



浙江库客安电气科技有限公司

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产品规格书

Specification

文件编号 File No.: GGS-TF-005

产品名称 Product Name: 直流接触器 DC Contactor

产品型号 Product model: KHFEVC-TF250B-1 系列

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版本 Version: A0

库客安审批签字 Signature by KKA			顾客确认 Custom Approval
拟制 Make	审核 Check	批准 Approved	负责人 By:
			日期 Date:

特别说明:

- 此规格书请顾客在 2 周内确认, 如未在规定时间内答复, 则视为同意。
- 自提供规格书之日起 2 年内, 顾客没有下单订货, 本规格书失效。

Especially claim:

- This specification is expected to be checked within 2 weeks. Without feedback after 2 weeks, KKA will take it as granted that customer approves of this specification.
- This specification will be invalid if no order within 2 years.

变更记录

Revisions Record

变更版本 Version No.	变更时间 Change Date	变更原因 Reason	变更内容 Change content	负责人 By
A0	20240809	新增 Creation	首次发行 Initial issue	

KHFEVC-TF250B-1 规格书

KHFEVC-TF250B-1 Contactor Specification

1 ★ 线圈额定参数 Coil Rating

at -40 °C ~ 85 °C

额定电压 Rated Voltage Vd. c.	动作电压 Operate Voltage Vd. c.	释放电压 Release Voltage Vd. c.	线圈电阻 Coil Resistance Ω (at 23 °C)	线圈功耗 Coil Power W (at 23 °C) 大约 Approx.
12	≤9	≥1	24.4×(1±7%)	6
24	≤18	≥2	97.6×(1±7%)	6

2 ★ 触点参数 Contact Specification

- 2.1 触点形式 Contact Arrangement: 一组常开 H 1 Form A 。
- 2.2 触点材料 Contact Material: 铜合金 Copper Alloy 。
- 2.3 接触电阻 Contact Resistance: ≤0.5 mΩ (at 250 A) 。
- 2.4 触点额定负载 Contact Rating: 250A (at 60 mm² wire) 。
- 2.5 最大分断电流 Max Breaking Current: 2000A 450Vd. c. (1 op) 。
- 2.6 最大切换电压 Max Switching Voltage: 1000Vd. c. 。
- 2.7 最小适用负载 Min Applicable Load: 12Vd. c. 1A 。
- 2.8 电流耐受 Current Endurance

电流 Current	时间 Duration
250A 持续	持续/cont.
350 A	8min
500 A	2min
900 A	30s
1000 A	25s

电流耐受条件 Condition for current endurance

- 1) 环境温度为 85°C, 导线截面积≥60mm² The ambient temperature is 85°C and the conductor cross-sectional area ≥60 mm²;
- 2) 线圈激励电压为线圈额定电压 Supply rated voltage to coil;

3 ★ 耐久性 Endurance

3.1 电耐久性 Electrical Endurance

产品型号 Product model	结构型式 Version	触点负载 Contact Rating	环境温度 Ambient Temperature	通断比 ON: OFF	电耐久性 Electrical Endurance
KHFEVC-TF250B-1	一组常开 1Form A	正向接通 making: (冲击 Inrush 400A, RC=1ms) 稳态 Steady 140A 触点电压 Contact Voltage 20Vd. c.	常温 Room Temperature	0.6 s: 5.4 s	7.5×10^4 次 (ops)
		正向&反向切换 Switching: 稳态 Steady 250A 触点电压 Contact Voltage 450Vd. c.			1200次 (ops)
		正向&反向切换 Switching: 稳态 Steady 250A 触点电压 Contact Voltage 800Vd. c.			600次 (ops)
		正向&反向分断 Breaking: 稳态 Steady 2000A 触点电压 Contact Voltage 450Vd. c.		ON:0.2s	1 次 (op)
		正向&反向分断 Breaking: 稳态 Steady 1500A 触点电压 Contact Voltage 800Vd. c.			1 次 (op)

3.2 机械耐久性 Mechanical Endurance

结构型式 Version	触点负载 Contact Rating	环境温度 Ambient Temperature	通断比 ON: OFF	机械耐久性 Mechanical Endurance
一组常开 1Form A	无负载 No load	常温 Room Temperature	0.25 s:0.25 s	2×10^5 次 (ops)

4 ★ 绝缘电阻 Insulation Resistance

4.1 试验前 Before Test

断开触点电路的各引出端之间 Between open contacts: 1000 M Ω (1000 Vd. c.)。

线圈引出端与触点引出端之间 Between coil and contact : 1000 M Ω (1000 Vd. c.)。

4.2 试验后 After Test

断开触点电路的各引出端之间 Between open contacts: 50 M Ω (1000 Vd. c.)。

线圈引出端与触点引出端之间 Between coil and contact: 50 M Ω (1000 Vd. c.)。

5 ★ 介质耐压 Dielectric Strength (漏电流 Leak Current:1 mA)

5.1 试验前 Before Test

断开触点电路的各引出端之间 Between open contacts: 3000 Va. c. (50/60 Hz 1 min) 。

线圈引出端与触点引出端之间 Between coil and contact: 3000 Va. c. (50/60 Hz 1 min) 。

5.2 试验后 After Test

线圈引出端与触点引出端之间 Between coil and contact: 2000 Va. c. (50/60 Hz 1 min) 。

触点引出端与线圈引出端之间 Between contact and coil: 2000 Va. c. (50/60 Hz 1 min)。

6 ★ 时间参数 Time(额定电压下 At Rated Voltage)

6.1 动作时间 Operate Time: ≤ 30 ms。

6.2 释放时间 Release Time: ≤ 10 ms。

6.3 回跳时间 Bounce Time: ≤ 5 ms。

7 ★ 振动 Vibration

正弦振动, 1.5 mm 双振幅, 10 Hz~500 Hz, 加速度 49 m/s², 三个相互垂直轴线的每一个方向 8 h (激励和非激励各 4 h), 共 24 h。继电器外观、结构和性能不应有异常。Sinusoidal vibration, 1.5 mm double amplitude, 10 Hz to 500 Hz, acceleration 49 m/s², 8 hours each for every axis, 4 hours each for the energized and non-energized status, total 24 hours. There shall not be any abnormalities on contactor appearance, construction and performance.

8 ★ 冲击 Shock

8.1 稳定性 Functional

196 m/s² (脉冲持续时间 11 ms), 3000 次(三个相互垂直轴线的每一个方向 500 次, 激励和非激励各 250 次), 闭合回路的断开或开路回路的闭合时间应不超过 10 μ s。196 m/s², duration 11ms, 500 ops for each direction of three mutually perpendicular axes, 250 ops each for the energized and non-energized status, total 3000 shocks. The opening time for close contacts or the closing time for open contacts should not exceed 10 μ s.

8.2 强度 Destructive

490 m/s² (脉冲持续时间 6 ms), 300 次(三个相互垂直轴线的每一个方向 50 次) 继电器外观、结构和性能不应有异常。490 m/s², duration 6 ms, 50 shocks for each directions of three mutually perpendicular axes, total 300 shocks. There shall not be any abnormalities on contactor appearance, construction and performance.

9 ★ 标准测试条件 Standards Test Condition9.1 温度 Temperature: 23 °C ±5 °C。9.2 湿度 Humidity: 25 %~75% RH。9.3 方向 Direction of Measurement: 任意 Free 。**10 ★ 使用条件 Operating Condition**10.1 温度 Temperature: -40 °C ~ 85 °C 。10.2 湿度 Humidity: 5 %~85% RH 。10.3 安装方向 Mounting Direction: 任意 Free 。

注：使用环境条件不能导致继电器内部产生结露、结冰，否则会导致继电器失效。

Note:The ambient environment of application shall not cause any dewing or icing inside the contactor. Otherwise, the contactor may fail to work consequently.

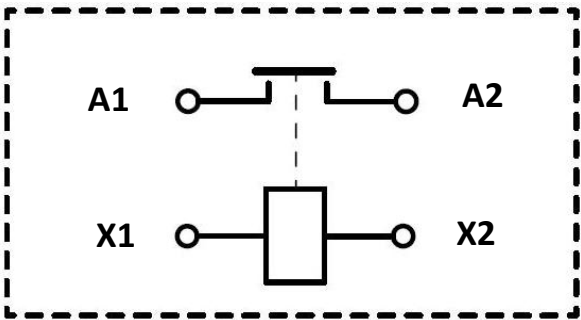
11 ★ 贮存条件 Storage Condition11.1 温度 Temperature: 5°C ~ 30°C 。11.2 湿度 Humidity: 5%~85% RH 。**12 ★ 订货标记 Ordering Information****订货标记示例**

	HFEVC	- T	F	250	B /	1000 -	12 -	C -	□ -	□ -	1
产品型号											
密封方式	T:陶瓷密封										
产品形状	F:方形										
负载电流	250:250A										
款式代号	B:小型化										
负载电压	450:450V 800:800V 1000:1000V										
线圈电压	12:12VDC 24:24VDC										
线圈引出端形式	C:连接器										
辅助触点形式	无:不带										
安装方式	无:立式安装										
特殊特性号 ⁽¹⁾	1:客户需求										

备注：(1) 客户特殊要求由我司评审后，按照特性号的形式标识。

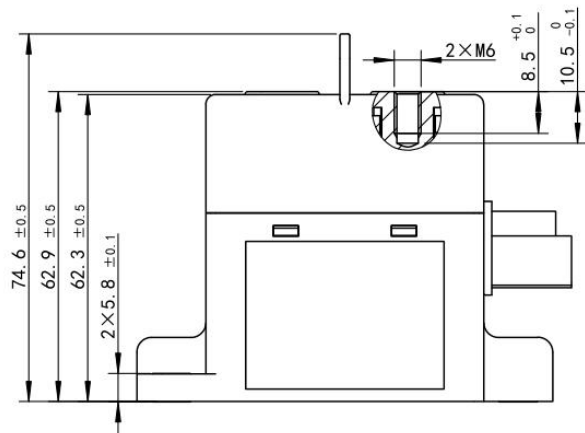
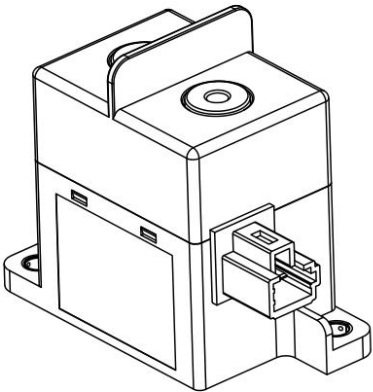
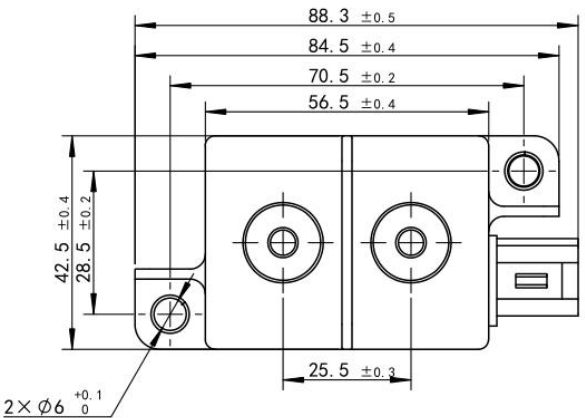
13 ★ 产品结构 Configuration

13.1 接线图 Wiring Diagram

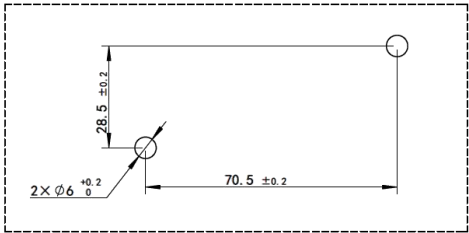


注1：负载、线圈均无极性 No polarity on the load and coil

13.2 外形图 Outline Dimensions:



安装孔尺寸



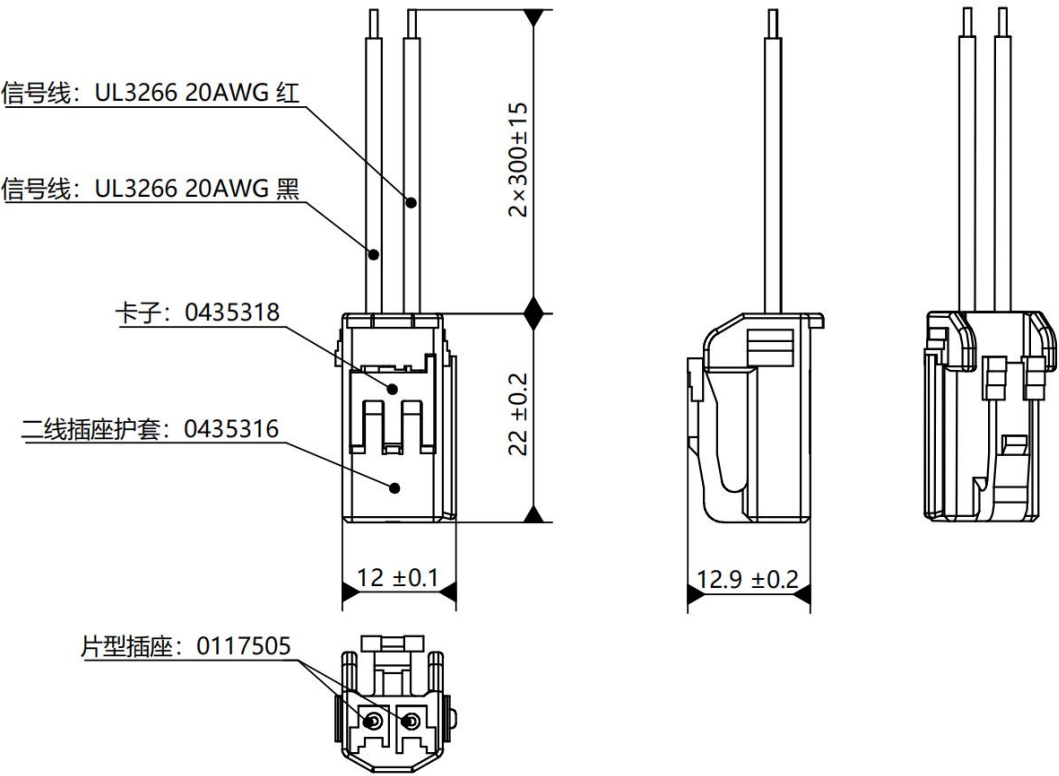
产品型号 Product model	重量 Unit Weight
KHFEVC-TF250B-1	360g

注 2：产品外形尺寸未注尺寸公差按下表执行。
Note: All unspecified tolerance according to following table.

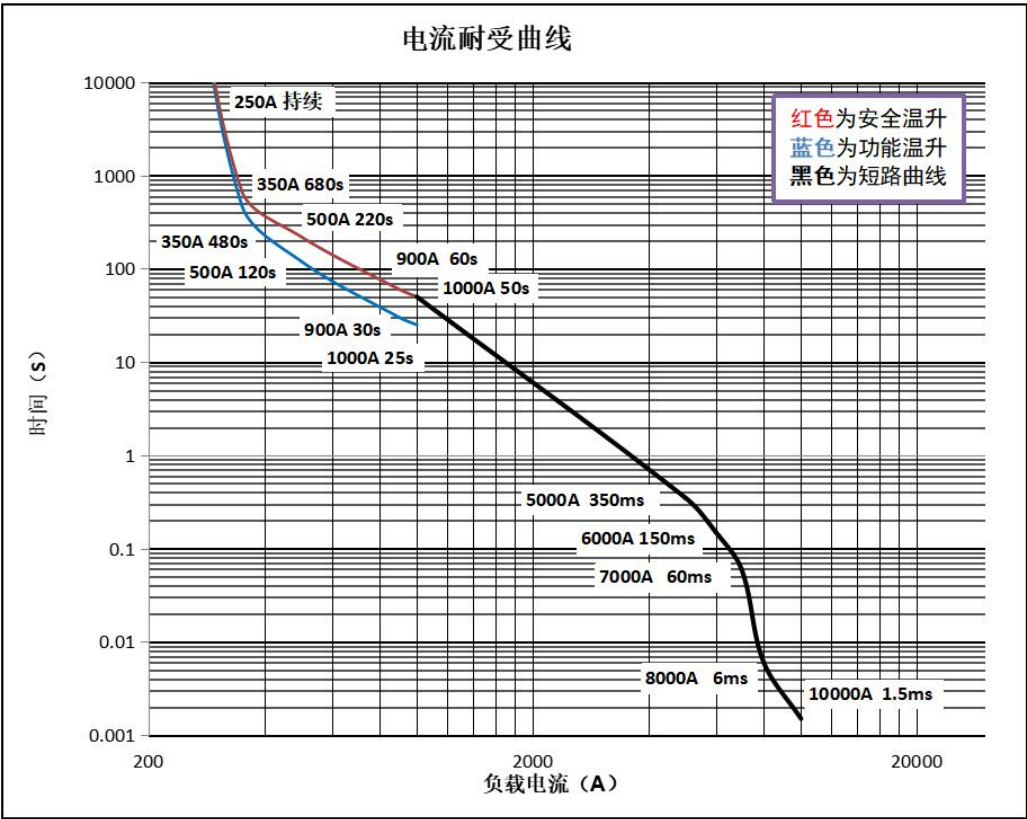
产品外形尺寸未注尺寸公差 Outline dimensions hadn't specified tolerance	
外形尺寸 Outline Dimensions	公差 Tolerance
≤10	±0.3
>10~50	±0.5
>50	±0.8

C: 连接器

(天海：0435系列、矢崎：7283-1020)



14 ★ 性能曲线图 Performance Curve
14.1 电流耐受曲线 Current tolerate curve



1. 环境温度为 85°C, 导线截面积 $\geq 60\text{mm}^2$;
2. 以上数据在常温下测得, 仅作参考, 请勿直接用于选择熔断器;
3. 该曲线设定的安全温升温度上限为 180°C, 功能温升温度上限为 130°C;
4. 如产品需处于长时间工作状态, 建议温度上限不超过 130°C。
5. $\geq 2000\text{A}$ 以上时, 接触器很可能会粘连, 但不起火、不爆炸;
6. 点划线为继电器短路能力曲线, $\geq 6000\text{A}$ 以上时继电器触点可能会出现弹跳, 但不起火、不爆炸。

15 ★ 其他说明 Others

15.1 供应商 Supplier

浙江库客安电气科技有限公司 Zhejiang KKA Electrics Technology Co., Ltd.

15.2 规格书内的各项性能参数是基于标准测试条件下测得的初始值。All the performance data listed in the datasheet are the initial values tested under standard testing condition.

15.3 注意事项 Notes

15.3.1 对库客安而言, 不可能评定继电器在每个具体应用领域的所有性能参数要求, 因而客户应根据具体的使用条件选择与之相匹配的产品, 若有疑问, 请与库客安联系, 以便获取更多的技术支持; 但产品选型责任仅由客户负责。KKA could not evaluate all the performance and all the parameters for every potential application. The customer can choose the right product according to the specific usage conditions and requirements. If there is any queries, please contact KKA for the technical service. However, customer will responsible for what they choose and it is the user's responsibility to determine which product should be used.

15.3.2 我司承诺的负载, 在没有特别说明时, 均指额定负载, 产品使用于我们承诺的负载条件之外时, 我公司不承担因此造成的失效责任。Without special note, the load we commit to the load is the rating load. KKA doesn't response for any usage beyond our guarantee.

15.3.3 触点额定值均为阻性负载时的数值, 使用 $L/R \geq 1\text{ms}$ 的感性负载 (L 负载) 的情况下, 请与感性负载并行采取浪涌吸收措施。未采取措施的情况下, 可能会造成电气寿命下降、发生切断不良。The rating load of contact is resistive load. Please assure a surge absorption device together with inductive load when using the $L/R \geq 1\text{ms}$ inductive load (L Load), otherwise it may lead to the decrease of electrical endurance and defective switch.

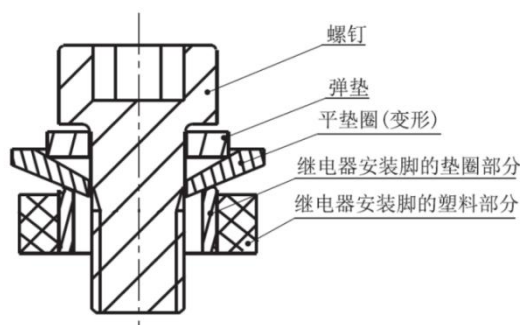
15.3.4 为抑制继电器线圈的反向电动势, 建议加装非线性电阻 (推荐使用可变电阻, 最大能量耐量: 1J 以上; 电压: 额定电压的 1.5~2 倍)。若使用二极管, 会使继电器释放时间大大加长, 肯定会导致切断性能下降, 敬请注意。In order to curb the reverse electromotive force of coil, a nonlinear resistor is recommended to use (ZNR is recommended, the max energy tolerance: $\geq 1\text{J}$; Voltage: 1.5~2 times the rated voltage). Please be noted that a diode will make the release time of relay increase, which should lead to the degradation of cutting-off capability.

15.3.5 本继电器的内部触点使用了气体保护, 伴随着触点温度变化 (环境温度+通电致使温度上升) 而存在内部气体穿透, 严禁将继电器长时间置于超过产品温度使用范围 ($-40\text{ }^{\circ}\text{C} \sim 85\text{ }^{\circ}\text{C}$) 环境中。The contactor contacts are sealed and filled with gas. When the contact temperature changes, there is internal gas penetrating characteristic. Huanfang contactors are forbidden to be used at the temperature beyond our suggestion $-40\text{ }^{\circ}\text{C} \sim 85\text{ }^{\circ}\text{C}$ for long time.

15.3.6 请避免在强磁界 (变压器、磁铁的周围) 和发热物体的附近安装。Please avoid installation in strong magnetic field (around the transformers & the magnet) and the heating objects nearby.

15.3.7 为防止出现松动, 继电器安装时请使用垫圈。继电器安装处请使用 M5 螺钉, 螺钉锁紧扭矩请控制在 $3\text{N} \cdot \text{m} \sim 4\text{N} \cdot \text{m}$ 。In order to prevent loosening, please use the washer when installing the contactor. Please use the M5 screws to install contactor, screw locking torque within $3\text{N} \cdot \text{m} \sim 4\text{N} \cdot \text{m}$.

15.3.8 使用 M5 螺钉时, 确保垫圈厚度和强度足够, 否则会变形, 撑破外壳。When use M5 screw, make sure the washer's thickness and strength are enough. Otherwise it will be out of shape, and the case will be broke.



15.3.9 请避免在引出片上粘附油脂等异物，请使用 60 mm² 以上规格的连接导线，否则有可能会造成引出端部分的异常发热。Please avoid grease and other foreign matter in the terminal, please use the connecting wire with a cross section area $\geq 60\text{ mm}^2$, or they may cause overheating to the terminal part .

15.3.10 注意连接铜排的厚度和扭矩大小，若超出下表建议的数值，会造成螺纹滑牙或安装不紧的问题。不建议将两铜排安装在同一侧，避免高压短路或打火。Please pay attention to the thickness of copper bars and the value of the torque. If it goes beyond the recommended values in the below table , it will cause thread slide or installation is not tight.To avoid short circuit or fire,it' s not suggest fix two copper bus bar at same side.

负载引出端螺钉大小 screw on load terminal	建议铜排厚度 the thickness of copper bus bar	扭矩大小 Torque
M6	3mm	6 N • m~8 N • m

15.3.11 在继电器坠落的情况下，原则上请不要再使用。In principle, please do not use it when the contactor has fallen down.

15.3.12 环保措施 Environmental Protection

库客安产品均符合 RoHS 要求。KKA products are all RoHS compliant.

15.3.13 库客安保留对产品更改的权利，客户在首次下单之前应确认此规格书内容，必要时可要求我司提供新的规格书。KKA reserves the right to make changes. Customers should reconfirm the contents of the specification before first orders and ask for us to supply a new specification if necessary.