ALQ Technology

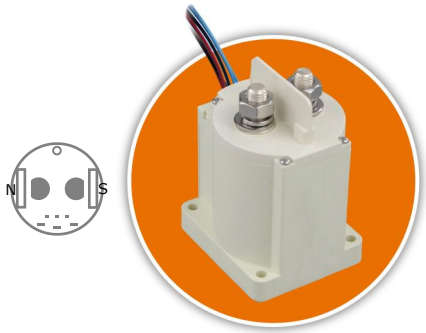
EVQ400 Series

1,000V DC / 400A DC Contactor Specification

Product description［产品描述］

■ Features［特性］

- ✓ Epoxy packaging, the contacts are protected by nitrogen, preventing oxidation, strong cooling arc capacity.［环氧封装，触点由氮气保护，防止氧化，具有极强的冷却电弧能力］
- ✓ High-voltage, high-current control capable.［具有高电压、大电流控制能力］
- ✓ Compact & low operating sound.［紧凑和低操作声音］
- ✓ Safety and high contact reliability.［安全和高接触可靠性］
- ✓ Can be installed in any direction.［可任意方向安装］
- ✓ Not freezing and condensing at low temperature.［在低温下不冻结和冷凝］



■ Certification［认证］

- ✓ CCC (Certificate No.［证书号］: 2024010304634915)

■ Applications［应用］

- ✓ DC Fast charging equipment［直流快速充电设备］
- ✓ Photovoltaic system［光伏系统］
- ✓ Energy storage equipment［储能系统］
- ✓ Power battery system［动力电池系统］
- ✓ High voltage inverter［高压变频器］

■ For product details and the latest product specifications, please visit the following website［产品详细信息及最新产品说明书请浏览以下网站］

Google **www.alq-dccontactor.com**

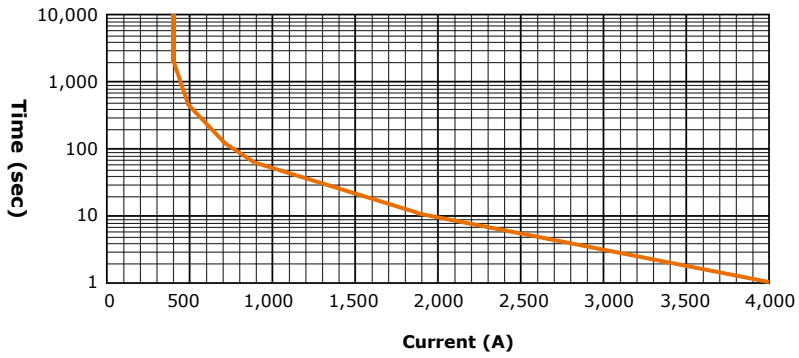
www.zgalq.com

Performance data［性能数据］

■ Power contact［主触点］

Parameter［参数］	Data［数据］
Contact arrangement［触点形式］	1 Form X (SPST-NO-DM) ［常开］
Contact polar［触点极性］	Without polarity［无极性］
Contact material［触点材料］	Copper or silver alloy optional, see "Part numbering system" ［铜或银合金可选，详见"零件编码系统"］
Rated operating voltage［额定工作电压］	1,000V DC
Max. Continuous current (at 23℃) ［最大连续电流］	400A

Short term withstand current［短时耐受电流］(at 85℃)



Notes［备注］:

1. The curve data is for buyers design reference, and the selection of DC contactor and short circuit matching fuse is subject to the actual verification［该曲线数据供用户设计参考，直流接触器选型与短路匹配熔断器时以实际验证为准］
2. Conductor size see ALQ-SPEC-000【DC Contactor User Manual】［导体尺寸请查看ALQ-SPEC-000【直流接触器使用说明书】］
3. The set curve for the DC contactor power contacts has a safety temperature upper limit of 150℃; the functional temperature upper limit is 130℃.［该曲线设定的直流接触器主触点安全温度上限为150℃；功能温度上限为130℃］

Electrical life ［电气寿命］	Resistive load (R load) ［阻性负载］ L/R ≤ 0.1ms ON : OFF = 1s : 9s	Break ［分断］		at 400A	at 240A
			1,000V DC	500 cycles	1,500 cycles
			750V DC	2,000 cycles	5,000 cycles
			450V DC	4,000 cycles	8,000 cycles
	Capacitive load (C load) ［容性负载］ (ON : OFF = 1s : 9s) 〈01	Make ［接通］	48V DC	20,000 cycles (at 700A)	
			24V DC	50,000 cycles (at 700A)	
Max. cut-off current ［最大切断电流］			2,000A	1 cycle (at 1,000V)	
Mechanical life ［机械寿命］ (ON : OFF = 1s : 9s)			200,000cycles		
Initial contact resistance (at 1A) ［初始接触电阻］			Max.［最大］: 30mΩ	Typical ［典型］: 1mΩ	
Operate Time (at 23℃) ［动作时间］		Close ［吸合］	30ms Max. 〈02		
		Bounce ［弹跳］	7ms Max.		
		Release ［释放］	12ms Max. 〈03		

〈01 Applicable only to DC contactors with power contact materials being silver alloys.［仅适用于主触点材料是银合金的直流接触器］
〈02 Coil nominal voltage, includes contact bounce time.［线圈施加额定工作电压，含触点弹跳时间］
〈03 Coil nominal voltage, includes arcing, without diode.［线圈施加额定工作电压，含电弧，无续流二极管］

■ Auxiliary contact［辅助触点］

Parameter［参数］	Data［数据］
Contact arrangement ［触点形式］ 〈04	1 Form A (SPST-NO) / 1 Form B (SPST-NC) (optional) ［常开/常闭（可选）］
Contact polar ［触点极性］	Without polarity ［无极性］
Contact current, Max.［最大电流］	2A (at 30V DC)
	3A (at 125V AC)
Contact current, Min.［最小电流］	100mA (at 8V)
Contact resistance, Max.［最大接触电阻］	0.417ohms (at 30V DC)
	0.150ohms (at 125V AC)
Electrical life［电气寿命］(Resistive load［阻性负载］, L/R ≤ 0.1ms)	100,000cycles (at 24V DC/2A)

〈04 The auxiliary contact is mechanically linked to the main power contacts.［辅助触点与主电源触点进行机械连接］

■ Coil（at 23℃）［线圈］

Parameter［参数］	Data［数据］	
Rated voltage ［额定工作电压］	12V DC	24V DC
Coil type ［线圈形式］	Dual coil ［双线圈］ 〈05	
Pick-up (close) voltage Max.［吸合电压］ 〈06 〈07	9V DC	18V DC
Drop-out (open) voltage Min.［释放电压］ 〈06	1.2V DC	2.4V DC
Pick-up (close) current Max.［最大吸合电流］	3.8A (75ms Max.) 〈08	2A (75ms Max.) 〈08
Holding current (Avg.)［保持电流（平均值）］	0.5A (at 12V DC)	0.25A (at 24V DC)
Coil power Max.［线圈功率］ 〈06	6W (at 12V DC)	6W (at 24V DC)
Operating voltage range ［工作电压范围］	10.2-13.2V DC	20.4-26.4V DC

〈05 The product has been configured with coil surge absorption circuit (TVS), buyers do not need to configure.［该产品已配置线圈浪涌吸收电路（TVS），用户无需配置。］

〈06 Because the DC contactor is operated by a coil that changes resistance with temperature: When the temperature is higher than 23℃, coil resistance, pick-up voltage and drop-out voltage will be higher than the nominal value, and the coil power will be lower than the nominal value. When the temperature is below 23℃, coil resistance, pick-up voltage and drop-out voltage will be lower than the nominal value, and the coil power will be higher than the nominal value.［因为直流接触器是通过一个随温度变化电阻的线圈来操作的。当温度高于 23℃时，线圈电阻、吸合电压和释放电压会高于标称值，而线圈功率会低于标称值。当温度低于 23℃时，线圈电阻、吸合电压和释放电压会低于标称值，而线圈功率会高于标称值。］

〈07 For pick-up testing of DC contactors with dual coil, the voltage should not rise slowly, and the voltage should be applied not less than the nominal pick-up voltage immediately. Otherwise, the DC contactor will not pick-up.［对于双线圈直流接触器的吸合测试，电压不能缓慢上升，需立即施加不小于标称吸合电压的电压。否则，直流接触器将不会吸合。］

〈08 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.［接触器有两个线圈。两者都用于吸合，然后大约在 75 毫秒后，一个线圈会从线圈驱动电路中电子移除。剩下的线圈提供低持续的保持功率，足以使接触器满足其所有规定的性能参数。这提供了最低的线圈功率。］

■ Insulation［绝缘］

Parameter［参数］		Data［数据］
Insulation resistance（at 1000V DC）［绝缘电阻］〈09		Initial［初始］: 100MΩ Min.
		End of life［寿命终结］: 50MΩ Max.
Dielectric withstanding voltage［介质耐压］(at sea level［海平面］)	Between open contacts［主触点间］	AC 3,500 Vrms for 1min. 〈10
	Between contacts and coil［主触点与线圈间］	

〈09 Measurement at same location as "Dielectric withstanding voltage" section.［测量位置与“介质耐压”部分相同］

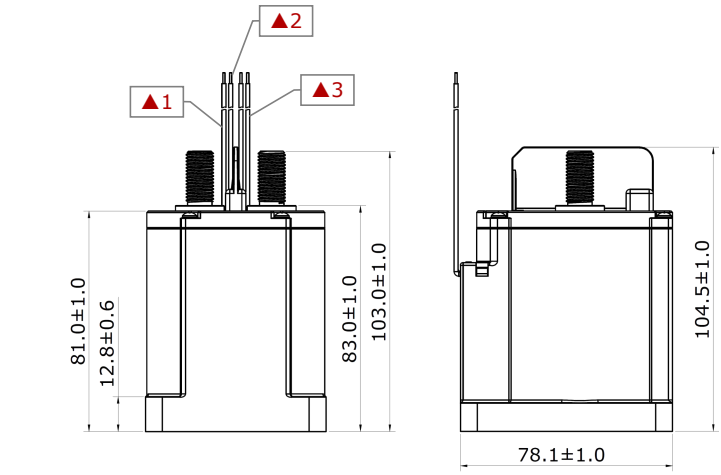
〈10 Leakage current［漏电流］: 10mA

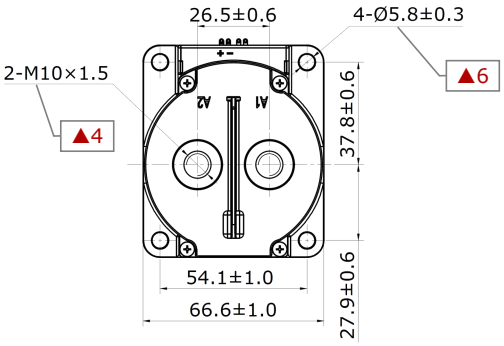
■ Environmental［环境］

Parameter［参数］		Data［数据］
Shock（1/2 Sine, 11ms）［冲击］	Actuated (closed)［吸合］	20G
	Non-Actuated (open)［断开］	20G
Vibration, Sinusoidal（80-2000Hz Peak）［正弦振动］		20G
Environmental seal［环境密封］		IP67 & IP69K
Salt fog［盐雾］		MIL-STD-810
Operating ambient temp range［使用环境温度］		-40℃ to +85℃
Storage ambient temp range［储存环境温度］		-40℃ to +85℃
Ambient humidity［环境湿度］		5%～95% RH
Altitude［海拔高度］		≤4000m

Dimensions［尺寸］ (Dimensions are in mm［尺寸单位为毫米］)

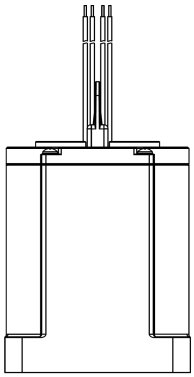
■ External thread［外螺纹］

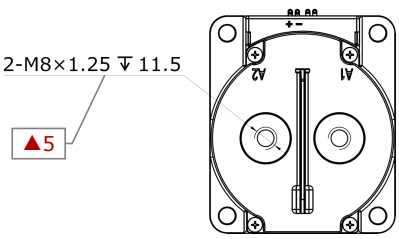




■ Internal thread［内螺纹］

Other dimensions are the same as the external thread［其它尺寸与外螺纹相同］





● Coil leads［线圈引线］

▲1 Red = + coil lead (AWG22)［红色=正极线圈导线（AWG22）］
▲2 Black = - coil lead (AWG22)［黑色=负极线圈导线（AWG22）］
(Lead length 400±10mm (without quick-connect terminal)［导线长度为 400±10mm（不带连接器）］)

● Auxiliary leads［辅助开关引线］

▲3 Blue = Auxiliary lead (AWG22)［蓝色=辅助开关导线（AWG22）］
(Lead length 400±10mm (without quick-connect terminal)［导线长度为 400±10mm（不带连接器）］)
(Optional, refer to part numbering system［可选配，参照零件编码系统］)

● Mounting［安装］

▲4 M10 x 1.5 Power terminals (external thread)［M10×1.5 主触点端子（外螺纹）］
Torque 9 to 12Nm (typical 10Nm)［扭矩 9 至 12Nm（典型 10Nm）］
Hardware supplied［附带的硬件］:
2 X M10 Washer (stainless)［2 个 M10 平垫圈（不锈钢）］
2 X M10 Spring washer (stainless)［2 个 M10 弹簧垫圈（不锈钢）］
2 X M10 x 1.5 Nut (stainless)［2 个 M10×1.5 螺母（不锈钢）］
▲5 M8 x 1.25 Power terminals (Internal thread)［M8×1.25 功率端子（内螺纹）］
Torque 9 to 12Nm (typical 10Nm)［扭矩 9 至 12Nm（典型 10Nm）］
Hardware supplied［附带的硬件］:
2 X M8 Washer (stainless)［2 个 M8 平垫圈（不锈钢）］
2 X M8 Spring washer (stainless)［2 个 M8 弹簧垫圈（不锈钢）］
2 X M8x16 Bolt (stainless)［2 个 M8×16 螺栓（不锈钢）］
▲6 Base［底座］
Torque 5 to 6Nm (Typical 5.5Nm)［扭矩 5 至 6Nm（典型 5.5Nm）］
Mounting hardware (not supplied)［安装硬件（不提供）］:
4 X M5 Bolt［4 个 M5 螺栓］
4 X M5 Washer［4 个 M5 平垫圈］
4 X M5 Spring washer［4 个 M5 弹簧垫圈］

● Packaging［包装］

12 units per shipping box［12 个/箱］
600mm x 400mm x 105mm shipping box［包装箱尺寸：长×宽×高］

● Weight［重量］

925g per product (typical)［925 克/个（典型）］
12.6kg per shipping box (typical)［12.6 千克/箱（典型）］

Part numbering system［零件编码系统］

	EVQ	400	G	12	D	01	A	8	72000

■ **Series［系列］:**
"**EVQ**"=EVQ series［EVQ 系列］

■ **Rated current［额定电流］:**
"**400**" = 400A

■ **Contact form［触点形式］:**
"**E**" = Power contact (1 Form X) without polarity, without auxiliary contact［主触点（一组常开）无极性，无辅助触点］
"**G**" = Power contact (1 Form X) without polarity, with 1 auxiliary contact (1 Form A)［主触点（一组常开）无极性，有 1 个辅助触点（一组常开）］
"**H**" = Power contact (1 Form X) without polarity, with 1 auxiliary contact (1 Form B)［主触点（一组常开）无极性，有 1 个辅助触点（一组常闭）］

■ **Coil voltage［线圈电压］:**
"**12**" = 12V DC
"**24**" = 24V DC
"**48**" = 48V DC

■ **Coil and auxiliary contact output type［线圈与辅助触点引出方式］:**
"**D**" = Lead type without quick-connect terminal［导线式，不带连接器］
"**E**" = Lead type with quick-connect terminal［导线式，带连接器］(Customizable, see ALQ-SPEC-000【DC Contactor User Manual】［可定制，详见 ALQ-SPEC-000【直流接触器使用说明书】］)

■ **Thread type［螺纹形式］:**
"**Blank**" = External thread (M10×1.5)［外螺纹（M10×1.5）］
"**01**" = Internal thread (M8×1.25)［内螺纹（M8×1.25）］

■ **Mounting method［安装方式］:**
"**A**" = Bottom mounting［立式安装］

■ **Design series number［壳架号］:**
"**8**" = 8#

■ **Special client code［特殊客户代码］:**
When buyers have special requirements, buyer special requirements are determined by ALQ after review, whether they are numbers or letters (they do not affect the construction and performance).［当用户存在特殊要求时使用，用户特殊要求由安来强评审后确定数字或字母（它们不影响构造和性能）］〈11

〈11
- ✓ First numbers or letters［第一位数字或字母］:
  "**7**" = Buyer industry［用户行业］
- ✓ Second numbers or letters［第二位数字或字母］:
  "**2**" = Power contact material is copper［主触点材料是铜］
  "**3**" = Power contact material is silver alloy［主触点材料是银合金］〈12
- ✓ Third, fourth, and fifth digits or letters［第三位、第四位和第五位数字或字母］:
  Buyer-customized coil and auxiliary switch lead length, insulated sleeve and quick-connect terminal. If the standard lead length and without quick-connect terminal, it is represented by 000. It can also be used to represent other special requirements of buyers［用户特殊订制的线圈与辅助开关导线长度、绝缘套管和连接器。如是标准线长且不带连接器，用 000 表示。也可以用于表示用户其它的特殊要求］

〈12 When the power contact material is silver alloy, the power contact connection method should be internal thread.［当主触点材料为银合金时，主触点连接方式应为内螺纹］

Please refer to the ALQ-SPEC-000 "DC Contactor User Manual" for more information, which is an inseparable part of this document.［请查看 ALQ-SPEC-000【直流接触器使用说明书】获取更多内容，该文件是本文件不可分割的一部分］