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

电话：0577-62721717
网址： www. kkacm. com

产品规格书

Specification

文件编号 File No.：GGS-TF-014

产品名称 Product Name: 直流接触器 DC Contactor

产品型号 Product model: KHFEVC-TF300 系列

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生产工厂 Production Plant：浙江库客安电气科技有限公司
Zhejiang KKA ElECTRICS Co.,Ltd.

工厂地址 Factory ADD ：浙江省温州市乐清市经济技术开发区纬十二路 196-5 号
No. 196-5, Weishier Road, Economic and Technological Development Zone, Yueqing City, Wenzhou City, Zhejiang Province

版本 Version: A1

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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	20200825	新增 Creation	首次发行 Initial issue	
A1	20240729	增强可读性 Enhanced readability	更新规格书样式 Update specification style	

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KHFEVC-TF300 系列产品规格书

KHFEVC-TF300 Series Product Specification

1 ★ 线圈额定参数 Coil Rating

at -40 ℃ ～ 85 ℃

额定电压 Rated Voltage Vd.c.	动作电压 Operate Voltage Vd.c.	释放电压 Release Voltage Vd.c.	线圈功耗 Coil Power W（at 23 ℃） 大约 Approx.
12	≤9	≥1	接通时：45W（接通时间约 0.2S） 保持时：3.8W
24	≤18	≥2	

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 300 A)。

2.4 触点额定负载 Contact Rating: 300A （at 100 mm^2 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
300A 持续	持续/cont.
450 A	5min
600 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≥100mm^2 The ambient temperature is 85℃ and the conductor cross-sectional area ≥ 100 mm^2;

2) 线圈激励电压为线圈额定电压 Supply rated voltage to coil;

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3 ★ 耐久性 Endurance

3.1 电耐久性 Electrical Endurance

产品型号 Product model	结构型式 Version	环境温度 Ambient Temperature	通断比 ON：OFF	通断比 ON：OFF	电耐久性 Electrical Endurance
KHFEVC-TF300 系列	一组常开 1Form A	常温 Room Temperature	正向接通 making： （冲击 Inrush 400A，RC=1ms） 稳态 Steady 140A 触点电压 Contact Voltage 20Vd.c.	0.6s:5.4s	7.5×10^4 次(ops)
			正向切换 Switching： 稳态 Steady 300A 触点电压 Contact Voltage 450Vd.c.	0.6s:5.4s	1000次 (ops)
			正向切换 Switching： 稳态 Steady 300A 触点电压 Contact Voltage 800Vd.c.	0.6s:5.4s	500次 (ops)
			正向分断 Breaking： 稳态 Steady 2000A 触点电压 Contact Voltage 450Vd.c.	On:0.6s	1 次(op)
			正向分断 Breaking： 稳态 Steady 1500A 触点电压 Contact Voltage 800Vd.c.	On:0.6s	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

断开触点的各引出端之间 Between open contacts::1000 MΩ (1000 Vd.c.)。

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

4.2 试验后 After Test

断开触点的各引出端之间 Between open contacts: 50 MΩ (1000 Vd.c.)。

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

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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: 2250 Va.c. (50/60 Hz 1 min) 。

触点引出端与线圈引出端之间 Between contact and coil: 2250 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/s^2,三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。闭合回路的断开或开路回路的闭合时间应不超过 10 μs。Sinusoidal vibration, 1.5 mm double amplitude ,10 Hz to 500 Hz, acceleration 49 m/s^2, 8 hours each for every axis,4 hours each for the energized and non-energized status ,total 24 hours.The opening time for close contacts or the closing time for open contacts should not exceed 10μs.

8 ★ 冲击 Shock

8.1 稳定性 Functional

196 m/s^2（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 μs。196 m/s^2,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 10μs.

8.2 强度 Destructive

490 m/s^2（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/s^2,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 Condition

9.1 温度 Temperature: 23 ℃±5 ℃。

9.2 湿度 Humidity: 25 %～75% RH。

9.3 方向 Direction of Measurement: 任意 Free 。

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10 ★ 使用条件 Operating Condition

10.1 温度 Temperature: -40 ℃ ～ 85 ℃ 。
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 Condition

11.1 温度 Temperature: 5℃ ～ 30℃
11.2 湿度 Humidity:5%～85% RH
12.3 贮存期 Storage Life: 12 个月 12 Months。(原包装 Original Package) 。
12.4 环境 Environment
12.4.1 产品贮存场地不能有腐蚀性气体。 Store in locations where the product is not exposed to corrosive gas.
12.4.2 贮存中应避免阳光直照产品。 Keep product is not exposed to the direct ray of the sun.

12 ★ 订货标记 Ordering Information

订货标记示例

HFEVC - T F 300 □ / 1000 - 12 - C - □ - □ - XXX

产品型号	
密封方式	**T**:陶瓷密封
产品形状	**F**:方形
负载电流	**300**:300A
款式代号	无:常规款
负载电压	**450**:450V **750**:750V **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)	无:标准型 **XXX**:客户需求,代号1～999

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。

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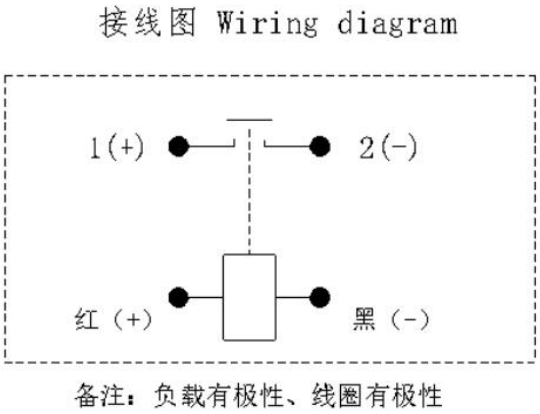
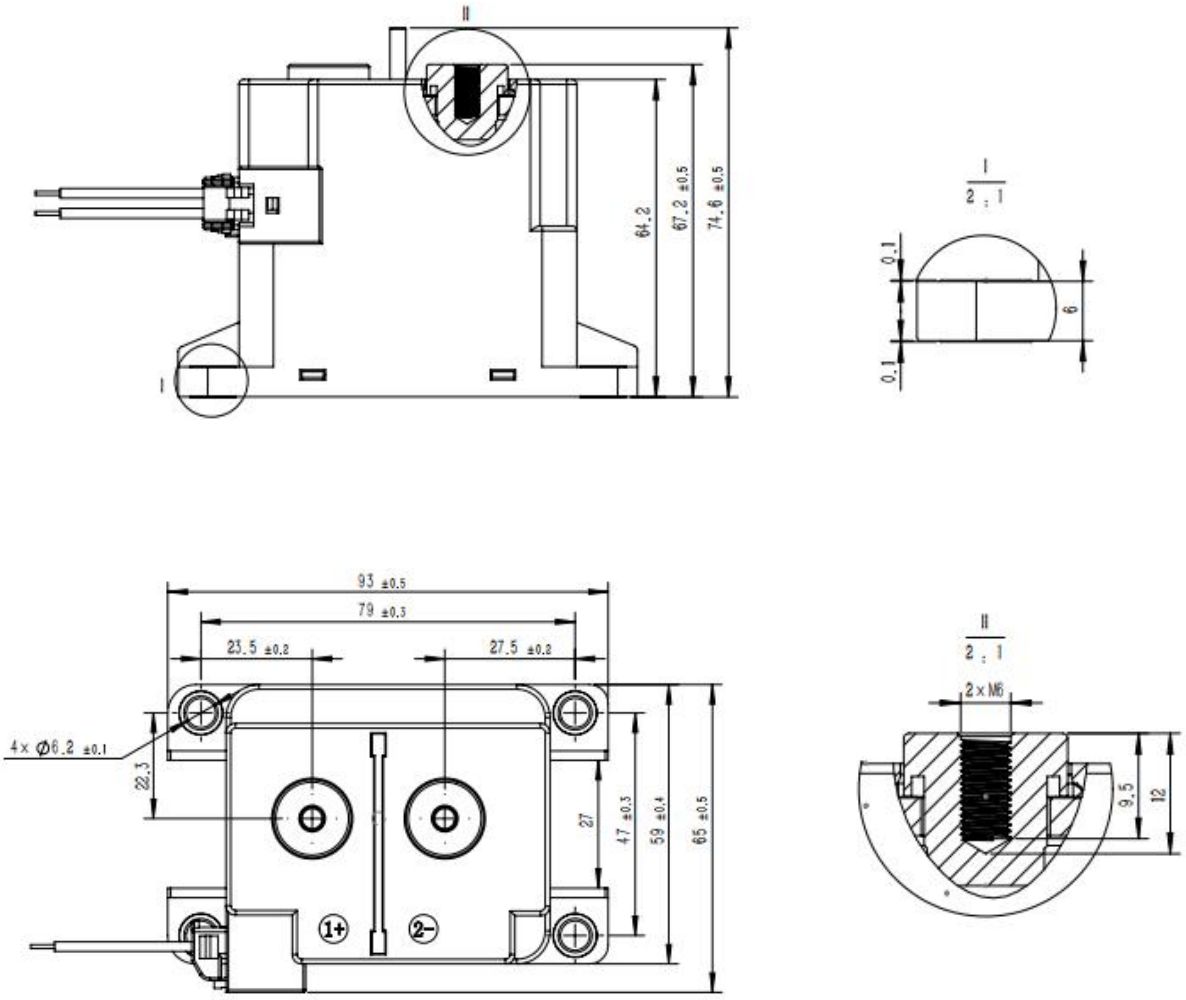
13 ★ 产品结构 Configuration

13.1 接线图 Wiring Diagram



备注：负载有极性、线圈有极性

13.2 外形图 Outline Dimensions：



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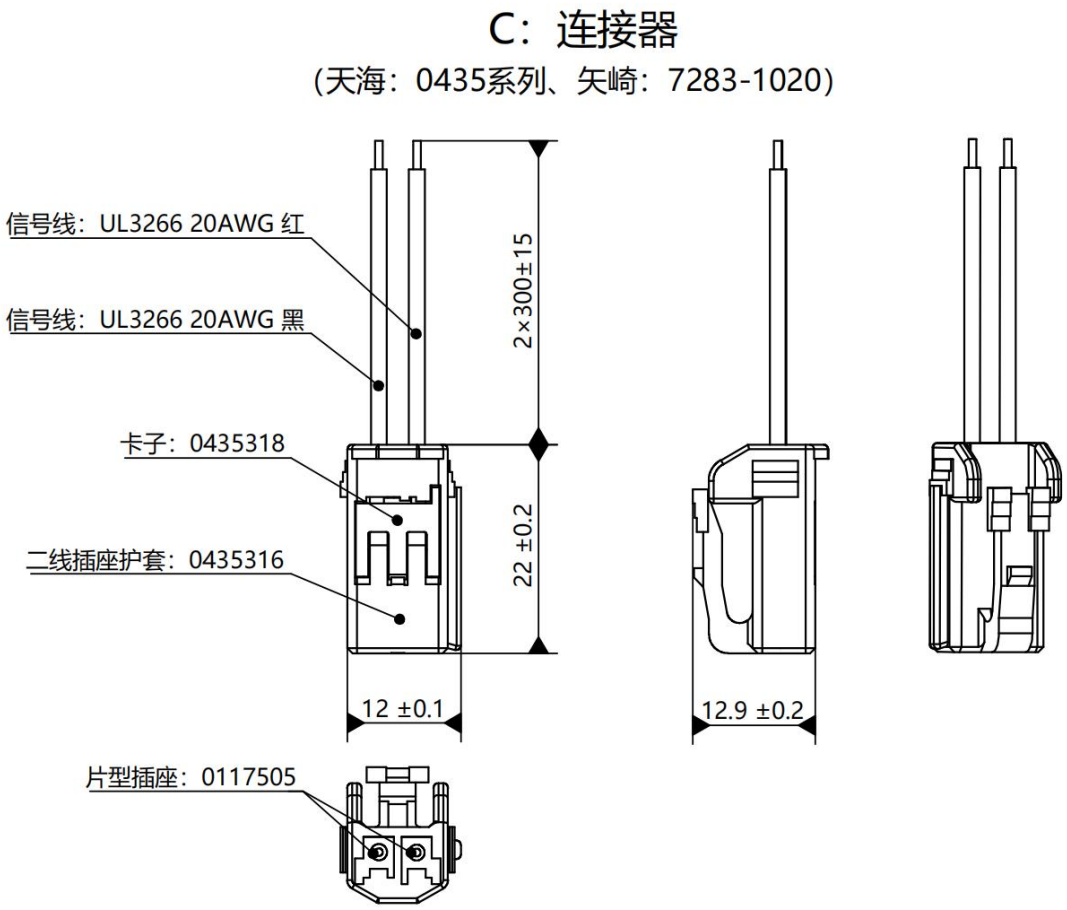
产品重量 Weight

产品型号 Product model	重量 Unit Weight
KHFEVC-TF300	700g

注：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



14 ★ 性能曲线图 Performance Curve

14.1 电流耐受曲线 Current tolerate curve

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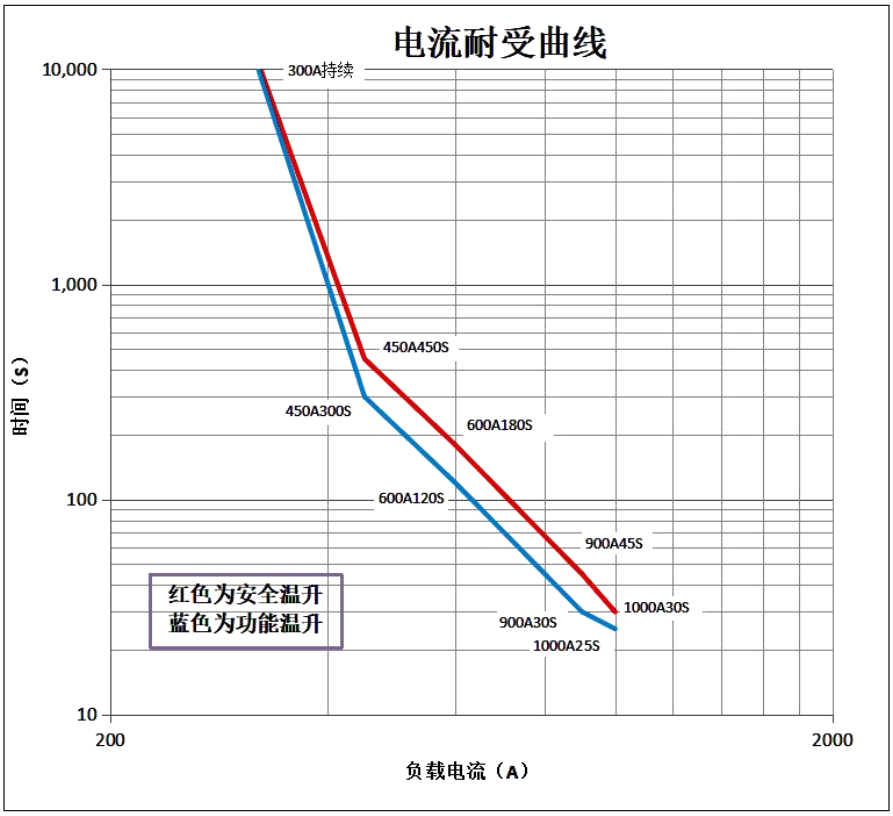
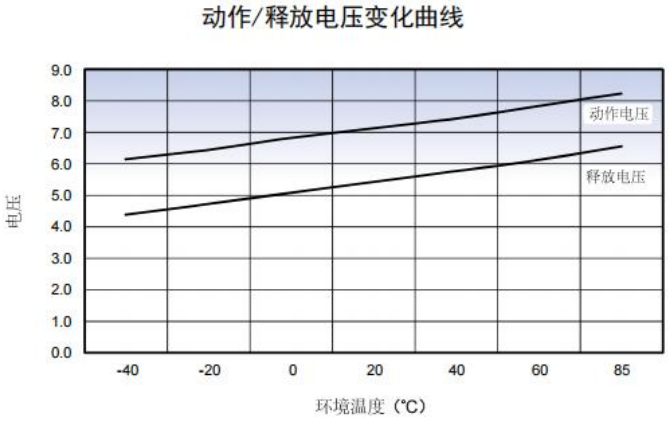


1. 环境温度为 85°C,导线截面积≥100㎜^{2} ；
2. 该曲线设定的安全温升温度上限为 180℃，功能温升温度上限为 130℃；
3. 如产品需处于长时间工作状态，建议温度上限不超过 130℃。

14.2 动作/释放电压变化曲线



15 ★ 产品特点 Product feature

15.1 采用陶瓷密封技术对产品内部进行全密封，触点系统长时间不氧化，安全性高。

The product is completely sealed for inner part by using ceramic sealing technology ,which protects contact system from oxidation for a long time and has high safety.

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15.2 产品内部灌封以氢气为主的气体，有效防止触点烧蚀。

The product is filled with hydrogen gas to effectively prevent contact ablation.

15.3 采用永磁体磁吹来弧技术，产品可靠性高

The technology of permanent magnet arc extinguishing is adopted to ensure hing reliability.

16 ★ 应用范围 Application

16.1 新能源汽车的高压主回路、慢充回路、快充回路等；充电桩的高压主回路系统；风电、光伏等电力管制系统。

Main used in high voltage main circuit, ,slow charging circuit,fast charging circuit,,as well as high voltage main circuit system in charging pile ,power control system of wing power,photovoltaic.

17★ 其他说明 Others

17.1 供应商 Supplier

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

17.2 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.

17.3 注意事项 Notes

17.3.1 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.

17.3.2 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.

17.3.3 触点额定值均为阻性负载时的数值，使用 L/R≥1ms 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≥1ms inductive load (L Load),otherwise it may lead to the decrease of electrical endurance and defective switch.

17.3.4 产品内置线路板，驱动 0.2S 后线圈会进行切换，但 0.2S 内的重复通断操作会引出继电器故障。内置有线路板的产品不能使用缓慢上升电压方式驱动,请通过快速上升(阶跃供电方式)进行线圈驱动，否则不会动作。The product has built-in circuit board, and the coil will switch after driving 0.2S, but the repeated on-off operation of 0.2S

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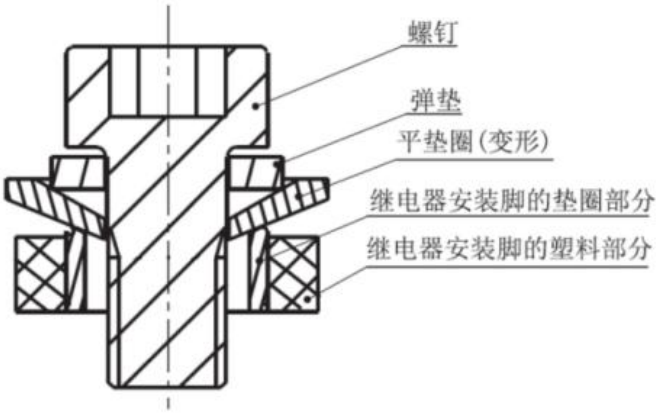
will lead to the relay fault. Built-in circuit board products cannot be driven by slow rising voltage, please conduct coil drive by fast rise (step power supply), otherwise action will not occury.

17.3.5 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 ℃～85 ℃)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 ℃～85 ℃ for long time.

17.3.6 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.

17.3.7 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 3N·m～4N·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 3N·m～4N·m.

17.3.8 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.



17.3.9 请避免在引出片上粘附油脂等异物，请使用 100 mm^2 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 ≥ 100 mm^2,or they may cause overheating to the terminal part .

17.3.10 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.

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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	建议铜排开孔尺寸 suggest hole dimension of copper bus bar	扭矩大小 Torque
M6	4 mm～6 mm	Φ6.1 mm～Φ6.5 mm	6 N·m～8 N·m

17.3.11 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.

17.3.12 环保措施 Environmental Protection

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

17.3.13 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.

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