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DC HIGH VOLTAGE EV RELAY

High Voltage DC System

Bi-directional switching device at 1500Vdc

YM YM Tech

YM Tech

㈜와이엠텍은 산업전기 및 전자분야의 핵심 컴포넌트를 설계, 제조, 공급하는 릴레이 전문 업체로, 1998년 설립된 이래, 직류 Relay와 Latch Relay, EV Relay, 특수분야 사업인 국방용 Relay 등 특수 제품을 개발, 공급하고 있으며, 기술 집약 기업인 이노비즈 기업으로 ISO9001 및 UL 등 각종 품질인증을 취득하였으며, 2006년 기술혁신경진대회 수상 및 2011년 우수중소기업 표창 등을 수상하였으며 2015년 TS16949를 취득하여 자동차 부품 공급 체계를 구축하였다.

와이엠텍 EV Relay는 에너지 저장 시스템, 충전기 등 고전압 리튬전지를 핵심으로 하는 시스템의 안전성을 보장합니다.

YM Tech EV Relay는 세계 최초로 CCC인증을 받은 것은 물론, IEC CB, CE, UL, FCC를 등 국제 규격 인증을 획득하였습니다.

㈜와이엠텍은 전기 자동차, 충전기, 에너지 절감 장치, 태양광, 풍력, 군사 무기, 항공기 등의 직류 개폐기를 소형화, 경량화하며 고전압 차단 기술 연구를 거듭해 직류 개폐 장치의 선두주자로 나아갈 것입니다.

환경을 생각하고, 인류를 생각한 기술!

모두를 편리하게, 그리고 건강하게 만드는 미래 기술입니다!

고객 가치 향상을 위한 새로운 미래 혁신! 와이엠텍이 열어가겠습니다!

YM Tech is specialized in DC high voltage relay. It designs, manufactures and supplies the core components for the electrical and electronics industries.

Founded in 1998, YM Tech has been developing and supplying DC Relay, Latch Relay, EV Relay and Military Purpose Relay, etc.

As technology-intensive Inno-Biz company, YM Tech has acquired various quality certifications such as ISO9001 and UL. Furthermore, it received 2006 Innovation Award, 2011 Excellent SME Biz Award and acquired TS16949 auto parts plant certification in 2015, thereby demonstrating its advanced technology.

EV Relay is used in electric vehicles. To switch the battery power to safely, EV Relay is very important electrical component in electric vehicles.

Moreover, it ensures the safety of high-voltage lithium batteries such as battery energy storage systems and charging station for electric vehicles, etc. YM Tech's EV relay received CCC certification for the first time in the world and acquired IEC CB, CE, UL, FCC etc., thereby complying with all international standards.

YM Tech has reduced the size and weight of DC switching devices used for electric vehicles, charging systems, energy saving devices, solar power station, wind power station , military weapons and airplanes, etc.

Furthermore, YM Tech will become a leader in the filed of DC switching devices through continued researches on the technologies for cutting off high-voltage.

Technology considering our environment and human race!

Future-oriented technology aims at enhancing convenience and health for everyone! .

DC HIGH VOLTAGE EV RELAY

Product Approvals

해외규격 (Product Approvals)

Type	UL (UL 508)	CE, CB (IEC60947.5)	CCC (GB14048.5)	Short circuit test (CE, CCC)	SCPD	Remark
EVR10		● CN28431 CB0022493	●	1KA	660GH 16A	CQC
EVR50	● E210800	● CN28433 CB0022433	●	1KA	660GH 63A	CQC
EVR100	● E210800	● CN28429 CB0022449	●	5KA	660GH 200A	CQC
EVR150	● E210800	● CN28429 CB0022449	●	5KA	660GH 200A	CQC
EVR250	● E210800	● CN32782 CB0030114	●	10KA	660GH 400A	CQC TUV-SUD
EVR400	● E210800	● CN28430 CB0022492	●	5KA	660GH 500A	CQC TUV-SUD
EVR400-S/B	● E210800					
EVR600				5KA	660GH 500A	
EVHB500	● E210800	●	●	6KA	660GH 500A	
EVL250	● E210800					
EVL350						
EVHD500						
EVHD1000						

Surrounding Air Temperature: 40 °C (UL standard)

DC HIGH VOLTAGE EV RELAY SELECTION GUIDE

Specifications \ Series			EVR10	EVR50	EVR100	EVR150
Figure			 see 8~10 page	 see 11~13 page	 see 14~16 page	 see 17~19 page
Type			EVR10	EVR50	EVR100	EVR150
Usage			Continuously 15A	Continuously 50A	Continuously 150A	Continuously 170A
Description			SPST-NO	SPST-NO	SPST-NO	SPST-NO
Contact ratings	Max. switching current		10A	50A	125A	150A
	Voltage drop across contacts		0.1V Max.(10A)	0.25V Max.(50A)	30㎷ Max.(100A)	30㎷ Max.(100A)
	Dielectric	Coil to contacts	2500VAC 1Minute	2500VAC 1Minute	3500VAC 1Minute	3500VAC 1Minute
		Open Contact	2500VAC 1Minute	2500VAC 1Minute	3500VAC 1Minute	3500VAC 1Minute
	Ambient temperature		-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃
	Operating time (at nominal voltage)		20 ms	20 ms	20 ms	20 ms
	Release time (at nominal voltage)		5 ms	5 ms	5 ms	5 ms
Coil ratings	Ambient temperature		-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃
	Rated voltage		DC6 to 110V, AC6 to 240V	DC6 to 220V	DC6 to 220V	DC6 to 220V
	Pick-up voltage (Nominal voltage)		75% Max.	75% Max.	75% Max.	75% Max.
	Drop-out voltage (Nominal voltage)		10% Min.	10% Min.	10% Min.	10% Min.
	Coil power (watts)		1.1 to 1.3	3 to 3.5	5.6 to 5.9	5.6 to 5.9
Expected life	Mechanical (min)		2,000,000	2,000,000	2,000,000	2,000,000
	Electrical (min)		70,000	100,000	10,000	10,000
Aux. Contacts	2(A) 30VDC, 3(A) 125VAC (resistive load)		×	×	O	O
Contact Resistance (mΩ)			MAX. 10	MAX. 5	MAX. 1	MAX. 1
Weight(g)			65	110	300	300
UL File No.					E210800	E210800

● 특징 (Features)

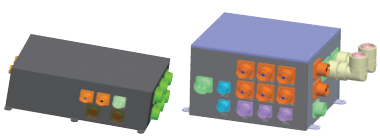
- A permanent magnet prevents arc effectively, our products can enables change 1200V DC.
- Compact, easy-to-use structure and easy installation.

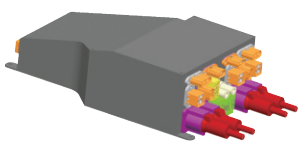
● 용도 (Usage)

- Power distribution system
- Railroad application
- Rectifier
- Pallet lifter
- Unmanned vehicle
- Satellite station system
- SMPS
- DC motor
- Electric scooter
- Golf Car
- Fuel Cell
- Solar System

DC Hi-Voltage Power Distribution Unit

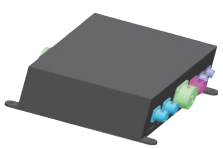
Hydrogen EV Car, Hybrid Car, Fire Engine, Hybrid Personal Carrier

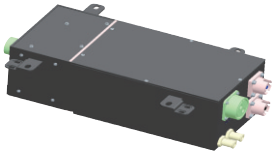




EVR250	EVR400	EVR400-S/B	EVR600	EVHB500
		Normal Close Conract 		
see 20~22 page	see 23~25 page	see 26~28 page	see 29~31 page	see 32~34 page
EVR250	EVR400	EVR400 (Normal Close)	EVR600	EVH500
Continuously 500A	Continuously 500A	Continuously 500A	Continuously 600A	Continuously 500A
SPST-NO	SPST-NO	SPST-NC	SPST-NO	SPST-NO
250A	400A	400A	600A	500A
30㎷ Max.(100A)	30㎷ Max.(100A)	30㎷ Max.(100A)	30㎷ Max.(100A)	30㎷ Max.(100A)
3500VAC 1Minute	3500VAC 1Minute	3500VAC 1Minute	3500VAC 1Minute	4500VAC 1Minute
3500VAC 1Minute	3500VAC 1Minute	3500VAC 1Minute	3500VAC 1Minute	4500VAC 1Minute
-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃
30 ms	30 ms	30 ms	30 ms	40 ms
10 ms	10 ms	10 ms	10 ms	10 ms
-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃
DC9 to 95V	DC9 to 95V	DC9 to 95V	DC9 to 95V	DC9 to 95V
70% Max.	70% Max.	70% Max.	70% Max.	75% Max.
10% Min.	10% Min.	10% Min.	10% Min.	10% Min.
3 ~ 3.5	3 ~ 3.5	3 ~ 3.5	3.5 ~ 4	3 ~ 3.5
2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
6,000	3,000	3,000	1,000	6,000
O	O	×	O	O
MAX. 1	MAX. 1	MAX. 1	MAX. 1	MAX. 1
420	660	660	920	980
E210800	E210800	E210800		E210800

- Battery Energy Storage System
- Power Battery test system
- Electric Vehicle
- Switching DC solenoid of power switch gear





• EVR400

- EVR400 is the economic switching device at 1000Vdc.
- EVR400 used in the solar electrics Systems for DC1000V and electrical vehicles

• EVHB500

- EVHB500 is the Bi-directional switching device at 1500Vdc.
- EVHB500 adopted the advanced and unique switching technology of YM Tech.
- EVHB500 is used in the charging and discharging systems of Lithium Battery such as battery energy storage systems.
- EVHB500 is to achieve safety and reliability.
- So, EVHB500 has Safety cover and Moisture-proof function.

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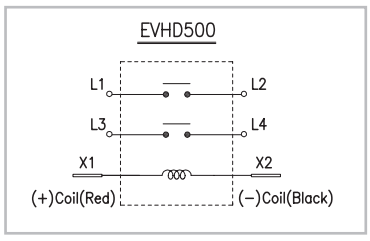
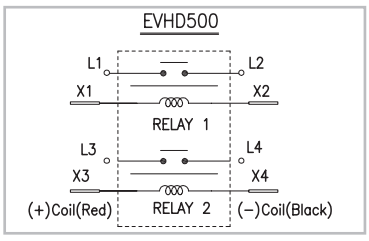
DC HIGH VOLTAGE EV RELAY SELECTION GUIDE
Bi-directional switching device at 1500Vdc

Specifications \ Series		EVL250	EVL350	EVHD500	EVHD1000
Figure		DC High Voltage EV Latch Relay  see 35~38 page	DC High Voltage EV Latch Relay  see 39~41 page	 see 42~43 page	 see 44~45 page
Type		EVL250	EVL350	EVDHD500	EVHD1000
Usage		Continuously 300A	Continuously 350A	Continuously 500A	Continuously 1000A
Description		SPST-Latching	SPST-Latching	DPST-NO	SPST-NO
Contact ratings	Max. switching current	250A	350A	500A	1000A
	Voltage drop across contacts	30㎷ Max.(100A)	30㎷ Max.(100A)	30㎷ Max.(100A)	20㎷ Max.(100A)
	Dielectric Coil to contacts	3500VAC 1Minute	3500VAC 1Minute	4500VAC 1Minute	4500VAC 1Minute
	Dielectric Open Contact	3500VAC 1Minute	3500VAC 1Minute	4500VAC 1Minute	4500VAC 1Minute
	Ambient temperature	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃
	Operating time (at nominal voltage)	10 ms	10 ms	40 ms	40 ms
	Release time (at nominal voltage)	10 ms	10 ms	10 ms	10 ms
Coil ratings	Ambient temperature	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃	-40 ℃ ~ 85 ℃
	Rated voltage	DC12 to 48V	DC12 to 48V	DC9 to 95V	DC9 to 95V
	Pick-up voltage (Nominal voltage)	75% Min. ~ 130% Max.	75% Min. ~ 130% Max.	75% Max.	75% Max.
	Drop-out voltage (Nominal voltage)	75% Min. ~ 130% Max.	75% Min. ~ 130% Max.	10% Min.	10% Min.
	Coil power (watts)	19 ~ 21	19 ~ 21	6 ~ 7	6 ~ 7
Expected life	Mechanical (min)	2,000,000	2,000,000	500,000	500,000
	Electrical (min)	6,000	1,000	1,000	1,000
Aux. Contacts	2(A) 30VDC, 3(A) 125VAC (resistive load)	O	O	O	O
Contact Resistance (mΩ)		MAX. 1	MAX. 1	MAX. 1	MAX. 0.5
Weight(g)		460	610	2100	2100
UL File No.		E210800			

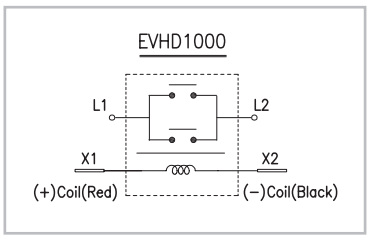
● EVHD : Double Switching device



Basic

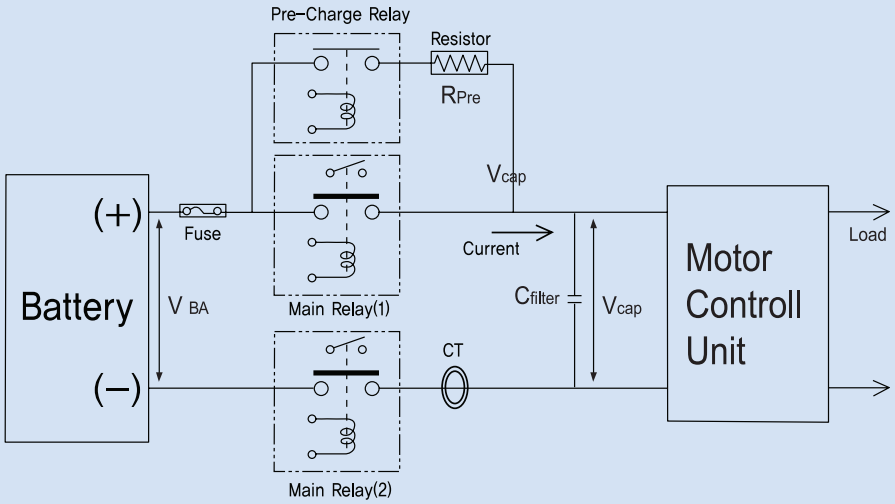


Separating operation

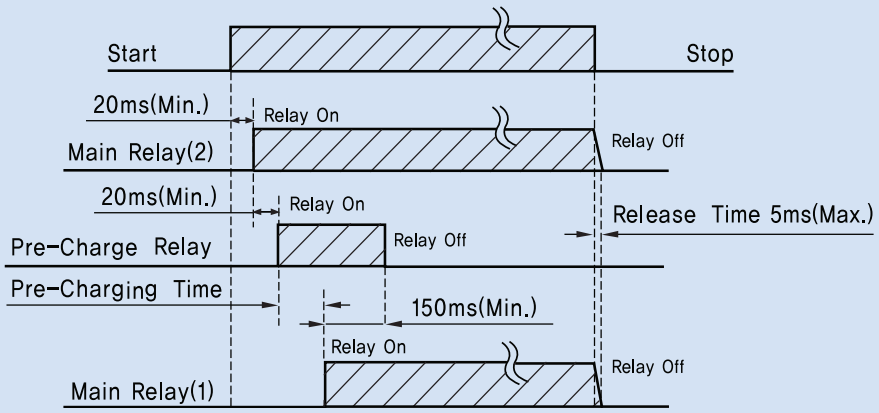


Main Contact Welds are Prevented(주접점 용착 예방)

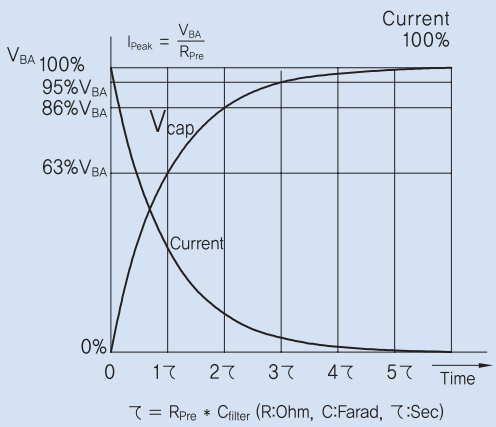
❶ Pre-Charge Circuit



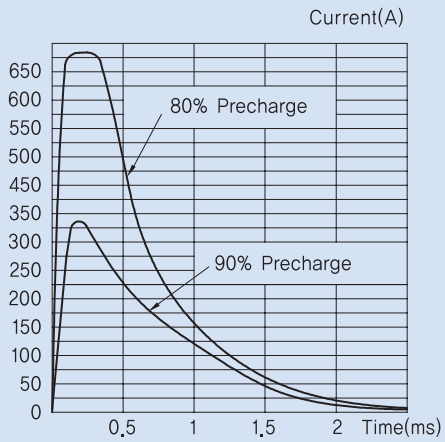
❷ Operating Sequence



❸ Charging Current



Pre-Charning Voltage and Current vs Time



Capacitive Make Test Curves

DC HIGH VOLTAGE EV RELAY

EVR10

응용분야 (Application) : Pre-Charge Relay, Electric Vehicle, Charging System, Solar System, etc.

코일정격 (Magnet coil ratings)

Nominal voltage(V)	Item	Nominal current (mA) 60Hz	Coil resistance (Ω)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Max. voltage (V)Max.	Coil power(W) dissipation
AC	6	226.5	9.5	80% Min.	30% Max.	130%	1.5～1.8VA (60Hz)
	12	112	35				
	24	56	140				
	50	28	600				
	100 / 110	11.2 / 12.4	3,030				
	200 / 220	8.8 / 9.7	10,800				
DC	6	200	30	75% Min.	10% Max.	130%	1.1～1.3 Approx.
	12	100	120				
	28	43	650				
	24	50	480				
	36	34	1,080				
	48	25	1,920				
	60	20	3,000				
	72	17	4,320				
	100 / 110	11 / 12	9,350				

Notes : 1. Nominal current and coil resistance are measured at +20℃ 2. Differences of coil resistance are ±10%. 3. Performance characteristic coil temperature is measured at +20℃

접점정격 (Contact ratings)

Item \ Type	1Pole Resistive load (L/R≤1㎳)
	EVR10
Max. switching current (wire size 2.0㎟)	10A
Max. switching capacity	1200VDC 2A
Contact rating switching voltages	12~1200VDC
	900VDC 10A(Resistive load)(+ polarity Main Terminal A1 and A2) each NO contact connected in series
Max. contact performance (wire size 2.0㎟)	30A 120Sec.
	20A 180Sec.
Voltage drop across contacts per 10A	0.1V Max.
Min, permissible load	12V DC 0.1A
Description	S.P.S.T On/Off, (1a)

주문방법 (Ordering information)

EVR 10 – 12 S

- EVR: Type
- 10: 10(A)
- 12: Coil Voltage (6 to 110V DC) Coil Voltage (6 to 240V AC)
- S: S : DC (Type) A : AC (Type)

DC HIGH VOLTAGE EV RELAY

EVR10

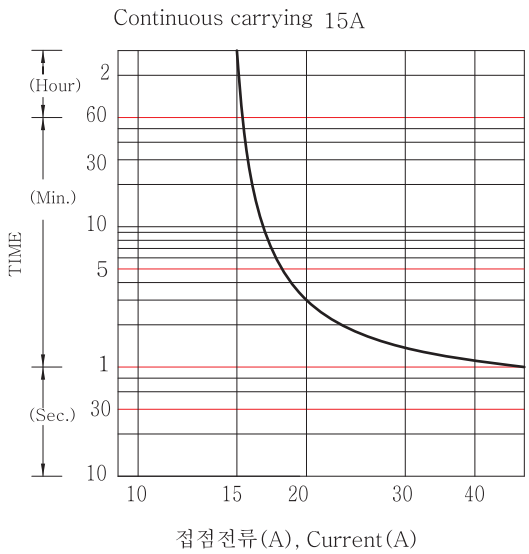
성 능 (Characteristics)

Initial insulation resistance			Min. 100MΩ 500V DC
Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	450V DC 10A	7×10^4
		250V DC 15A	2×10^5
Initial breakdown voltage	Between open contacts		2500V AC 60 Sec. 10mA
	Between contacts & coil		2500V AC 60 Sec. 10mA
Operate time (at 20℃)			Max. 20㎳
Release time (at 20℃)			Max. 5㎳
Shock resistance	Functional		Min 196 ㎨ {20G},(10㎲)
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		43 ㎨ {4.4G} 10 to 200Hz,(10㎲)
	Destructive		43 ㎨ {4.4G} 10 to 200Hz
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			65g

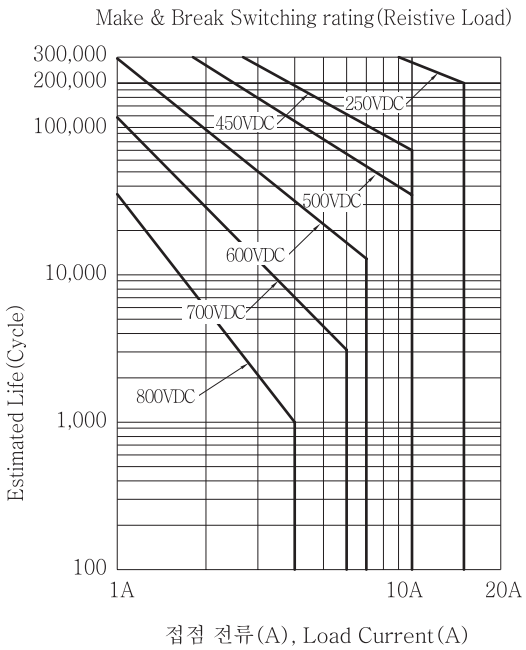
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continuous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)

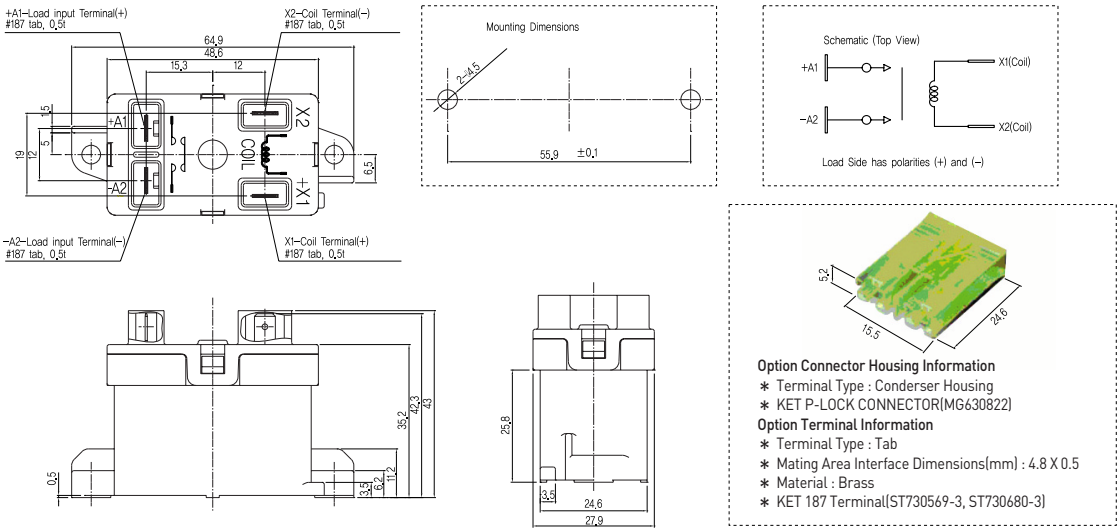


DC HIGH VOLTAGE EV RELAY

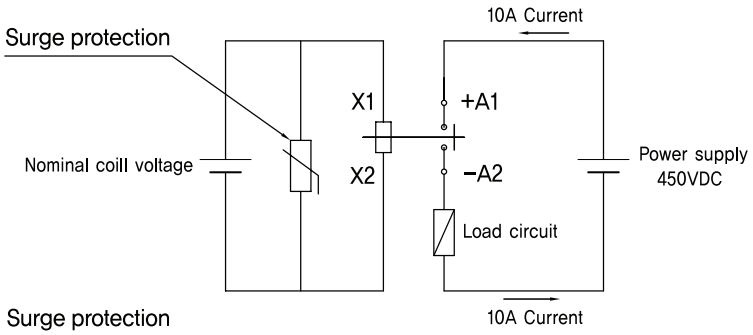
EVR10

외형치수도 (Dimension in mm)

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0

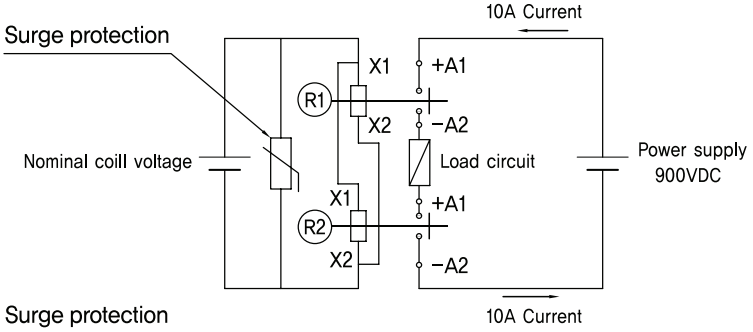


회로 (Circuit)



Surge protection

Varistor surge protection device should be connect parallel to coil
Suitable voltage of varistor is 3 times the coil voltage.



Surge protection

Varistor surge protection device should be connect parallel to coil
Suitable voltage of varistor is 3 times the coil voltage.

DC HIGH VOLTAGE EV RELAY

EVR50

응용분야 (Application) : Pre-Charge Relay, Electric Vehicle, Charging System, Solar System Heating System, etc.

코일정격 (Magnet coil ratings)

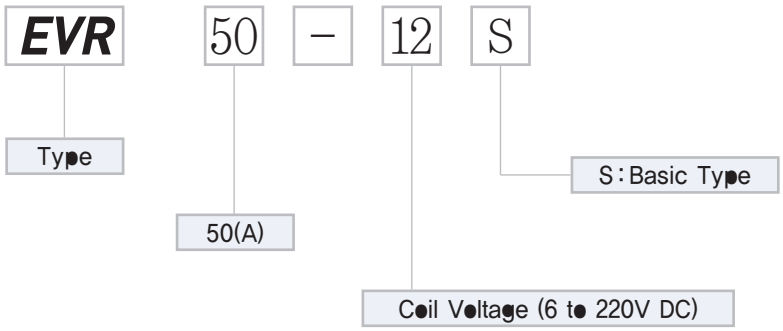
Nominal voltage(V) / Item		Nominal Coil current (mA)	Coil resistance (Ω)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Max. voltage (V)Max.	Coil power(W) dissipation
DC	220	17	14,500	75%	10%	130%	3 ~ 3.5
	110	29	3,750				
	72	45	1,600				
	60	54	1,120				
	48	66	730				
	36	90	400				
	24	133	180				
	12	267	45				
	6	545	11				

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%.
3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

Item / Type	1Pole Resistive load (L/R≤1㎳)
	EVR50
Max. switching current (wire size 10㎟)	50A
Max. switching capacity	1200VDC 10A
Contact rating switching voltages	12~1200VDC
Max. contact performance (wire size 10㎟)	150A 30Sec.
	250A 10Sec.
Voltage drop across contacts per 50A	0.25V max.
Min. permissible load	12V DC 0.5A
Description	S.P On/Off, (1a)

주문방법 (Ordering information)



DC HIGH VOLTAGE EV RELAY

EVR50

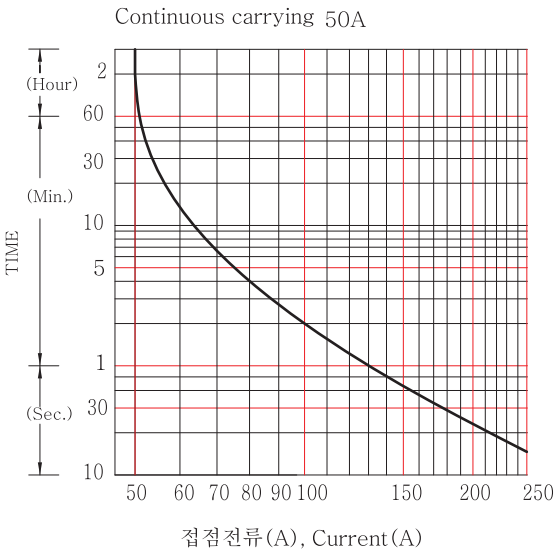
성 능 (Characteristics)

Initial insulation resistance			Min. 100㏁ 500V DC
Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	450V DC 50A	1×10^5
		250V DC 50A	2×10^5
Initial breakdown voltage	Between open contacts		2500V AC 60 Sec. 10mA
	Between contacts & coil		2500V AC 60 Sec. 10mA
Operate time (at 20℃)			Max. 20㎳
Release time (at 20℃)			Max. 5㎳
Shock resistance	Functional		Min 196 ㎨ {20G},(10㎲)
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		43 ㎨ {4.4G} 10 to 200㎐,(10㎲)
	Destructive		43 ㎨ {4.4G} 10 to 200㎐
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			110g

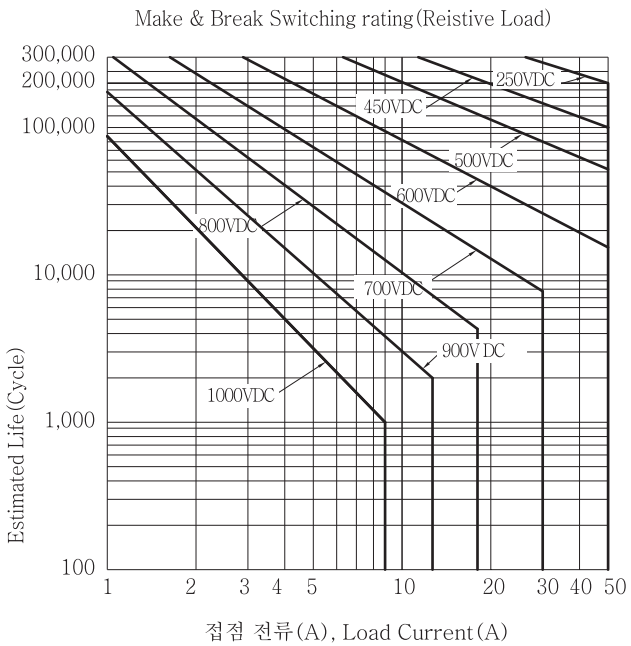
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)

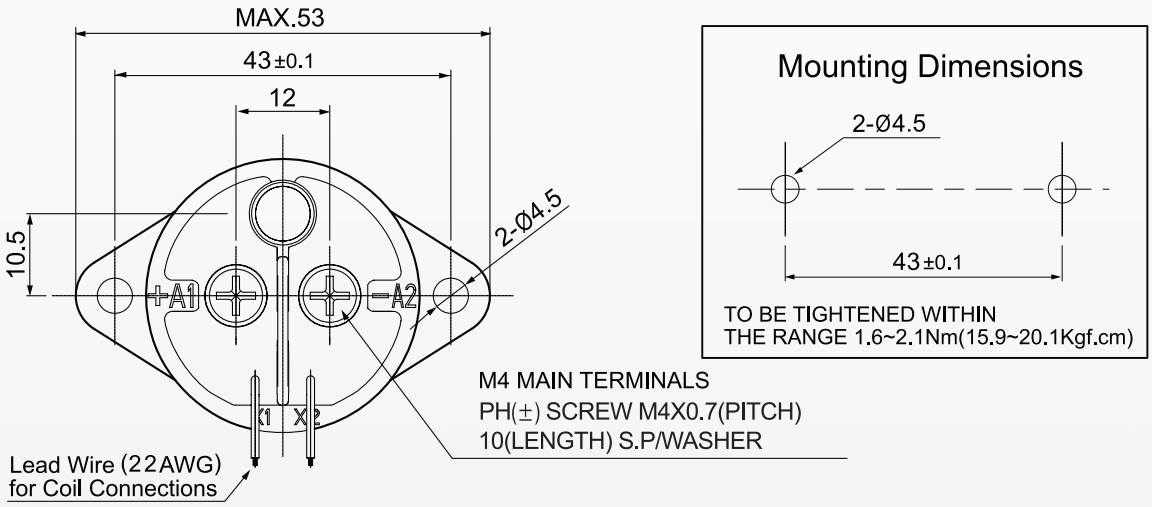


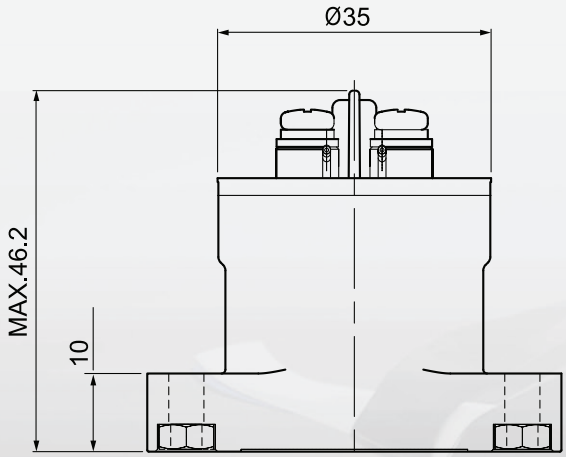
DC HIGH VOLTAGE EV RELAY

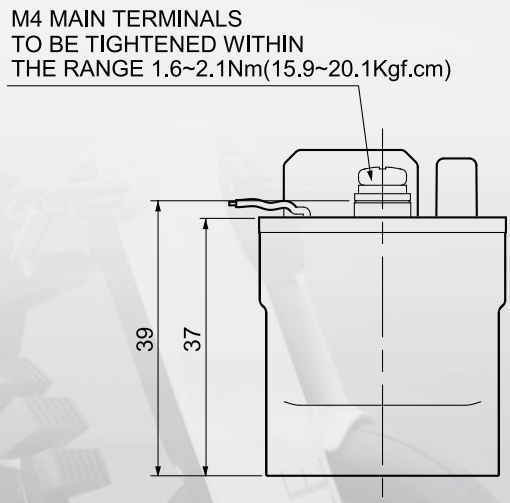
EVR50

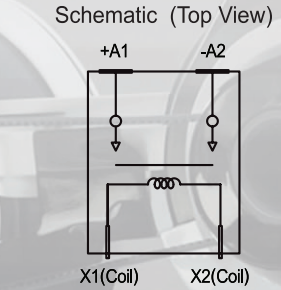
외형치수도 (Dimension in mm)

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0









Load Side has polarities (+) and (-)

DC HIGH VOLTAGE EV RELAY

EVR100

응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System Solar System, Golf Car, Fuel Cell Vehicle, etc.

코일정격 (Magnet coil ratings)

Nominal voltage(V)	Item	Nominal Coil current (mA)	Coil resistance (Ω)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Max. voltage (V)Max.	Coil power(W) dissipation
DC	220	27	8,600	75%	10%	130%	5.6 ~ 5.9
	110	52	2,100				
	72	83	870				
	60	95	630				
	48	117	410				
	36	156	230				
	24	245	110				
	12	480	25				
	6	952	6.3				

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%.
3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

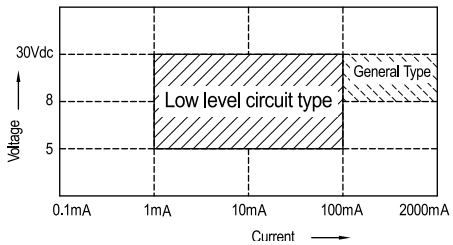
Item \ Type	1Pole Resistive load (L/R≤1㎳)
	EVR100
Max. Continuous current (wire size 50㎟)	150A
Max. switching current	125A
Max. switching capacity	1200VDC 20A
Contact rating switching voltages	12~1200VDC
Max. cut-off current	300VDC 1000A 3 Ops
Voltage drop across contacts per 100A	30mV Max.
Min. permissible load	12V DC 0.5A
Description	S.P On/Off (a)
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVR 100 A - 12 S /G

- EVR: Type
- 100: 125(A)
- A: With aux. Contact / Blank: Without aux. Contacts
- 12: Coil Voltage (6 to 220V DC)
- S: Basic Type
- /G: Gold alloy aux. Contacts / Blank: General aux. Contacts

Permissible load of Aux. contact



DC HIGH VOLTAGE EV RELAY

EVR100

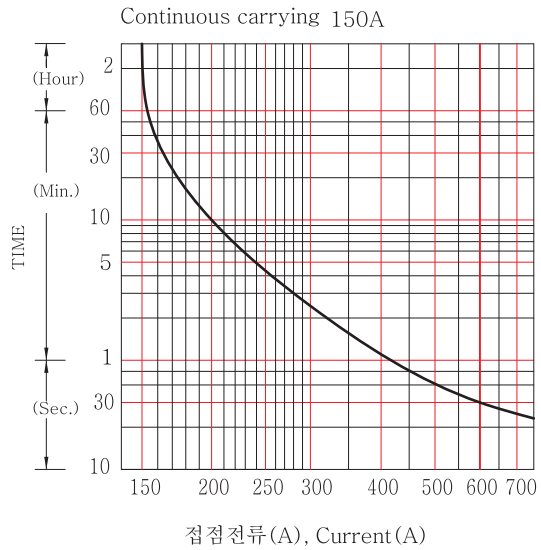
성 능 (Characteristics)

Initial insulation resistance			Min. 100㏁ 500V DC
Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	450V DC 125A	1×10^4
		250V DC 125A	1×10^5
Initial breakdown voltage	Between open contacts		3500V AC 60 Sec. 10mA
	Between contacts & coil		3500V AC 60 Sec. 10mA
Operate time (at 20℃)			Max. 20㎳
Release time (at 20℃)			Max. 5㎳
Shock resistance	Functional		Min 147 ㎨ {15G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {10G} 10 to 500㎐
	Destructive		100 ㎨ {10G} 10 to 500㎐
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			300g

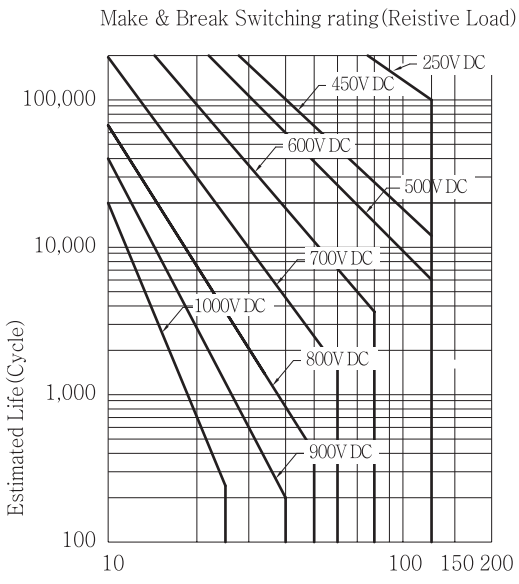
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)

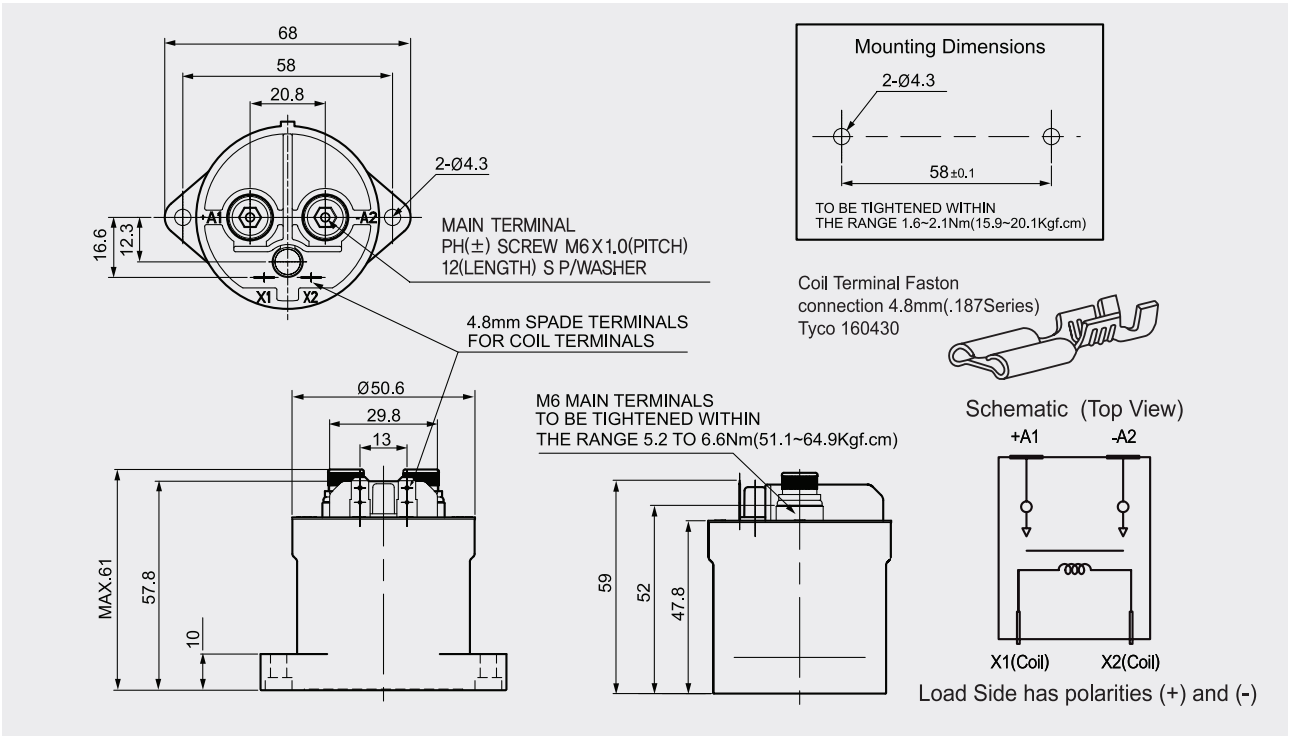


DC HIGH VOLTAGE EV RELAY

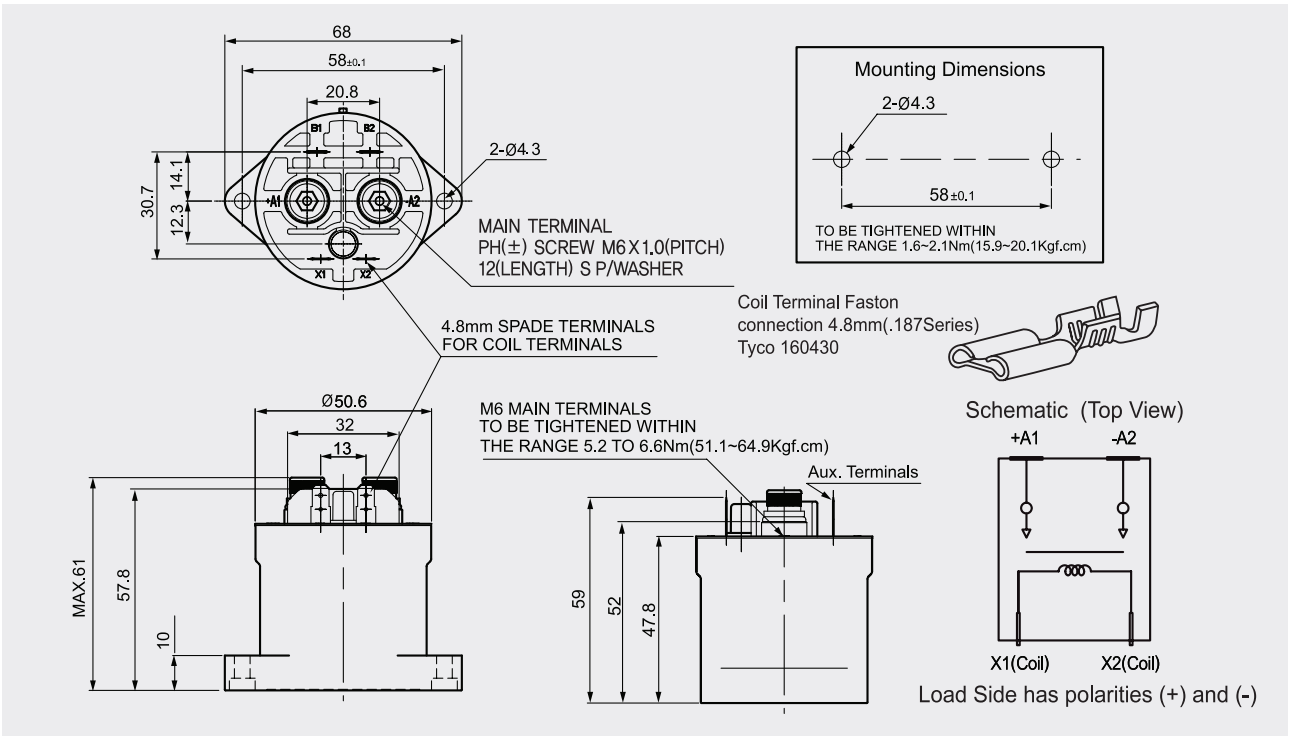
EVR100

외형치수도 (Dimension in mm)

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0



(Aux. Type)



DC HIGH VOLTAGE EV RELAY

EVR150

응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System Solar System, Golf Car, Fuel Cell Vehicle, etc.

코일정격 (Magnet coil ratings)

Nominal voltage(V)	Item	Nominal Coil current (mA)	Coil resistance (Ω)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Max. voltage (V)Max.	Coil power(W) dissipation
DC	220	27	8,600	75%	10%	130%	5.6 ~ 5.9
	110	52	2,100				
	72	83	870				
	60	95	630				
	48	117	410				
	36	156	230				
	24	245	110				
	12	480	25				
	6	952	6.3				

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%.
3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

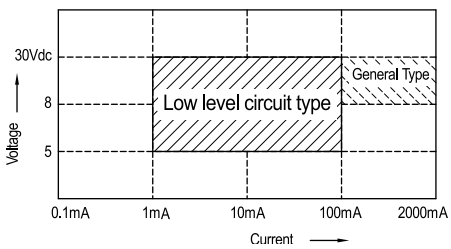
Item \ Type	1Pole Resistive load (L/R≤1㎳)
	EVR150
Max. Continuous current (wire size 50㎟)	170A
Max. switching current	150A
Max. switching voltages	1200VDC 30A
Contact rating switching voltages	12~1200VDC
Max. cut-off current	300VDC 1000A 3 Ops
Voltage drop across contacts per 100A	30mV Max.
Min. permissible load	12V DC 0.5A
Description	S.P On/Off (a)
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVR 150 A - 12 S /G

- EVR: Type
- 150: 150(A)
- A: A : With aux. Contact / Blank : Without aux. Contacts
- 12: Coil Voltage (6 to 220V DC)
- S: S : Basic Type
- /G: Blank : General aux. Contacts / /G : Gold alloy aux. Contacts

Permissible load of Aux. contact



DC HIGH VOLTAGE EV RELAY

EVR150

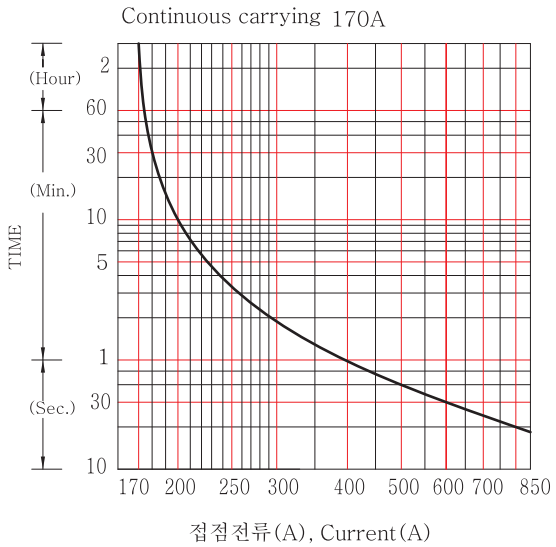
성 능 (Characteristics)

Initial insulation resistance			Min. 100MΩ 500V DC
Expected life	Mechanical (Min.)		2×10⁶
	Electric (L/R≤1ms)	450V DC 150A	1×10⁴
		250V DC 150A	1×10⁵
Initial breakdown voltage	Between open contacts		3500V AC 60 Sec. 10mA
	Between contacts & coil		3500V AC 60 Sec. 10mA
Operate time (at 20℃)			Max. 20ms
Release time (at 20℃)			Max. 5ms
Shock resistance	Functional		Min 147 ㎨ {15G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {10G} 10 to 500Hz
	Destructive		100 ㎨ {10G} 10 to 500Hz
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			300g

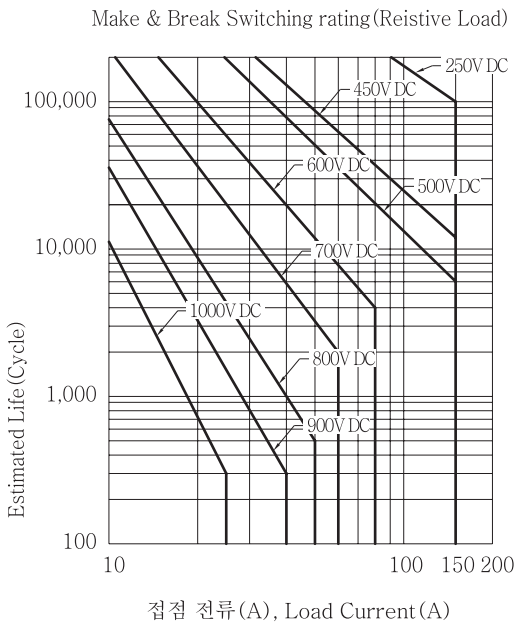
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)

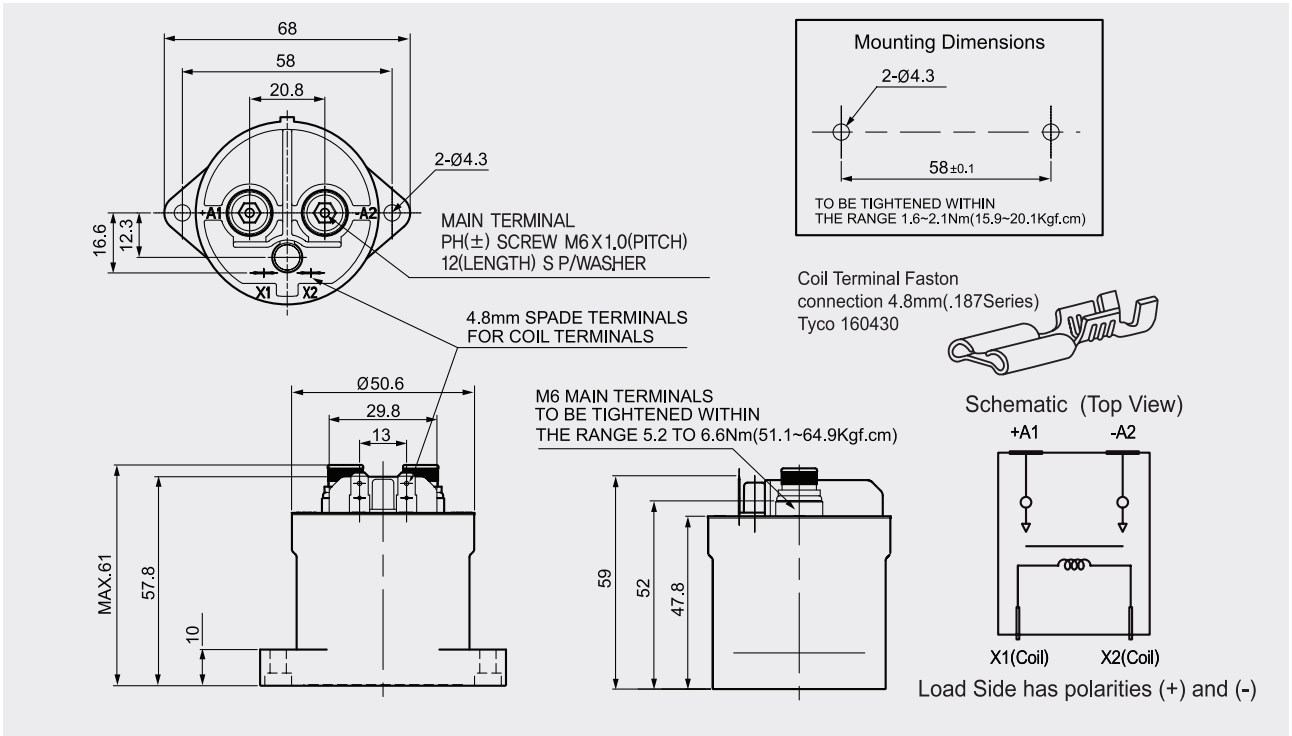


DC HIGH VOLTAGE EV RELAY

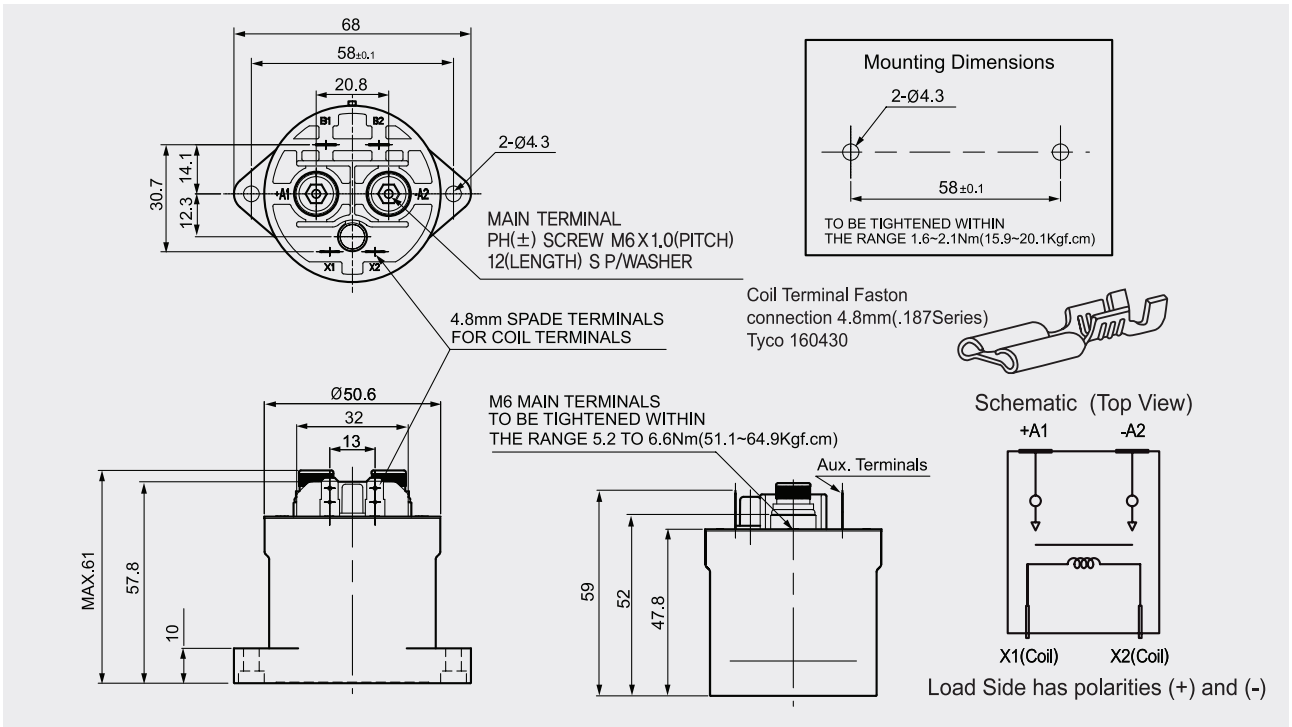
EVR150

외형치수도 (Dimension in mm)

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0



(Aux. Type)



DC HIGH VOLTAGE EV RELAY

EVR250(NEW)

응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System Solar System, Golf Car, Fuel Cell Vehicle, etc.

코일정격 (Magnet coil ratings)

Nominal voltage(V) / Item		Inrush Coil current 100ms (Max.)	Holding Coil current (mA)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Holding voltage (V)Min.	Max. voltage (V)Max.
B	72	1.3A	0.05~0.12A	32VDC	18VDC	22VDC	95VDC
	60						
	36						
A	36	2.4A	0.09A	9VDC	6VDC	7.5VDC	36VDC
	24	2.4A	0.14A				
	12	2.4A	0.29A				
12		2.4A	0.29A	9VDC	6VDC	7.5VDC	18VDC
24		1.3A	0.17A	18VDC	12VDC	13.5VDC	32VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃, 2. Differences of coil resistance are ±10%, 3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

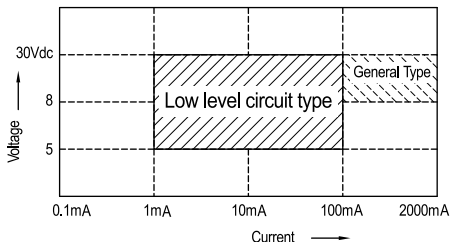
Item / Type	1Pole Resistive load (L/R≤1㎳)
	EVR250
Max. Continuous current (wire size 300㎟)	500A
Max. switching current	250A
Max. switching capacity at max. voltages	900VDC 200A
Contact rating switching voltages	12~1200VDC
Max. cut-off current	600VDC 1000A 3 Ops / 400VDC 1500A 2 Ops
C-R load (charging)	500V 1500A 4,000 Ops / 500V 500A 30,000 Ops
Voltage drop across contacts per 100A	30mV Max.
Min. permissible load	12V DC 0.5A
Description	S.P On/Off (a)
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVR 250 A - 24 S /G

- EVR: Type
- 250(A): 250(A)
- A: With aux. Contact / Blank: Without aux. Contact
- 24: A=Coil Voltage (12 to 36V DC) / B=Coil Voltage (36 to 72V DC) / 12=Coil Voltage (12V DC) / 24=Coil Voltage (24V DC)
- S: Nut Type / B: Bolt Type
- Blank: General aux. Contact / /G: Gold alloy aux. Contact

Permissible load of Aux. contact



DC HIGH VOLTAGE EV RELAY

EVR250(NEW)

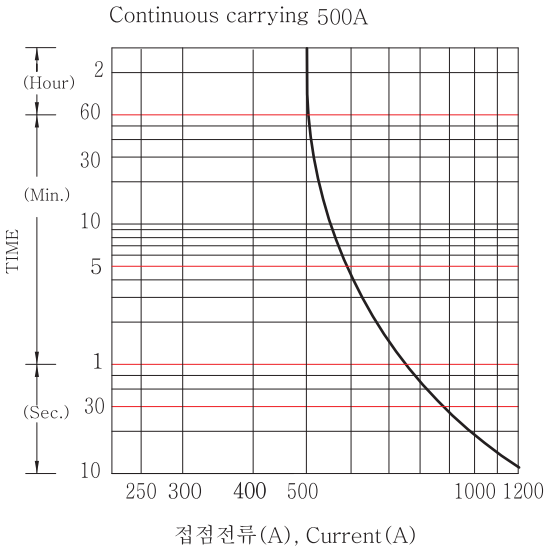
성 능 (Characteristics)

Expected life	Mechanical (Min.)		2×10^6
	Electric (Min.) (L/R≤1㎳)	450V DC 250A	7×10^3
		750V DC 250A	3×10^3
Initial insulation resistance			Min. 100㏁ 500V DC
Initial breakdown voltage	Between open contacts		4000V AC 60 Sec. 5mA
	Between contacts & coil		4000V AC 60 Sec. 5mA
Operate time (at 20℃)			Max. 30㎳
Release time (at 20℃)			Max. 10㎳
Shock resistance	Functional		Min 196 ㎨ {20G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {20G} 80 to 2000㎐
	Destructive		100 ㎨ {20G} 80 to 2000㎐
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			460g

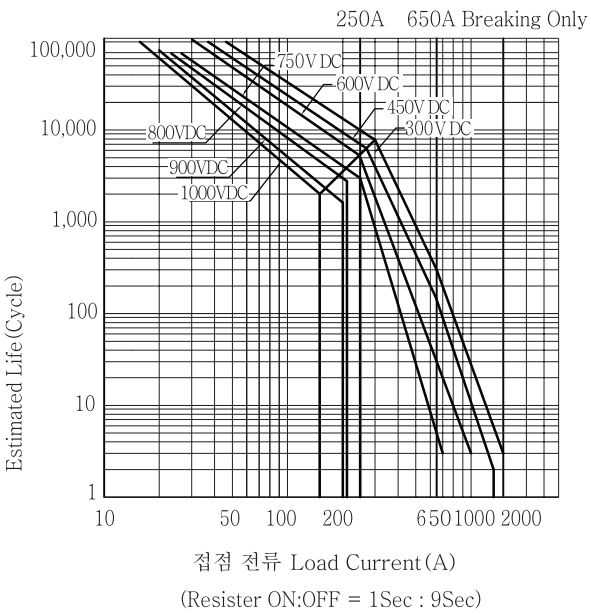
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)



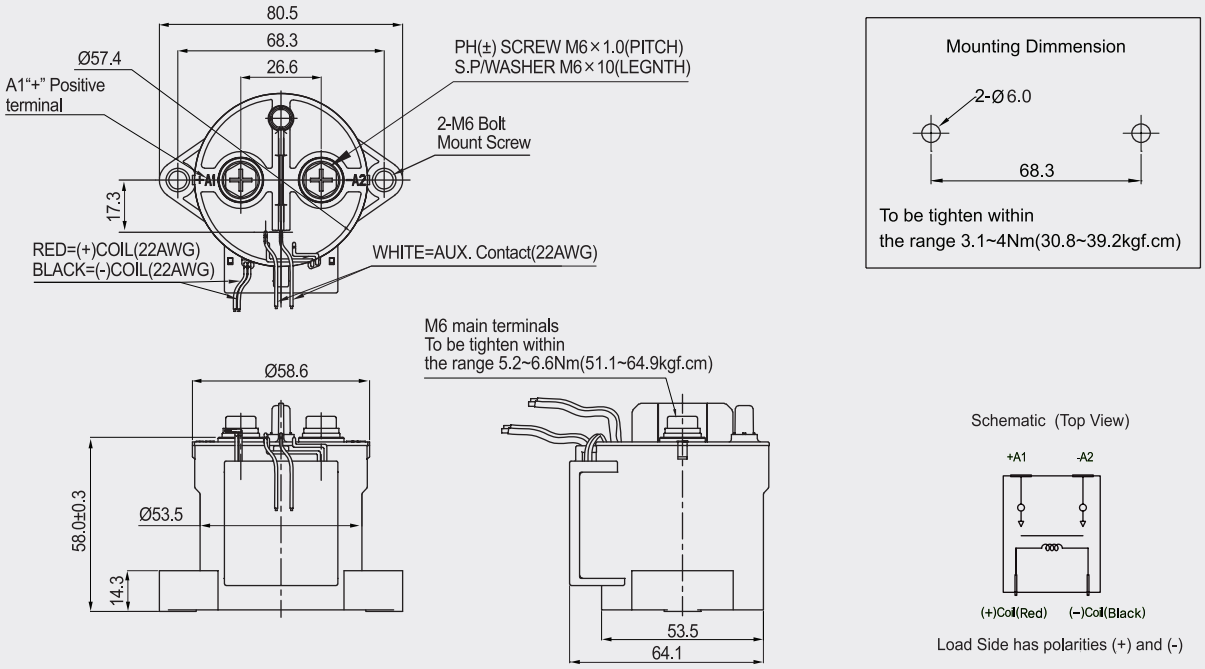
DC HIGH VOLTAGE EV RELAY

EVR250(NEW)

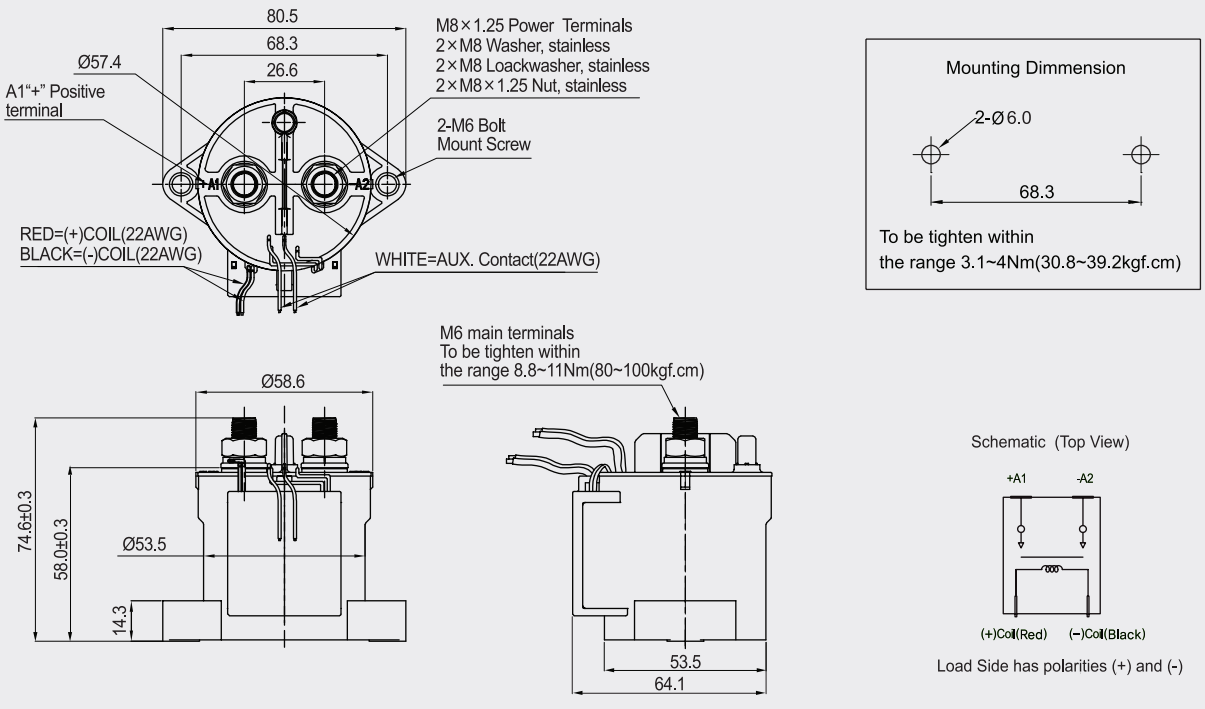
공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0

외형치수도 (Dimension in mm)

(Nut Type)



(Bolt Type)



DC HIGH VOLTAGE EV RELAY

EVR400

응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System Solar System, Golf Car, Fuel Cell Vehicle, etc.

코일정격 (Magnet coil ratings)

Nominal voltage(V)	Item	Inrush Coil current 100ms (Max.)	Holding Coil current (A)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Holding voltage (V)Min.	Max. voltage (V)Max.
B	72	1.3A	0.045~0.07A	32VDC	18VDC	22VDC	95VDC
	60						
	36						
A	36	3.8A	0.09A	9VDC	6VDC	7.5VDC	36VDC
	24		0.13A				
	12		0.27A				
12		1.2A	0.32A	9VDC	6VDC	7.5VDC	18VDC
24		0.6A	0.16A	18VDC	12VDC	13.5VDC	32VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%. 3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

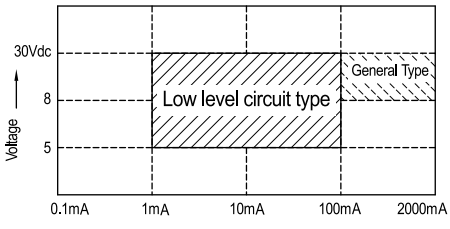
Item \ Type	1Pole Resistive load (L/R≤1㎳) EVR400	
Max. Continuous current (wire size 150㎟×2)	500A	
Max. switching current	450V DC 400A	UL Certification
	1200V DC 80A	
	1000V DC 90A	
	1000V DC 100A	CE
Contact rating switching voltages	12~1500VDC	
Max. cut-off current	300VDC 2500A 3 Ops	
C-R load (charging)	500V 1500A 4,000 Ops / 500V 500A 30,000 Ops	
Voltage drop across contacts per 100A	30mV Max	
Min. permissible load	12VDC 0.5A	
Description	S.P On/Off (a)	
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)	
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC	
General Aux. Contact Current, Min.	100mA 8VDC	
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC	
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC	

주문방법 (Ordering information)

EVR 400 A - A S /G

- EVR — Type
- 400(A)
- A : With aux. Contact / Blank : Without aux. Contact
- A=Coil Voltage (12 to 36V DC) / B=Coil Voltage (36 to 72V DC) / 12=Coil Voltage (12V DC) / 24=Coil Voltage (24V DC)
- S : Bolt Type / B : Nut Type
- Blank : General Aux. Contact / /G : Gold alloy Aux. Contact / /T : Twin Main contacts (High reliability contacts)

Permissible load of Aux. contact



DC HIGH VOLTAGE EV RELAY

EVR400

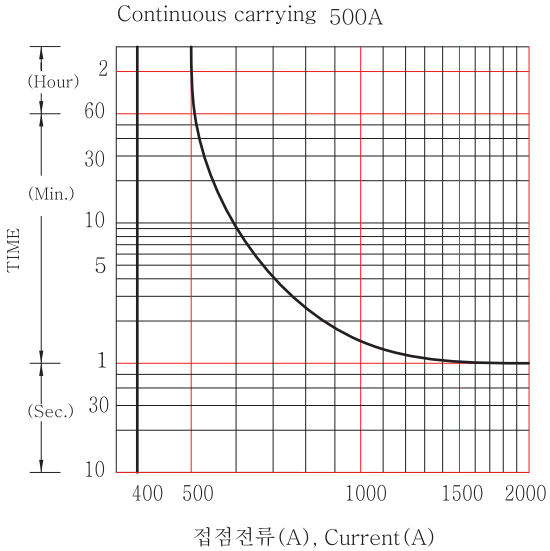
성 능 (Characteristics)

Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	450V DC 400A	3×10^3
		250V DC 400A	1×10^5
		1000V DC 100A	1×10^4
Initial insulation resistance			Min. 100㏁ 500V DC
Initial breakdown voltage	Between open contacts		3500V AC 60 Sec. 5mA
	Between contacts & coil		3500V AC 60 Sec. 5mA
Operate time (at 20℃)			Max. 30㎳
Release time (at 20℃)			Max. 10㎳
Shock resistance	Functional		Min 196 ㎨ {20G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {20G} 80 to 2000㎐
	Destructive		100 ㎨ {20G} 80 to 2000㎐
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			660g

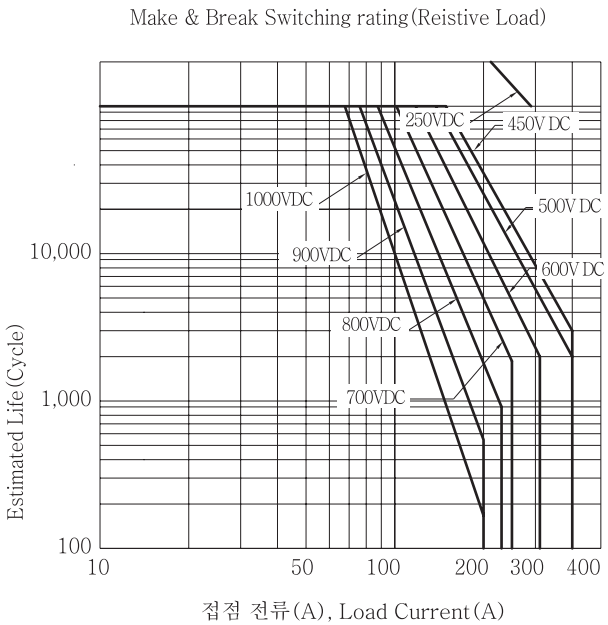
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching RatingsCurves)



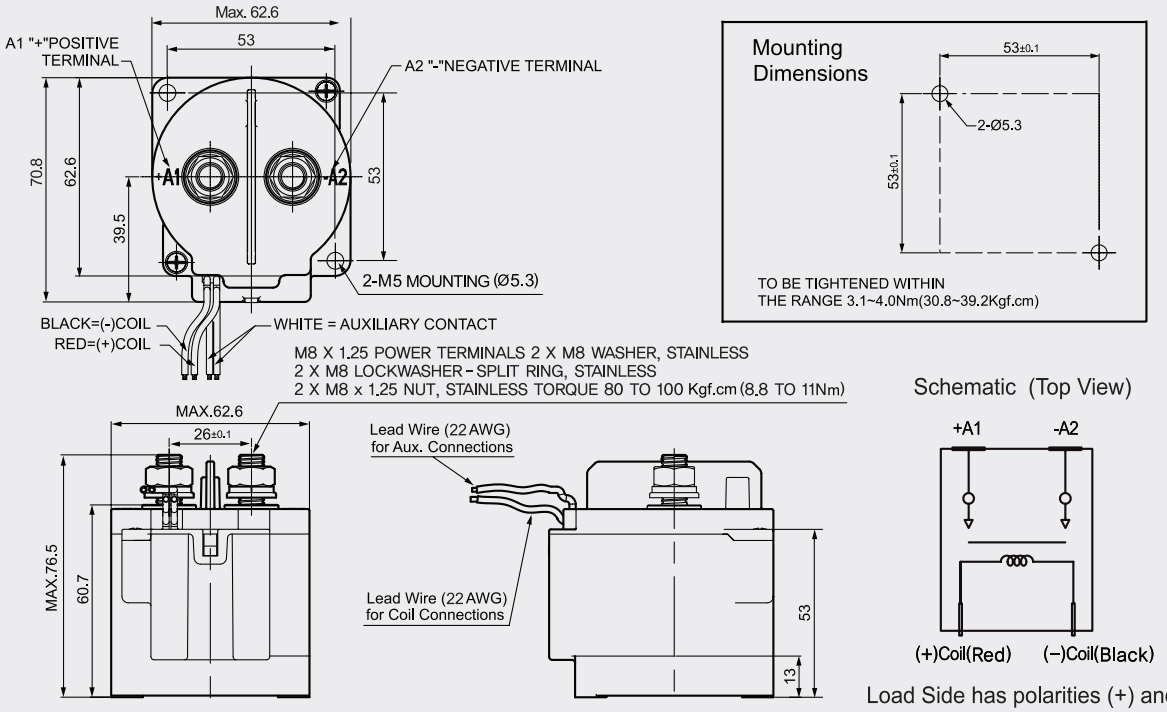
DC HIGH VOLTAGE EV RELAY

EVR400

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0

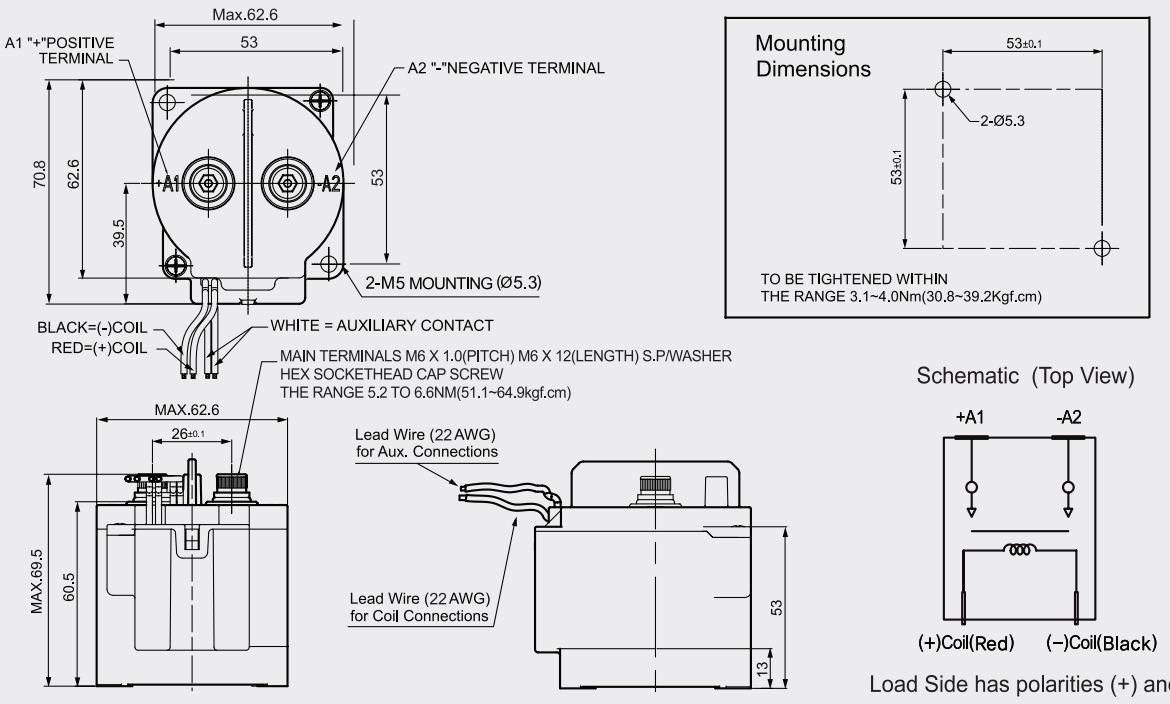
외형치수도 (Dimension in mm)

(Bolt Type)



Load Side has polarities (+) and (-)

(Nut Type)



Load Side has polarities (+) and (-)

DC HIGH VOLTAGE EV RELAY

EVR400-S/B

(Normal Close Contact)

응용분야 (Application) : Elarth device of Solar Power Systems

코일정격 (Magnet coil ratings)

Nominal voltage(V) \ Item		Inrush Coil current 100ms (Max.)	Holding Coil current (mA)	Pick-up voltage (V)Max. (Contact Closing → Opening)	Drop-out voltage (V)Min. (Contact Opening → Closing)	Holding voltage (V)Min. (Contact:Opening)	Max. voltage (V)Max.
A	36	3.8A	0.09A	9VDC	6VDC	7.5VDC	36VDC
	24		0.13A				
	12		0.27A				
12		3.8A	0.3A	9VDC	6VDC	7.5VDC	18VDC
24		2.7A	0.3A	18VDC	12VDC	13.5VDC	32VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃.
2. Differences of coil resistance are ±10%.
3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

Item \ Type	1Pole Resistive load (L/R≤1㎳)	
	EVR400- S/B	
Max. Continuous current (wire size 150㎟×2)	500A	
Max. switching current	1200V DC 80A	UL Certification
	1000V DC 90A	
	1200V DC 80A	
	1000V DC 100A	
Contact rating switching voltages	12~1500VDC	
Voltage drop across contacts per 100A	30mV Max	
Min. permissible load	12VDC 0.5A	
Description	S.P On/Off (b)	
Contact Arrangement	1Form B (SPST-NC.)	

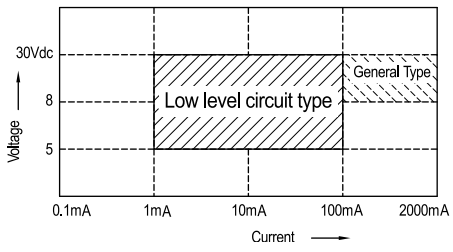
Notes : EVR400- S/B is without aux. contact.

주문방법 (Ordering information)

EVR 400 [ ] - 24 S /B

- EVR: Type
- 400(A): 400(A)
- [ ]: Blank : Without aux. Contact
- 24: A=Coil Voltage (12 to 36V DC) / 12=Coil Voltage (12V DC) / 24=Coil Voltage (24V DC)
- S: S : Bolt Type / B : Nut Type
- /B: /B : Main Contact type of Nomal Close

Permissible load of Aux. contact



DC HIGH VOLTAGE EV RELAY

EVR400-S/B
(Normal Close Contact)

성 능 (Characteristics)

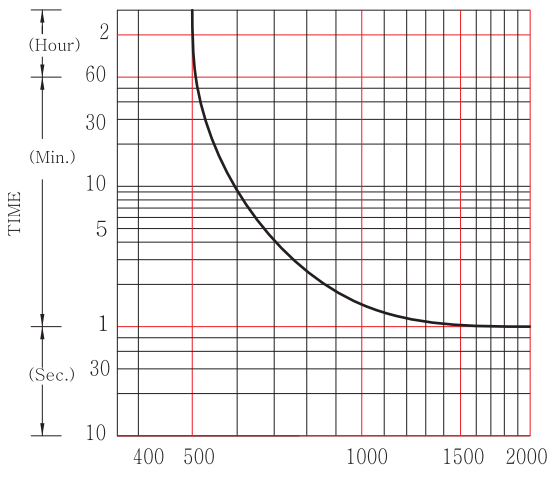
Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	450V DC 400A	3×10^3
		250V DC 400A	1×10^5
		1000V DC 100A	1×10^4
Initial insulation resistance			Min. 100㏁ 500V DC
Initial breakdown voltage	Between open contacts		3500V AC 60 Sec. 5mA
	Between contacts & coil		3500V AC 60 Sec. 5mA
Operate time (at 20℃)(Contact Closing → Contact Opening)			Max. 30㎳
Release time (at 20℃)(Contact Opening → Contact Closing)			Max. 10㎳
Shock resistance	Functional		Min 196 ㎨ {20G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {20G} 80 to 2000㎐
	Destructive		100 ㎨ {20G} 80 to 2000㎐
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			660g

특성곡선 (Reference data)

● 온도상승곡선

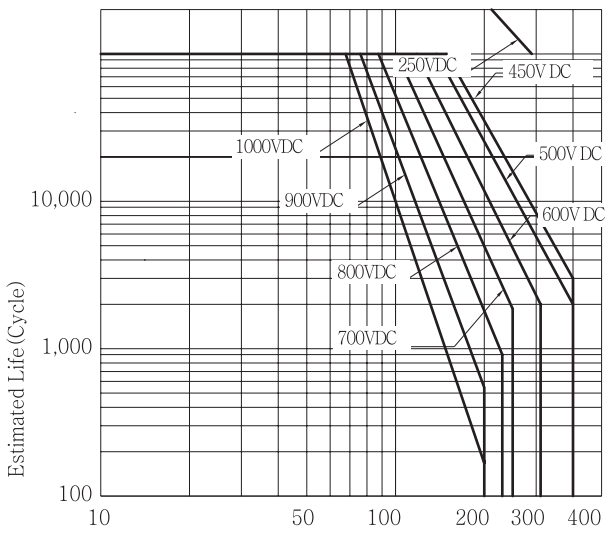
• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)

Continuous carrying 500A



● 전기적 수명 곡선
(Estimated Switching Ratings)

Make & Break Switching rating(Reistive Load)



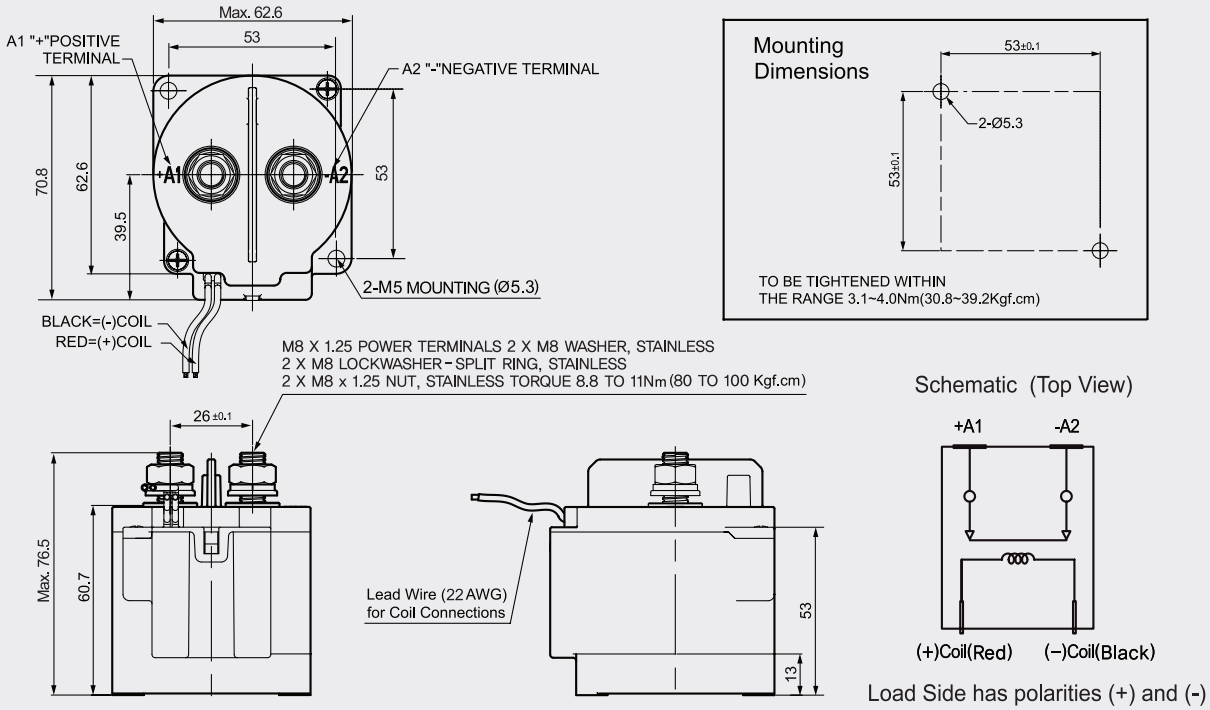
DC HIGH VOLTAGE EV RELAY

EVR400-S/B

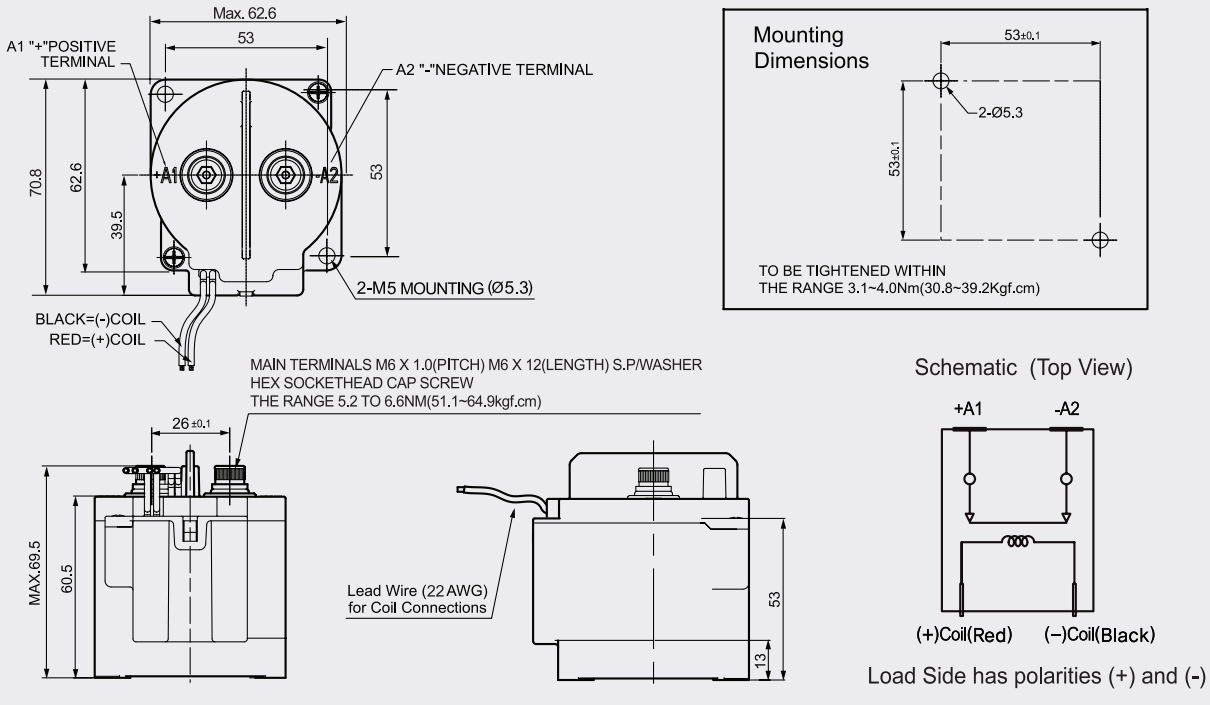
(Normal Close Contact)

외형치수도 (Dimension in mm)

(Bolt Type)



(Nut Type)



DC HIGH VOLTAGE EV RELAY

EVR600

응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System Solar System, Golf Car, Fuel Cell Vehicle, etc.

코일정격 (Magnet coil ratings)

Nominal voltage(V)	Item	Inrush Coil current 100ms (Max.)	Holding Coil current (A)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Holding voltage (V)Min.	Max. voltage (V)Max.
B	72	1.3A	0.045~0.07A	32VDC	18VDC	22VDC	95VDC
	60						
	36						
A	36	3.8A	0.11A	9VDC	6VDC	7.5VDC	36VDC
	24		0.16A				
	12		0.32A				
12		1.2A	0.32A	9VDC	6VDC	7.5VDC	18VDC
24		0.6A	0.16A	18VDC	12VDC	13.5VDC	32VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%.
3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

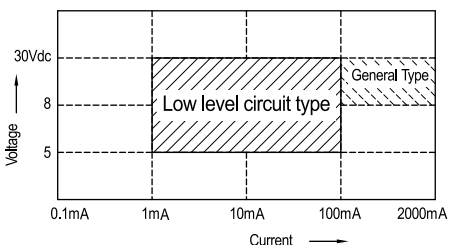
Item \ Type	1Pole Resistive load (L/R≤1㎳)
	EVR600
Max. Continuous current (wire size 185㎟×2)	600A
Max. switching current	600A
Max. switching voltages	900VDC
Contact Rating switching voltages	12~900VDC
Voltage drop across contacts per 100A	30mV Max.
Min. permissible load	12VDC 0.5A
Description	S.P On/Off (a)
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVR | 600 | A | - | 24 | S | /G

- EVR: Type
- 600: 600(A)
- A: A : With aux. Contact / Blank : Without aux. Contact
- 24: A=Coil Voltage (12 to 36V DC) / B=Coil Voltage (36 to 72V DC) / 12=Coil Voltage (12V DC) / 24=Coil Voltage (24V DC)
- S: S : Basic Type
- /G: Blank : General Aux. Contact / /G : Gold alloy Aux. Contact / /T : Twin Main contacts (High reliability contacts)

Permissible load of Aux. contact



DC HIGH VOLTAGE EV RELAY

EVR600

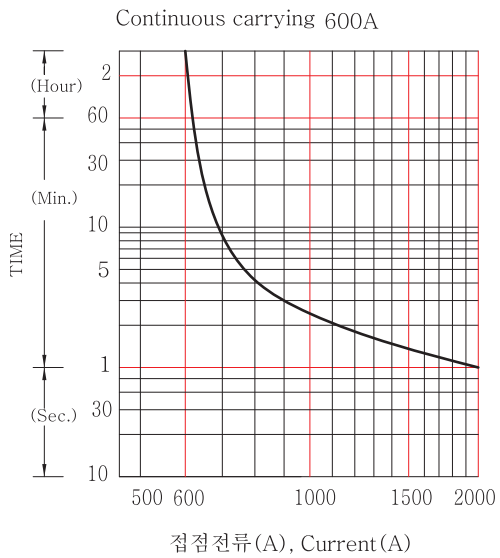
성 능 (Characteristics)

Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	450V DC 600A	1×10^3
		250V DC 600A	1×10^5
Initial insulation resistance			Min. 100㏁ 500V DC
Initial breakdown voltage	Between open contacts		3500V AC 60 Sec. 5mA
	Between contacts & coil		3500V AC 60 Sec. 5mA
Operate time (at 20℃)			Max. 30㎳
Release time (at 20℃)			Max. 10㎳
Shock resistance	Functional		Min 196 ㎨ {20G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {20G} 80 to 2000㎐
	Destructive		100 ㎨ {20G} 80 to 2000㎐
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			920g

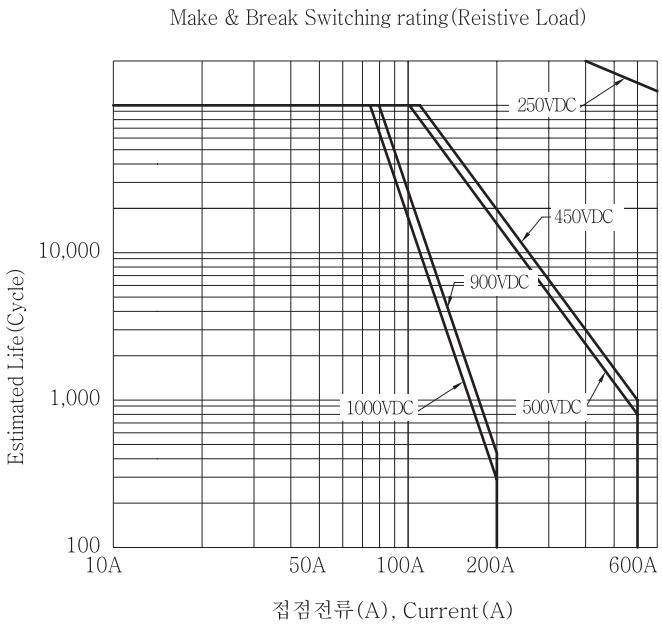
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)

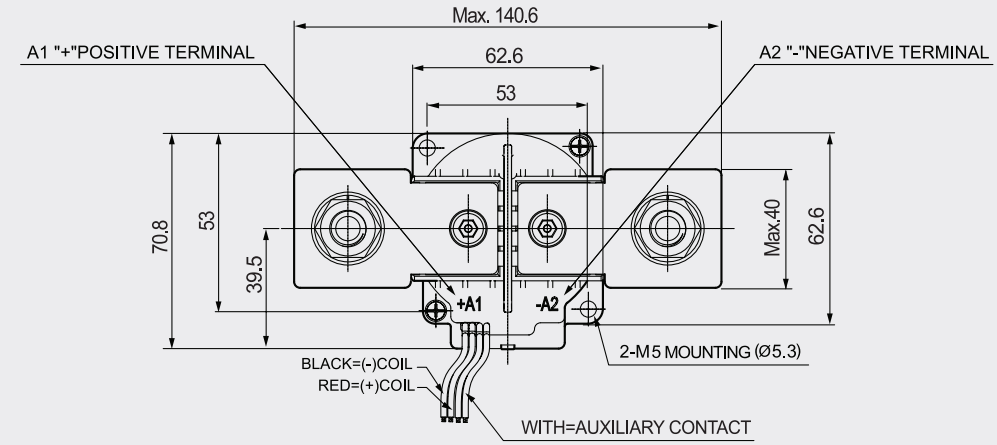


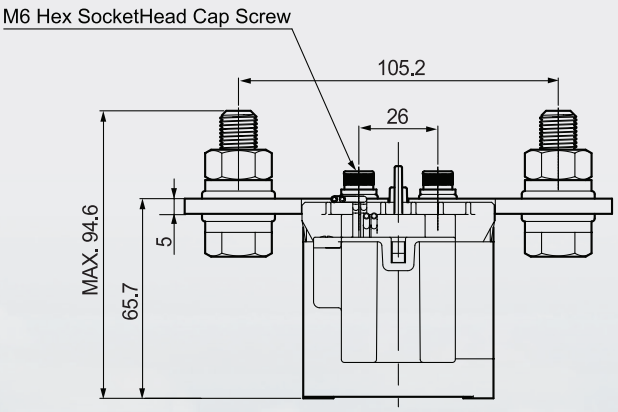
DC HIGH VOLTAGE EV RELAY

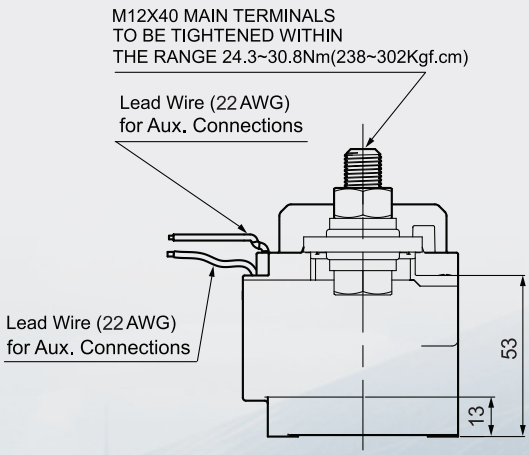
EVR600

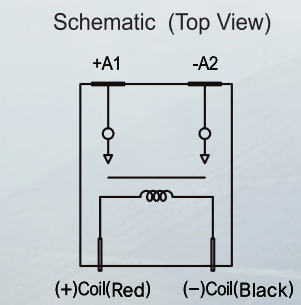
외형치수도 (Dimension in mm)

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0

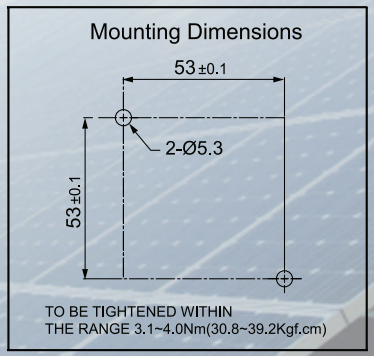








Load Side has polarities (+) and (-)



DC HIGH VOLTAGE Bi-directional SWITCHING RELAY

EVHB500

(H: 1500V Class)

응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System, Solar System, etc. Bi-directional switching systems and AC systems. 양방향 직류 스위치 및 교류 스위칭 시스템

코일정격 (Magnet coil ratings)

Nominal voltage(V) / Item		Inrush Coil current 100ms (Max.)	Holding Coil current (mA)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Holding voltage (V)Min.	Max. voltage (V)Max.
B	72	1.3A	0.06A	32VDC	18VDC	22VDC	95VDC
	60		0.08A				
	36		0.12A				
A	36	3.8A	0.1A	9VDC	6VDC	7.5VDC	36VDC
	24		0.16A				
	12		0.35A				
12		1.4A	0.32A	9VDC	6VDC	7.5VDC	18VDC
24		1.1A	0.16A	18VDC	12VDC	13.5VDC	32VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%. 3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

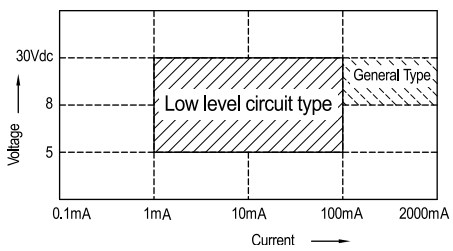
Item / Type	1Pole Resistive load (L/R≤1㎳) EVHB500	
Continuous current (wire size 325㎟)	500A	
Max. switching current	750V DC 500A	UL Certification
	1000V DC 300A	
	1500V DC 100A	
Max. switching Voltages	1500VDC / 1000VAC	
Contact Rating switching voltages	12~1500VDC / 1000VAC	
Voltage drop across contacts per 100A	30mV Max	
Min. permissible load	12VDC 0.5A	
Description	S.P On/Off (a)	
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)	
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC	
General Aux. Contact Current, Min.	100mA 8VDC	
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC	
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC	

주문방법 (Ordering information)

EVH B 500 A - A S /G

- EVH: Type 1500Vdc Class
- B: Bi-directional switching device
- 500: 500(A)
- A: A : With aux. Contact / Blank : Without aux. Contact
- A: A=Coil Voltage (12 to 36V DC) / B=Coil Voltage (36 to 72V DC) / 12=Coil Voltage (12V DC) / 24=Coil Voltage (24V DC)
- S: S : Basic Type
- /G: Blank : General Aux. Contact / /G : Gold alloy Aux. Contact

Permissible load of Aux. contact



DC HIGH VOLTAGE Bi-directional
SWITCHING RELAY

EVHB500
(H: 1500V Class)

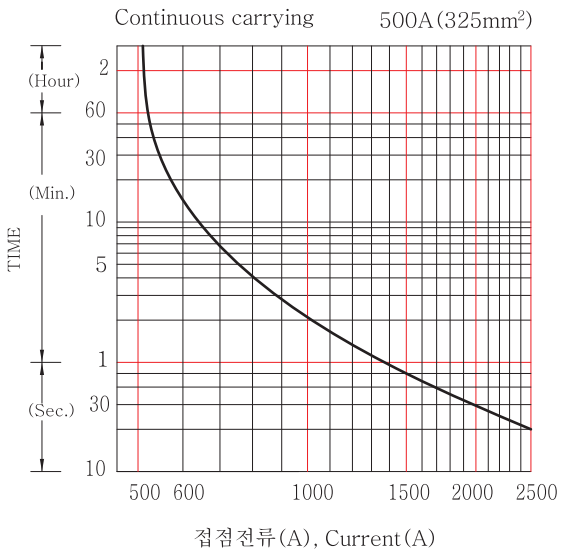
성 능 (Characteristics)

Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	750V DC(+),(−) 500A	1×10^3
		1000V DC(+),(−) 300A	1×10^3
		1500V DC(+),(−) 100A	1×10^3
Initial insulation resistance			Min. 100㏁ 500V DC
Initial breakdown voltage	Between open contacts		4500V AC 60 Sec. 5mA
	Between contacts & coil		4500V AC 60 Sec. 5mA
Operate time (at 20℃)			Max. 40㎳
Release time (at 20℃)			Max. 10㎳
Shock resistance	Functional		Min 196 ㎨ {20G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {20G} 80 to 2000㎐
	Destructive		100 ㎨ {20G} 80 to 2000㎐
Conditions for operation transport and storage	Ambient temperature		−40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			980g

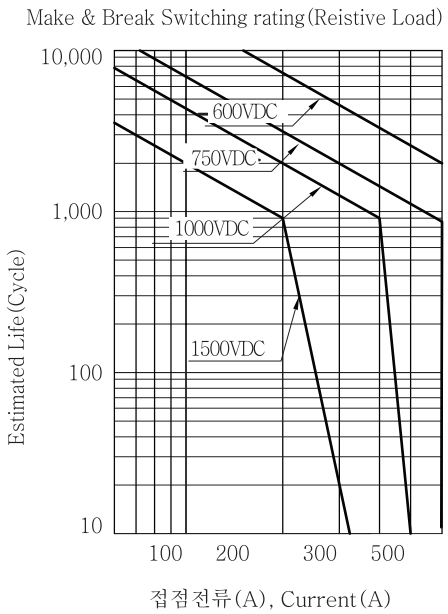
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)

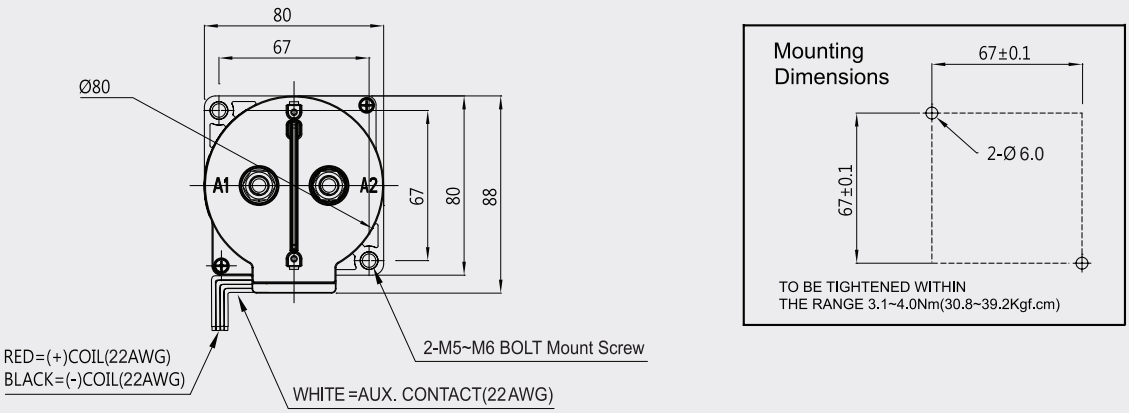


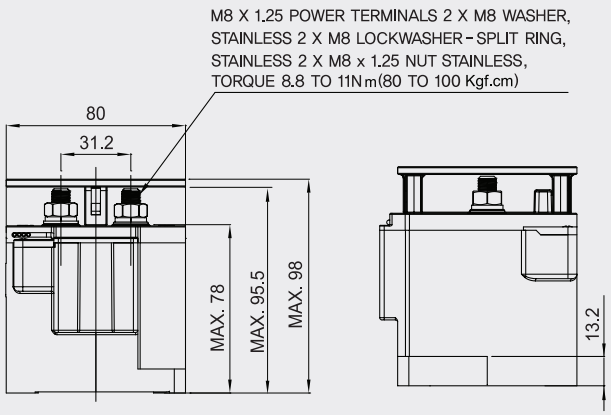
DC HIGH VOLTAGE Bi-directional
SWITCHING RELAY

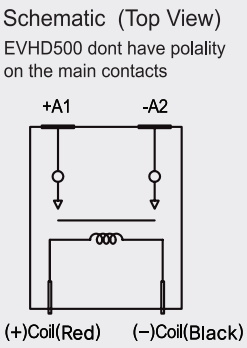
EVHB500
(H: 1500V Class)

외형치수도 (Dimension in mm)

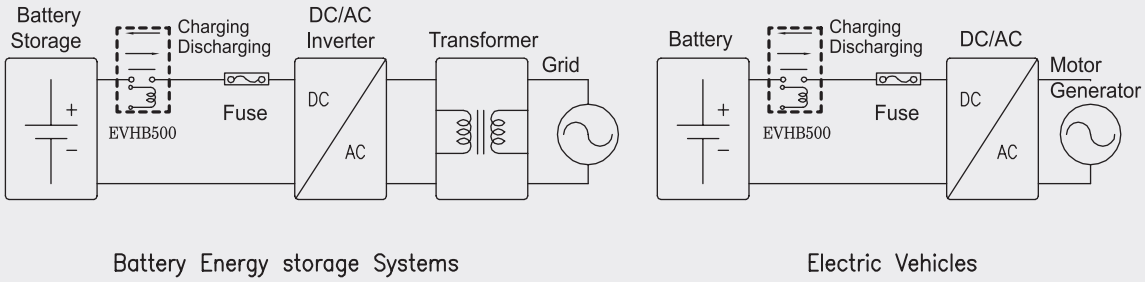
공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0







응용 회로 (Application Circuit)



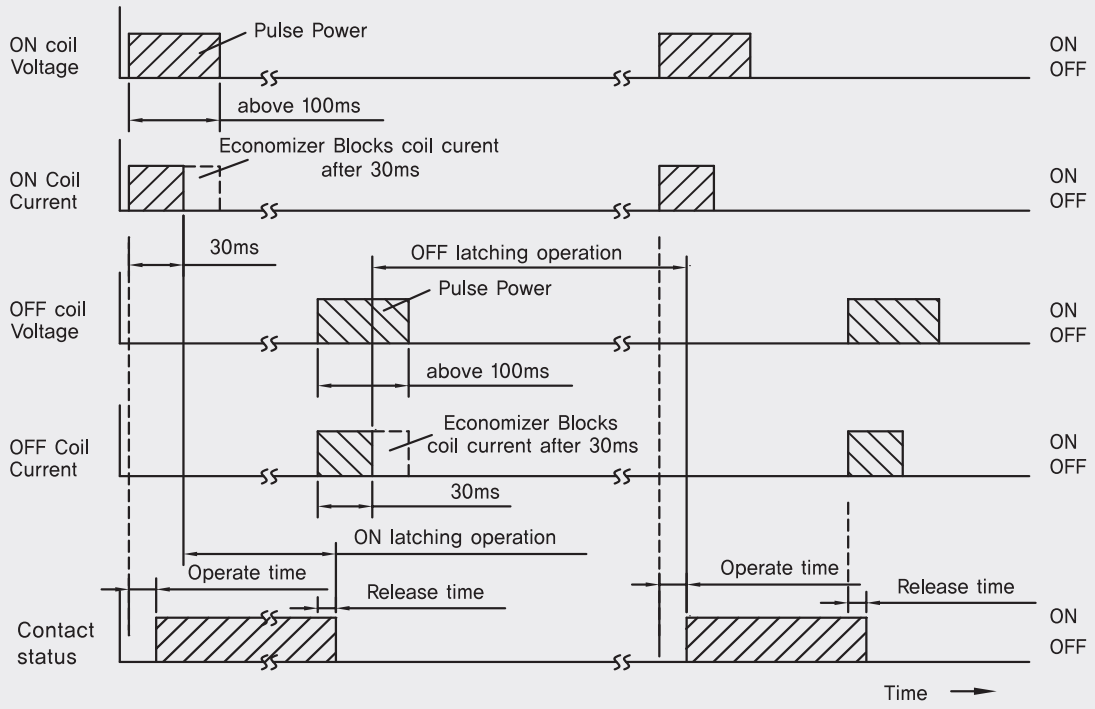
DC HIGH VOLTAGE EV LATCH RELAY

EV LATCH Relay 특성 (EV Latch Relay characteristics)

1. EV Latch Relay는 ON과 OFF시에 30ms동안만 코일이 전력을 소모하기 때문에 에너지를 절약할 수 있습니다.
2. 코일은 상시 전력을 소모하지 않기 때문에 발열에 의한 고장을 방지합니다.
3. 전원 전압이 불안정한 사용환경에서 오동작이 없습니다.
4. 코일에 전원을 지속적으로 인가하여도 Economizer가 On/Off시에 30ms 동안만 전류를 흘리고, 그 이후에는 Coil에 전류를 차단합니다.

1. Because EV Latch relay consumes electric power only 30ms in the Coil, when main contact moves On and Off, so you can save energy.
2. Because the EV Latch relay Coils doesn't consume a electric energy at normal state, this product prevent a fault risks by high temperature.
3. When the power supply of coil is unstable, a malfunction of EV Latch relay does not occur.
4. Even if coil power is continuously supplied, the economizer blocks coil current after 30ms, so the economizer of EV Latch relay protects coil failure.

EV Latch Relay 시간 특성 (Timing Diagram of EV Latch Relay)



DC HIGH VOLTAGE EV LATCH RELAY

EVL250

응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System, Solar System, Golf Car, Fuel Cell Vehicle, Helicopter, etc.

코일정격 (Magnet coil ratings)

Item / Nominal voltage(V)	Inrush Coil current (Max.)	Pick-up Holding Time (ms)	Pick-up voltage (V)	Drop-out voltage (V)	Drop-out Time (ms)	Max. voltage (V)Max.
12	2.5A	50~100㎳	9.0VDC	9.0VDC	50~100㎳	15VDC
24	1.5A	50~100㎳	18.0VDC	18.0VDC	50~100㎳	30VDC
36	1.0A	50~100㎳	27.0VDC	27.0VDC	50~100㎳	45VDC
48	0.75A	50~100㎳	36.0VDC	36.0VDC	50~100㎳	60VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%. 3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

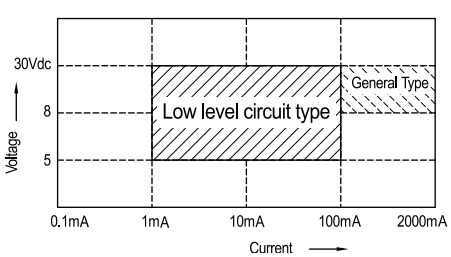
Item / Type	1Pole Resistive load (L/R≤1㎳)
	EVL250
Max. Continuous current (wire size 185㎟)	300A
Max. switching current	250A
Max. switching voltages	1000VDC 80A
Contact rating switching voltages	12~1000VDC
Max. cut-off current	300VDC 1000A 10 Ops
	300VDC 1500A 3 Ops
C-R load (charging)	500V 1500A 4,000 Ops
	500V 500A 30,000 Ops
Voltage drop across contacts per 100A	30mV Max.
Min. permissible load	12VDC 0.5A
Description	S.P On/Off (a)
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVL 250 A - 12 S /G H

- EVL: Latch Relay
- 250: 250(A)
- A: A:With Aux. Contact / Blank : Without aux. Contact
- 12: 12=Coil Voltage(12V DC) / 24=Coil Voltage(24V DC) / 36=Coil Voltage(36V DC) / 48=Coil Voltage(48V DC)
- S: S : Nut Type / B : Bolt Type
- /G: Blank : General Aux. Contact / /G : Gold alloy Aux. Contact
- H: H : High Side Drive / L : Low Side Drive

Permissible load of Aux. contact



DC HIGH VOLTAGE EV LATCH RELAY

EVL250

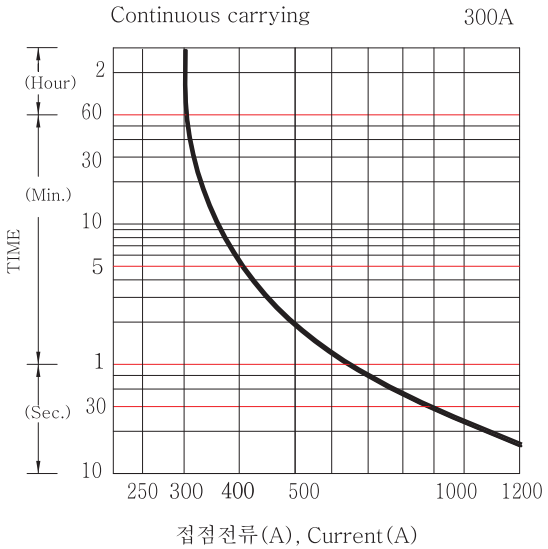
성 능 (Characteristics)

Expected life	Mechanical (Min.)		2×10^6
	Electric (Min.) (L/R≤1㎳)	450V DC 250A	6×10^3
		250V DC 250A	10^5
Initial insulation resistance			Min. 100㏁ 500V DC
Initial breakdown voltage	Between open contacts		3500VAC 60 Sec. 5mA
	Between contacts & coil		3500VAC 60 Sec. 5mA
Operate time (at 20℃)			Max. 10㎳
Release time (at 20℃)			Max. 10㎳
Shock resistance	Functional		Min 196 ㎨ {20G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {20G} 80 to 2000㎐
	Destructive		100 ㎨ {20G} 80 to 2000㎐
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			460g

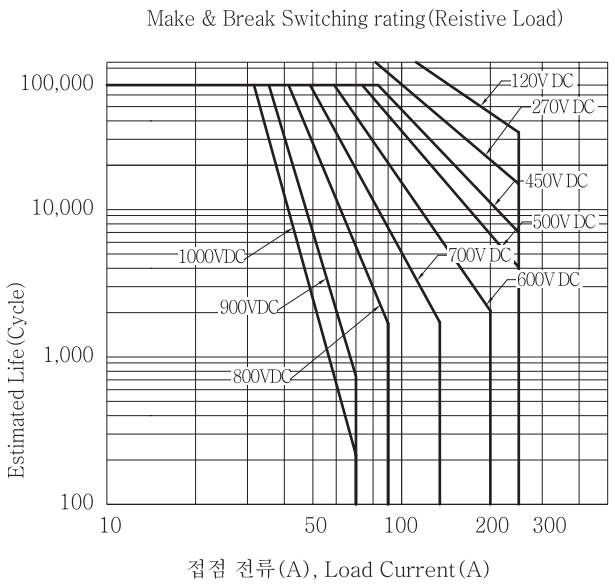
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)



● 전기적 수명 곡선
(Estimated Switching Ratings)



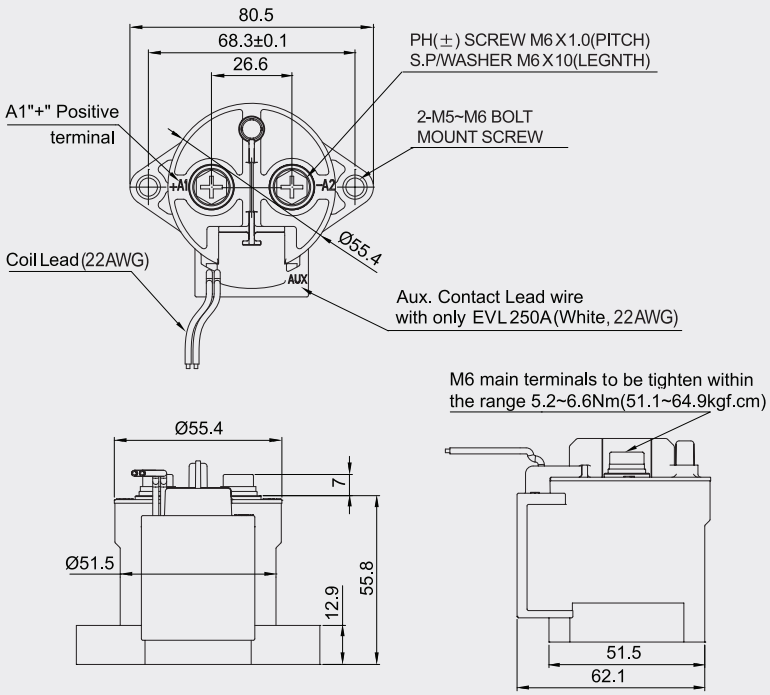
DC HIGH VOLTAGE EV LATCH RELAY

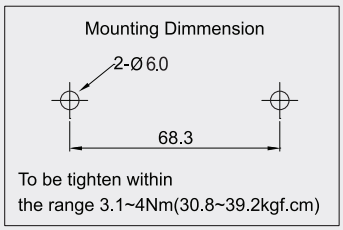
EVL250

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0

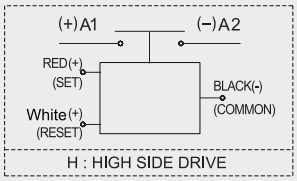
외형치수도 (Dimension in mm)

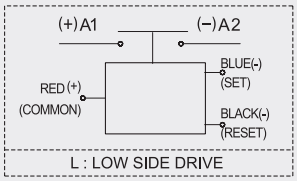
(Nut Type)



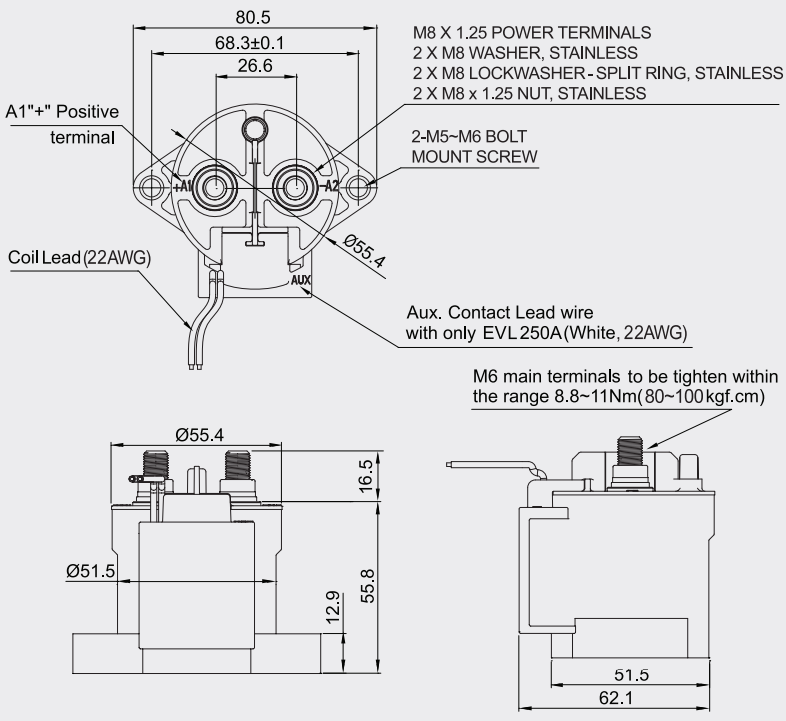


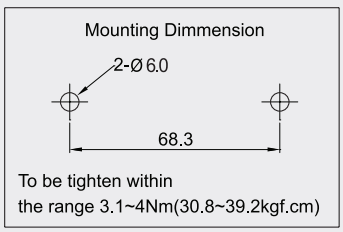
Schematic (Top View)
Load Side has polarities (+) and (-).



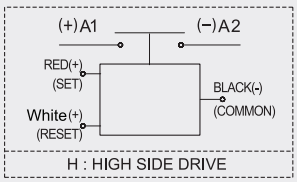


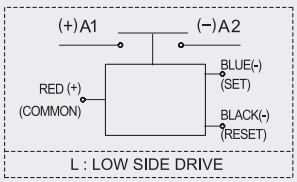
(Bolt Type)





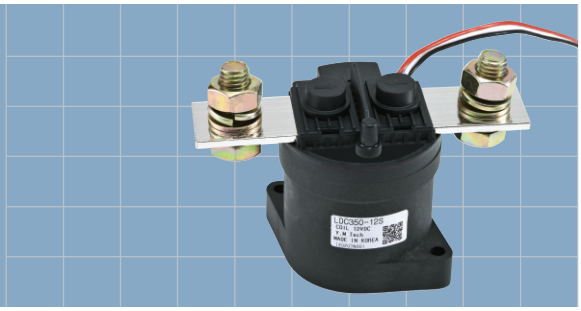
Schematic (Top View)
Load Side has polarities (+) and (-).





DC HIGH VOLTAGE LATCH RELAY

EVL350



응용분야 (Application) : Electric Vehicle, Charging System, Battery Energy Storage System Solar System, Golf Car, Fuel Cell Vehicle, Helicopter, etc.

코일정격 (Magnet coil ratings)

Item / Nominal voltage(V)	Inrush Coil current (Max.)	Pick-up Holding Time (ms)	Pick-up voltage (V)	Drop-out voltage (V)	Drop-out Time (ms)	Max. voltage (V)Max.
12	2.5A	50~100㎳	9.0VDC	9.0VDC	50~100㎳	15VDC
24	1.5A	50~100㎳	18.0VDC	18.0VDC	50~100㎳	30VDC
36	1.0A	50~100㎳	27.0VDC	27.0VDC	50~100㎳	45VDC
48	0.75A	50~100㎳	36.0VDC	36.0VDC	50~100㎳	60VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃.
2. Differences of coil resistance are ±10%.
3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

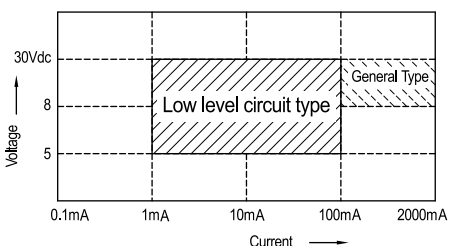
Item / Type	1Pole Resistive load (L/R≤1㎳)
	EVL350
Max. Continuous current (wire size 100㎟×2)	350A
Max. switching current	350A
Max. switching voltages	900VDC
Contact rating switching voltages	12~900VDC
Voltage drop across contacts per 100A	30mV Max.
Min. permissible load	12VDC 0.5A
Description	S.P On/Off (a)
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contacts Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contacts Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVL 350 A - 12 S /G H

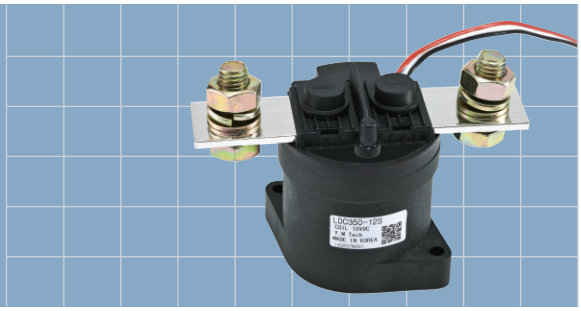
- EVL: Latch Relay
- 350: 350(A)
- A: A:With Aux. Contact / Blank: Without aux. Contact
- 12: 12=Coil Voltage(12V DC) / 24=Coil Voltage(24V DC) / 36=Coil Voltage(36V DC) / 48=Coil Voltage(48V DC)
- S: S : Basic Type
- /G: Blank : General Aux. Contact / /G : Gold alloy Aux. Contact
- H: H : High Side Drive / L : Low Side Drive

Permissible load of Aux. contact



DC HIGH VOLTAGE LATCH RELAY

EVL350



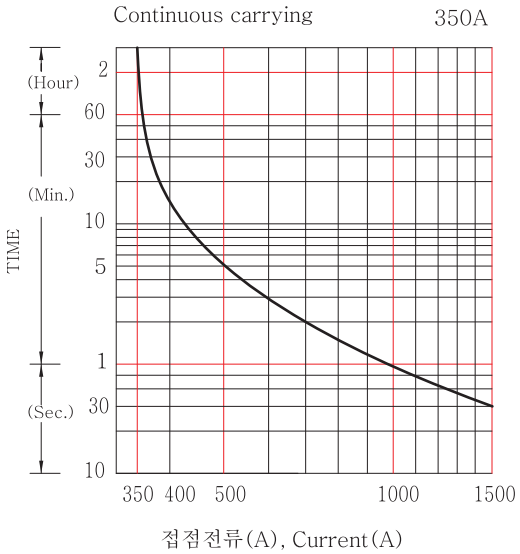
성 능 (Characteristics)

Expected life	Mechanical (Min.)		2×10^6
	Electric (L/R≤1㎳)	350V DC 350A	1×10^3
		250V DC 350A	1×10^5
Initial insulation resistance			Min. 100㏁ 500V DC
Initial breakdown voltage	Between open contacts		3500V AC 60 Sec. 5mA
	Between contacts & coil		3500V AC 60 Sec. 5mA
Operate time (at 20℃)			Max. 10㎳
Release time (at 20℃)			Max. 10㎳
Shock resistance	Functional		Min 147 ㎨ {15G}
	Destructive		Min 490 ㎨ {50G}
Vibration resistance	Functional		100 ㎨ {10G} 10 to 500Hz
	Destructive		100 ㎨ {10G} 10 to 500Hz
Conditions for operation transport and storage	Ambient temperature		-40℃ to +85℃
	Humidity		5 to 85% R.H.
Unit weight			610g

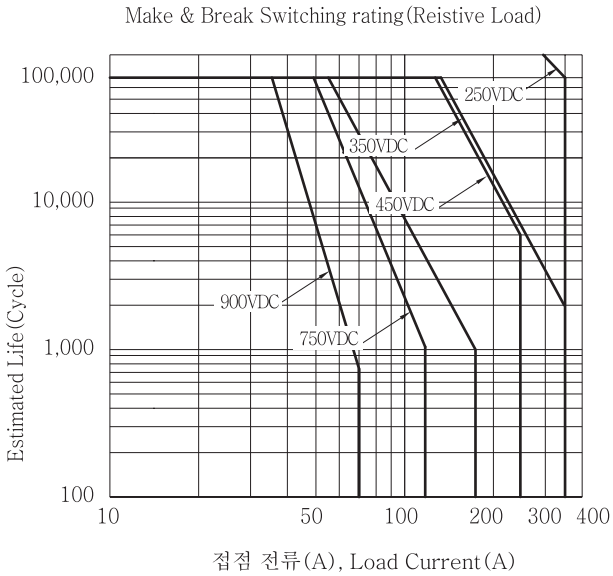
특성곡선 (Reference data)

● 온도상승곡선

• 통전시간의 최대치 Max, Current capacity
Max, Continous thermal current rating (amperes)

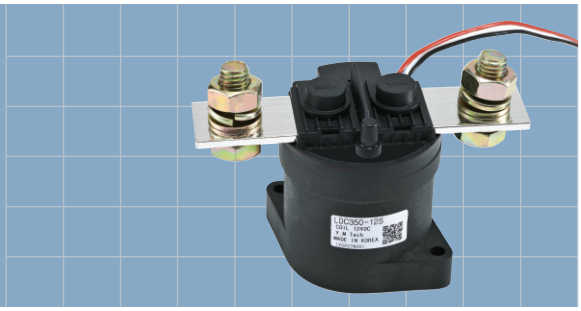


● 전기적 수명 곡선
(Estimated Switching Ratings)



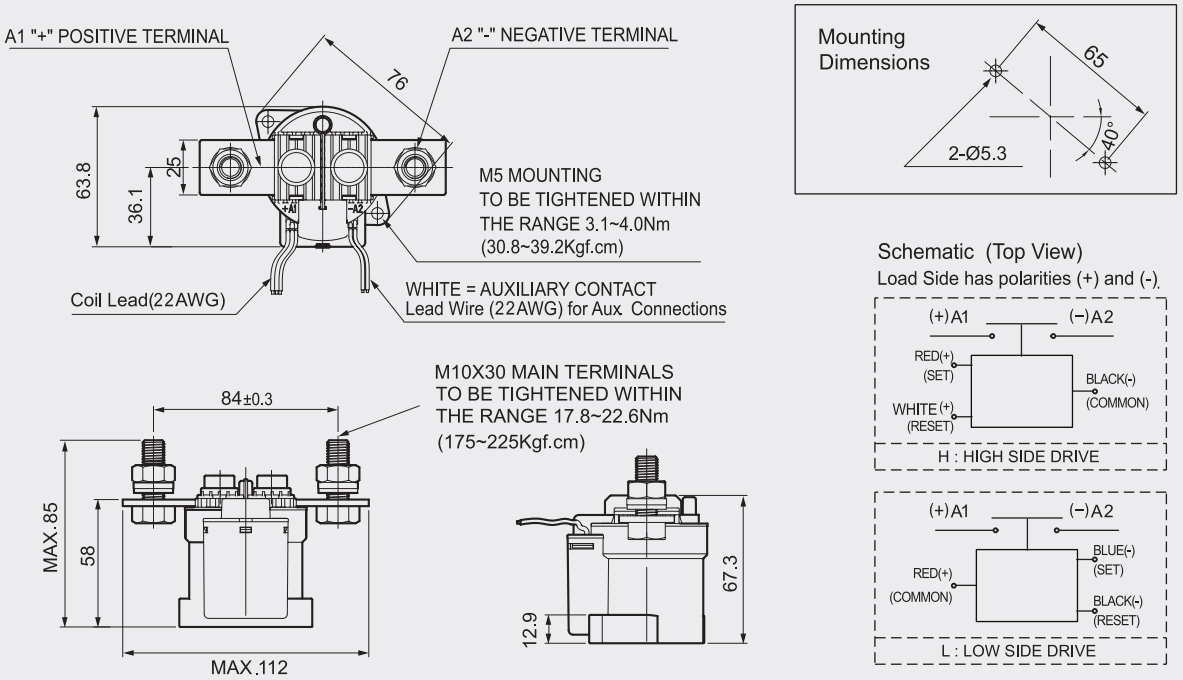
DC HIGH VOLTAGE LATCH RELAY

EVL350

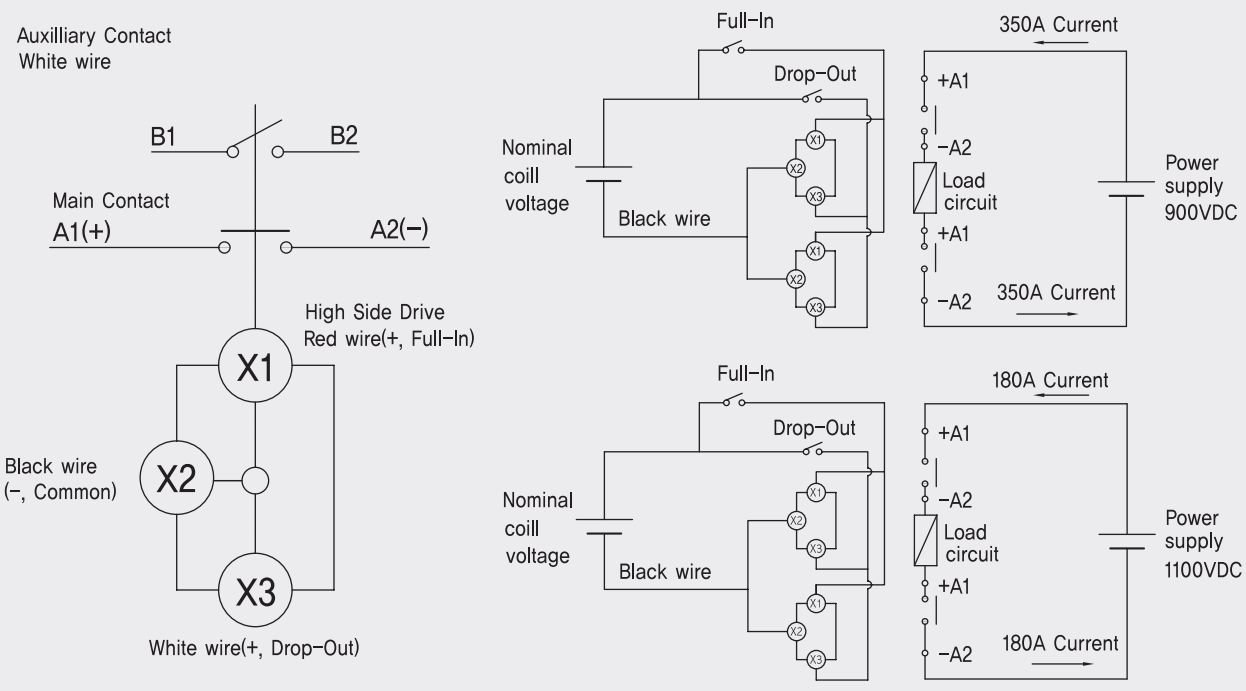


외형치수도 (Dimension in mm)

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0



EVL350-2P 결선도 (2 Pole wiring diagram of EVL350)



DC HIGH VOLTAGE Bi-directional SWITCHING RELAY

EVHD500

(Double Switching Device)

응용분야 (Application) : Charging System, Battery Energy Storage System, Solar System, etc. Bi-directional switching systems and AC systems.

코일정격 (Magnet coil ratings)

Nominal voltage(V) \ Item		Inrush Coil current 100ms (Max.)	Holding Coil current (A)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Holding voltage (V)Min.	Max. voltage (V)Max.
B	60	2.8A	0.13A	32VDC	18VDC	22VDC	60VDC
	48	2.5A	0.20A				
	36	2.0A	0.25A				
A	36	4.2A	0.32A	9VDC	6VDC	7.5VDC	36VDC
	24	4.0A	0.45A				
	12	3.8A	0.70A				
12		2.4A	0.7A	9VDC	6VDC	7.5VDC	18VDC
24		1.2A	0.35A	18VDC	12VDC	13.5VDC	32VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%. 3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

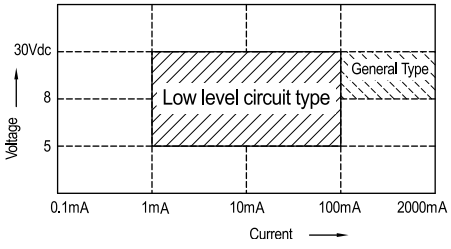
Item \ Type	2Pole Resistive load (L/R≤1㎳)
	EVHD500
Continuous current (wire size 325㎟)	500A
Max. switching current	750V DC/AC 500A/Pole
	1000VDC 300A/Pole
	1500VDC 100A/Pole
Max. switching Voltages	1500VDC
Contact Rating switching voltages	12~1500V DC/AC
Voltage drop across contacts per 100A	30mV Max
Min. permissible load	12VDC 0.5A
Description	D.P On/Off (a)
Contact Arrangement, auxiliary contacts	2Form A (DPDT-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contact Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contact Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVH D 500 A - A S /G

- **EVH**: Type 1000Vdc Class
- D: Double switching device
- 500: 500(A)
- A: A : With aux. Contact / Blank : Without aux. Contact
- A: A=Coil Voltage (12 to 36V DC) / B=Coil Voltage (36 to 72V DC) / 12=Coil Voltage (12V DC) / 24=Coil Voltage (24V DC)
- S: S : Basic Type
- /G: Blank : General Aux. Contact / /G : Gold alloy Aux. Contact

Permissible load of Aux. contact



DC HIGH VOLTAGE Bi-directional
SWITCHING RELAY

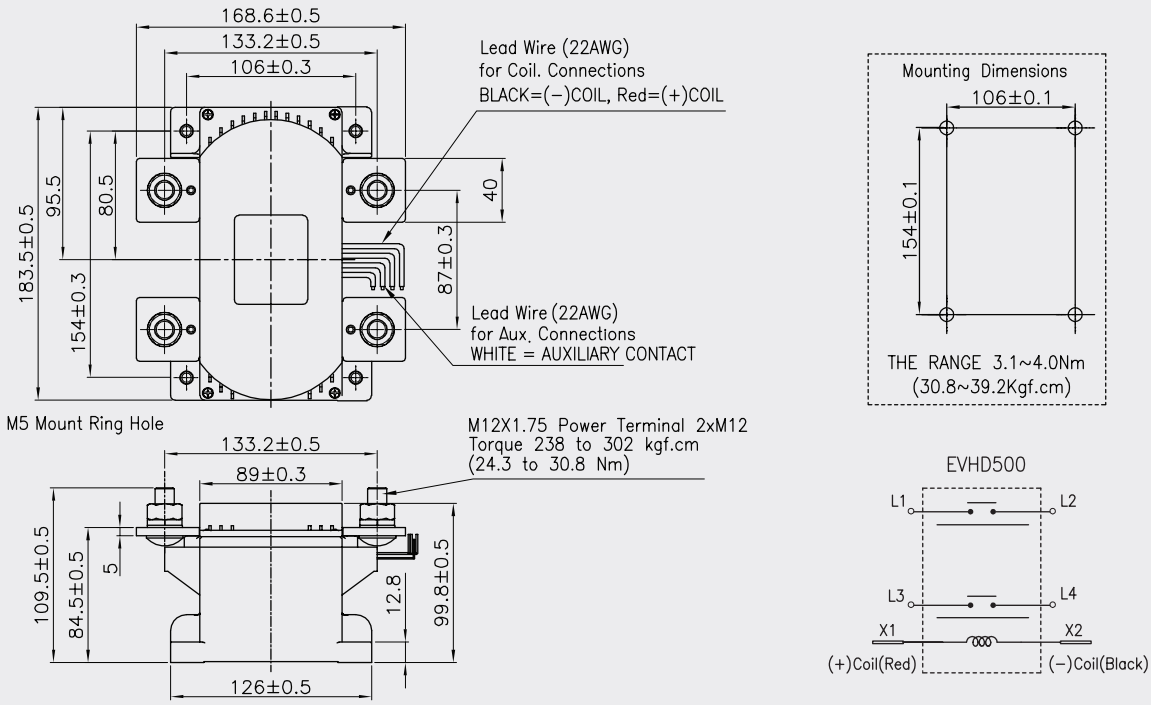
EVHD500

(Double Switching Device)

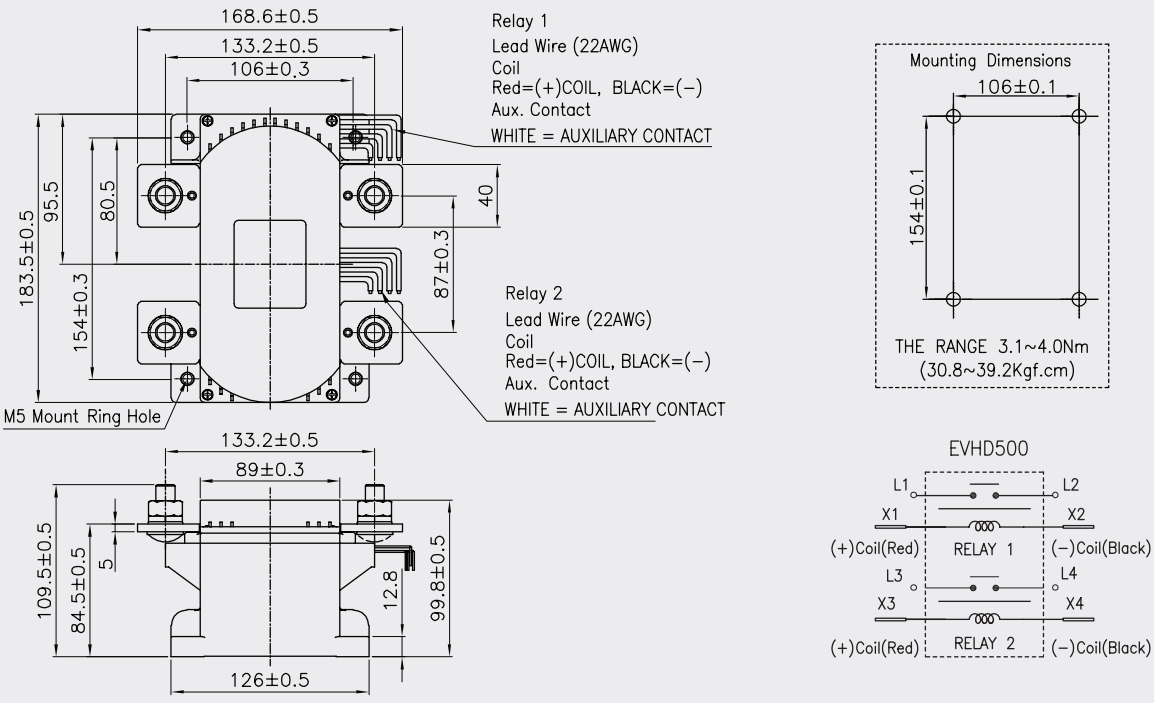
공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0

외형치수도 (Dimension in mm)

(Basic Type)



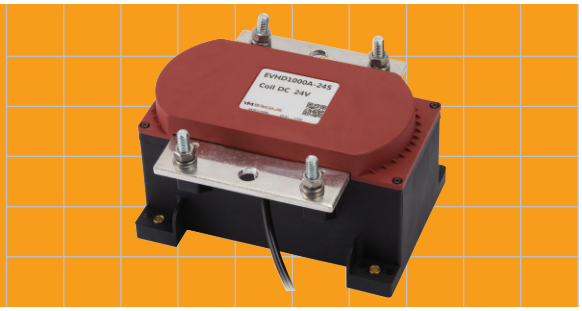
(Separation Type)



DC HIGH VOLTAGE Bi-directional SWITCHING RELAY

EVHD1000

(Double Switching Device)



응용분야 (Application) : Charging System, Battery Energy Storage System, Solar System, etc. Bi-directional switching systems and AC systems.

코일정격 (Magnet coil ratings)

Nominal voltage(V) \ Item		Inrush Coil current 100ms (Max.)	Holding Coil current (A)	Pick-up voltage (V)Max.	Drop-out voltage (V)Min.	Holding voltage (V)Min.	Max. voltage (V)Max.
B	60	2.8A	0.13A	32VDC	18VDC	22VDC	60VDC
	48	2.5A	0.20A				
	36	2.0A	0.25A				
A	36	4.2A	0.32A	9VDC	6VDC	7.5VDC	36VDC
	24	4.0A	0.45A				
	12	3.8A	0.70A				
12		3.8A	0.7A	9VDC	6VDC	7.5VDC	18VDC
24		2.2A	0.35A	18VDC	12VDC	13.5VDC	32VDC

Notes : 1. Nominal current and coil resistance are measured at +20℃. 2. Differences of coil resistance are ±10%. 3. Performance characteristic coil temperature is measured at +20℃.

접점정격 (Contact ratings)

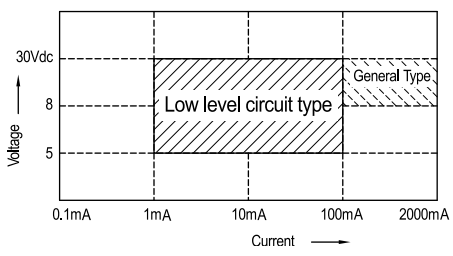
Item \ Type	1Pole Resistive load (L/R≤1㎳)
	EVHD1000
Continuous current (wire size 325㎟×2)	1000A
Max. switching current	750VDC 800A
	500VDC 1000A
	1500VDC 200A
Max. switching Voltages	1500VDC / 1,000VAC
Contact Rating switching voltages	12~1500V DC / 1,000VAC
Voltage drop across contacts per 100A	20mV Max
Min. permissible load	12VDC 0.5A
Description	S.P On/Off (a)
Contact Arrangement, auxiliary contacts	1Form A (SPST-NO.)
General Aux. Contact Current, Max.	2A 30VDC / 3A 125VAC
General Aux. Contact Current, Min.	100mA 8VDC
Gold alloy Aux. Contact Max.	0.1A 30VDC / 0.1A 30VAC
Gold alloy Aux. Contact Min.	1mA 5VDC / 1mA 5VAC

주문방법 (Ordering information)

EVH D 1000 A - A S /G

- **EVH**: Type 1000Vdc Class
- D: Double switching device
- 1000: 1000(A)
- A: A : With aux. Contact / Blank : Without aux. Contact
- A: A=Coil Voltage (12 to 36V DC) / B=Coil Voltage (36 to 72V DC) / 12=Coil Voltage (12V DC) / 24=Coil Voltage (24V DC)
- S: S : Basic Type
- /G: Blank : General Aux. Contact / /G : Gold alloy Aux. Contact

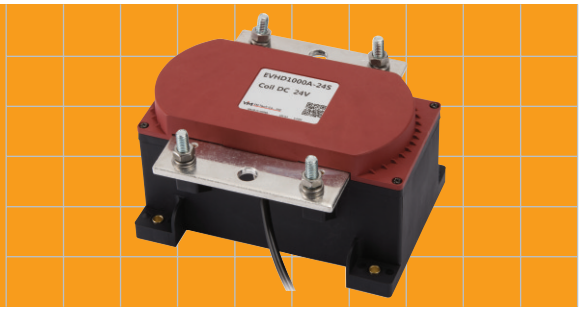
Permissible load of Aux. contact



DC HIGH VOLTAGE Bi-directional
SWITCHING RELAY

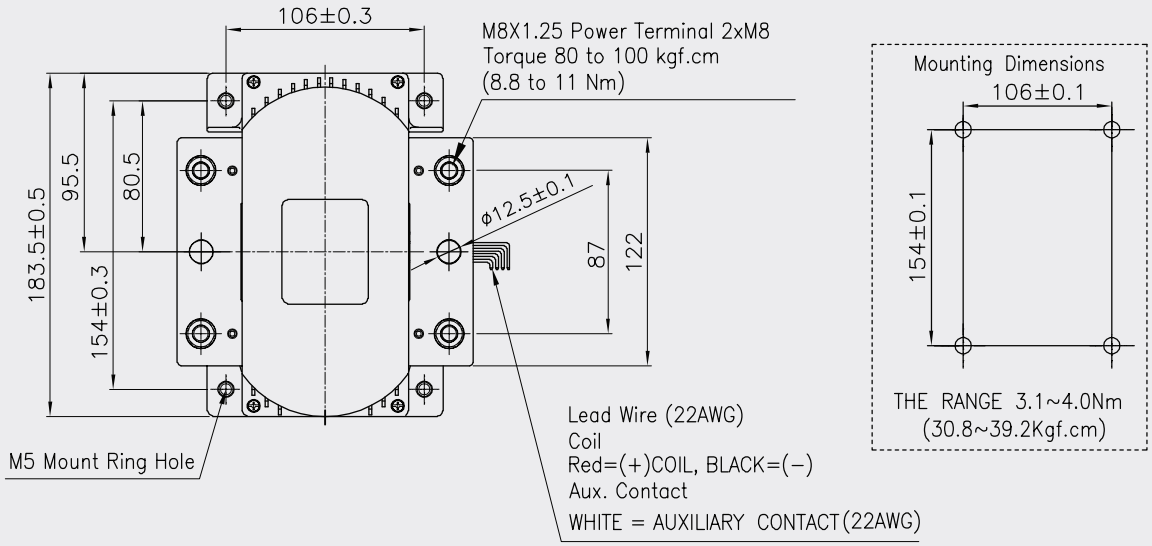
EVHD1000

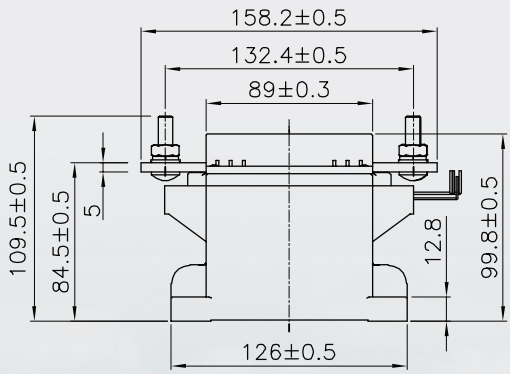
(Double Switching Device)

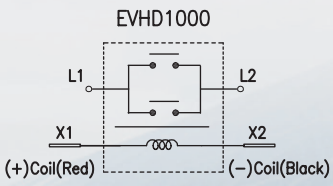


외형치수도 (Dimension in mm)

공차 (Tolerance) : 10mm 이하 ±0.3, 10~50mm ±0.6, 50mm 이상 ±1.0





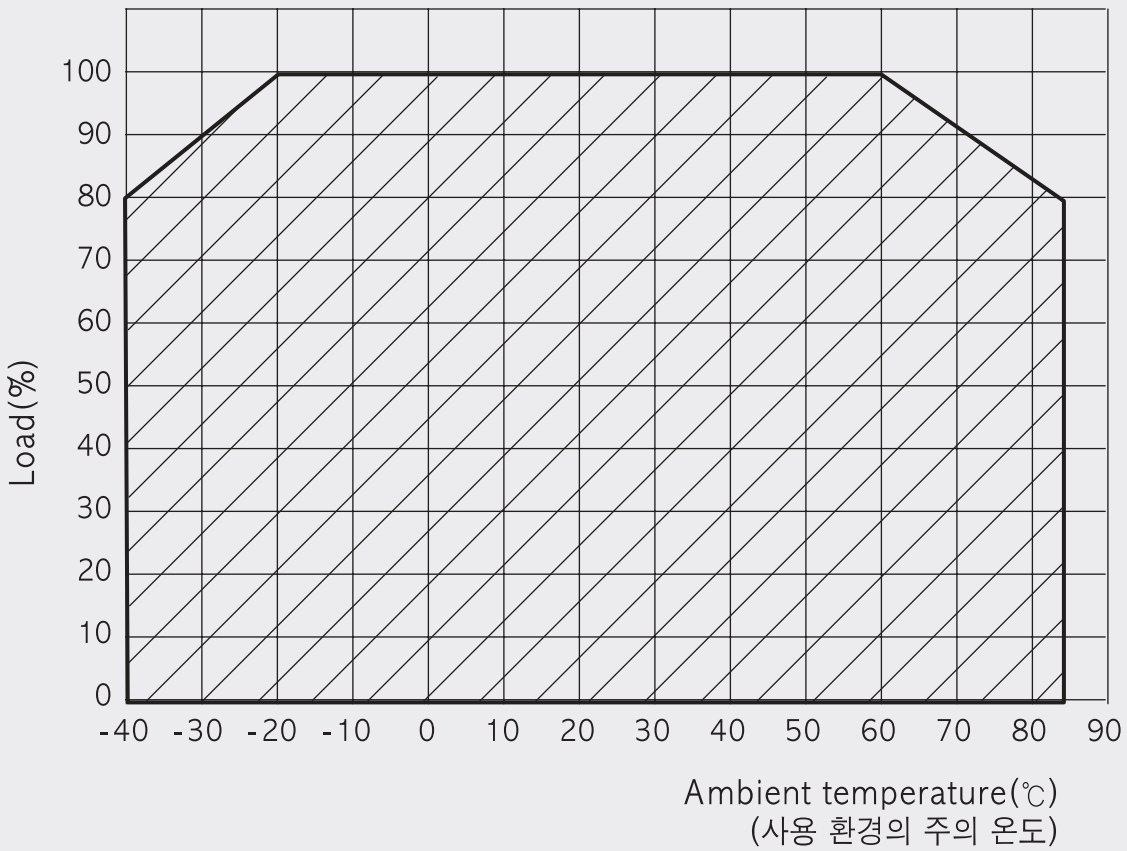


Contact De-rating factor :
Ambient temperature

De-rating

EVR Relay의 온도에 따른 주접점의 De-rating 계수

(Contact De-rating factor : Ambient temperature)



YMT EV Relay Features

1. YM Tech EV 릴레이는 밀폐형 릴레이로 내부에 산소 및 유기가스를 완전히 제거하여 접점의 산화 및 탄화를 방지하여 언제나 신품 같은 접촉 신뢰성을 유지합니다.
2. 밀폐형(IP67) 등급으로 아크가 분출되지 않기 때문에 점화 가능성이나 유해한 환경에서 안전하게 사용 가능합니다.
3. YM Tech EV 릴레이는 사용 전압이 직류 450V로 동종 릴레이 중 가장 높고, 정격 전류에서 전기적 수명이 동종 릴레이 중 가장 긴 것이 YM Tech 릴레이의 특징 입니다.
4. EVR 100 이상은 릴레이의 동작을 확인하고, 통신에 활용 할 수 있도록 보조 접점을 내장하였습니다.
5. EVR 400 이상은 코일에서 소모하는 전력을 절감하기 위하여 에너지 saving 회로를 채용하여 전기 자동차의 효율을 높이는데 기여 합니다.
6. LDC350은 투입과 개방 동작 시에만 코일에 약 30mS의 에너지만 공급하고 자동 차단합니다. 유지 상태는 코일에서 에너지를 전혀 소비 않는 래치 메커니즘을 장착하였으며, EV 래치 릴레이 최초의 설계 입니다. 또한, 동작, 복귀 시 계속 전원이 인가 되여도 내부의 회로에서 판단하여 30mS의 동작과 복귀에 필요한 에너지만 공급하고 자동 차단되여 별도의 제어회로가 필요 없습니다. 태양광 발전 판넬의 직류 스위칭에 적합하고 원거리에서 On, Off가 가능하며, 에너지 충,방전용 배터리 제어에 적합한 친환경적인 래치 릴레이 입니다.
7. 전선을 연결하는 단자는 고온에 열화 되지 않아 견고하고 마모, 파손의 고장 위험이 없습니다.

1. As YM Tech EV Relay is a closed-type relay, it completely removes oxygen and organic compound emissions inside and prevents the contact from being oxidized and carbonized, which keeps the contact reliability as brand-new all the time.
2. As an Arc is not erupting with closed type (IP67), it is not likely to be ignited and can be safely used in harmful environments.
3. This YM Tech EV Relay's using voltage is a direct 450V, which is the highest among relays of the same kind. At rated current, its electrical life is the longest out of the same kind of relays.
4. As for ones over EVR100, an auxiliary contact is built in order to check the movements of relay and be able to use for communication.
5. As for ones over EVR400, an energy saving circuit is equipped to save electric power consumed in coils, which contributes to raising the efficiency of electric vehicles.
6. For LDC350, it only supplies approximately 30mS' energy to coils and shuts off automatically, only when moves such as opening and inserting are observed. And a Latch mechanism which doesn' t consume any energy in coils at ordinary state is built, and is regarded as the first design of EV Latch Relay. Furthermore, although power is continuously supplying when in motion and returning, the inside circuit judges itself and supplies only necessary energy for 30mS' movements and returning, and then automatically shuts off which doesn't need an extra control circuit. It is suitable for direct switching of solar panels and can be controlled by On and Off at a long distance. This is an eco-friendly latch relay fit for controlling the batteries of energy charging/discharging.
7. As the terminal connected to wires isn't affected by high temperature, it is solid and there is no failure risks of abrasion and breakage etc.

YM YM Tech Co., Ltd.

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Specifications are subject to change without notice for improving product's performance.

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