High current relay HCR


Powertrain Systems


Chassis Systems


Safety


Security


Body


Driver Information


Convenience

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 applicable for 42 V loads (please ask our specialists)

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. 7.76 oz. (220 g)

Nominal voltage

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

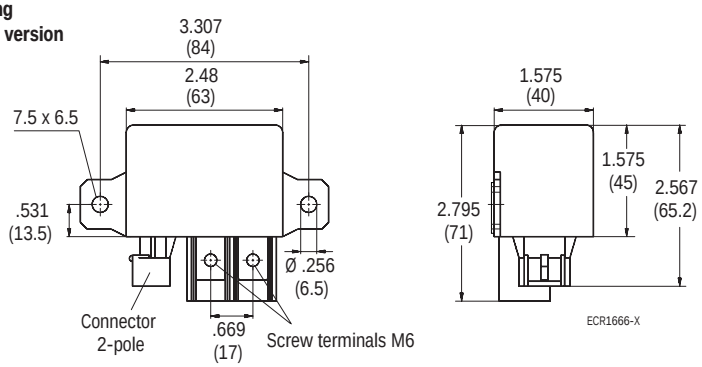
Terminals

Quick connect terminals (coil)
Screw terminals (load)

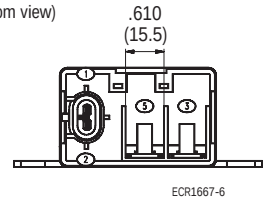
Conditions

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).

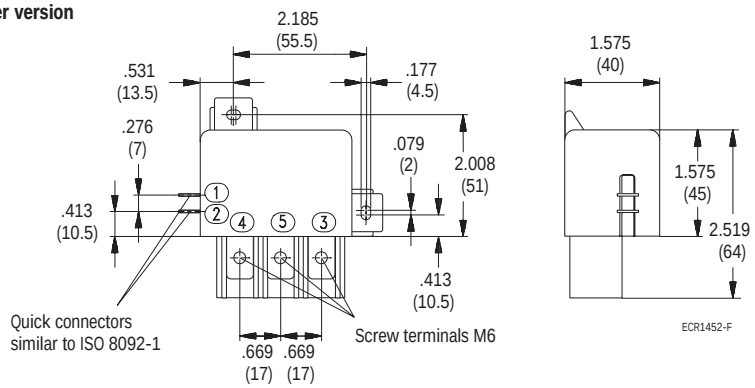
Dimensional drawing
Double make/make version



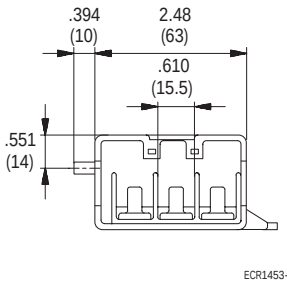
View of the terminal (bottom view)



Changeover version



View of the terminal (bottom view)



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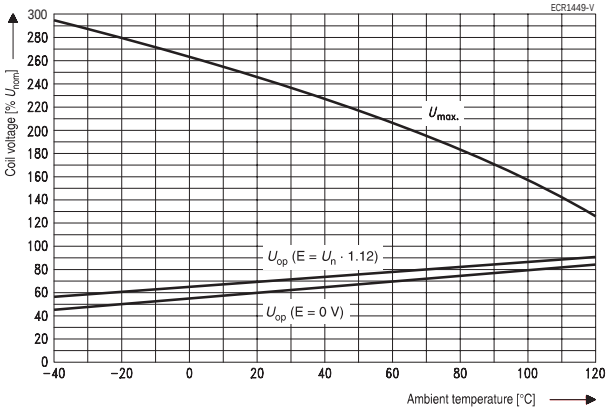
Contact data

Contact configuration	Make contact/ Form A		Double make contact/ Form X		Changeover contact/ Form C	
Contact material	AgNi0.15	$AgSnO_2$	AgNi0.15	$AgSnO_2$	AgNi0.15	$AgSnO_2$
Circuit symbol (see also Pin assignment)						
Max. switching current[2]						
On[3]	150 A (12 V)	300 A (12 V)	150 A (24 V)	300 A (24 V)	NO 150 A (12 V) NO 150 A (12 V)	300 A (12 V) 300 A (12 V)
Off	150 A (12 V)	300 A (12 V)	150 A (24 V)	300 A (24 V)	NC 100 A (12 V) NC 100 A (12 V)	200 A (12 V) 200 A (12 V)
Limiting continuous current						
at 23 °C	150 A[4]	130 A[4]	130 A[4]	120 A[4]	Data on request	
at 85 °C	130 A[4] 150 A[4]	120 A[4] 130 A[4]	120 A[4] 130 A[4]	100 A[4] 120 A[4]		
Voltage drop (initial) at 100 A	Typ. 50 mV	Typ. 70 mV	Typ. 70 mV	Typ. 100 mV	Typ. 50 mV	Typ. 70 mV
Increase in coil temperature at 10 A load	Typ. 0.3 °C					
Mechanical endurance (without load)	> 10^7 operations					
Electrical endurance at 24 °C[1]	150 A 13.5 V > 3 x 10^4 op.	300 A 13.5 V > 5 x 10^4 op.	150 A 27 V > 3 x 10^4 op.	200 A 27 V > 5 x 10^4 op.	Data on request	

[1] Resistive load 1 sec make, 5 sec break time.
[2] The values apply to a resistive load or inductive load with suitable spark suppression.
[3] This current may flow for a maximum of 3 sec for a make/break ratio of 1 : 10.
[4] Cable 16 mm²
[5] Cable 25 mm²

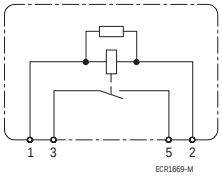
Operating voltage range



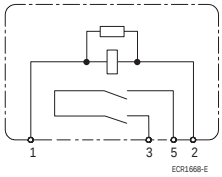
Does not take into account the temperature rise due to the contact current
E = pre-energization

Pin assignment

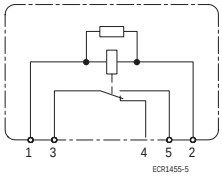
1 make contact/
1 form A



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 VDC (other coils on request)
Nominal power consumption of the unsuppressed coil at nominal voltage	Typ. 3.3 W
Test voltage winding/contact	1000 VAC_{rms}
Upper limit temperature for the coil	155 °C
Maximum ambient temperature range[1)]	– 40 to + 125 °C
Max. switching rate without contact loading	10 Hz
Operate time (12 VDC)	Typ. 25 msec
Release time (12 VDC)	Typ. 8 msec

[1)] See also operating voltage diagram
N.B.
A low resistive device in parallel to the relay coil slows the armature movement down
and reduces the lifetime caused by increased erosion and/or higher risk of contact tack welding.

Mechanical data	
Cover retention	
pull	500 N (112.5 lbs)
push	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)]
Torsion of screw bolts	5 Nm
Enclosures	
Dust cover	Protects relay from dust. For use in passenger compartment or enclosures

[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.

Operating conditions				
Temperature range, storage	-40 °C to 155 °C			
Test	Relevant standard	Testing as per	Dimension	Comments
Dry heat	IEC 68-2-2	Ba	500 h	100 °C
Temperature cycling	IEC 68-2-14	Nb	10 cycles	– 40/+ 85 °C (5 °C per min.)
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
Vibration resistance	IEC 68-2-6		10 … 200 Hz 10 g	No change in the switching state > 10 µsec
Shock resistance	IEC 68-2-27 (half-sine pulse form) acceleration, acc. to position		6 msec 20 g	No change in the switching state > 10 µsec
Load dump	ISO 7637	DIN 40 839 Part 1		
Jump start	5 sec 16 V 10 sec 16 V 25 sec 25 V		3 cycles	
Flammability	UL94-HB			

Ordering information

Part number HCR	Contact arrangement	Contact material	Protection class according to IEC 529 (EN 60 529)
V23132-A2001-A100	1 Form A	AgNi0.15	IP 54
V23132-A2001-A200	1 Form A	$AgSnO_2$ (plat.)	IP 54
V23132-A2001-B100	1 Form A	AgNi0.15	IP 67
V23132-A2001-B200	1 Form A	$AgSnO_2$ (plat.)	IP 67
V23132-B2002-A100	1 Form X	AgNi0.15	IP 54
V23132-B2002-A200	1 Form X	$AgSnO_2$ (plat.)	IP 54
V23132-B2002-B100	1 Form X	AgNi0.15	IP 67
V23132-B2002-B200	1 Form X	$AgSnO_2$ (plat.)	IP 67
V23132-C2001-A100	1 Form C	AgNi0.15	IP 54
V23132-C2001-A200	1 Form C	$AgSnO_2$ (plat.)	IP 54

Coil versions

Coil designator HCR	Rated coil voltage (V)	Coil resistance (Ω)		Must operate voltage (VDC)	Must release voltage (VDC)	Allowable overdrive (VDC)	
		without suppression device	with suppression device			at 23 °C[1]	at 85 °C[1]
001	12	43.5	37[2]	7.2	1.2	27	20
002	24	178	141[2]	14.4	2.4	54	38

[1] Allowable overdrive is stated with no load current flowing through the relay contacts and minimum coil resistance.
[2] Including suppression device.