

GER-400ST

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APPROVED BY _____

CHECKED BY _____

■ Rating

Pole	1		
Rated insulation voltage	DC500V(over 100MΩ)		
Rated withstand voltage	AC 2.5kV / min, AC 3.0kV / sec (Detection Current : less than 10mA)		
Rated operational Voltage	DC450V		
Continuous Current	400A		
Rated operational Current Ie(A)	L/R<1ms	DC450V	400A
Short time Current (Over Current)	2min	800A(150mm ²)	
	7min	600A(150mm ²)	

■ Coil Data

Rated Voltage	DC12V	DC24V
Pick-up Voltage(Initial at 20°C)	Max. DC9V	Max. DC18V
Drop -out Voltage(Initial at 20°C)	Min. DC1.2V	Min. DC2.4
Max. Allowable Voltage	DC16V	DC32V
Max. Power Consumption (at 20°C)	Under 4.5W	Under 4.5W

■ Degrees of protection of enclosed equipment IP :IP40

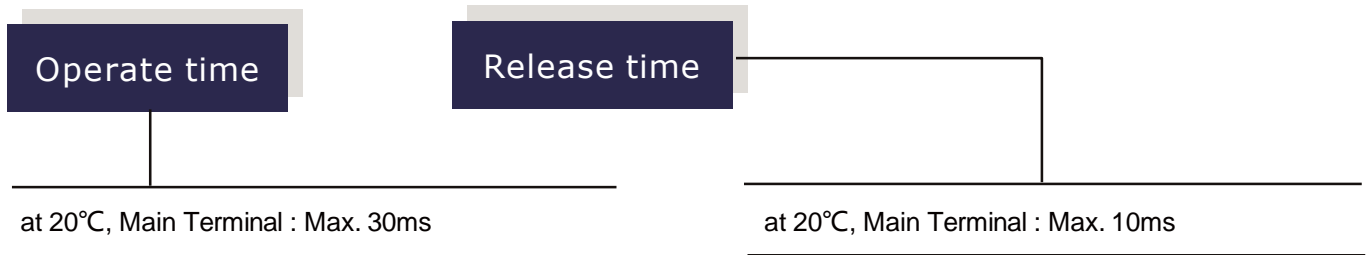
■ Expected Life

Electrical Life	(L/R<1ms)	400A at DC450V 1,000Cycle(360 Cycle / Hr)
	(L/R<1ms)	200A at DC450V 3,000Cycle(720 Cycle / Hr)
Reverse Direction Cut-off	400A at DC200V 1,000Cycle(60 Cycle / Hr)	
Mechanical	Min. 200,000ops(3600 Cycle / Hr)	

■ Initial Breakdown Voltage(IEC60255-7)

Each Main Contacts(Open)	2500Vrms/ min(Detection current:10mA)
Contact & Coil	2500Vrms/ min(Detection current:10mA)
Contact & Frame	2500Vrms/ min(Detection current:10mA)
Coil & Frame	2500Vrms/ min(Detection current:10mA)

* Coil should not work when you check breakdown voltage.
If you need to check breakdown voltage when the coil working, please consult with LSIS.



■ Initial Insulation Resistance(IEC60255-7) :Min. 100M Ω (at DC500V)

* Between Coil & Contacts,Between Contacts of same polarity.

■ Vibration Resistance(ES95400-10 3.6.2-1)

Functional : 10 to 1,000Hz at 1.0G
Detection time : 10 μ s, Time of vibration for each X,Y,Z direction(8hours)
Destructive : 10 to 200Hz in increments of 10 @Min. 4.5G
Time of vibration for each X,Y,Z direction : 4hours

* Caution : Vibration amplification because of resonance.

■ Shock Resistance(IEC60255-7)

Functional : 196m/s²(20G)
Detection time : 10 μ s, Relay On(11ms half sine)
Destructive : 490m/s²(50G)
Relay On(9ms half sine wave)

* Caution : Vibration amplification because of resonance

■ Tightening torque / Unit Weight

Mounting Hole(M6)	6 to 8N·m*
Main Terminal (M6)	6 to 8N·m*
Unit Weight	Approx. 622g

*1. Caution : Please use BOLT when you fixed Relay mounting.

*2. Caution : Should be use 10~12mm bolt length.(Excepted busbar or terminal thickness)

■ Operation, Transport, Storage

Ambient Temperature	-40 to 85°C
Ambient Humidity	5 to 95% R.H
Storage Temperature	-40 to 85°C
Storage Humidity	5 to 95% R.H

* Above is the condition of ambient temperature and humidity in case of operation,transport and storage.

■ Certificated

IEC60947-5-1	(Low-voltage switchgear and control gear – Part 5-1: Control circuit devices and switching elements –Electromechanical control circuit devices)
GB14048.5	(Same with IEC 60946-5-1)

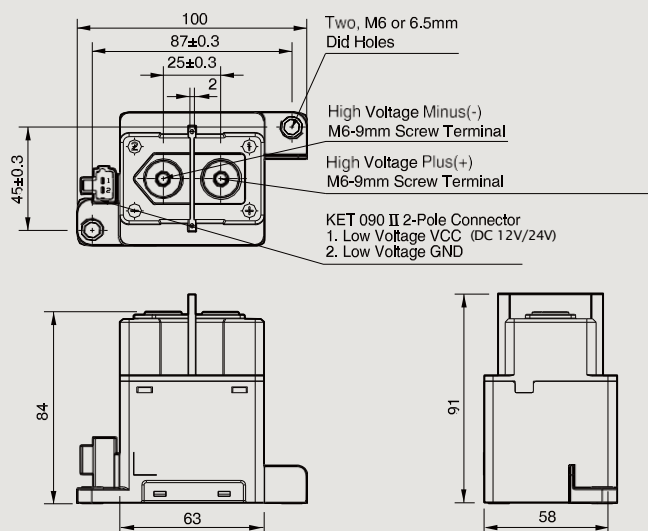
■ Contact Data

Min. Continuous Current	1A/DC12V, 1A/DC24V*
Max. Cut-off current(L/R < 1ms)	3,200A at DC450V 1Cycle
Contact Voltage Drop(Initial)	0.02V at 20A

* May be the contactor resistance will be going up,if you used relay without current.



Dimension



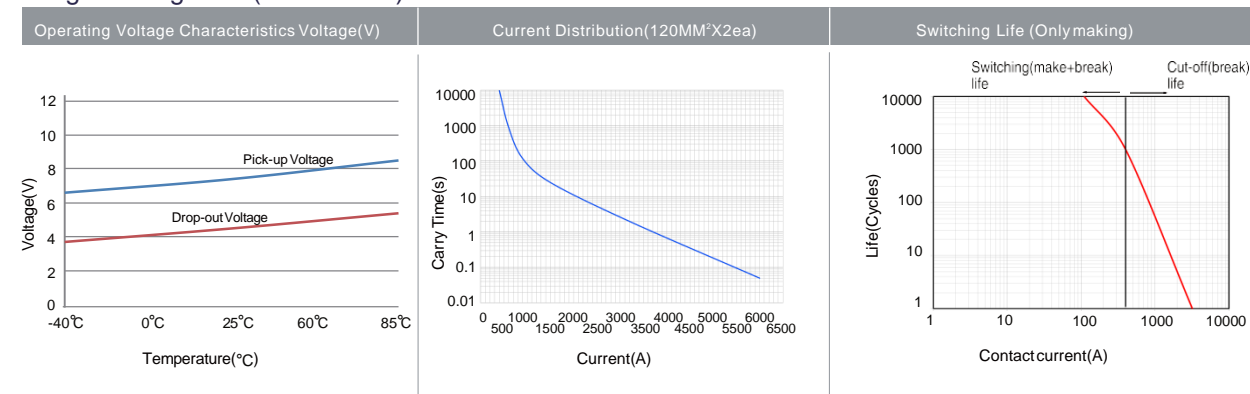
General Tolerance

Less Than 10: ± 0.25 / 10~50: ± 0.5
More Than 50: ± 0.8

Coil Terminal Accessory

Housing:MG651026(L)			Terminal:ST730676-3		Accessory(Not included)	
Part No.	Wire Range		Tab Thick	Material		Components
	AWG	mm ²		Thick	Finish	
ST730676-3	18-16	AVSS(CAVS) 0.85~1.25	0.64	0.25	Copper Alloy Pre-Tin	Standard Connector 1EA Flange Bolt M6-7 2EA

Engineering Data(Reference)



■ Cautions for use

● Main Contactor

1. Length of bolts to main contacts of relay should be 6~8mm except bus bar/terminal.
2. Contacts of relay can be oxidized in the air causing some discoloration, but there is no problem to use.
3. Excessive load input to main contacts and over-life may cause heat generation.
4. Avoid oil or foreign substances adhering to main contacts, there may be heat generation to the contacts.
5. Contact resistance may increase due to torque applied to the main contacts or vibration / shock during moving.
In this case, please re-measure by applying voltage / current of actual use condition.

● Mounting

1. Use the torque range specified in catalog, when tightening screws and nuts to fixed mounting or main contacts.
2. We generally recommend tightening the relays using bolts.
When using nuts, the fixed mounting injection part may be pushed and broken. (Use a flat nut when using nuts.)
3. When designing the fixed mounting mounted to relay, please make sure that injection area is not pressed.
Fixed mounting of the relay can be broken.

● Coil

1. Do not turn off the coil while power is supplied to the main contacts of relay. The relay may be damaged.
2. Excessive load input to coil part may cause heat generation.
3. If voltage is applied slowly to the coil, the relay may not operate. Please operate the coil promptly.
4. When load is applied to main contacts and relay coil turns on/off, coil temperature rises so that coil resistance can rise.
In this case, operating voltage may exceed the rated voltage.
To avoid this situation, we recommend that you take precautions such as increasing the load current, limiting voltage application time, and applying high coil voltage and nominal voltage.
5. When measuring the withstanding voltage(Initial Breakdown Voltage), measure the relay in OFF state.

● Installation

1. Please avoid cross-connection as it may cause malfunction or overheating.
 2. If distance between relays is close or if heat generating parts are located close to relay, be careful of temperature rise and insulation (minimum distance between relays is at least 10mm).
 3. Use a conductor suitable for the specific current. Failure to meet recommended size(SQ) of conductor may cause heat problems. (It is necessary to consider the condition when installing the module)
 4. When wiring, make sure that the power supply is disconnected. Relays can be damaged.
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■ Cautions for use

● Environment

1. Use pick-up / drop-out voltage according to the operating environment. Pick-up / drop-out voltage may vary.
2. Relay life may vary depending on load type used, operating frequency, coil drive circuit and surrounding environment.
3. When using a capacitor, make sure that inrush current should not exceed the rated current of relay (95% or more capacitor charging is recommended)
4. When using inductive load L / R 1ms, measures such as installing surge absorbers in parallel should be taken in order to prevent shortening of electrical life or contact failure.
5. Do not install relays near objects that emit strong magnetic fields or heat.
6. If relays are installed close to each other or near magnetic parts such as motors and speakers, the relays may change operating characteristics or cause malfunctions. Therefore, check the performance under actual operating conditions, after installation.
7. If a product such as current sensor is installed near relay, check the performance under actual operating conditions. There may be a problem to output.
8. When pulling lead wire of the female connector on the opposite side, do not pull it with a force of more than 0.5N. There may be a problem with the product.
9. This product is not waterproof. (IP40)
10. Do not use the product in an environment where organic solvents such as alcohol, benzene, thinner, and strong alkali (ammonia or caustic soda) can easily adhere to the product.
11. Additional components should not be applied to the relay housing.
12. Please note that welding may occur in following environments
: inrush current, shutdown, short circuit, low coil voltage, fuse combination
13. Make sure that resonance does not occur at relay mounting area. Vibration values guaranteed may be exceeded due to the resonance.
14. Do not use products that have fallen during use or transportation. It may cause malfunction.
15. If temperature changes suddenly, there may be a problem with current-carrying of the relay.