

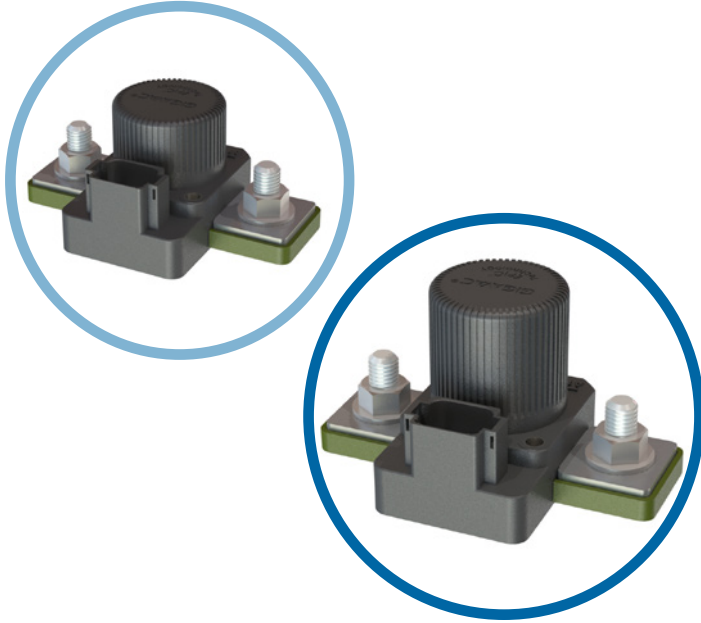


# | MXC Smart-Factor™

600+ AMP, 48 VOLT CAN-BUS CONTACTOR

## Introduction

Contactors with CAN Bus communication reporting current, voltage, temperature, status, cycle count, and more. Other features include overcurrent trip points, undervoltage and overvoltage setpoints, power-up state, and delay-on break.



## Features

- Chassis level power terminals – No need for specially routed power cables, special bus bars, or unique lugs.
- Rugged ceramic seal rated to 175°C – Reduced risk of fire or meltdown in over current conditions. The same technology used for advanced aerospace programs.
- Hermetically sealed gas filled chamber – Designed to meet: UL1604 for Class I & II, Div 2 and Class III for use in hazardous locations, IP67 for temporary water immersion for 30 min, IP69K for pressure washing, SAE J1171 – external ignition protection, ISO8846 for protection against ignition around flammable gasses, and MIL-R-6106.
- High Efficiency Dual DC Coils – Very low continuous coil power with no EMI emissions or crosstalk on your system control power.
- Built-in coil suppression for all DC coils – Eliminates the cost and engineering time to add external coil suppression.
- Orientation invariant – Can be installed in any orientation without a reduction in performance



## SPECIFICATIONS

Series		15 (350 A)	16 (600 A)
<b>Contact Arrangement</b>		SPST-NO (Form X) – Silver Alloy	
<b>Contact Voltage Rating</b>		12-48 V	
<b>Insulation Resistance (A1-A2, A1&amp;A2 to controls)</b>		500 V, 100 MΩ (50 MΩ after life)	
<b>Dielectric (A1-A2, A1&amp;A2 to controls)</b>		2200 VAC, 60 Hz, leakage <1 mA	
<b>Contact Resistance<sup>1</sup></b>	<b>Max</b>	0.4 mΩ	0.3 mΩ
	<b>Typical</b>	0.15 to 0.3 mΩ	0.11 to 0.2 mΩ
<b>Current (see chart for Temp. derating)</b>		350 A (400 MCM)	600 A (500 MCM)
<b>90s</b>		1000 A	1500 A
<b>10s</b>		2000 A	3000 A
<b>1s</b>		3000 A	4000 A

## Resistive Load Switching

Series		15 (350 A)	16 (600 A)
<b>Mechanical Life (no load switching)</b>		300,000 cycles	
<b>Resistive switching @ 28V</b>		100,000 cycles @ 350 A	100,000 cycles @ 600 A
<b>Fault interrupt (1 cycle)</b>		3000 A	5000 A

## Environmental Specifications

Series	15 (350 A)	16 (600 A)
Weight	1.6 lbs, 725 g	2 lbs, 910 g
Shock	20 G	
Vibration	15 G	
Ambient Temp Range	Operating <sup>4</sup>	-55 to +85 °C
	Storage	-70 to +150 °C
Max Terminal Temperature	125°C	
Environmental Seal	Exceeds IP67 & IP69K	
Salt Fog	MIL-STD-810	

## Timing (Max Values @ 25°C)

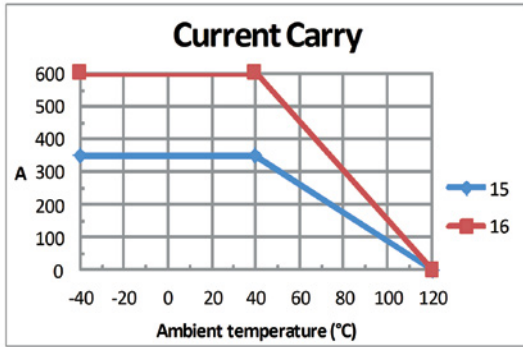
Series	15 (350 A)	16 (600 A)
Operate Time <sup>2</sup>	Max	20 ms
	Typical	13 ms
Release Time, Max	12 ms	7 ms
Operate (including bounce)	20 ms	
Inrush	75 ms	

## Coil Ratings (25°C, Currents & Power At Nominal V)

Series	15 (350 A)		16 (600 A)	
	B	C	B	C
Coil P/N Designation				
Coil Voltage (Nominal)	12 V	24 V	12 V	24 V
Coil Voltage (Max)	16 V	32 V	16 V	32 V
Coil Voltage (Min) <sup>5,7</sup>	9 V	17 V	9 V	17V
Inrush Current (Max) <sup>5,6</sup>	3.9 A	1.6 A	3.8 A	1.9 A
Hold Current after Inrush (Max) <sup>6</sup>	0.23 A	0.097 A	0.64 A	0.32 A
Coil Hold Power (Max) <sup>6</sup>	2.8 W	2.3 W	7.7 W	7.8 W
Coil Back EMF <sup>3</sup>	0 V			
Transients on Power Pins (2, 7)	+50 V, 13 ms			
Vin Power Pins (2, 7) Reverse Polarity (Max)	-80 V			
For coil temperature info please see App Note	#8	#9	#12	#13



## CURRENT CARRY VS TEMPERATURE



## SOFTWARE PARAMETERS

Parameter	Data
Current Trip Setting Range	± (20 A – 600 A)
Current Sense Accuracy	±7%
Over Current Response Time	2 ms + release time



## DIMENSIONS

All dimensions are +/- 0.5mm unless otherwise shown.

### Mounting

M6 Bolts

### Case Material

DuPont Zytel FR50  
(25% Glass Filled Nylon)

### Power Connection

Zinc Plated M12x1.75 Bolt  
Stainless M12x1.75 Flanged Nut  
Torque 23-34Nm [200-300in-lb]

### Mating Connector

Gigavac offers the required mating connector as an assembled unit (0857-9/10) or as a component package, see Accessories.

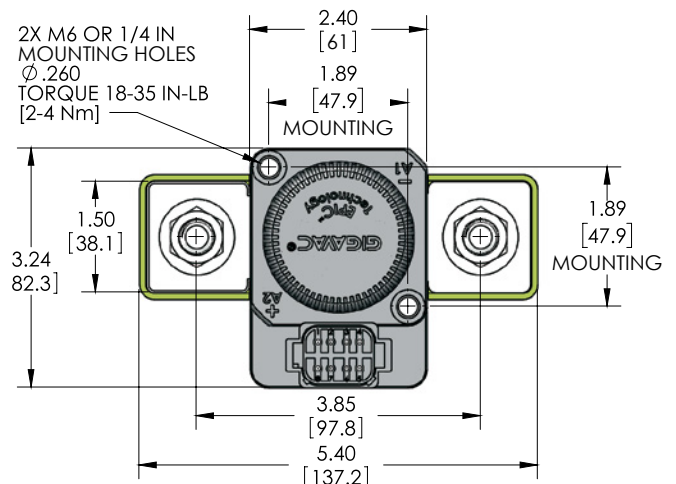
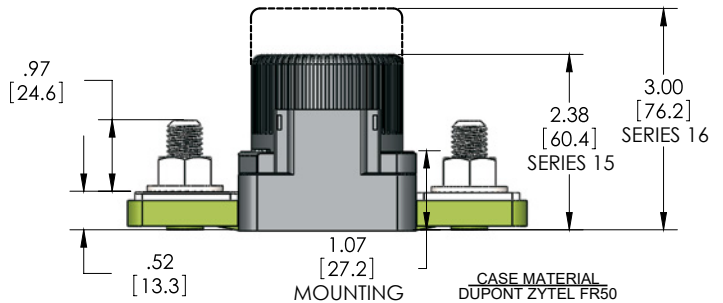
Deutsch Connector Housing P/N: DT06-08SA

Solid Contact Socket P/N: 0462-201-16141

Wedge Lock P/N: W8S

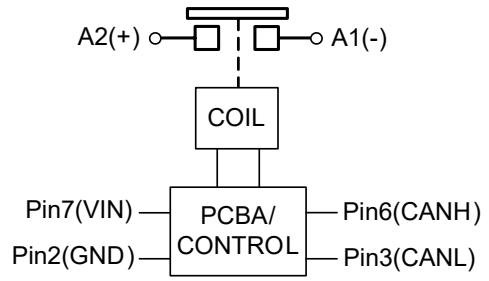
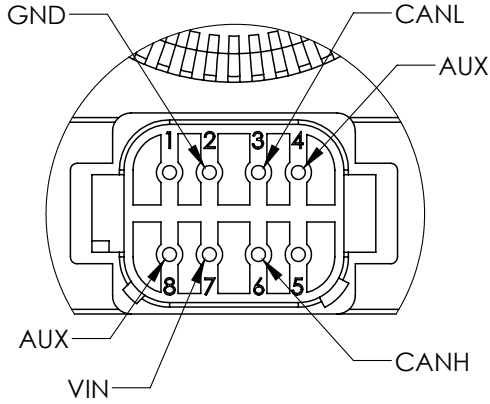
Sealing Plug P/N: 114017

Crimp Tool P/N: HDT-48-00





## POWER CIRCUIT AND INSTALLATION

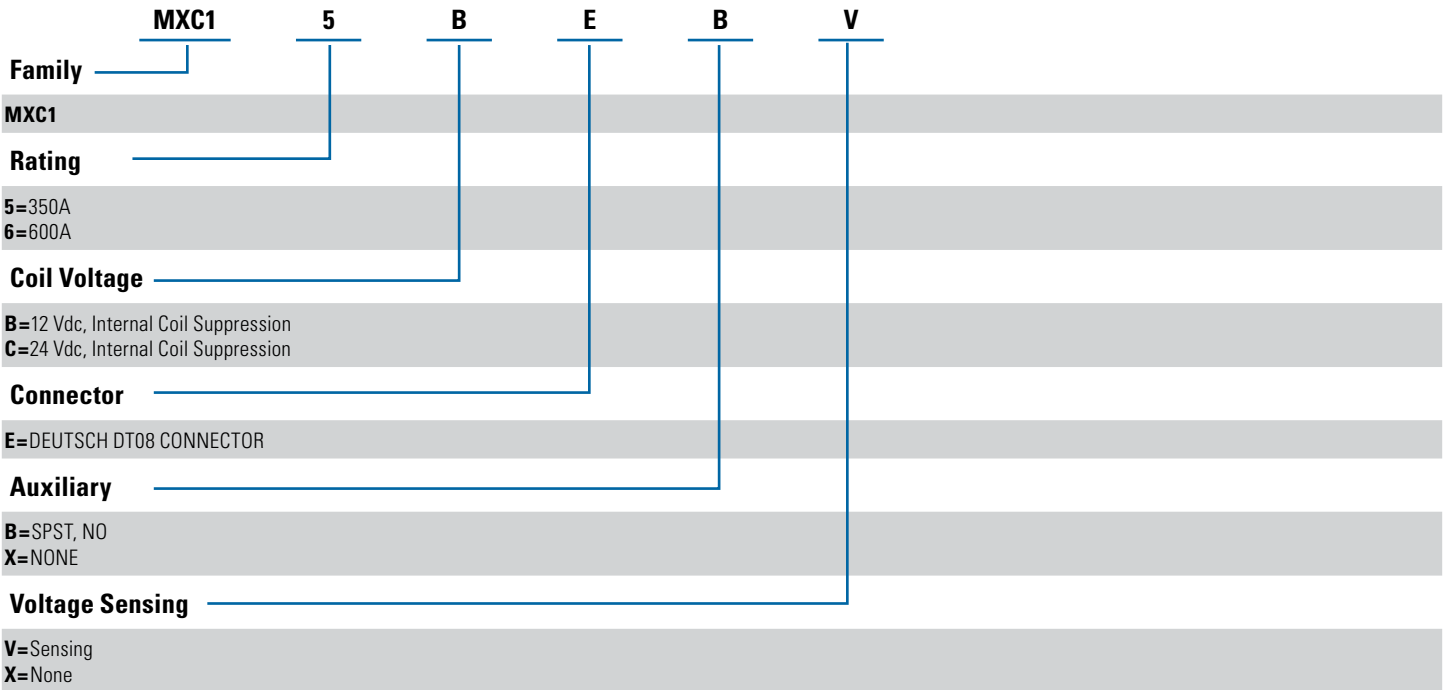


To enable internal 120Ω CAN termination: Jumper Pin1 and Pin5.



## ORDERING OPTIONS

Example : MXC15BEBV





## FOOTNOTES

1. Contact resistance measured at currents higher than 100A.
2. Operation time is measured at 25°C and includes maximum 7ms bounce.
3. Insulation resistance is 50 Mohms after life.
4. Contactor can operate up to 125°C ambient in special cases as long as the max terminal temperature is not exceeded.
5. 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 of its specified performance specifications. This provides low coil power without PWM electronics that can cause EMI emissions and/or cross-talk on control power.
6. Contactor is operated by a coil that changes resistance with temperature. Since inrush current, hold current and coil hold power are specified at nominal voltage, they will be lower than indicated at temperatures above 25°C and higher than indicated at temperatures below 25°C. Similarly, pick-up and drop-out voltages will be higher than indicated at temperatures above 25°C and lower than indicated at temperatures below 25°C.
7. The coil voltage cannot be ramped. It must be applied instantly at the required voltage and duration to ensure proper operation.
8. Limit make current to the rated continuous current to avoid contact welding.
9. Coils are switched internally with a FET, so no fly-back/suppression voltage is seen at the coil inputs.
10. The CAN communication protocol and .DBC file can be found on our website.



## TECHNICAL NOTES

1. Switching lifecycles is based on current flow from A1(+) to A2(-). For best breaking performance, the contactor should be installed so that current flows from A1(+) to A2(-). Break current flow in the opposite direction will result in reduced performance during break and will consume the useful life of the contactor much faster. Direction of current flow is not relevant during make or when flowing on closed contacts.
2. Applications with capacitors will require a pre-charge circuit.
3. Electrical life rating is based on resistive load testing with 27µH maximum inductance in the circuit. Because each application is different, it is highly recommend to test the contactor under worst-case operating conditions to ensure the performance meets your application requirements.
4. Contactor end-of-life (EOL) is defined as when the dielectric, insulation resistance, or contact resistance exceeds the specifications listed.

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Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

### Americas

Sensata GIGAVAC  
Contactor Center of Excellence  
6382 Rose Lane  
Carpinteria, CA 93013  
USA

Tel: +1 (805) 684 8401  
Email: [gigavac@sensata.com](mailto:gigavac@sensata.com)  
Sensata Global Headquarters  
Sensata Technologies  
529 Pleasant Street  
Attleboro, MA 02703  
USA

### Europe, Middle East & Africa

Sensata Technologies Holland B.V.  
Jan Tinbergenstraat 80  
7559 SP Hengelo  
The Netherlands  
Tel: +31743578000  
Email: [gigavac-info-eu@list.sensata.com](mailto:gigavac-info-eu@list.sensata.com)

### Asia Pacific

China  
Sensata Technologies China Co., Ltd.  
BM Intercontinental Business Center  
30th Floor  
100 Yu Tong Road  
Shanghai 200070  
People's Republic of China  
Tel: +8621 2306 1500  
Email: [contactorasia@list.sensata.com](mailto:contactorasia@list.sensata.com)

Japan  
Sensata Technologies Japan Ltd.  
Shin Yokohama Square Bldg. 7F  
2-3-12 Shin-yokohama  
Kohoku-ku, Yokohama-shi,  
Kanagawa 222-0033  
Tel: +81 45 277 7001  
Email: [contactorasia@list.sensata.com](mailto:contactorasia@list.sensata.com)

## CONTACT US