High Voltage DC Contactor

GVB35 1000VDC BI-DIRECTIONAL CONTACTOR

Features

- Gas filled design offers lower resistance than non-hermetic switches resulting in higher system efficiency and less heat generation. Meet IP67 level.
- Suppression gas allows high fault interrupt capability and prohibits oxidation---Strong capability of cooling arc, rapidly breaking current.
- High Efficiency Dual DC Coils – Very low 12, 24, or 48 VDC continuous coil power with no EMI emissions or cross-talk on your system control power. Ideal for battery powered systems or where low power is needed.
- Built-in coil suppression for all DC coils – Saves you engineering time and parts cost to add external coil suppression.
- Not position-sensitive – can be mounted in any position for ease of installation.
- Certification: CE/CCC, UL 60947-4-1

Applications

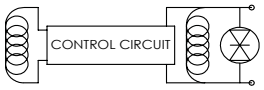
- DC fast charging
- Energy storage systems
- Battery electric special mobility

SPECIFICATIONS

Electrical & Performance

Specifications		Data
Rated Voltage (V)		1000
Nominal Current (A)		500[9]
Contact Arrangement	**Main**	SPST-NO
	Auxiliary[1]	SPST-NO
Mechanical Life (cycles)		300,000
Contact Resistance[2] **(MΩ)**	**Max**	0.2
	Typical	0.15
Short Circuit Withstand Current (ms)		20@4,000A
Insulation Resistance[2] **(MΩ)**		100@1000VDC
Dielectric at sea level (leakage<1mA)		4000VAC
Shock, ½ Sine, 11ms	**Actuated (closed)**	50G
	Non-Actuated (open)	25G
Vibration, Sinusoidal (10-2000Hz Peak)		25G
Environmental Seal		IP67 & IP69K
Salt Fog		MIL-STD-810
Max. Break Current @ 400V[7] **(1 cycle)**		±2000A
Max. Break Current @ 1000V[7] **(1 cycle)**		±500A
Electric Life (cycles)[7]	**Break**	6,000@1000VDC/80A
		20@1000VDC/250A
		100@850VDC/300A
		300,000@450VDC/20A
	Make	300,000@10VDC/50A
		1,000@450VDC/1350A

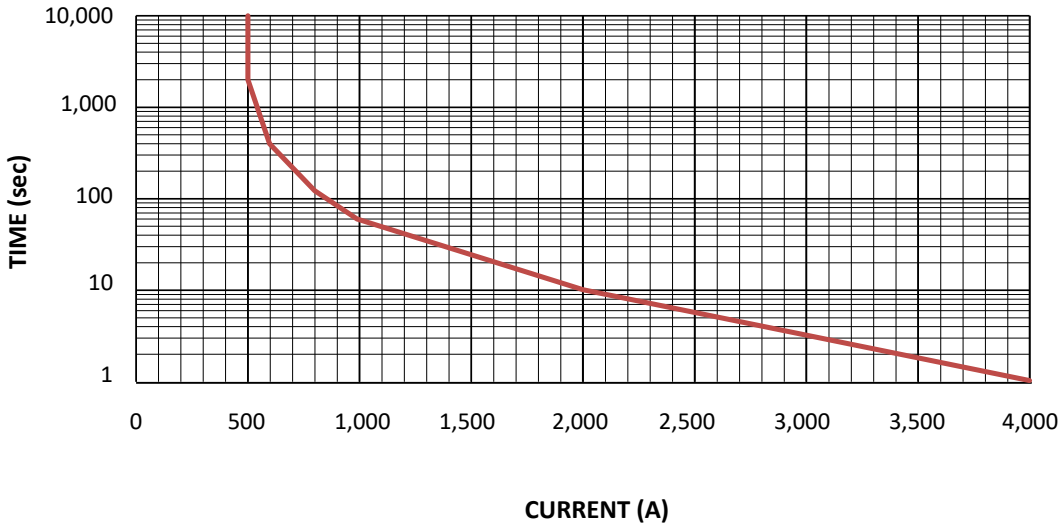
COIL RATINGS at 25°C

Coil P/N Designation	B[6]	C[6]	F[6]
Coil Voltage, Nominal (VDC)	12	24	48
Coil Type	Dual	Dual	Dual
Coil Voltage, Max (V)	16	32	64
Pick-Up Voltage, Max[3,5] (V)	8	16	32
Drop-Out Voltage[3] (V)	0.5	2	4
Pick-Up Current, Max[4] (A) (75 ms)	3.9	1.6	0.97
Coil Current[5] (A)	0.23	0.097	0.042
Coil Power[3] (W)	2.8	2.3	2.0
Operate Time, Max[8] (ms)	20		
Release Time, Max (ms)	12		
Internal Coil Suppression	TVS 		
Coil Back EMF (V)	55	55	125
Transients, Max (V) (13 ms)	±50	±50	±75
Reverse Polarity (V)	16	32	64

CURRENT CARRY RATINGS

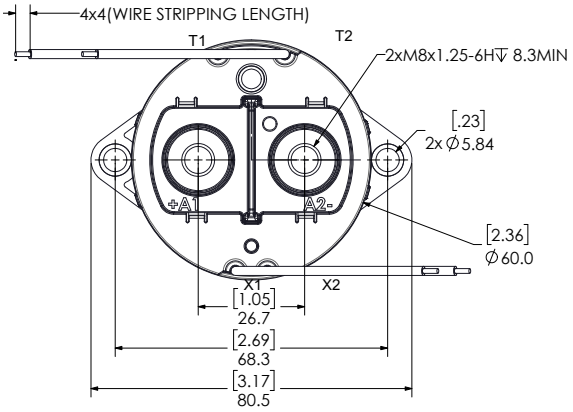
CURRENT CARRY vs TIME

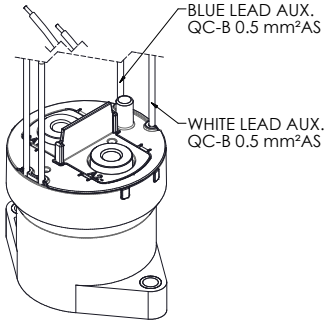
With 85 °C terminal temperature rise (Busbar 400MCM)

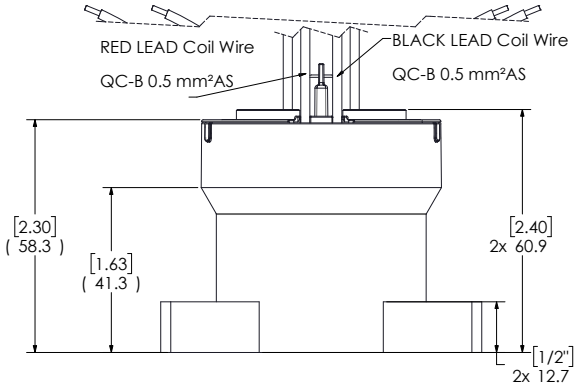


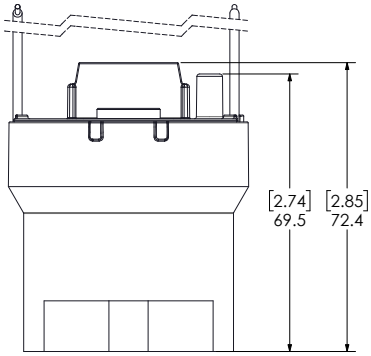
DIMENSIONS

Dimensions are in mm (inches).









Auxiliary Leads

B=SPST-NO
Blue Lead = T1
White Lead = T2
(Refer to Ordering Options section)

Coil Leads

Red Lead = X1(+)
Black Lead = X2(-)
(Refer to Ordering Options section)

Mounting

M5 or No. 10 Screws
Torque 1.7-4 Nm

Power Connection

Silver Plated Copper M8x1.25 Terminals
Torque 10 Nm [90 in-lb] max

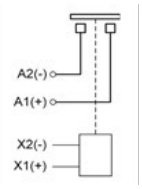
Temperature and Weight

Operating ambient Temp Range = -55 to +85°C
Storage ambient Temp Range = -70 to +150°C
Weight, typical = 0.44 kg (0.97 lb)

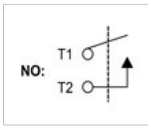
Packaging

24 units per shipping box
21 in x 18 in x 4 in shipping box

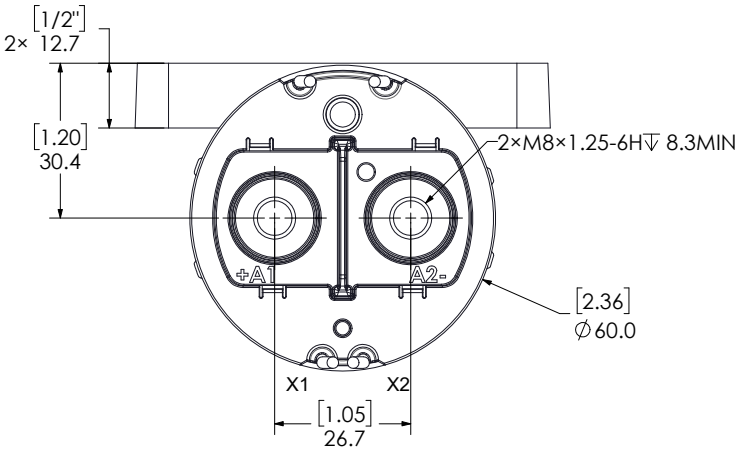
Power Contacts

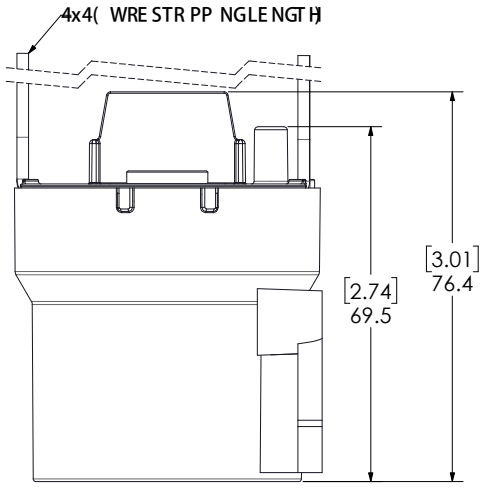


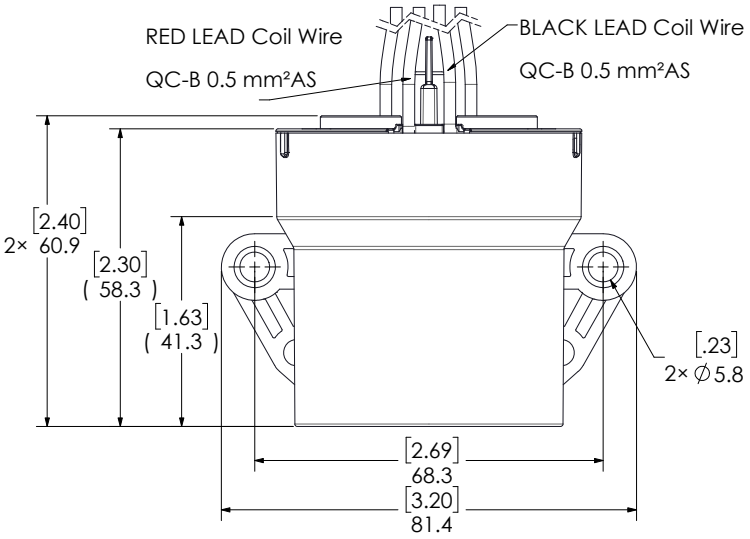
Auxiliary Contacts

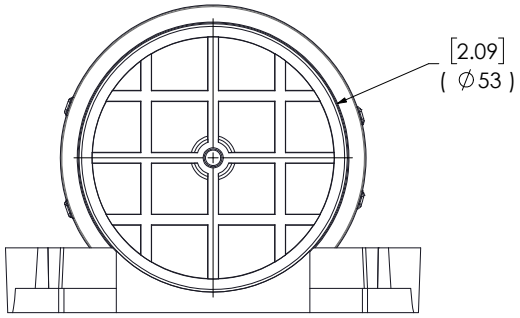


SIDE MOUNT DIMENSIONS









ORDERING OPTIONS

Example: GVB351BAB

GVB35	1	B	A	B

Family

GVB35

Mounting

1= Upright
2= Side

Coil Voltage

B= 12 Vdc, Internal Coil Suppression
C= 24 Vdc, Internal Coil Suppression
F= 48 Vdc, Internal Coil Suppression

Coil Termination

A=Flying leads, 30 cm (12 in)
B=Flying leads, 61 cm (24 in)
C=Flying leads, 122 cm (48 in)

Auxiliary Contacts

X= None
B= SPST-NO normally open

GENERAL NOTES

1. Auxiliary contact rating is 2A, 24Vdc Resistive load, 100,000 cycles. Minimum current is 0.1mA, 5V. The auxiliary contact is mechanically linked to the main power contacts.
2. Insulation resistance is 50 MΩ after life.
3. Because the contactor is operated by a coil that changes resistance with temperature:
   Maximum coil voltage will be lower than indicated at temperatures above 25°C, and higher than indicated at temperatures below 25°C.
   And because Nominal Coil Voltage has been assumed for the Pick-up Current, Coil Current and Coil Power specifications, Current/Wattage will be lower than indicated at temperatures above 25°C and higher than indicated at temperatures below 25°C.
   Pick-up Voltage and Drop Out Voltage will be lower than indicated at temperatures below 25°C and higher than indicated at temperatures above 25°C.
4. Contactor has two coils. Both are used for pick-up, and then in approximately 75 milliseconds, one coil is electronically removed from the coil drive circuit. The remaining coil supplies low continuous hold power sufficient for the contactor to meet all its specified performance specifications. This provides the lowest coil power possible without the use of PWM electronics that have been known to cause EMI emissions and/or cross-talk on your system control power.
5. For Pick-up testing of contactors with dual coils, the voltage cannot be ramped up slowly, but must be applied instantly to at least the maximum Pick-up Voltage or Current. Otherwise, the contactor will not pick-up.
6. These DC coils have built-in coil suppression. The use of additional external coil suppression can slow the release time and invalidate the life cycle ratings, or can cause the contactor not to be able to interrupt the maximum current specified. If lower coil back EMF is required, please contact GIGAVAC for assistance.
7. All contact ratings and coil versions may not be UL recognized. Contact GIGAVAC for a copy of the applicable sections of the test report.
8. Operation time is measured at 25°C and includes maximum 7ms bounce.
9. Terminal temperature should be kept under 150°C under continuous carry conditions at an ambient of 85°C by applying the correct conductor size or active cooling. Failure to do so can result in overheating of the assembly and end of life of the product. Ambient temperature can impact terminal temperature rise and should be considered in the end application testing. UL recognized components are limited to 130°C external temperatures (Housing positions: top, middle and bottom). Please contact GIGAVAC for detailed information.

TECHNICAL NOTES

- Contactors feature internal transient voltage suppressor for coil suppression. No external diodes should be added across the coil.
- Applications with capacitors will require a pre-charge circuit.
- Electrical life rating is based on resistive load with 27µH maximum inductance in circuit. Because your application may be different, we suggest you test the contactor in your circuit to verify life is as required.
- End of life is defined as when the dielectric, insulation resistance or contact resistance exceeds the specifications listed.
- Please avoid impact or drop of the contactor during application or transportation. In order to maintain the performance of the contactor, it is not recommended to continue to use the contactor after impact or fall.

WARNINGS

RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE
- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

Failure to follow these instructions can result in serious injury, or equipment damage.

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

Failure to follow these instructions will result in death or serious injury.

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