

High current relay HCR



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 cam shaft
- Dual battery switches
- Battery disconnection



132_3d01

Design

Dustproof;
optional: sealed version,
sealing in accordance with
IEC 60 068;
immersion cleanable:
protection class IP67 to IEC
60 529 (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)

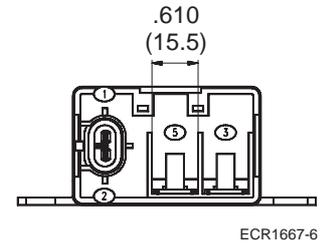
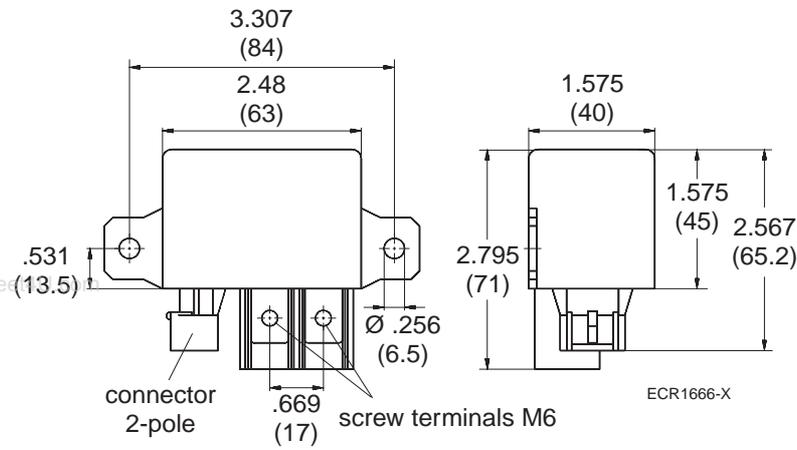
Conditions

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).

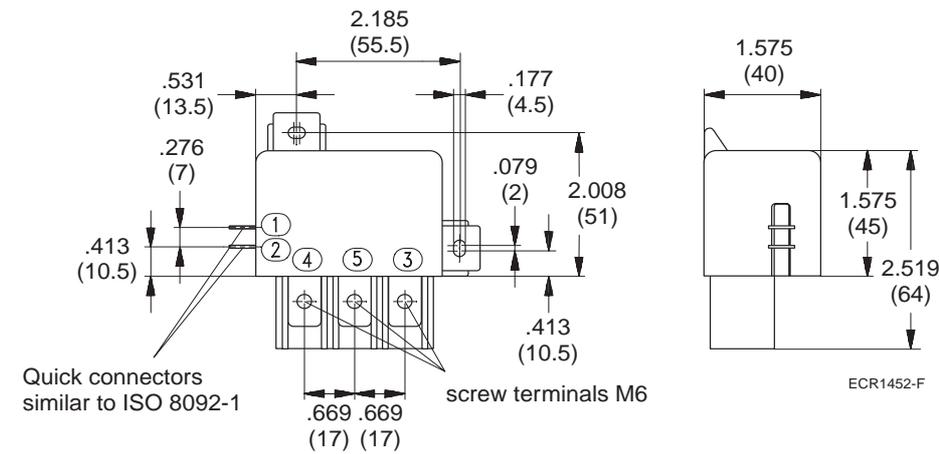
High current relay HCR

Dimension drawing
Bridging make/make version

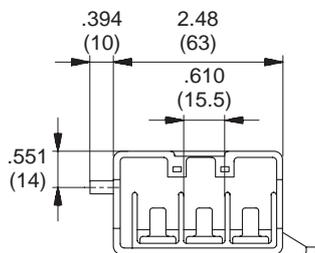
View on the terminals (bottom view)



Changeover version



View on the terminals (bottom view)



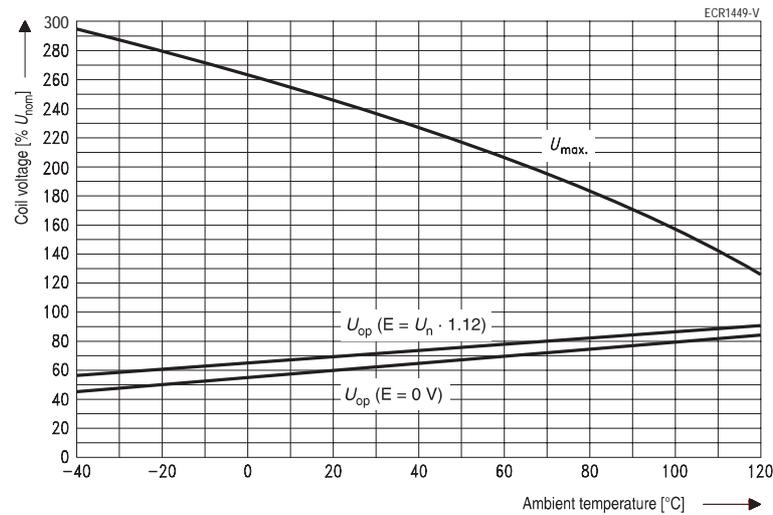
ECR1453-N

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Contact data			
Contact configuration	Make contact/ Form A	Bridging make contact/ Form X	Changeover contact/ Form C
Contact material	AgNi0.15 ¹⁾		
Circuit symbol (see also Pin assignment)			
Max. switching current ²⁾ On ³⁾ Off	300 A (1000 A for 10 cycles) 300 A (1000 A for 10 cycles)		
Limiting continuous current at 23 °C at 85 °C	150 A ⁴⁾ 130 A ⁴⁾ / 150 A ⁵⁾		
Voltage drop (initial) at 100 A	Typ. 50 mV		
Increase in coil temperature at 10 A load	Typ. 0.3 °C		
Mechanical endurance (without load)	> 10 ⁷ operations		
Electrical endurance	For resistive load of 150 A, 1 sec make, 1 sec break time, 13.5 V switching voltage, 24 °C > 3 x 10 ⁴ operations		

- 1) Optional: AgSnO₂ contact material for higher switching loads (300 A on/off, 13.5 V, 23 °C, > 5 x 10⁴ operations)
 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

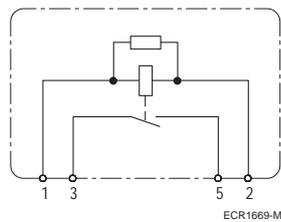
Operating voltage range



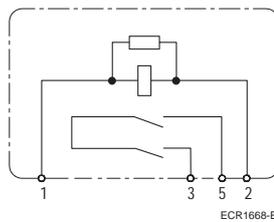
Does not take into account the temperature rise due to the contact current
 E = pre-energization

Pin assignment

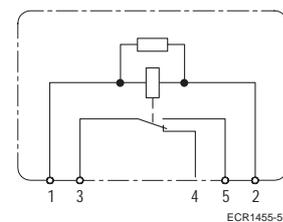
1 make contact/
1 form A



1 bridging 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)	25 msec
Release time (12 VDC)	8 msec

¹⁾ See also operating voltage range 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 60 068-2-2	Ba	500 h	100 °C
Temperature cycling	IEC 60 068-2-14	Nb	10 cycles	- 40/+ 85 °C (5 °C per min.)
Damp heat constant	IEC 60 068-2-3	Ca	500 h	40 °C, 93% RH
Industrial atmosphere	IEC 60 068-2-60	method 4	21 days	25 °C
Vibration resistance	IEC 60 068-2-6		10 ... 200 Hz 10 g	No change in the switching state > 10 μsec
Shock resistance	IEC 60 068-2-27 (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			

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Ordering information

Part number (Replace * with "Coil designator") HCR	Contact arrangement	Contact material	Enclosure	Terminals
V23132-A2*-A100	1 Form A	AgNi0.15	dust cover	quick connect (coil) screw terminals (load)
V23132-B2*-A100	1 Form X	AgNi0.15	dust cover	quick connect (coil) screw terminals (load)
V23132-C2*-A100	1 Form C	AgNi0.15	dust cover	quick connect (coil) screw terminals (load)

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.