WangRong Group

High Voltage DC Relay

About WangRong

WangRong Group (WRG), established in 2000 as Shajing Branch of OEG in Shenzhen, has developed its business scope from original precise relays to all kind of industrial components. Its products are certified to UL/cULus, VDE, TUV, CQC and in accordance with RoHS directive.

WRG has established two manufacturing centers in Shenzhen and Huangshan, which are all in accordance with ISO 9001, ISO 14001 and TS 16949. WRG has equipped with advanced Test lab for UL 60947 tests.

WRG strong production capacity guarantees high quality and fast delivery. With more than 20 years of experience in introducing, studying and practicing international advanced materials, processing and management knowledge, WRG has developed its deep knowledge and expertise in R&D, tooling, injection, stamping, assembling, testing and auto production. WRG strives to provide reliable solutions for its industrial customers. WRG is continuously developing its marketing and sales network. Besides in Mainland, WRG has also established subsidiaries and offices in HongKong, Japan, Italy, USA and Korea. WRG dedicates to provide pre-sales service and after sales service timely and closely.

Focus on Quality and Innovation

Quality and innovation is essential to our company. By introducing advanced international technology and management, WRG has built state of art manufacture center and become one of the most trusted partners for its customers.

Huangshan Manufacturing Center
Staff: about 500
Area: 80,000 m2
Production Capacity: 700 M pieces/year

Shenzhen Manufacturing Center
Staff: about 350
Area: 18,000 m2
Production Capacity: 110 M pieces/year

Huangshan Manufacturing Center

Shenzhen Manufacturing Center

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High Voltage Relay

Brief introduction

High voltage relay, a kind of electrical switching component, is also called contactor. High voltage relays switch circuits in a safe way, i.e. switching high voltage with low voltage remotely, or controlling dangerous high voltage with low voltage (12V ~ 72V). The relays, being widely used in control circuits, are actually “Auto Switches” controlling big circuit with small circuit. In a word, high voltage relays provide auto-adapting, protection and circuit switching functions.

Our strengths

- Professional R&D team
- Most up-to-date quality management systems
  TS16949, ISO9001 and 14000.
- Advanced facilities
  Annual yield of 1M relays, 2000 M^2 workshops in Class 100,000.
- Sophisticated testing methods
  600 KW Electrical Life Testing System.
- Patented technologies
  WRG is a professional provider of developing and manufacturing HV DC relays. With patented technologies, advanced production & test equipment, WRG can satisfy different requirements.
- Two series
  RAVR and RAVC, with load current of 10 A ~ 500 A; load voltage of 12 ~ 900 VDC.

New energy vehicle

Charging station

Photovoltaic system

Wind power

Power supply for cloud server

Heavy equipment

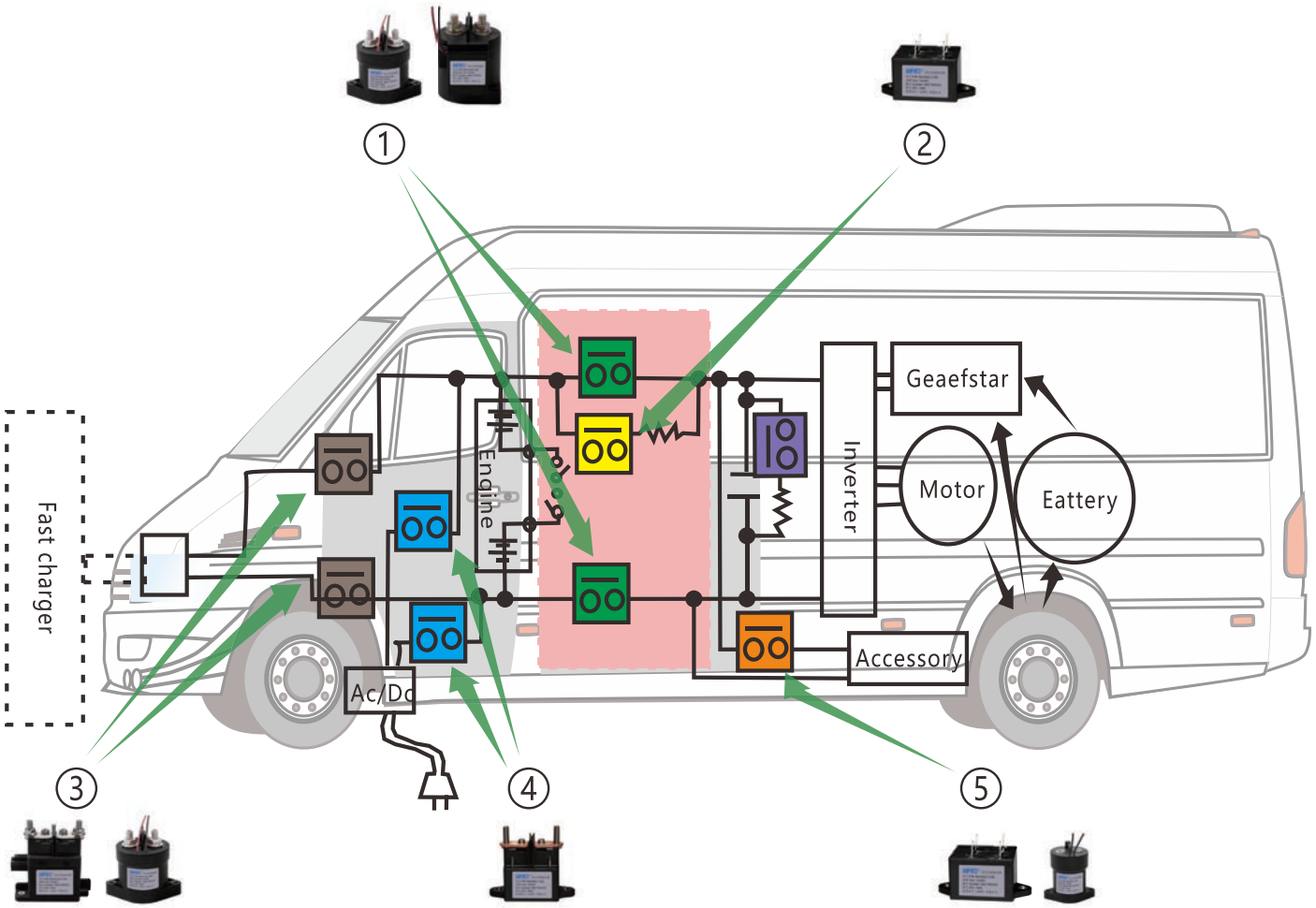
Applications

HV DC relays are widely used in high voltage DC applications, such as EV, HEV, FCEV, PV, wind power, Cloud computing servers, charging systems, DC power supply control systems and heavy equipment.

EV applications

1. Main relays: to cut off at high voltages when faults or unexpected conditions occur. RAVC250 and RAVC350 are recommended.

2. Pre-charge relays: together with pre-charge resistors to bear the impact load on main relays. RAVR20 is recommended.

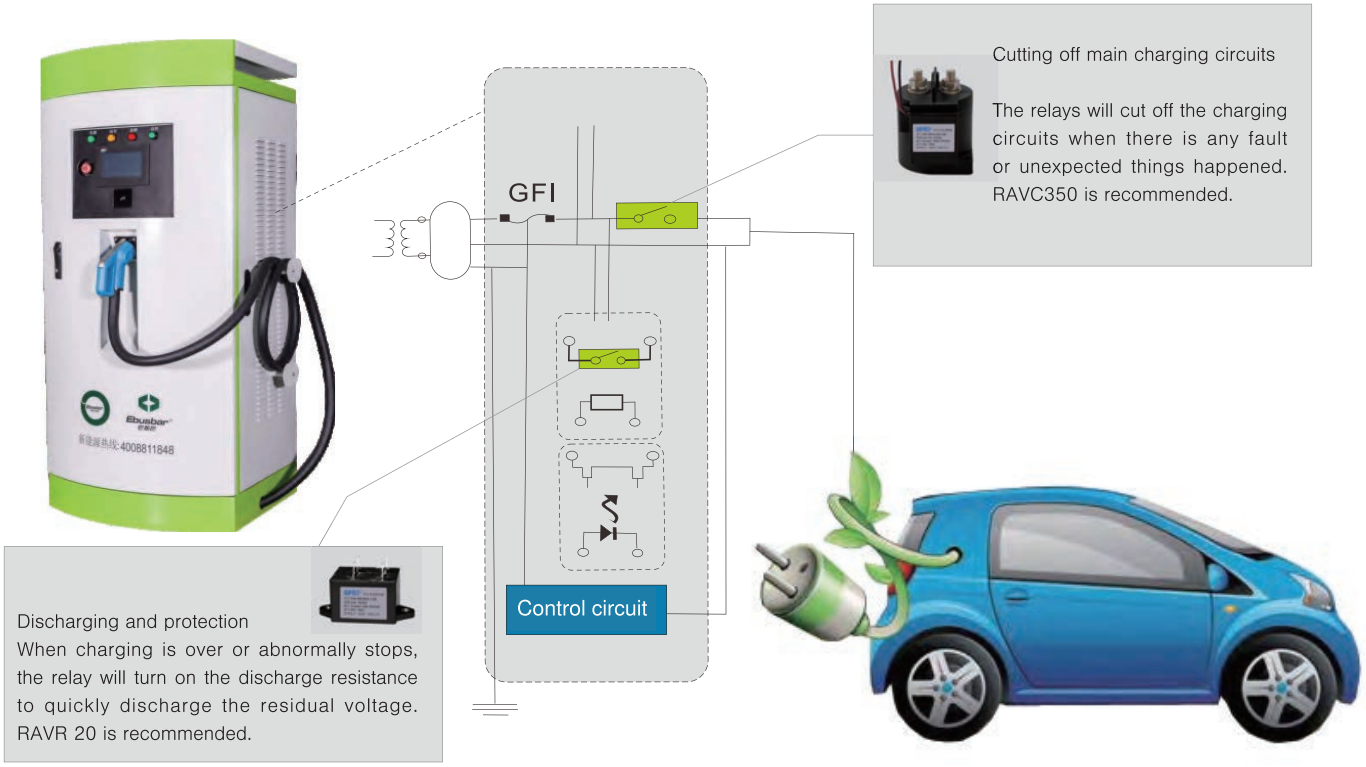


3. In fast charging system with rated current of 120 A - 150 A: to isolate high voltage, e.g. unexpected circuit faults during charging process. RAVR120, RAVR150 and RAVC150A are recommended.

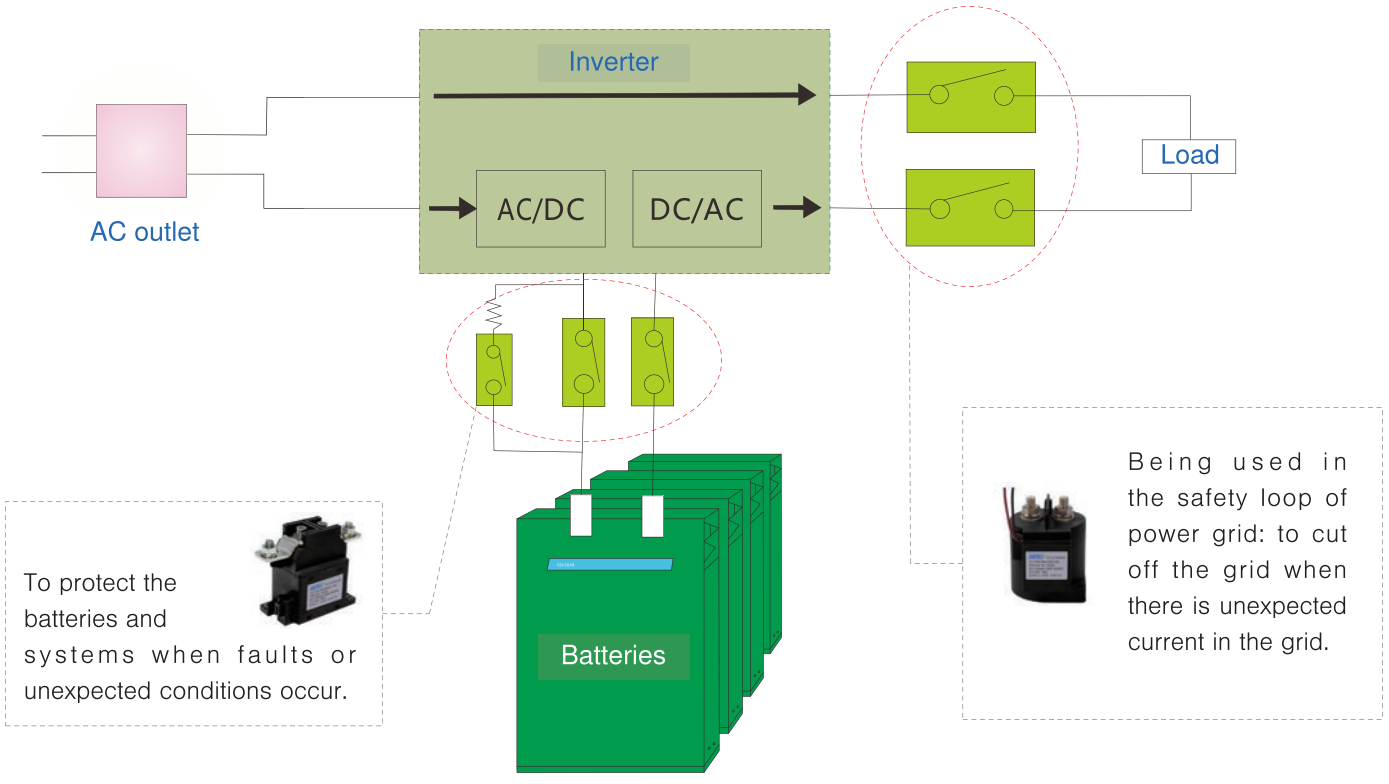
4. Trickle charging system with rated current of 5 A - 10 A. RAVR40 is recommended.

5. High voltage auxiliaries. RAVR120, RAVR40 and RAVC50 are recommended.

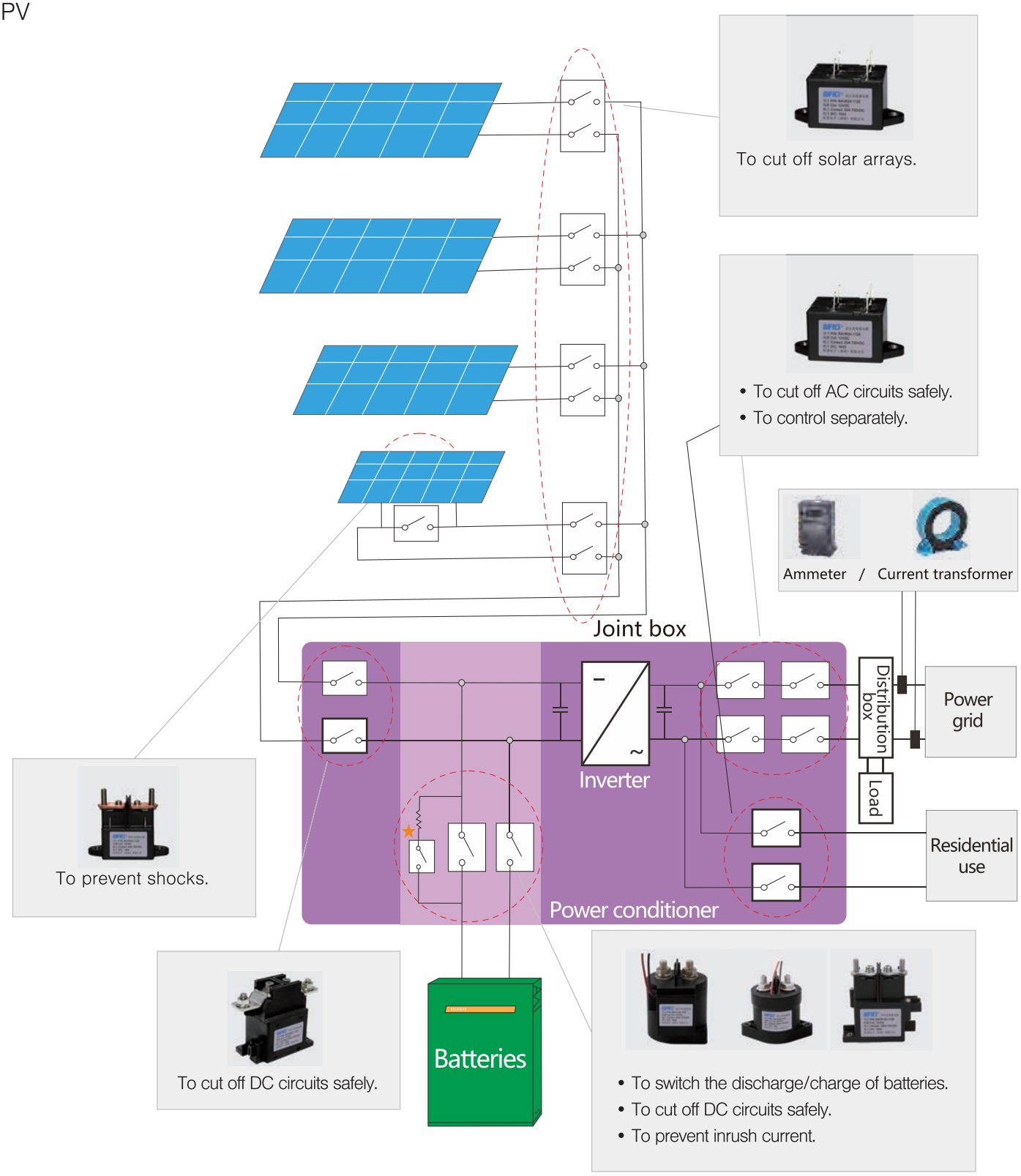
Charging stations



BESS(Battery Energy Storage System)



PV



• When a fire or other disaster occurs, the relays can cut off the DC circuit and short circuit the panels. In this way, the products ensure the safety of the systems (e.g. to prevent firefighters from shocks.)
• To conduct remote control for maintenance and thus to cut down the maintenance cost.

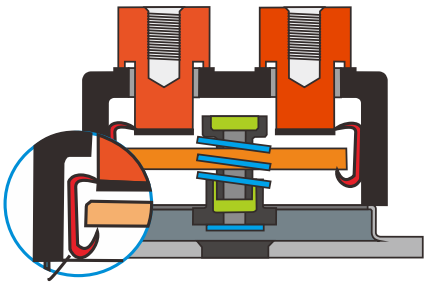
• To cut off unexpected big current for protecting connected storage batteries.
• The generating efficiency will be decreased, if there is any cover on the panel or there is any fault. Relays can be deployed for bypassing the panel or cutting off the solar arrays to ensure the whole system efficiency.

The features of high voltage relays

Although our relays are a kind of small power relays, they can energize and cut off high DC voltages or high DC currents. Compared with the traditional DC contactors in HV DC applications, it features:

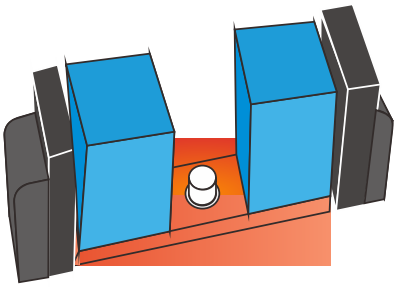
Safe

Sealed structure
No arc leaks



Space saving

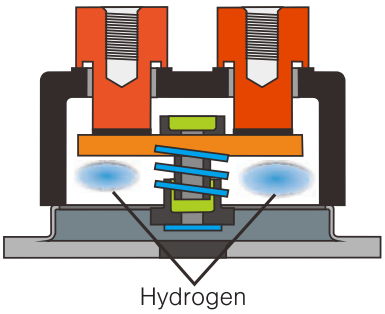
No arc space required



The traditional relays require arc space, thus proximity installation is not possible.

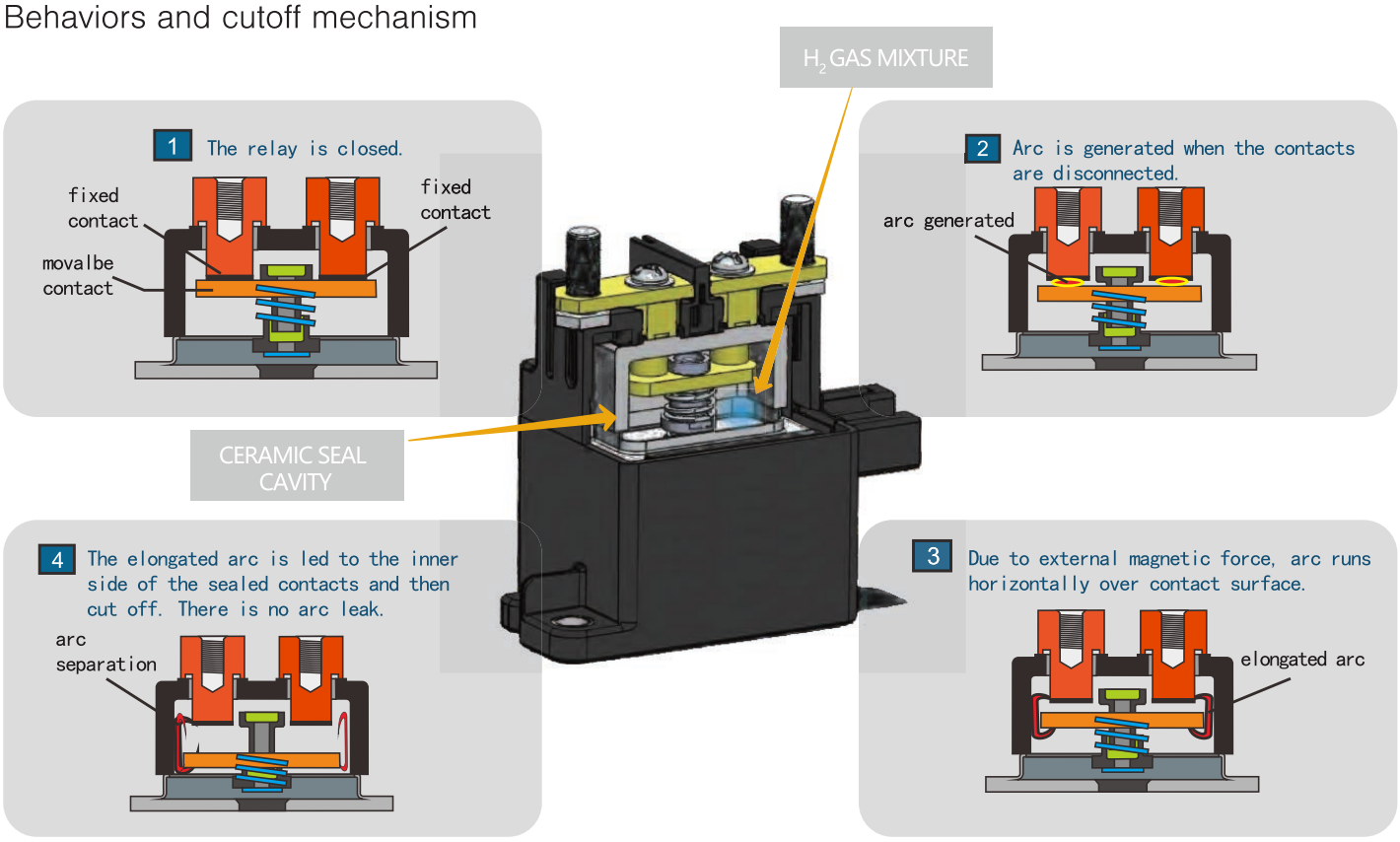
Small size

Sealed contact capsule with hydrogen enables high voltage cut off in a extreme short contact gap



To cool and cut off the arc with hydrogen mixture in the sealed contact capsule.

Behaviors and cutoff mechanism



		RAVR20	RAVR40	RAVR100
				
Characteristics		20 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology	40 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology	100 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology
Contact configuration		1 A	1 A	1 A
Contact material		Cu alloy	Cu alloy	Cu alloy
Contact ratings		20 A 450 V DC	40 A 450 V DC	100 A 450 V DC
Min. applicable load		1 A 12 V DC	1 A 12 V DC	1 A 12 V DC
Rated coil voltage		12 V, 24 V	12 V, 24 V	12 V, 24 V
Coil power		3.6 W	3 W	4.5 W
Mechanical life (no load)		2×10^5 times	2×10^5 times	2×10^5 times
Electrical life		450 V 1×10^4 times 750 V 3×10^3 times	450 V 1×10^4 times 750 V 3×10^3 times	450 V 1×10^4 times 750 V 3×10^3 times
Dielectric strength	Between contacts	2500 V AC 60 Sec. 10 mA	2500 V AC 60 Sec. 10 mA	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA	4000 V AC 60 Sec. 10 mA	4000 V AC 60 Sec. 10 mA
	Surge voltage	5000 V AC	5000 V AC	5000 V AC
Operating temperature		-40 ~ +85 ℃	-40 ~ +85 ℃	-40 ~ +85 ℃
Dimension L×W×H (mm)		78x39.2x35	72x32.6x57.7	77x40.4x76.2
Weight (g)		160	180	350
Page		14	16	18

		RAVR120	RAVR150	RAVR250
				
Characteristics		120 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology	150 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology	250 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology
Contact configuration		1 A	1 A	
Contact material		Cu alloy	Cu alloy	Cu alloy
Contact ratings (Res. Load)		120 A 450 V DC	150 A 450 V DC	250 A 450 V DC
Min. applicable load		1 A 12 V DC	1 A 12 V DC	1 A 12 V DC
Rated coil voltage		12 V, 24 V	12 V, 24 V	12 V, 24 V
Coil power		4.5 W	6 W	34 W (0.1s), 4 W (Keep)
Mechanical life (no load)		2×10^5 times	2×10^5 times	2×10^5 times
Electrical life		450 V 1×10^4 times 750 V 3×10^3 times	450 V 1×10^4 times 750 V 3×10^3 times	450 V 1×10^4 times 750 V 3×10^3 times
Dielectric strength	Between contacts	2500 V AC 60 Sec. 10 mA	2500 V AC 60 Sec. 10 mA	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA	4000 V AC 60 Sec. 10 mA	4000 V AC 60 Sec. 10 mA
	Surge voltage	5000 V AC	5000 V AC	5000 V AC
Operating temperature		-40 ~ +85 ℃	-40 ~ +85 ℃	-40 ~ +85 ℃
Dimension L×W×H (mm)		77x40.4x76.2	79x41.1x84.3	105.3x45x88
Weight (g)		350	400	500
Page		20	22	24

		RAVC50	RAVC100	RAVC150
				
Characteristics		50 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology	100 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology	150 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology
Contact configuration		1 A	1 A	1 A
Contact material		Cu alloy	Cu alloy	Cu alloy
Contact ratings		50 A 450 V DC	100 A 450 V DC	150 A 450 V DC
Min. applicable load		1 A 12 V DC	1 A 12 V DC	1 A 12 V DC
Rated coil voltage		1 A 12 V DC	1 A 12 V DC	9 ~ 36 V
Coil power		5.5 W	5.5 W	43.2 W (0.1s), 1.7W (Keep)
Mechanical life (no load)		2×10^5 times	2×10^5 times	2×10^5 times
Electrical life		450 V 1×10^4 times 750 V 3×10^3 times	450 V 1×10^4 times 750 V 3×10^3 times	450 V 1×10^4 times 750 V 3×10^3 times
Dielectric strength	Between contacts	2500 V AC 60 Sec. 10 mA	2500 V AC 60 Sec. 10 mA	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA	4000 V AC 60 Sec. 10 mA	4000 V AC 60 Sec. 10 mA
	Surge voltage	5000 V AC	5000 V AC	5000 V AC
Operating temperature		-40~+85 ℃	-40~+85 ℃	-40~+85 ℃
Dimension L×W×H (mm)		55x35x58.5	55x35x58.5	80.4x52.8x73
Weight (g)		180	180	380
Page		26	28	30

		RAVC250	RAVC350
			
Characteristics		250 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology	350 A Encased in ceramic house, contact capsule filled with reducing gases of hydrogen mixture, combining with magnetic quenching technology
Contact configuration		1 A	1 A
Contact material		Cu alloy	Cu alloy
Contact ratings (Res. Load)		250 A 450 V DC	350 A 450 V DC
Min. applicable load		1 A 12 V DC	1 A 12 V DC
Rated coil voltage		9 ~ 36 V	9 ~ 36 V
Coil power		43.2 W (0.1s), 1.7W (Keep)	45.6 W (0.1s), 3.4 W (Keep)
Mechanical life (no load)		2×10^5 times	2×10^5 times
Electrical life		450 V 1×10^4 times 750 V 3×10^3 times	450 V 1×10^4 times 750 V 3×10^3 times
Dielectric strength	Between contacts	2500 V AC 60 Sec. 10 mA	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA	4000 V AC 60 Sec. 10 mA
	Surge voltage	5000 V AC	5000 V AC
Operating temperature		-40~+85 ℃	-40~+85 ℃
Dimension L×W×H(mm)		80.4x52.8x73	84.5x82x76.2
Weight (g)		380	550
Page		32	34

RAVR20 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance always remains stable even under harsh environment.

20 A

		Technical parameters
Coil data		
Rated voltage		12 / 24 V DC
Rated power		3.6 W
Max. voltage		16 / 32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Coil resistance		40 / 160 Ω
Holding current		0.3 / 0.15 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		20 A
Max. switching rating		1000 V DC, 200 A (300 V DC), 60 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 60 A 50 Ops
Reverse cutoff		-
Min. load		1 A 12 V DC
Short-time current		30 A 15 min, 50 A 2 min. (≥ 3 mm^2)
Contact resistance		≤ 10 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 5 mm
Creepage distance		> 5 mm
Vibration		Functional test, 43 m/s^2 10~200 Hz, (10 μs) Destructive test, 43 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		78x39.2x35
Weight (g)		160

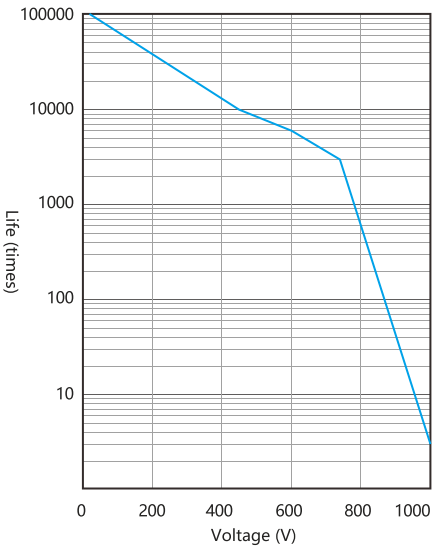
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

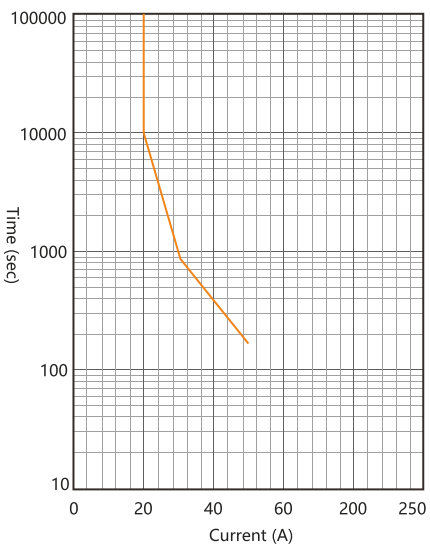
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVR	20	*	-1	12	D	01
RAVR: Square type	20: 20A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

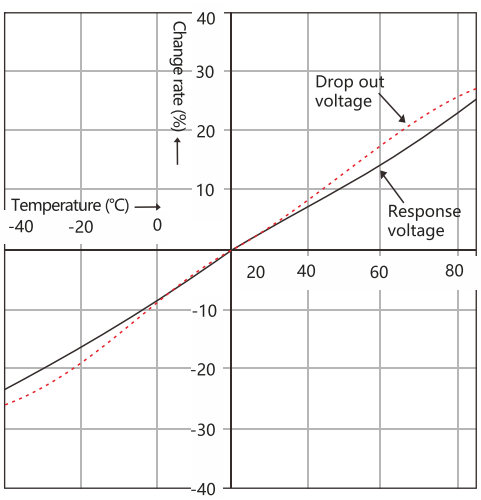
On-off ability (rated current)



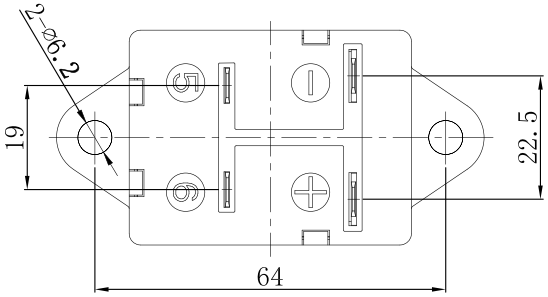
Load current

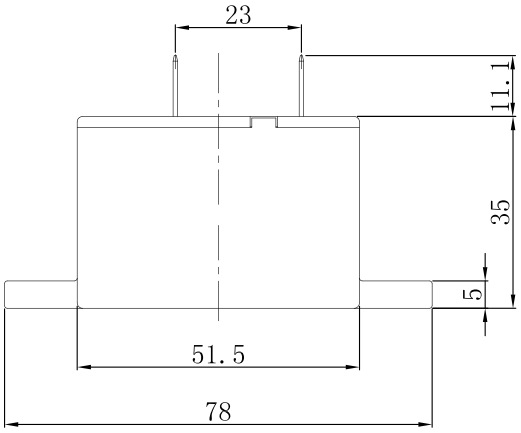


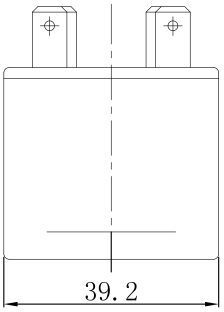
Ambient temperature



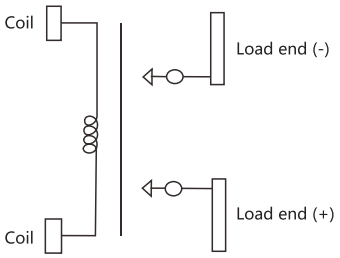
Outline dimension



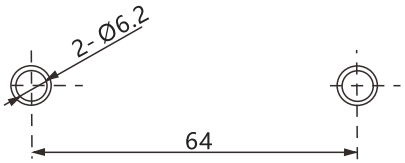




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVR40 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

40 A

		Technical parameters
Coil data		
Rated voltage		12 / 24 V DC
Rated power		3 W
Max. voltage		16 / 32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Coil resistance		48 / 192 Ω
Holding current		0.25 / 0.125 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		40 A
Max. switching rating		1000 V DC, 400 A (300 V DC), 120 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 120 A 50 Ops
Reverse cutoff		-40 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		60 A 15 min, 100 A 2 min. (≥ 10 mm^2)
Contact resistance		≤ 10 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 10 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		72x32.6x57.7
Weight (g)		180

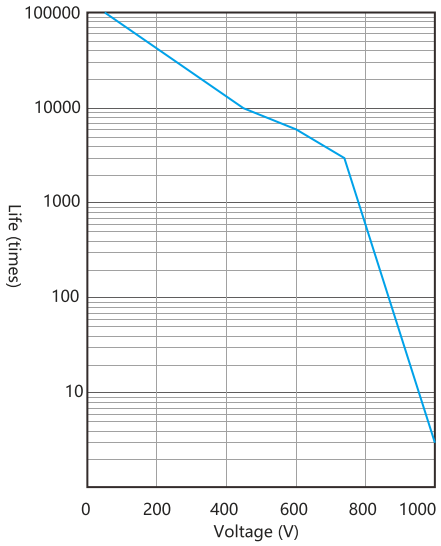
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

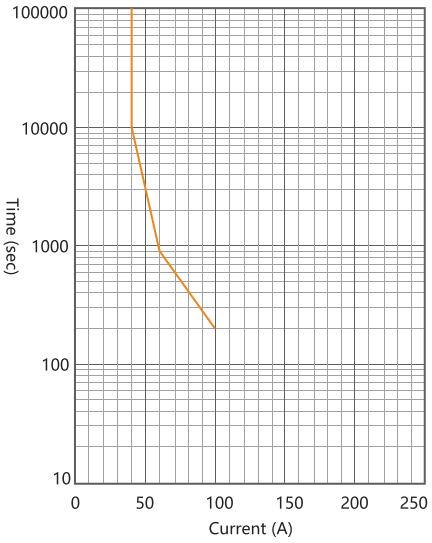
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVR	40	*	-1	12	D	01
RAVR: Square type	40: 40A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

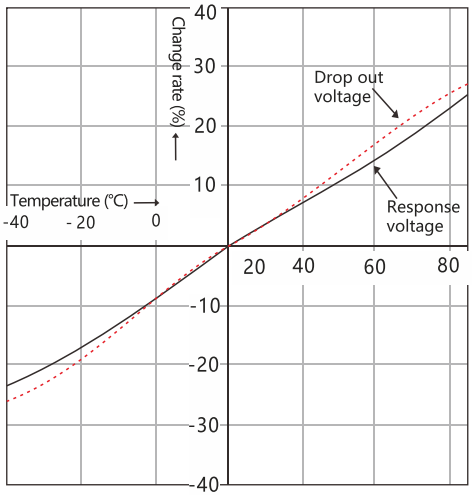
On-off ability (rated current)



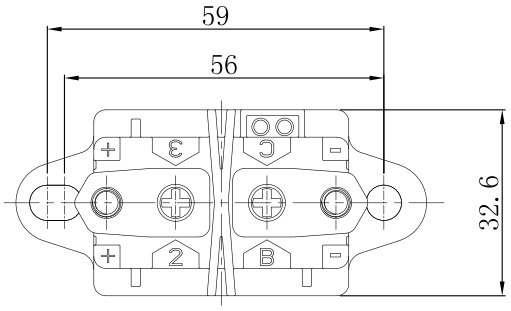
Load current

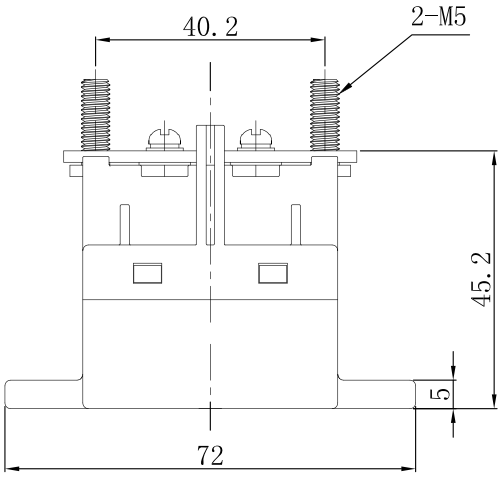


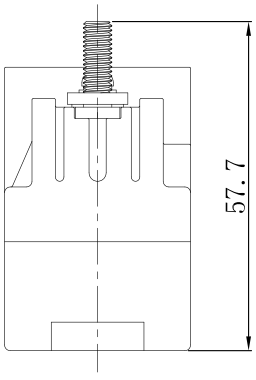
Ambient temperature



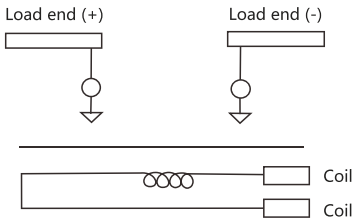
Outline dimension



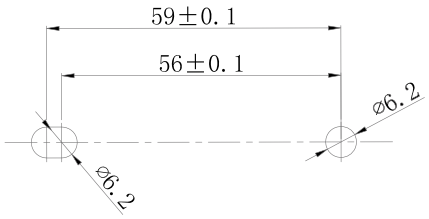




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVR100 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

100 A

		Technical parameters
Coil data		
Rated voltage		12~24 V DC
Rated power		4.5 W
Max. voltage		16~32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Coil resistance		32 / 128 Ω
Holding current		0.375 / 0.188 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		100 A
Max. switching rating		1000 V DC, 1000 A (300 V DC), 300 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 200 A 100 Ops
Inverse cutoff		-100 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		150 A 15 min, 225 A 2 min. (≥ 35 mm^2)
Contact resistance		≤ 1.5 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 43 m/s^2 10~200 Hz, (10 μs) Destructive test, 43 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		77x40.4x76.2
Weight (g)		350

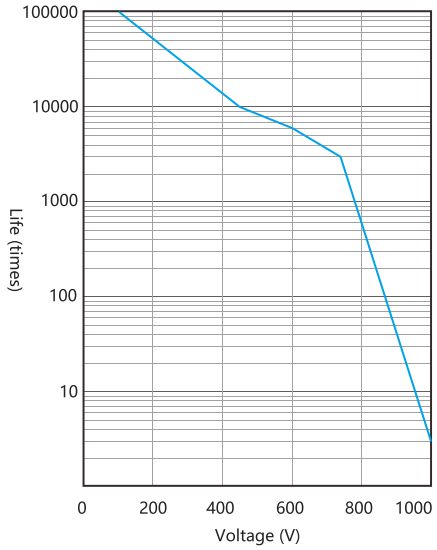
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

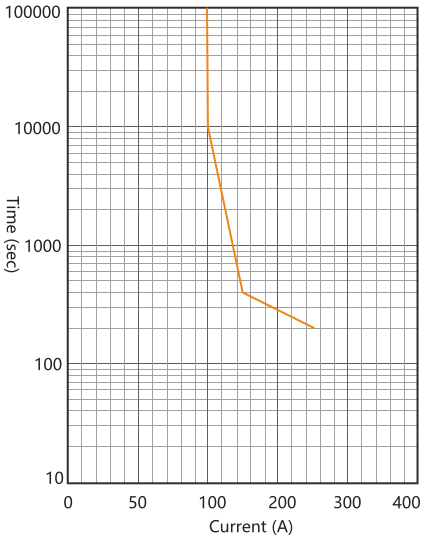
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVR	100	*	-1	12	D	01
RAVR: Square type	100: 100A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

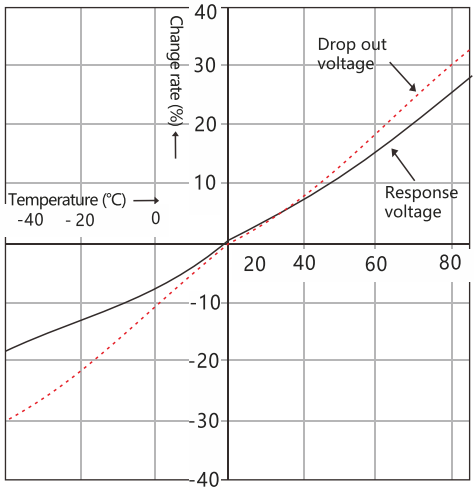
On-off ability (rated current)



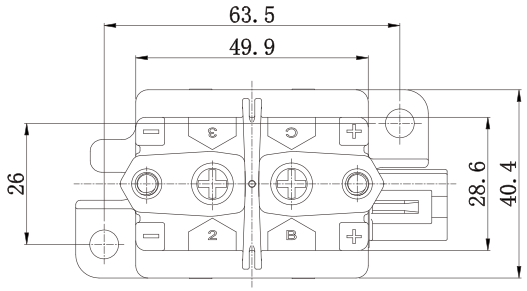
Load current

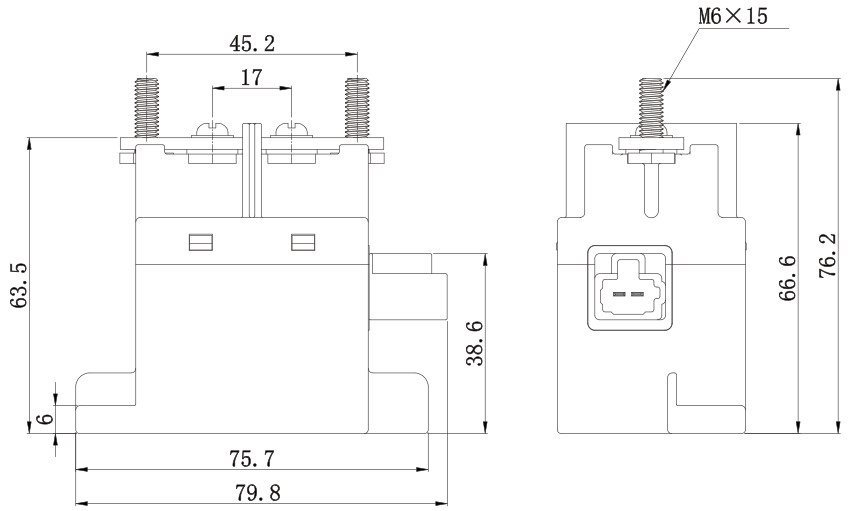


Ambient temperature

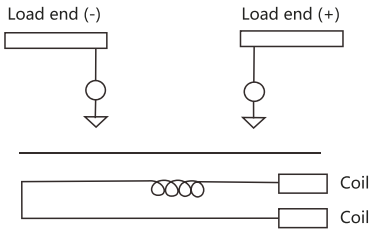


Outline dimension

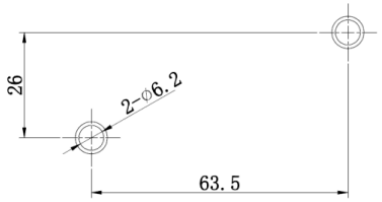




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVR120 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

120 A

		Technical parameters
Coil data		
Rated voltage		12 / 24 V DC
Rated power		4.5 W
Max. voltage		16 / 32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Coil resistance		32 / 128 Ω
Holding current		0.375 / 0.188 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		120 A
Max. switching rating		1000 V DC, 1200 A (300 V DC), 360 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 250 A 100 Ops
Inverse cutoff		-120 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		180 A 15 min, 300 A 2 min. (≥ 40 mm^2)
Contact resistance		≤ 1.5 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 43 m/s^2 10~200 Hz, (10 μs) Destructive test, 43 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		77x40.4x76.2
Weight (g)		350

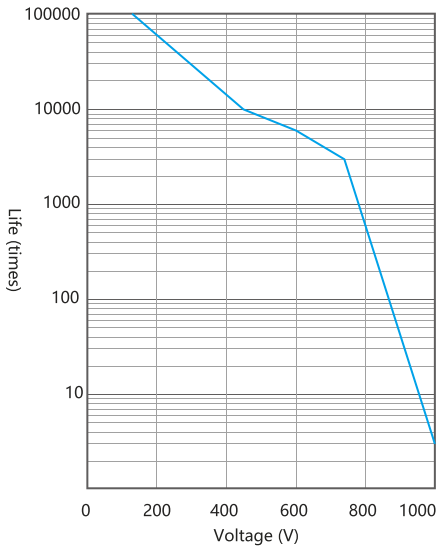
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

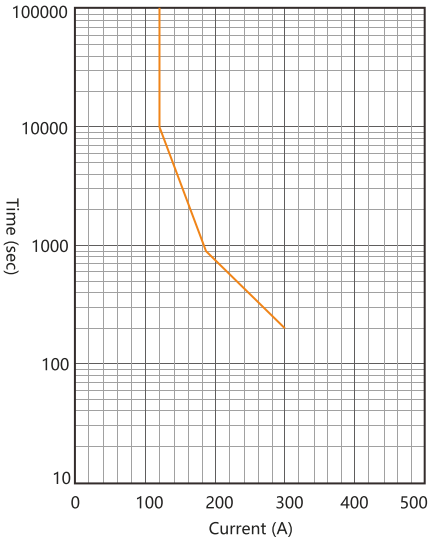
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVR	120	*	-1	12	D	01
RAVR: Square type	120: 120A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

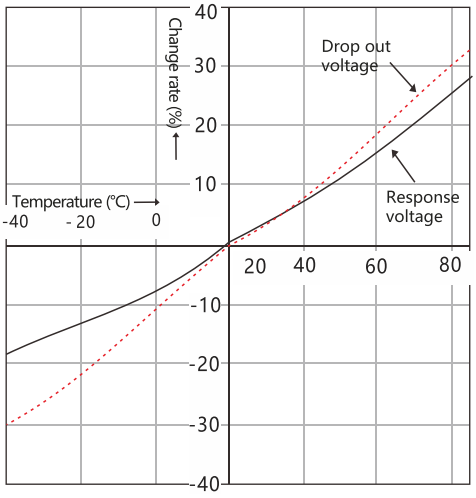
On-off ability (rated current)



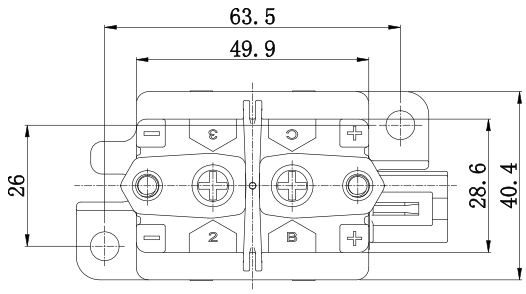
Load current

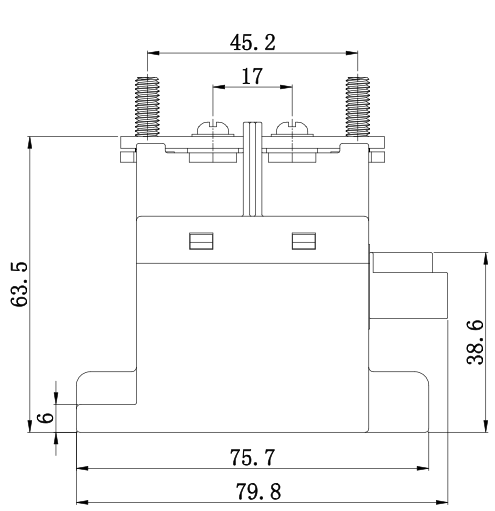


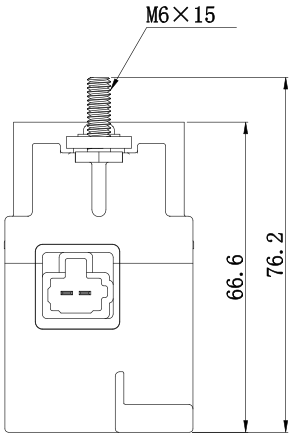
Ambient temperature



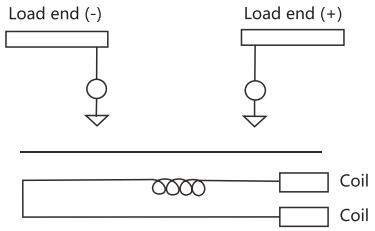
Outline dimension



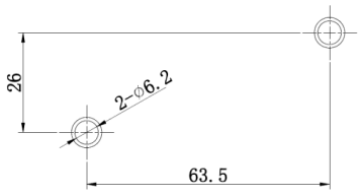




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVR150 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

150 A

		Technical parameters
Coil data		
Rated voltage		12 / 24 V DC
Rated power		6 W
Max. voltage		16 / 32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Coil resistance		24 / 96 Ω
Holding current		0.5 / 0.25 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		150 A
Max. switching rating		1000 V DC, 1500 A (300 V DC), 450 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 300 A 100 Ops
Inverse cutoff		-150 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		225 A 15 min, 320 A 2 min. (≥ 50 mm^2)
Contact resistance		≤ 0.4 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	2500 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		79x41.1x84.3
Weight (g)		400

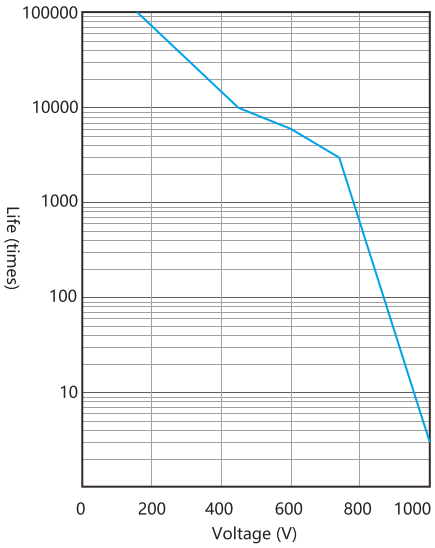
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

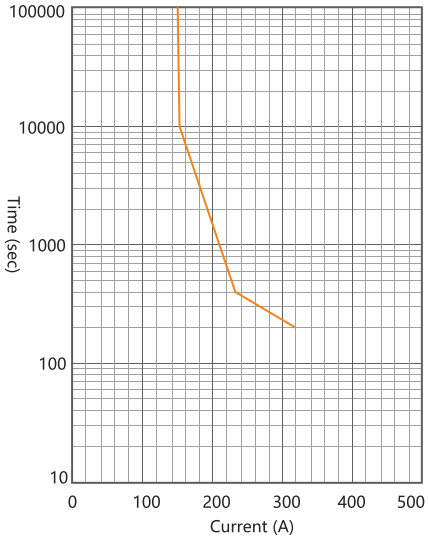
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVR	150	*	-1	12	D	01
RAVR: Square type	150: 150A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

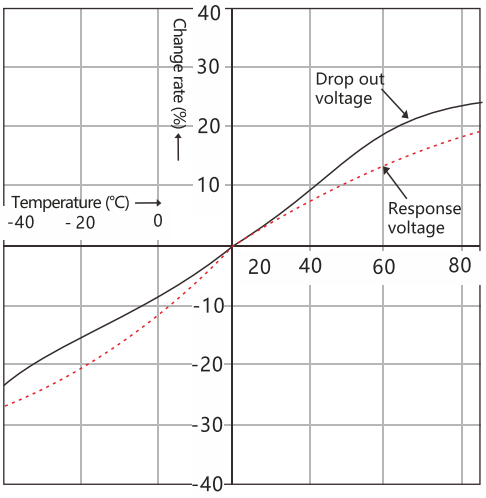
On-off ability (rated current)



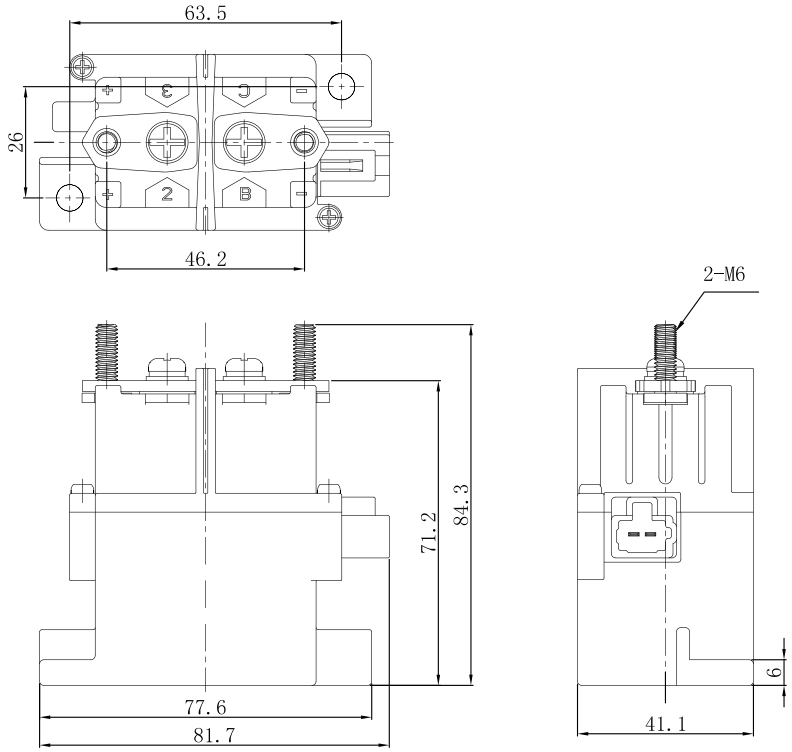
Load current



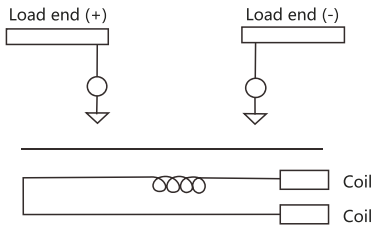
Ambient temperature



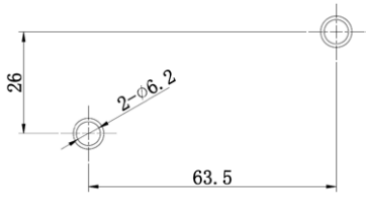
Outline dimension



Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVR200 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

200 A

		Technical parameters
Coil data		
Rated voltage		12 / 24 V DC
Rated power		34 W (0.1s) @ response, 4 W at holding
Max. voltage		16 / 32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Starting current		3 A / 1.5 A
Holding current		0.35 / 0.175 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		200 A
Max. switching rating		1000 V DC, 2000 A (300 V DC), 600 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 400 A 100 Ops
Inverse cutoff		-200 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		300 A 15 min, 500 A 2 min. (≥ 60 mm^2)
Contact resistance		≤ 0.3 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (operating)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		105.3x45x88
Weight (g)		500

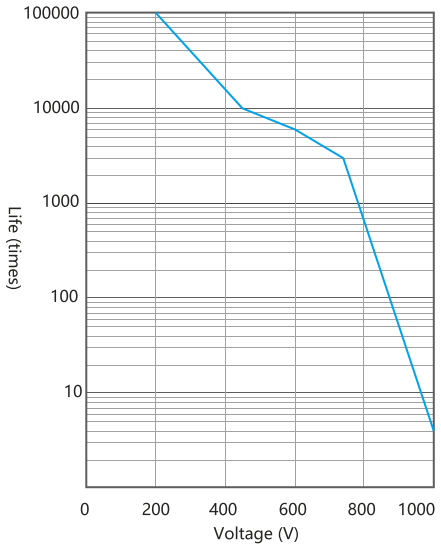
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

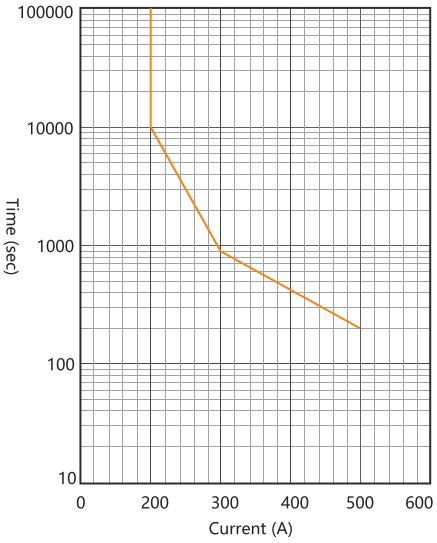
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVR	200	*	-1	12	D	01
RAVR: Square type	200: 200A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

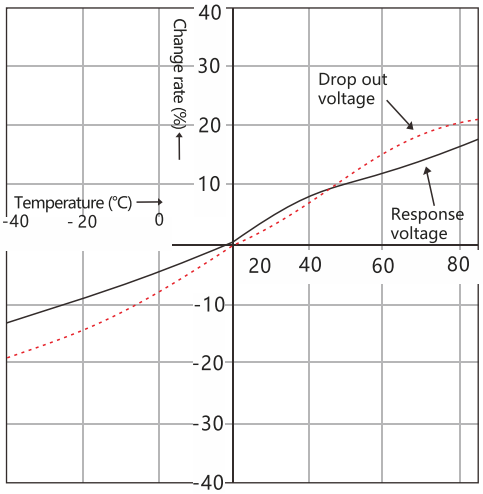
On-off ability (rated current)



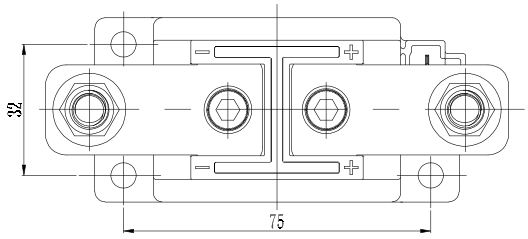
Load current

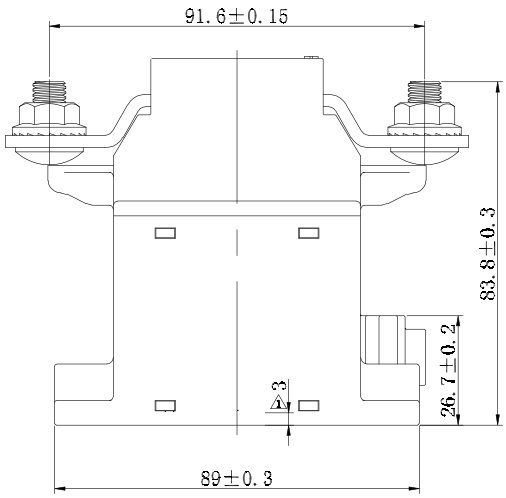


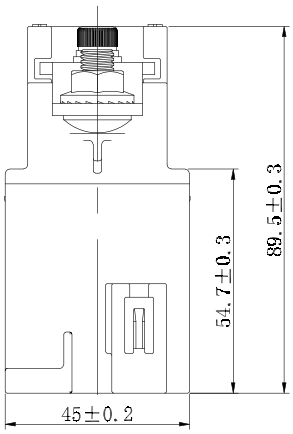
Ambient temperature



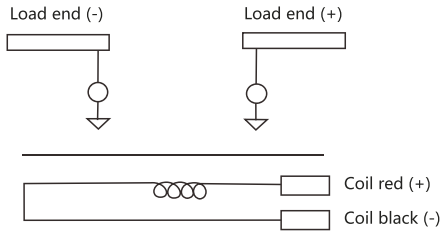
Outline dimension



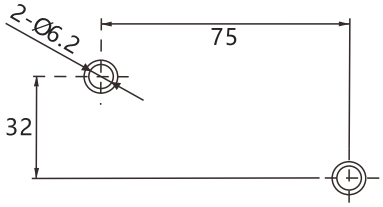




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVC50 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

50 A

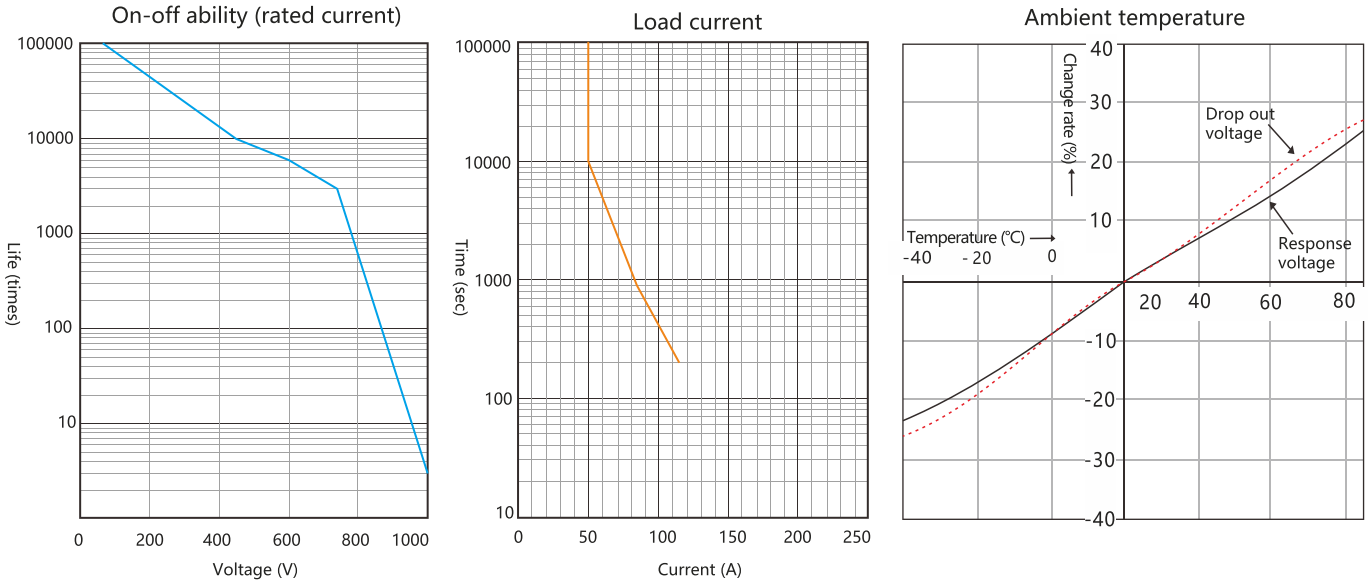
		Technical parameters
Coil data		
Rated voltage		12 / 24 V DC
Rated power		5.5 W
Max. voltage		16 / 32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Coil resistance		26 / 100 Ω
Holding current		0.5 / 0.25 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		50 A
Max. switching rating		1000 V DC, 500 A (300 V DC), 150 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 150 A 100 Ops
Inverse cutoff		-50 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		75 A 15 min, 125 A 2 min. (≥ 10 mm^2)
Contact resistance		≤ 1.5 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		32.0×27.0×20.0
Weight (g)		180

Note: the above data are tested at 20 ℃ , other data will be provided on request.

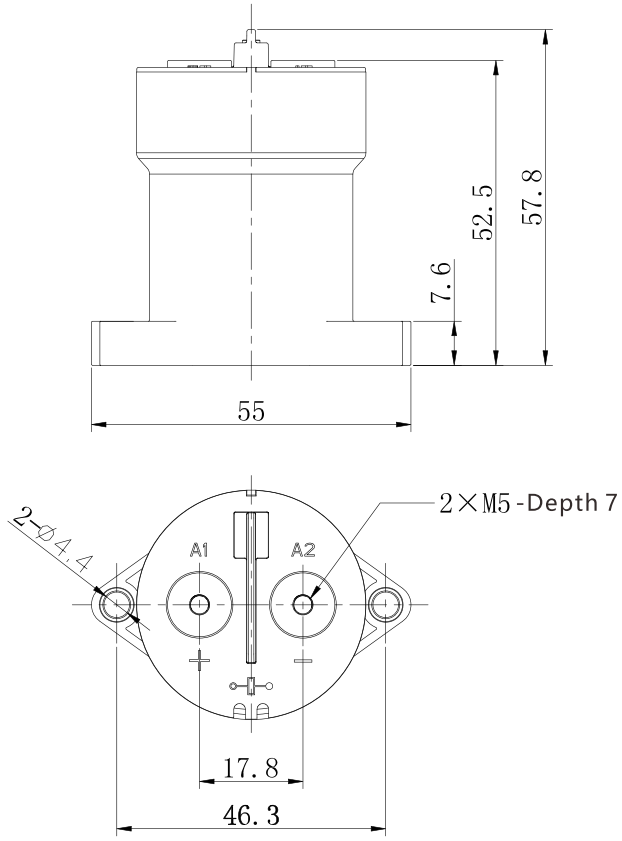
Type designation

Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVC	50	*	-1	12	D	01
RAVC: Round type	50: 50A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

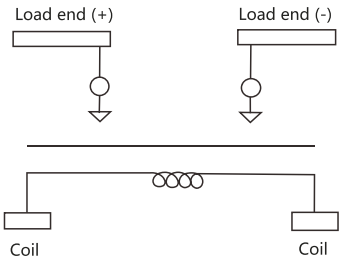
Engineering data



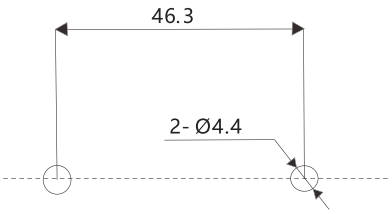
Outline dimension



Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVC100 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

100 A

		Technical parameters
Coil data		
Rated voltage		12 / 24 V DC
Rated power		5.5 W
Max. voltage		16 / 32 V DC
Response voltage		≤ 9 / 18 V DC
Drop out voltage		≥ 1 / 2 V DC
Coil resistance		26 / 100 Ω
Holding current		0.5 / 0.25 A
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		100 A
Max. switching rating		1000 V DC, 1000 A (300 V DC), 300 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 200 A 100 Ops
Inverse cutoff		-100 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		150 A 15 min, 225 A 2 min. (≥ 35 mm^2)
Contact resistance		≤ 1.5 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		32.0×27.0×20.0
Weight (g)		180

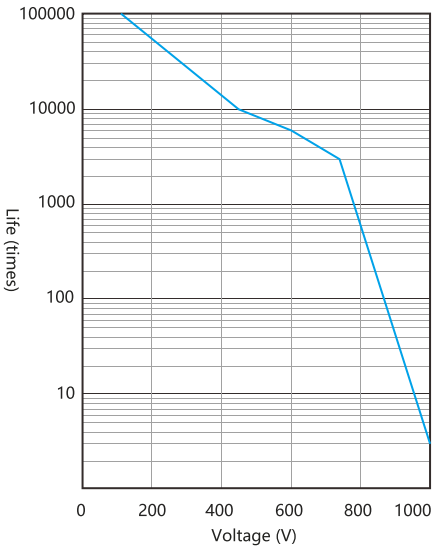
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

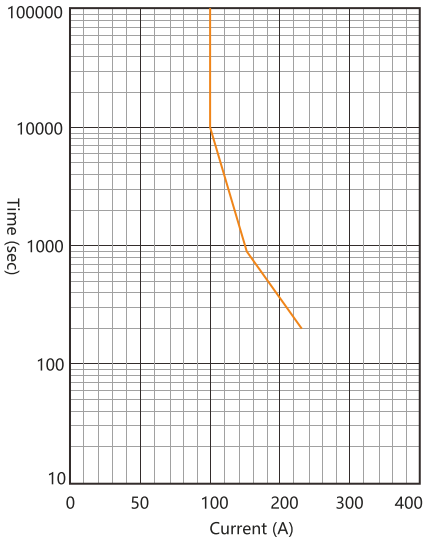
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVC	100	*	-1	12	D	01
RAVC: Round type	100: 100A	Nil: Without auxiliary contact	1: 1 NO	12: 12 V DC 24: 24 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

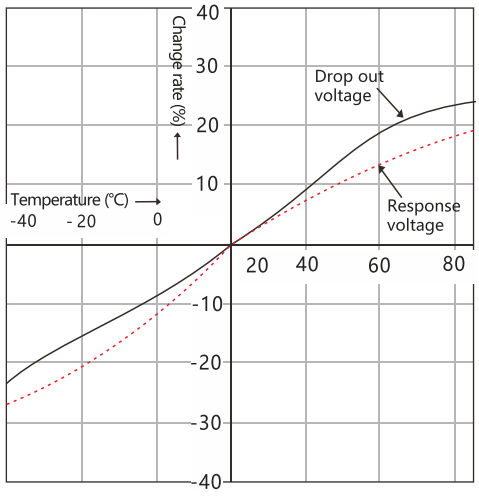
On-off ability (rated current)



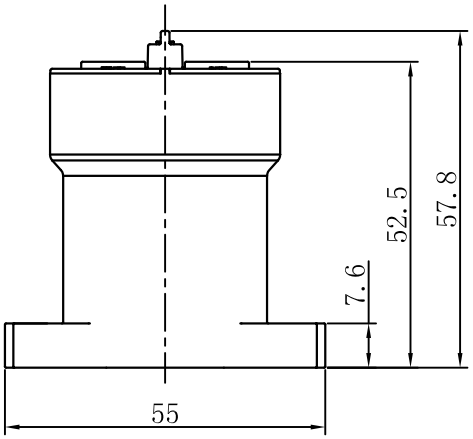
Load current

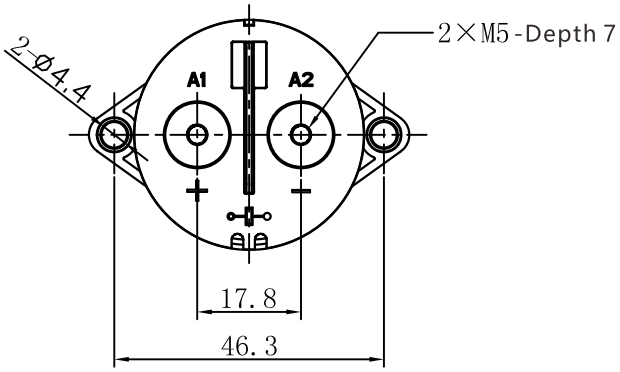


Ambient temperature

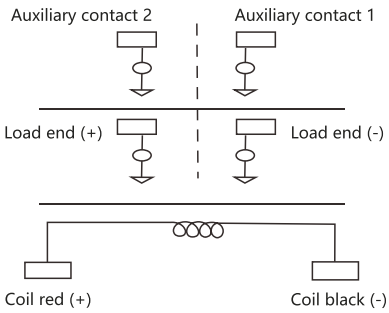


Outline dimension

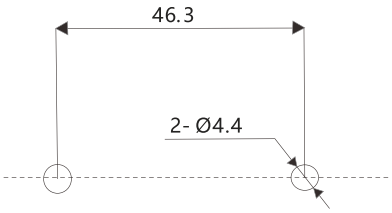




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVC150 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

150 A

		Technical parameters
Coil data		
Rated voltage		9~36 V DC
Starting current		3.6 A
Holding current		0.13 A (12 V DC), 0.07 A (24 V DC)
Max. voltage		36 V DC
Response voltage		≤ 8.5 V DC
Drop out voltage		≥ 4.5 V DC
Inverse over-voltage cutoff		≤ 2 V DC
Power saving mode		PWM
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		150 A
Max. switching rating		1000 V DC, 1500 A (300 V DC), 450 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 200 A 100 Ops
Inverse cutoff		-150 A 200 V DC 1000 Ops
Min. load		1 A 12 V DC
Short-time current		225 A 15 min, 320 A 2 min. (≥ 50 mm^2)
Contact resistance		≤ 0.5 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
Auxiliary contact current		2 A 30 V DC / 3 A 125 V AC
Min. current of auxiliary contact		100 mA 8 V DC
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		80.4x52.8x73
Weight (g)		380

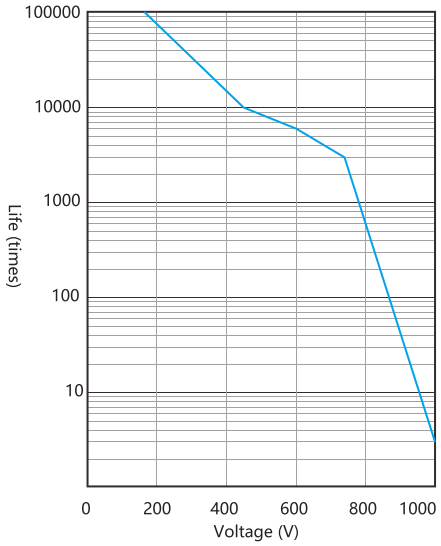
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

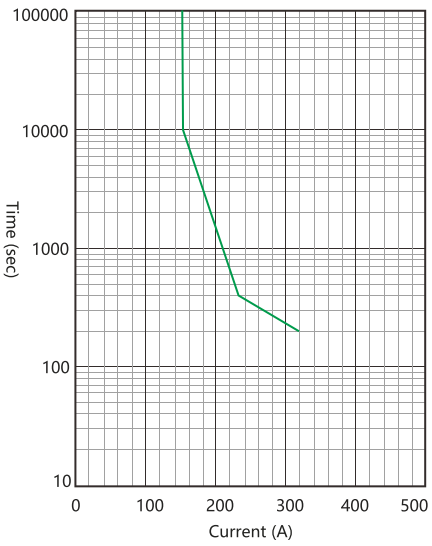
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVC	150	A	-1	A	D	01
RAVC: Round type	150: 150A	Nil: Without auxiliary contact A: with auxiliary contact	1: 1 NO	A: 9~36 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

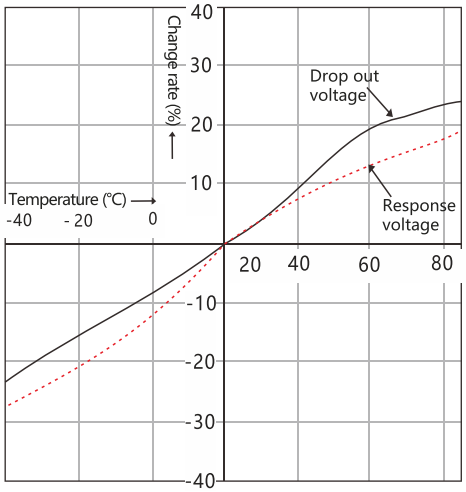
On-off ability (rated current)



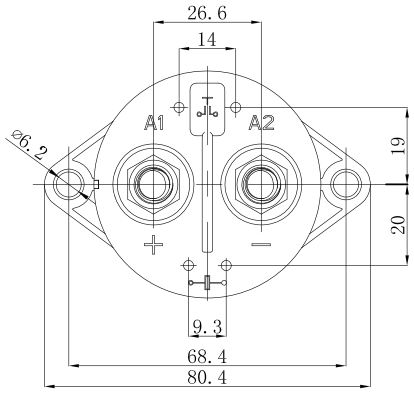
Load current

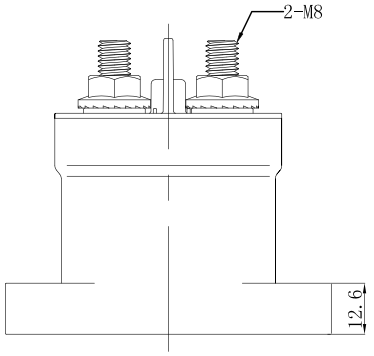


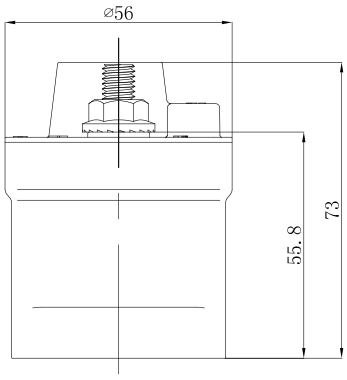
Ambient temperature



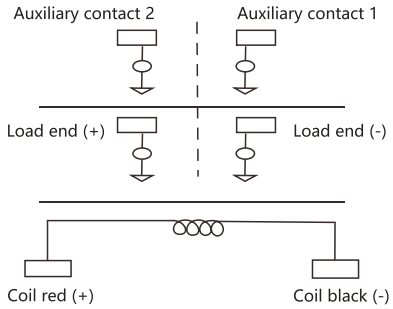
Outline dimension



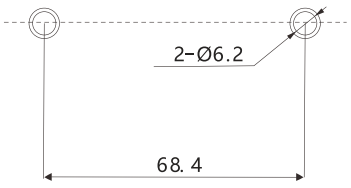




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVC250 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

250 A

		Technical parameters
Coil data		
Rated voltage		9~36 V DC
Starting current		3.6 A
Holding current		0.13 A (12 V DC), 0.07 A (24 V DC)
Max. voltage		36 V DC
Response voltage		≤ 9 V DC
Drop out voltage		≥ 4.8 V DC
Inverse over-voltage cutoff		≤ 2 V DC
Power saving mode		PWM
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		250 A
Max. switching rating		1000 V DC, 2500 A (300 V DC), 750 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 350 A 100 Ops
Inverse cutoff		-250 A 200 V DC 1000 Ops
Capacitive load (Charging capacitor)		500 V 500 A 10,000 Ops
Min. load		1 A 12 V DC
Short-time current		375 A 15 min, 500 A 2 min. (≥ 75 mm^2)
Contact resistance		≤ 0.5 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
Auxiliary contact current		2 A 30 V DC / 3 A 125 V AC
Min. current of auxiliary contact		100 mA 8 V DC
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		80.4x52.8x73
Weight (g)		380

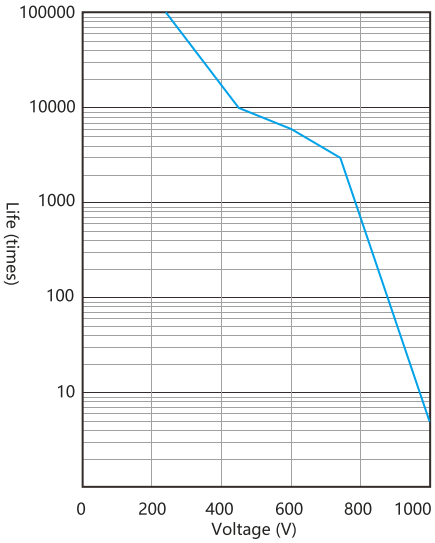
Note: the above data are tested at 20 ℃ , other data will be provided on request.

Type designation

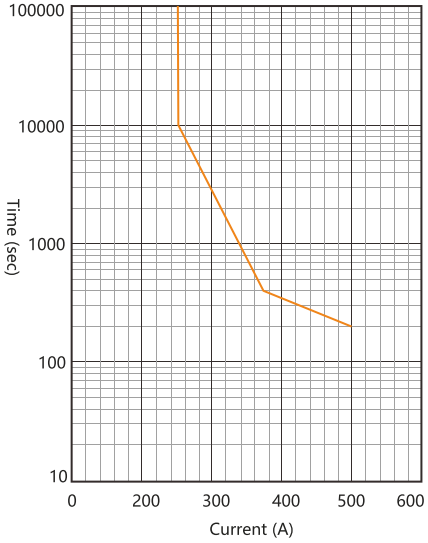
Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVC	250	A	-1	A	D	01
RAVC: Round type	250: 250A	Nil: Without auxiliary contact A: with auxiliary contact	1: 1 NO	A: 9~36 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

Engineering data

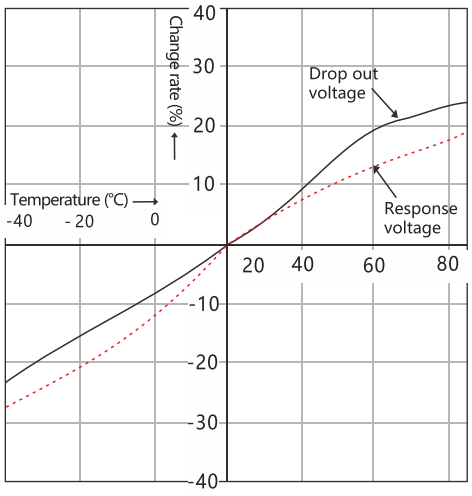
On-off ability (rated current)



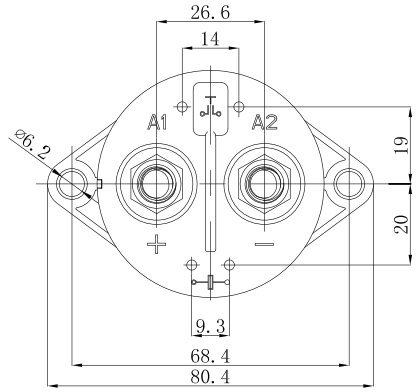
Load current

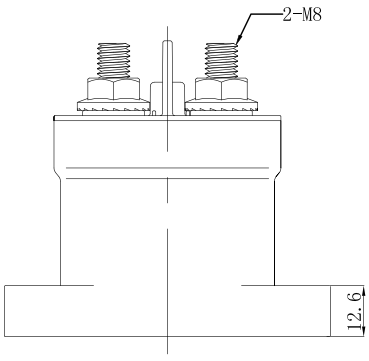


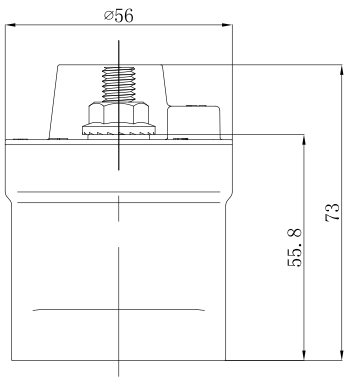
Ambient temperature



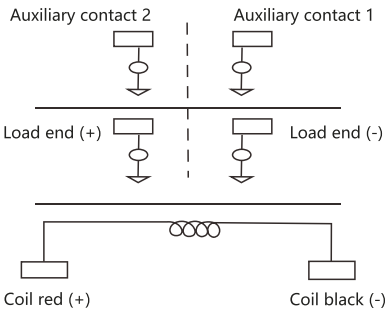
Outline dimension



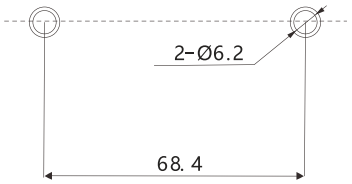




Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

RAVC350 High Voltage DC Relay

- Encased in ceramic house, contact capsule filled with hydrogen mixture. Switching load voltage up to 1000 V DC due to combined magnetic quenching technology.
- Compact and reliable design; no arc leaks thanks to metal ceramic house; contact points are sealed in capsule filled with reducing gases; and a reliable cutoff can be achieved with a short contact gap.
- Reliable contacts sealed with reducing gases. Contact resistance remains stable even under harsh environment.

350 A

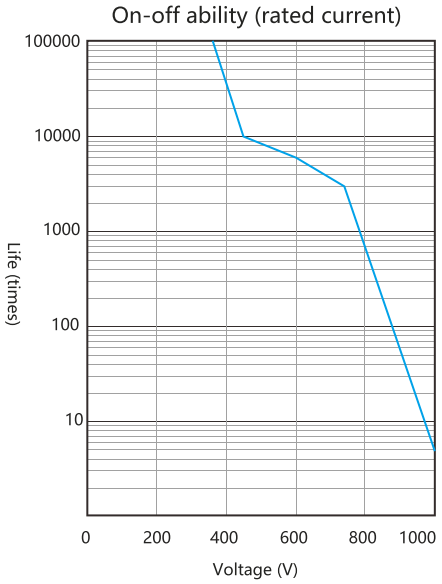
		Technical parameters
Coil data		
Rated voltage		9~36 V DC
Starting current		3.8 A
Holding current		0.27 A (12 V DC), 0.12 A (24 V DC)
Max. voltage		36 V DC
Response voltage		≤ 9 V DC
Drop out voltage		≥ 6 V DC
Inverse over-voltage cutoff		≤ 2 V DC
Power saving mode		PWM
Operating time		≤ 30 ms
Release time		≤ 10 ms
Bounce time		≤ 5 ms
Contact data		
Contact configuration		1 A
Contact material		Cu alloy
Max. continuous current		350 A
Max. switching rating		1000 V DC, 3500 A (300 V DC), 1000 KW
Rated contact voltage		450 V DC
Overload cutoff		750 V DC 500 A 100 Ops
Inverse cutoff		-400 A 200 V DC 1000 Ops
Capacitive load (Charging capacitor)		500 V 500 A 10,000 Ops
Min. load		1 A 12 V DC
Short-time current		400 A 15 min, 500 A 2 min. (≥ 120 mm^2)
Contact resistance		≤ 0.4 mΩ (6 V DC 20 A)
Mechanical life		$2×10^5$ times
Electrical life		450 V $1×10^4$ times 750 V $3×10^3$ times
Auxiliary contact current		2 A 30 V DC / 3 A 125 V AC
Min. current of auxiliary contact		100 mA 8 V DC
General data		
Rated withstand voltage	Between contacts	2500 V AC 60 Sec. 10 mA
	Coil / Contact	4000 V AC 60 Sec. 10 mA
Surge voltage		5000 V AC
Insulation resistance		100 MΩ (500 V DC)
Electrical clearance		> 6 mm
Creepage distance		> 10 mm
Vibration		Functional test, 49 m/s^2 10~200 Hz, (10 μs) Destructive test, 49 m/s^2 10~200 Hz 4 h
Shock		Functional test, 196 m/s^2 11 ms, (10 μs) Destructive test, 490 m/s^2 6 ms
Ambient temperature (Operation)		-40~85 ℃ (No condensation)
Operating humidity		5~85%
Dimension L×W×H (mm)		84.5x82x76.2
Weight (g)		550

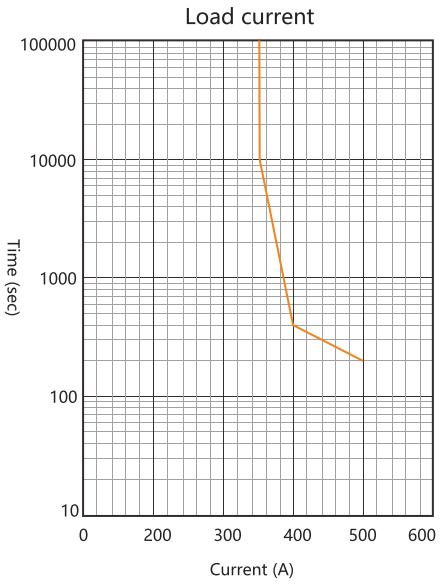
Note: the above data are tested at 20 ℃ , other data will be provided on request.

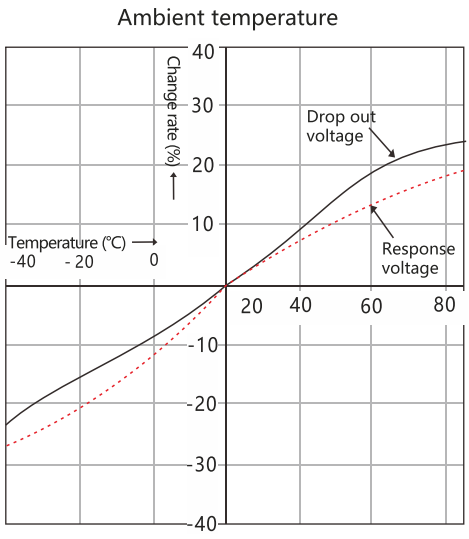
Type designation

Model designation	Contact load	Auxiliary contact	Contact configuration	Coil voltage	Coil termination	Special code
RAVC	350	A	-1	A	D	01
RAVC: Round type	350: 350A	Nil: Without auxiliary contact A: with auxiliary contact	1: 1 NO	A: 9~36 V DC	D: Wire lead, without fast terminal E: Wire lead, with fast terminal	01~99

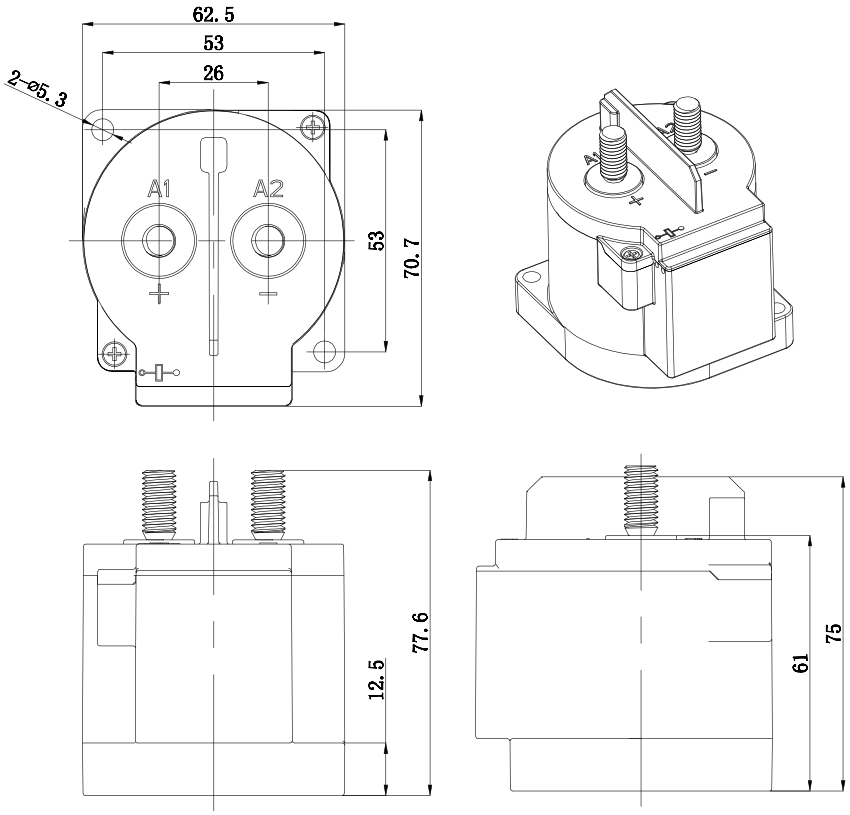
Engineering data



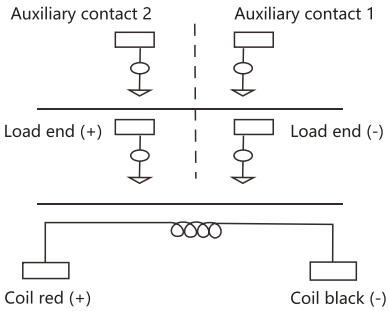




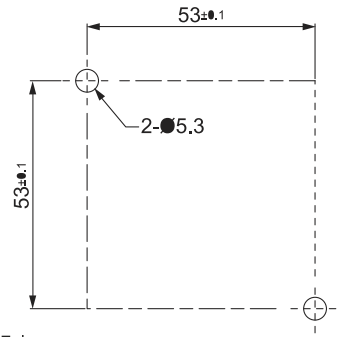
Outline dimension



Wiring scheme



Mounting dimension



Tolerance:
Dimension<10mm: ±0.3
Dimension=10~50mm: ±0.6
Dimension>50mm: ±1.0

Usage of Relays

Our HV DC relays can cut off high voltage DC thanks to hydrogen gas with high arc cooling capacity. The relays have ceramic sealed explosion proof structure, and the contacts are water proof and anti-oxidation. The products are widely used in high voltage DC applications, such as EV, HEV, FCEV, construction machinery, PV, wind power, charging systems, DC power supply control systems.

Precautions

1. All relay contacts have polarity, please make sure to correctly connect the contacts in accordance with what described on the nameplate. If they are connected with the reverse polarity, the electrical characteristics specified in this instructions cannot be assured.
2. The contact ratings are all based on resistive load. Please take certain measures for other applications than resistive load, otherwise the electrical life may be degraded and the switching performance may be influenced. Be aware that the use of diode may influence the switching performance.
3. In the pick-up testing of relays with dual coils, the voltage can not be ramped up slowly. Please drive the coil with fast rising (step power supply mode), otherwise the relays will not act.
4. Do not place the relays in an environment that exceeds the product operating temperature range (-40℃ ~ 85℃) for a long time.
5. Avoid installing the relays near strong magnetic field (transformer, magnet) or heat source.
6. Avoid any foreign matter such as grease from relay terminals. Make sure that the main power cable is closest to the relay terminal, and then install as the sequence of flat washer, spring washer and nut. Incorrect connection sequence may cause severe overheating and lead to melt of cable insulation layer.
7. All screws are fastened in accordance with the torque shown in Table 1 and Table 2. Too large torques may cause damage.
8. Please use wires specified in Table 3, otherwise it may cause abnormal heating on the terminals.
9. If the relay accidentally falls to the ground, it is recommended not to use it anymore.

Table 1: Torques for lead out end

nut	RAVR20	RAVR40	RAVR100	RAVR120	RAVR150	RAVR200	RAVC50	RAVC100	RAVC150	RAVC250	RAVC350
M4											
M5		2~3 Nm					2~3 Nm	2~3 Nm			
M6			3~4 Nm	3~4 Nm	3~4 Nm						
M8						6~8 Nm			6~8 Nm	6~8 Nm	6~8 Nm
Note: RAVC50 and RAVC100 use screws.											

Table 2: Torques for relay installation

Screws	RAVR20	RAVR40	RAVR100	RAVR120	RAVR150	RAVR200	RAVC50	RAVC100	RAVC150	RAVC250	RAVC350
M4							2~3 Nm	2~3 Nm			
M5	3~4 Nm	3~4 Nm	3~4 Nm	3~4 Nm	3~4 Nm	3~4 Nm			3~4 Nm	3~4 Nm	3~4 Nm
M6	5~6 Nm	5~6 Nm	5~6 Nm	5~6 Nm	5~6 Nm	5~6 Nm			5~6 Nm	5~6 Nm	
M8											
Note: a. Screw strength must meet the requirements of Strength 8.8 (GB/T 70.1). b. The effective locking thread length must be greater than 5mm.											

Table 3: Wires used for relays

Type	RAVR20	RAVR40	RAVR100	RAVR120	RAVR150	RAVR200	RAVC50	RAVC100	RAVC150	RAVC250	RAVC350
Min. nominal cross section (mm^2)	3	10	35	40	50	60	10	35	50	75	120

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| Note

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Note

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Headquarters

Wonder Prosperity Co., Ltd.
Unit 2232, 22nd Flr., Pioneer Center, Nathan Rd. 750, Mongkok, Kowloon, Hongkong, China
Tel: +852-27959344
Fax: +852-27579502
Email: wrg@wrg-elec.com
Website: www.wrg-elec.com

Subsidiaries and offices

China
WangRong Electronics (Shenzhen) Co., Ltd.
Bldg. A, Area D, Democractic Nine-Nine Industrial Park, Xihuan Rd., Shajing Street, Baoan Zone, Shenzhen, China
Tel: +86-755-36615699
Fax: +86-755-33195151
Email: wrg@wrg-elec.com
Website: www.wrg-elec.com

Huangshan WangRong Electronics Co., Ltd.
WangRong Electronics Park, Wudongdian, Biyang Town, Yi County, Huangshan City, Anhui, China
Tel: +86-559-2267190
Email: wrg@wrg-elec.com

Shenzhen WangRong Electronics Co., Ltd.
4th Flr., Bldg. 8, The 2nd Industrial Park of Xilinangang, Songbai Rd. 1026, Nanshan Zone, Shenzhen, China
Tel: +86-755-86717592
Email: xuefeng.li@szwre.cn

Shanghai WangRong Brand Management Co., Ltd.
Bldg. B-505, Yuntongxing Plaza, Zhongren Rd. 399, Nanxiang Town, Jiading Zone, Shanghai, China
Tel: +86-21-60951250
Email: salessh01@wrg-elec.com

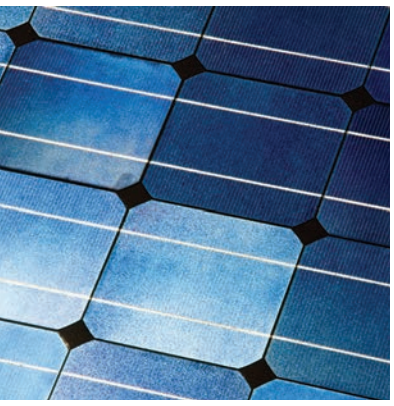
WangRong Electronics Nanjing Co., Ltd.
Room 304, Mozhou Rd. 12, Jiangning District, Nanjing City, Jiangsu, China

Europe
STARDAY SRL
40012 Lippo Calderara di Reno(Bologna) Italy - Via Serra, 34
Tel: +39-51-3175111
Fax: +39-51-725410
Email: alessandro.vitali@stardaysrl.it

United States
C/O MC Clary Swift 19656 8th Street, East Sonoma, CA, USA
Email: jyoxall@worldproducts.com

Japan
1424-7, Kibata, Yaita City, Tochigi Prefecture, Japan
Email: funayama@wrg.co.jp

Korea
Room #201, Seongwoo Bldg., 19 Hapjeong-dong, Mapo-gu, Seoul 121-220, Korea
Email：wrgkr@naver.com

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