

686 Series Solenoid PRODUCT SPECIFICATION SHEET

Product Facts

- Designed to be the smallest, lightest weight, lowest cost sealed contactor in the industry with its current rating (500+A carry, 2000A interrupt at 320VDC).
- Built-in coil economizer – only 1.7W hold power @ 12VDC to 96VDC and it limits back EMF to 0V. Models requiring external economizer also available.
- Optional auxiliary contact for easy monitoring of power contact position.
- Hermetically sealed – intrinsically safe, operates in explosive/harsh environments with no oxidation or contamination of coils or contacts, including long periods of nonoperation.
- Versatile coil/power connections.
- AIAG QS9000 designed, built and approved



Typical applications include battery switching and back-up, DC voltage power control, circuit protection and safety.

Performance Data

Parameter	Units	Value for 686 Series
Contact Arrangement, power contacts		1 Form A (SPST-NO)
Rated Operating Voltage	VDC	12 - 96
Continuous (Carry) Current, Typical	A	500 @ 65C, 400 mcm conductors
Make/Break Current at Various Voltages ^{1/}	A	See next page
Break Current at 320VDC ^{1/}	A	2,000, 1 cycle ^{2/}
Contact Resistance, Typ. (@200A)	mohms	0.2
Load Life	Cycles	See next page
Mechanical Life	Cycles	100,000
Contact Arrangement, auxiliary contacts		1 Form A (SPST-NO)
Aux. Contact Current, Max.	A	2A @ 30VDC / 3A @ 125VAC
Aux. Contact Current, Min.	mA	100mA @ 8V
Aux. Contact Resistance, Max.	ohms	0.417@ 30VDC / .150 @ 125VAC
Operate Time @ 25C		
Close (includes bounce), Typ.	ms	40
Bounce (after close only), Max.	ms	7
Release (includes arcing), Max @ 2000A	ms	12
Dielectric Withstanding Voltage	Vrms	2,200 @ sea level (leakage <1mA)
Insulation Resistance @ 500VDC	megohms	100 ^{2/}
Shock, 11ms 1/2 sine, peak, operating	G	20
Vibration, sine, 80-2000Hz., peak	G	20
Operating Ambient Temperature	C	-40 to +65
Weight, Typical	lb.(kg)	1.3 (.60)

^{1/} Main power contacts

^{2/} 50 at end of life

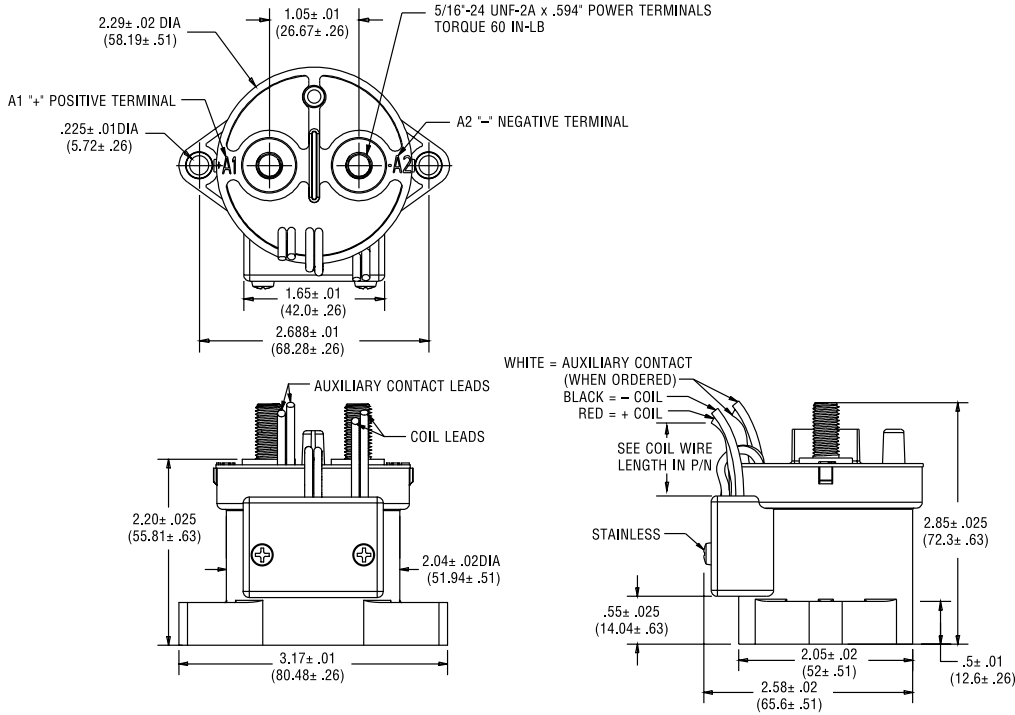
^{3/} Does not meet dielectric & IR after test, 1700 amp for unit with Aux. Contacts

Coil Operating Voltage

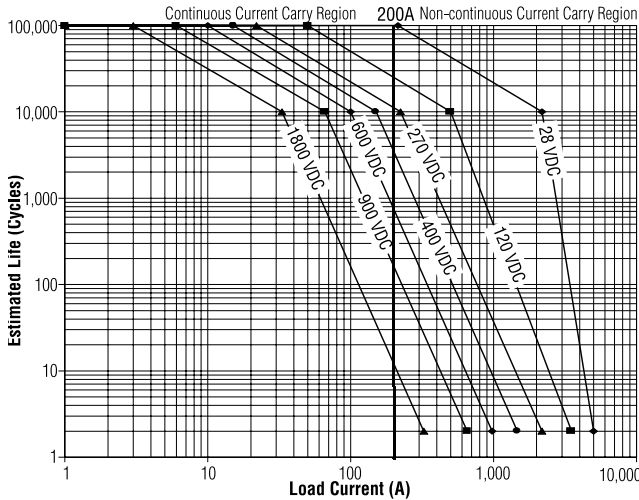
	12VDC	24VDC	48VDC
Nominal Voltage	12VDC	24VDC	48VDC
Voltage (will operate)	9.6-13.2VDC	19.2-26.9VDC	38.4-52.8VDC
Voltage (Max.)	13.2VDC	26.9VDC	52.8VDC
Pickup (close) Voltage Max.	9.6VDC	19.2VDC	38.4VDC
Holding Current (Avg.)	1.0A@12V	0.59A@24V	0.33A@48V

686 Series Solenoid (Continued)

Outline Dimensions



Estimated Make & Break Power Switching Ratings



NOTES:

- 1) For resistive loads with 300 H maximum inductance
- 2) Estimates based on extrapolated data. User is encouraged to verify rating in actual application.
- 3) End of life when dielectric strength between terminals falls below 50 megohms @ 500VDC.
- 4) The maximum contact make and break power is estimated at 208KW. Break only above 208KW to avoid contact welding.

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

Electrical Load Life Ratings for Typical 686 Applications

Make/Break Life Capacitive & Resistive Loads at 320VDC (1) (2)	
@90% capacitive pre-charge (make only) see chart below	Cycles 50,000
@80% capacitive pre-charge (make only) see chart below	Cycles 50
@200A make/break (2 consecutive, reverse polarity) (1)	Cycles 12
2,000A (break only) (1)	Cycles 1*
Mechanical Life	Cycles 1 million

- (1) Resistive load includes inductance L = 25μH. Load @ 2500A tested @ 200μH.
 - (2) Life based on projected Weibull Life with 95% reliability.
- * Does not meet dielectric and IR after test.

686 Capacitive Make Test Curves for Pre-Charged Motor Controller

