High Current Relay 150


Powertrain Systems


Chassis Systems


Safety


Security


Body


Driver Information


Convenience

Description

Features

- Switches currents of more than 300 A
- Heat, moisture and vibration resistant
- Minimal contact resistance

Typical Applications

- Preheating air for diesel engines
- Preheating catalytic converters
- Car heating systems
- Electrical power steering
- Electrical pumps
- Primary and/or engine switches
- Electrical valve control
- Switches for loading ramps
- Electrically adjustable camshaft
- Dual battery switches
- Battery disconnection
- Also available for 42 V applications
- ELV/RoHS/WEEE compliant

Please contact Tyco Electronics for relay application support.

132_3d01


Car Industry


Truck Industry


Other Industry

Design

Dustproof;
optional: sealed version, sealing in accordance with IEC 68;
immersion cleanable:
protection class IP67 to IEC 529 (EN 60 529)

Weight

Approx. 220 g (7.76 oz.)

Nominal voltage

12 V or 24 V;
other nominal voltages available on request

Terminals

Quick connect terminals (coil)
Screw terminals (load)

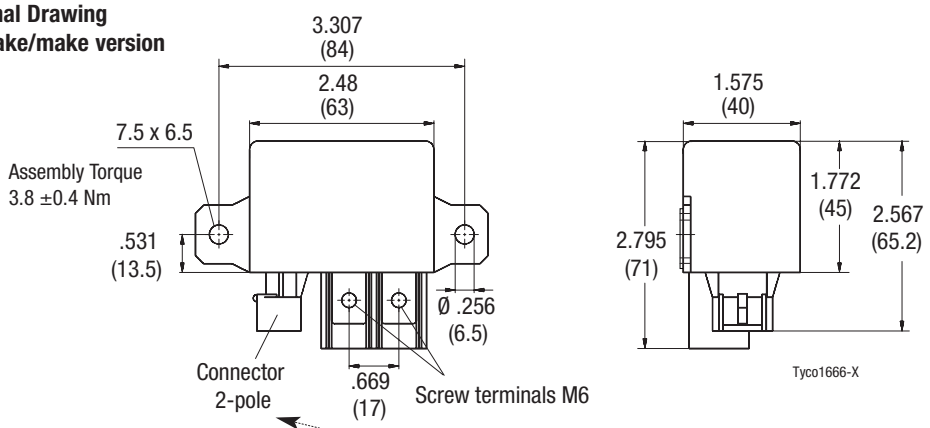
Conditions

All parametric, environmental and endurance tests are performed according to EIA Standard RS-407-A at standard test conditions unless otherwise noted:
23 °C ambient temperature,
20-50% RH, 29.5 ± 1.0" Hg
(998.9 ±33.9 hPa).
Please also refer to the Application Recommendations in this catalog for general precautions.

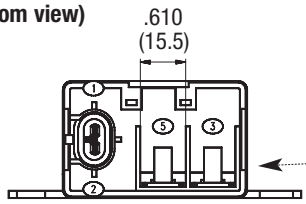
For general precautions please refer to our Application Notes and especially to *Storage* in the “Glossary” at http://relays.tycoelectronics.com/appnotes/

High Current Relay 150

Dimensional Drawing
Double make/make version



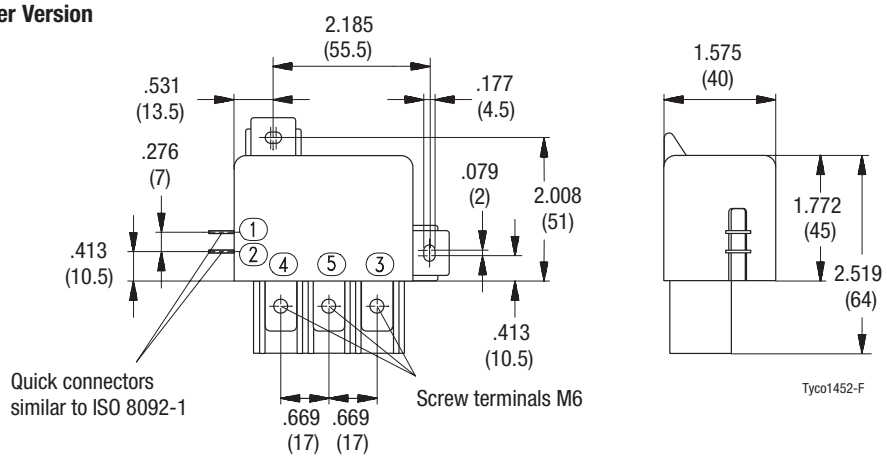
View of the Terminal (bottom view)



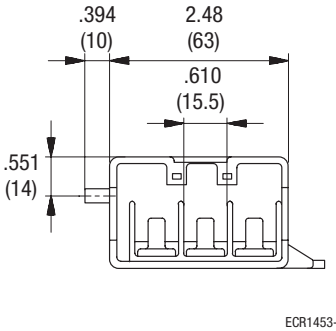
Connector Information
AMP Superseal 1.5. series

Coil side	
- Receptacle connector	282080-1
- Single wire seal	281934-2
- Contact	282110-1
Load side	
- Thimble	710026

Changeover Version



View of the Terminal (bottom view)



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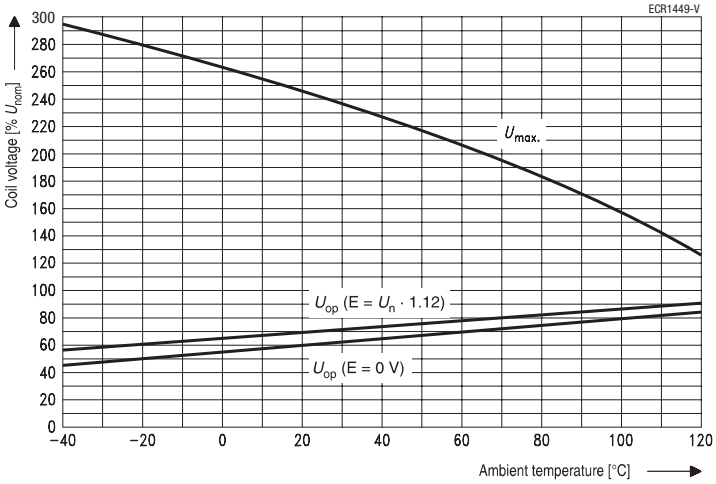
Contact Data

Contact configuration	Make contact/ Form A		Double make contact/ Form X		Changeover contact/ Form C	
Circuit symbol (see also Pin Assignment)						
Rated voltage	12 V	12 V	24 V	24 V	12 V	12 V
Rated current at 85 °C					NC/NO	NC/NO
Cable 16 mm³	130 A	120 A	120 A	100 A	100 A/130 A	90 A/120 A
Cable 25 mm³	150 A	130 A	135 A	120 A	120 A/150 A	100 A/130 A
Contact material	AgNi0.15	$AgSnO_2$	AgNi0.15	$AgSnO_2$	AgNi0.15	$AgSnO_2$
Max. switching current[1]					NC/NO	NC/NO
On[2]	150 A	300 A	150 A	300 A	120 A/150 A	200 A/300 A
Off	150 A	300 A	150 A	300 A	120 A/150 A	200 A/300 A
Min. recommended load[3]	1 A at 5 V					
Voltage drop at 100 A (initial)						
NO contact	Typ. 50 mV, 100 mV max.	Typ. 70 mV, 200 mV max.	Typ. 70 mV, 200 mV max.	Typ. 70 mV, 400 mV max.	Typ. 50 mV, 100 mV max.	Typ. 70 mV, 200 mV max.
NC contact					Typ. 50 mV, 100 mV max.	Typ. 70 mV, 200 mV max.
Mechanical endurance (without load)	$> 10^7$ operations					
Electrical endurance at 23 °C, 1 s on, 5 s off (example of resistive load)	$> 3 \times 10^4$ operations 150 A, 13.5 V	$> 5 \times 10^4$ operations 300 A, 13.5 V	$> 1 \times 10^4$ operations 150 A, 27 V	$> 5 \times 10^4$ operations 200 A, 27 V	Data on request	
Max switching rate at nominal load	6 operations per minute (0.1 Hz)					

[1] The values apply to a resistive or inductive load with suitable spark suppression and at maximum 13.5 V for 12 V or 27 V for 24 V load voltages.
[2] For a load current duration of maximum 3 s for a make/break ratio of 1:10.
[3] See chapter Diagnostics in our Application Recommendations on page 18 of this catalog or consult the internet at http://relays.tycoelectronics.com/application.asp

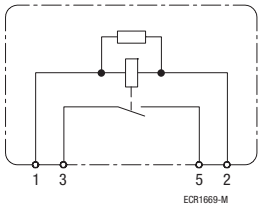
Operating Voltage Range



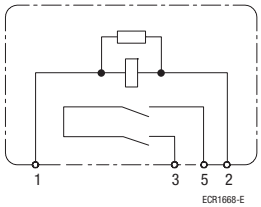
Does not take into account the temperature rise due to the contact current
E = pre-energization

Pin Assignment

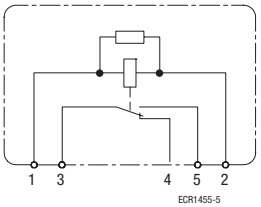
1 make contact/
1 form A



1 double make contact/
1 form X



1 changeover contact/
1 form C



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Coil Data

Available for nominal voltages	12, 24 V (other coils on request)
Nominal power consumption of the unsuppressed coil at nominal voltage	3.3 W
Nominal power consumption at nominal voltage with suppression resistor	4.1 W
Test voltage winding/contact	1000 VAC_{rms}
Maximum ambient temperature range	– 40 to + 125 °C
Operate time at nominal voltage	Typ. 25 ms
Release time at nominal voltage	Typ. 8 ms

N.B.
A low resistive suppression device in parallel to the relay coil increases the release time and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding.

Mechanical Data

Cover retention	
Axial force	500 N (112.5 lbs)
Pull force	500 N (112.5 lbs)
Push force	500 N (112.5 lbs)
Terminals	
Pull force	150 N (33.75 lbs)
Push force	150 N (33.75 lbs)
Resistance to bending, force applied to front	20 N (4.5 lbs)[1)]
Resistance to bending, force applied to side	20 N (4.5 lbs)[1)]
Max. torsion of screw bolts	4 ... 5 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures. Please refer to the Application Notes at http://relays.tycoelectronics.com/appnotes/

[1)] Values apply 2 mm from the end of the terminal. When the force is removed, the terminal must not have moved by more than 0.3 mm.

Environmental Conditions

Temperature range, storage	Refer to *Storage* in the "Glossary" at http://relays.tycoelectronics.com/appnotes/			
Test	Relevant standard	Testing as per	Dimension	Comments
Temperature cycling	IEC 68-2-14	Nb	10 cycles	– 40/+ 85 °C (5 °C per min.)
Dry heat	IEC 68-2-2	Ba	500 h	100 °C
Damp heat constant	IEC 68-2-3	Ca	500 h	40 °C, 93% RH
Industrial atmosphere	IEC 68-2-60	Method 4	21 days	25° C
Corrosive gas	IEC 68-2-42 IEC 68-2-43	10 ± 2 cm^3/m^3 SO_2 1 ± 0.3 cm^3/m^3 H2S	10 days 10 days	
Vibration resistance	IEC 68-2-6 (sine sweep)		10 … 200 Hz 5 g	No change in the switching state > 10 µs Valid for NC contacts, NO contact values significantly higher
Shock resistance	IEC 68-2-27 (half-sine pulse form)		6 ms min. 20 g	
Load dump	ISO 7637-1 (12 V) ISO 7637-2 (24 V)	Test pulse 5 Test pulse 5	Vs =+ 86.5 V Vs =+ 200 V	
Drop test	Capable of meeting specifications after 1.0 m (3.28 foot) drop onto concrete			
Flammability	UL94-HB or better (meets FMVSS 302)[1)]			

[1)] FMVSS: Federal Motor Vehicle Safety Standard.

High Current Relay 150

Ordering Information

Part Numbers (see table below for coil data) Relay Part Number	Tyco Order Number	Nominal Voltage	Contact Arrangement	Contact Material	Protection Class according to IEC 529 (EN 60 529)
12 V HCR 150					
V23132-A2001-A100	1393315-1	12 V	1 Form A	AgNi0.15	IP54
V23132-A2001-A200	1393315-2	12 V	1 Form A	AgSnO2	IP54
V23132-A2001-B100	1393315-3	12 V	1 Form A	AgNi0.15	IP67
V23132-A2001-B200	1416010-1	12 V	1 Form A	AgSnO2	IP67
24 V HCR 150					
V23132-B2002-A100	1393315-8	24 V	1 Form X	AgNi0.15	IP54
V23132-B2002-A200	1393315-9	24 V	1 Form X	AgSnO2	IP54
V23132-B2002-B100	1-1414428-0	24 V	1 Form X	AgNi0.15	IP67
V23132-B2002-B200	1-1393315-1	24 V	1 Form X	AgSnO2	IP67
12 V HCR 150					
V23132-C2001-A100	1-1393315-2	12 V	1 Form C	AgNi0.15	IP54
V23132-C2001-A200	1416010-3	12 V	1 Form C	AgSnO2	IP54

Coil Versions

Coil data for HCR 150	Rated Coil Voltage (V)	Coil Resistance (Ω) without suppression device	Coil Resistance (Ω) with suppression device	Must Operate Voltage (V)	Must Release Voltage (V)	Allowable Overdrive [1] Voltage (V) at 23°C	Allowable Overdrive [1] Voltage (V) at 85°C
V23132-**001-****	12	44	37	7.2	1.2	27	20
V23132-**002-****	24	178	141	14.4	2.4	54	38

[1] Allowable overdrive is stated with no load applied and minimum coil resistance.