

# 产品承认书

## Product Approval Sheet

|                          |   |
|--------------------------|---|
| 客户名称<br>Customer Name    | /   |
| 客户编号<br>Customer Number  | /   |
| 产品品号<br>Product Number   | 30550005301 / 30550005302<br>30505009201 / 30505009202  |
| 产品名称<br>Product Name     | CM-X13-13825-60KV-D50-CW-黑-贴标-HW-V1<br>CM-X13-13825-60KV-D50-CCW-黑-贴标-HW-V1<br>5620 桨叶桨夹-V1-CW<br>5620 桨叶桨夹-V1-CC |
| 样品阶段<br>Sample stage     | /   |
| 样品版本<br>Sample version   | /   |
| 送样日期<br>Date of Delivery | /   |

| 公司承认<br>Approved by Hobbywing |                   |                               | 客户承认<br>Approved by customer |
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※若对试样产品的品质有特殊要求，请与本公司业务人员联系。  
 In case of any special requirements on the product quality, please contact our sales.  
 ※感谢您给予本公司送样承认的机会，请将此表签回本公司便于归档。  
 Thanks for offering this opportunity of sample submittal & approval, please return this form to us for filing after confirmation.

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## 1.目的 Purpose

1.1.本承认书中的产品规格供产品在设计、生产、销售中确保质量保障有依可循。

1.1.The product specifications in this endorsement are for product quality assurance in design, production, and sales.

## 2.一体动力套功能要求 Function parameters of all-in-one thrust system

| 序号<br>NO. | 项目<br>Topic   | 要求<br>Requirements | 备注<br>Remarks                             |
|-----------|---|--------------------|---|
| 1         | 推荐电池搭配 (S)<br>Recommended battery (S)                           | 14                 | Lipo                                      |
| 2         | 空载电流(A)<br>No-load current(A)                                   | ≤6.8               | 出厂检验项目<br>Factory inspection items        |
| 3         | 空载转速(rpm)<br>No-load speed (rpm)                                | 2450±100           | 出厂检验项目<br>Factory inspection items        |
| 4         | 标准使用电压范围 (VDC)<br>Standard operating voltage range (VDC)        | 24~61              |   |
| 5         | 海拔工作范围 (m)<br>Altitude working range (m)                        | ≤2000              |   |
| 6         | 额定电压(VDC)<br>Rated voltage (VDC)                                | 54                 |   |
| 7         | 额定拉力(kg)<br>Rated thrust (kg)                                   | 27                 | 负载<br>load                                |
| 8         | 额定电流(A)<br>Rated current(A)                                     | ≤61                | 负载<br>load                                |
| 9         | 最大拉力(kg)<br>Maximum thrust (kg)                                 | 57                 | 负载, 海平面测试<br>Load, Test at sea level      |
| 10        | 寿命老化 (h 电机电调无故障)<br>Life aging (h motor and ESC are fault-free) | ≥1000              |   |
| 11        | 尺寸长宽高(mm)<br>Dimensions length, width and height (mm)           | 234*162.1*152      | 详见外形图<br>See outline drawings for details |
| 12        | 一体机重量(g)<br>All-in-one weight(g)                                | 3480±70            | 不带桨叶<br>Without paddles                   |

### 2.1.电机功能参数 Motor functional parameters

| 序号<br>NO. | 项目<br>Topic   | 要求<br>Requirements | 备注<br>Remarks   |
|-----------|---|--------------------|---|
| 1         | 电机内阻(mΩ 环温: 25℃)<br>Motor internal resistance (mΩ ambient temperature: 25℃) | 13-14.7            | 出厂检验项目, 直流低阻分选仪<br>Factory inspection items, DC low resistance sorter |

|    |   |   |  |
|----|---|---|--|
| 2  | 绝缘等级<br>Insulation level  | H   | 生产检验项目<br>Production inspection items  |
| 3  | 整机耐压 (mA<br>AC750V/50Hz,持续<br>3s,泄露电流)<br>Withstand voltage of<br>the overall unit (mA<br>AC750V/50Hz,<br>lasting 3s, leakage<br>current) | $\leq 1$  | 出厂检验项目, 耐压测试仪<br>Factory inspection items, withstand<br>voltage tester                 |
| 4  | 定子尺寸<br>Stator size   | D138*25   | /  |
| 5  | 电机槽极数<br>Motor slot& pole   | 42 P 36 N   | /  |
| 6  | KV  | 60  | 出厂检验项目, 转速表<br>Factory inspection items, RPM<br>meter                                  |
| 7  | 噪音<br>Noise   | 无异音(干涉摩擦、异物、轴承损坏、磁<br>钢松脱等)<br>No abnormal sounds<br>(abnormal friction, foreign matters, beari<br>ng damage, magnetic steel loosening, etc.) | 出厂检验项目, 耳听<br>Factory inspection items, listen<br>with ears                            |
| 8  | 电机重量(g)<br>Motor weight (g)   | 2275 ± 35   | 出厂检验项目, 电子秤(抽检)<br>Factory inspection items, electronic<br>scale (sampling inspection) |
| 9  | 电机外径(mm)<br>Motor outer diameter<br>(mm)  | $\Phi 147.9 \pm 0.2$  | 出厂检验项目, 千分尺(抽检)<br>Factory inspection items,<br>micrometer (sampling inspection)       |
| 10 | 电机长度 (mm)<br>Motor length (mm)  | 62 ± 0.2  | 出厂检验项目, 卡尺(抽检)<br>Factory inspection items, calipers<br>(sampling inspection)          |
| 11 | 轴伸直径(mm)<br>Shaft extension<br>diameter (mm)  | $\Phi 15-0/-0.05$   | 出厂检验项目, 千分尺(抽检)<br>Factory inspection items,<br>micrometer (sampling inspection)       |
| 12 | 轴伸长度(mm)<br>Shaft extension length<br>(mm)  | 10+0.1/-0.15  | 出厂检验项目, 卡尺(抽检)<br>Factory inspection items, calipers<br>(sampling inspection)          |
| 13 | 底座安装孔距(mm)<br>Base mounting hole<br>distance (mm)   | $\Phi 72 -4*M6$   | 出厂检验项目, 二次元/检具<br>Factory inspection items,<br>2D/inspection tools                     |
| 14 | 桨叶安装孔距(mm)<br>Propeller mounting<br>hole distance (mm)  | $\Phi 40 -4*M5$   | 出厂检验项目, 二次元/检具<br>Factory inspection items,<br>2D/inspection tools                     |
| 15 | 三相线长度(mm)<br>Three-phase cable<br>length (mm)   | 80 ± 10 (∅ 6.5mm 金插)<br>80 ± 10 (∅ 6.5mm Golden Insert)   | 出厂检验项目, 直尺<br>Factory inspection items, ruler  |
| 16 | 其他<br>Others  | 详见附件外形图纸<br>Please refer to the attached appearance<br>drawing for details.   |  |

## 2.2.电调功能参数 ESC function parameters

| 序号<br>NO | 项目<br>Topic | 要求<br>Requirements | 备注<br>Remarks |
|----------|-------------|--------------------|---------------|
|----------|-------------|--------------------|---------------|

|    |   |   |   |
|----|---|---|---|
| 1  | 低压启动 (26VDC @ PWM 1200us)<br>Low voltage start (26VDC @ PWM 1200us) | 产品启动顺畅<br>Start up smooth   | 出厂检验项目<br>Factory inspection items  |
| 2  | 油门行程(us)<br>Throttle range(us)                                      | 1050-1950   |   |
| 3  | PWM 电平 (V)<br>PWM level (V)   | 3.3/5   |   |
| 4  | PWM 频率 (Hz)<br>PWM frequency (Hz)                                   | 50-500  |   |
| 5  | 设置电调 ID<br>Set ESC ID   | 1, 2, 3, . . . 124 (可正常设置)<br>1, 2, 3, . . . 124(able to be set)  | 出厂检验项目<br>Factory inspection items  |
| 6  | 电调状态码<br>ESC status code  | 32768,32776, . . . (可正常反馈)<br>32768,32776, . . . (feedback normal)  | 出厂检验项目<br>Factory inspection items  |
| 7  | 欠压保护阈值(VDC)<br>Undervoltage protection value (VDC)                  | 24<br>“滴滴--滴滴--” 鸣叫, 不通过自检<br>24<br>“Beep Beep--Beep Beep--” Sound alarm, self-check no pass  | 出厂检验项目<br>Factory inspection items  |
| 8  | 过压保护阈值(VDC)<br>Overvoltage protection value (VDC)                   | 65<br>“滴滴--滴滴--” 鸣叫, 不通过自检<br>65<br>“Beep Beep--Beep Beep--” Sound alarm, self-check no pass  | 出厂检验项目<br>Factory inspection items  |
| 9  | 持续电流 (A)<br>Continuous current (A)                                  | 80  | 使用环境处于室温环境下, 工作电压 54 V, 在良好散热情况下 (非密闭环境温度 $\leq 60^{\circ}\text{C}$ )<br>The environment used is at room temperature, the working voltage is 54 V, and under good heat dissipation conditions (non-sealed ambient temperature $\leq 60^{\circ}\text{C}$ ) |
| 10 | 瞬间电流 (A)<br>Instantaneous current (A)                               | 200   | 散热条件同上, 时间 3S 内(非密闭环境温度 $\leq 60^{\circ}\text{C}$ )<br>The heat dissipation conditions are the same as above, within 3 seconds (non-sealed ambient temperature $\leq 60^{\circ}\text{C}$ )  |
| 11 | 脉宽校准<br>Pulse width calibration                                     | 不支持校准<br>Not support calibrate  |   |
| 12 | 信号丢失保护<br>signal loss protection                                    | 信号线拔出 0.3s, “滴--滴--” 鸣叫;<br>"Beep beep" alarm after disconnecting signal cable for 0.3s.<br>重新插上信号线, 恢复输出功率<br>Return to operation after reconnecting signal cable. | 出厂检验项目, 工作电压 54 VDC 输入 PWM 1200us<br>Factory inspection items, working voltage 54VDC input PWM 1200us   |
| 13 | 失步堵转保护<br>Out-of-step stall protection                              | 电机卡死, 电机 1s 不启动; 去掉卡死装置, 电机可正常启动<br>Motor stuck for more than 1s, motor will not operate. After removing the stuck force, the motor can operate again.              | 出厂检验项目, 工作电压 54VDC 输入 PWM 1200us<br>Factory inspection items, working voltage 54VDC input PWM 1200us  |

|    |  |   |  |
|----|--|---|--|
| 14 | 控制器 CAN 电阻(Ω)<br>Controller CAN resistance (Ω)   | /   | 出厂检验项目, 万用表 (抽检)<br>Factory inspection items, multimeter (sampling inspection) |
| 15 | 电源线长度(mm)<br>Power cable length (mm)   | 1470±10   | 出厂检验项目, 卡尺(抽检)<br>Factory inspection items, calipers (sampling inspection)     |
| 16 | 信号线长度(mm)<br>Signal cable length (mm)  | 1270±10   | 出厂检验项目, 卡尺(抽检)<br>Factory inspection items, calipers (sampling inspection)     |
| 17 | 整机信号线颜色<br>Signal cable color  | 黑: GND、白: PWM、红: H、灰: L<br>Black: GND2, White: PWM, Red: H, ash: L  | 出厂检验项目, 目视<br>Factory inspection items, visual inspection                      |
| 18 | 电源线颜色及规格<br>Power cable color and specifications   | 硅胶线-红/黑色- 8AWG<br>Silicone cable-Red/Black-8AWG   | 出厂检验项目, 目视<br>Factory inspection items, visual inspection                      |
| 19 | 整机信号线要求及拉脱力 (kgf/min)<br>Overall unit signal cable requirements and pull-off force (kgf/min) | 端子对线芯拉脱力≥3.0<br>端子对胶壳保拉力≥1.0<br>The pull-off force of the terminal to the wire core is ≥3.0<br>The tensile force of the terminal against the rubber shell is ≥1.0 | 出厂检验项目, 拉力计<br>Factory inspection items, tensile gauge                         |
| 20 | 硬件版本 (CAN)<br>Hardware version (CAN)   | SMT-HW5114-YT2-V2.0-14S-CAN   | 出厂检验项目<br>Factory inspection items   |
| 21 | 电调程序版本 (CAN-ESC)<br>ESC program version (CAN-ESC)  | HW5114YT2V1C1420-C07X13825S60ZT<br>5-6223B271-HW  | 出厂检验项目<br>Factory inspection items   |
| 22 | 电调 CAN 通信版本<br>ESC CAN communication version   | HW318-EXT-V2.0-CAN-03.5.16_TH2-B0<br>4.1.12-6123B272-HW   | 出厂检验项目<br>Factory inspection items   |
| 23 | 其他<br>Others   | 详见附件外形图纸<br>Please refer to the attached appearance drawing for details.  |  |

### 2.3. 桨叶功能参数 Propeller functional parameters

| 序号<br>NO | 项目<br>Topic  | 规格<br>Specifications  | 备注<br>Remarks  |
|----------|--|---|--|
| 1        | 拉力(kg)<br>Thrust(kg)                               | MAX 57kg @ 2400 rpm   | 5620 桨叶<br>5620 propellers   |
| 2        | 单支桨重量(g)<br>Single propeller weight (g)            | 293 ± 8   | 出厂检验项目, 电子计数秤<br>Factory inspection items, electronic counting scale   |
| 3        | 材质<br>Material                                     | 桨夹: 铝<br>桨叶: 尼龙+碳纤维<br>Adapter: aluminium<br>Propeller: nylon+ carbon fiber |  |
| 4        | 程序转速上限 (RPM)<br>Upper limit of program speed (RPM) | 2400  | 超转速上限运行会有结构风险与安全<br>隐患<br>Operating beyond the upper speed limit will cause structural damage risks and safety hazards |



## 2.4.电机+电调 CAN ID 及转向分配 Motor + ESC CAN ID and rotation direction

| 序号<br>NO. | 项目<br>Topic  | 要求<br>Requirements              | 备注<br>Remarks                      |
|-----------|--|---------------------------------|------------------------------------|
| 1         | CAN ID 及转向分配<br>CAN ID and rotation direction assignment | ID1, 转向: CCW Rotation direction | 出厂检验项目<br>Factory inspection items |
| 2         |  | ID2, 转向: CW Rotation direction  | 出厂检验项目<br>Factory inspection items |
| 3         |  | ID3, 转向: CCW Rotation direction | 出厂检验项目<br>Factory inspection items |
| 4         |  | ID4, 转向: CW Rotation direction  | 出厂检验项目<br>Factory inspection items |

## 3.外观要求 Appearance requirements

### 3.1.电机部分 Motor part

| 序号<br>NO. | 项目<br>Topic  | 要求<br>Requirements   | 备注<br>Remarks  |
|-----------|--|--|--|
| 1         | 整机<br>Overall unit   | 无脏污、刮花、残留胶、喷漆不良、磕碰等不良<br>No dirt, scratches, residual glue, Poor paint spraying, bumps and other defects | 出厂检验项目,目视<br>Factory inspection items, visual inspection |
| 2         | 三相线<br>Three phase cable                                   | 漆包线直出, 表面耐高温防护管包裹, 无破损<br>Direct outlet(black glass fiber sleeve   | 出厂检验项目,目视<br>Factory inspection items, visual inspection |
| 3         | 三相线热缩套管颜色<br>Three-phase wire heat shrinkable sleeve color | 橙、黄、蓝区分, 套管需完全包裹金叉根部<br>varnished sleeve. The sleeve must cover the root of the outlet                   | 出厂检验项目,目视<br>Factory inspection items, visual inspection |
| 4         | 金插<br>Golden plug  | 未氧化、发黑、焊接等不良<br>Solid golden plug  | 出厂检验项目,目视<br>Factory inspection items, visual inspection |
| 5         | 颜色<br>Color  | 黑色<br>Black  | 出厂检验项目,目视<br>Factory inspection items, visual inspection |
| 6         | Logo   | 无漏打、字体歪斜、破损等<br>The font should be free of skewness, damage, etc.  | 出厂检验项目,目视<br>Factory inspection items, visual inspection |
| 7         | 其他<br>Others   | 详见附件外形图纸<br>Please refer to the attached appearance drawing for details.                                 | 出厂检验项目,目视<br>Factory inspection items, visual inspection |

### 3.2.电调部分 ESC part

| 序号<br>NO. | 项目<br>Topic         | 要求<br>Requirements  | 备注<br>Remarks  |
|-----------|---------------------|---|--|
| 1         | 整机<br>Overall unit  | 无脏污、刮花、残留胶、电镀不良、磕碰等不良<br>No dirt, scratches, residual glue, poor plating, bumps and other defects | 出厂检验项目,目视<br>Factory inspection items, visual inspection |
| 2         | 信号线<br>Signal cable | 线皮无破损、断裂等不良<br>There is no damage or breakage to the wire sheath                                  | 出厂检验项目,目视<br>Factory inspection items,                   |



|   |  |   |   |
|---|--|---|---|
|   |  |   | visual inspection   |
| 3 | 电源线<br>Power cable   | 线皮无破损、断裂等不良<br>There is no damage or breakage to the wire sheath  | 出厂检验项目,目视<br>Factory inspection items,<br>visual inspection |
| 4 | 三相线<br>Three phase cable                                       | 线皮无破损、断裂等不良<br>There is no damage or breakage to the wire sheath  | 出厂检验项目,目视<br>Factory inspection items,<br>visual inspection |
| 5 | 三相线热缩套管<br>颜色<br>Three-phase wire heat shrinkable sleeve color | 橙、黄、蓝区分,套管需完全包裹金插根部<br>Orange, yellow, and blue are distinguished. The casing must completely wrap the root of the gold insert. | 出厂检验项目,目视<br>Factory inspection items,<br>visual inspection |
| 6 | 金插<br>Golden plug  | 未氧化、发黑、焊接等不良<br>No oxidation, blackening, welding defects, etc.   | 出厂检验项目,目视<br>Factory inspection items,<br>visual inspection |
| 7 | 颜色<br>Color  | 黑色<br>Black   | 出厂检验项目,目视<br>Factory inspection items,<br>visual inspection |
| 8 | Logo   | 无漏打、字体歪斜、破损等<br>No missing typos, font distortion, damage, etc.   | 出厂检验项目,目视<br>Factory inspection items,<br>visual inspection |
| 9 | 其他<br>Others   | 详见附件外形图纸<br>Please refer to the attached appearance drawing for details.  |   |

### 3.3.桨叶部分 Propeller section

| 序号<br>NO. | 项目<br>Topic     | 要求<br>Requirements   | 备注<br>Remarks  |
|-----------|-----------------|--|--|
| 1         | 桨叶<br>Propeller | <p>桨叶无破损,开裂,鼓包,明显缩水凹陷,缺胶,进胶口以及披锋需清理干净;<br/>表面浮纤无团聚,无明显应力痕;<br/>安装面平整无明显缩水;<br/>追溯码清晰可见,如有丝印图案需完好清晰且位置准确。</p> <p>The propellers are free of damage, cracks, bulges, obvious shrinkage and dents, and lack of glue. The glue inlets and propellers need to be cleaned;<br/>There is no agglomeration of floating fibers on the surface and no obvious stress marks;<br/>The installation surface is flat and there is no obvious shrinkage;<br/>The traceability code is clearly visible, and if there is a silk screen pattern, it must be intact, clear and in an accurate position.</p> | <p>不同材质不能混用在同一机架<br/>Different materials cannot be mixed in the same rack.</p> |

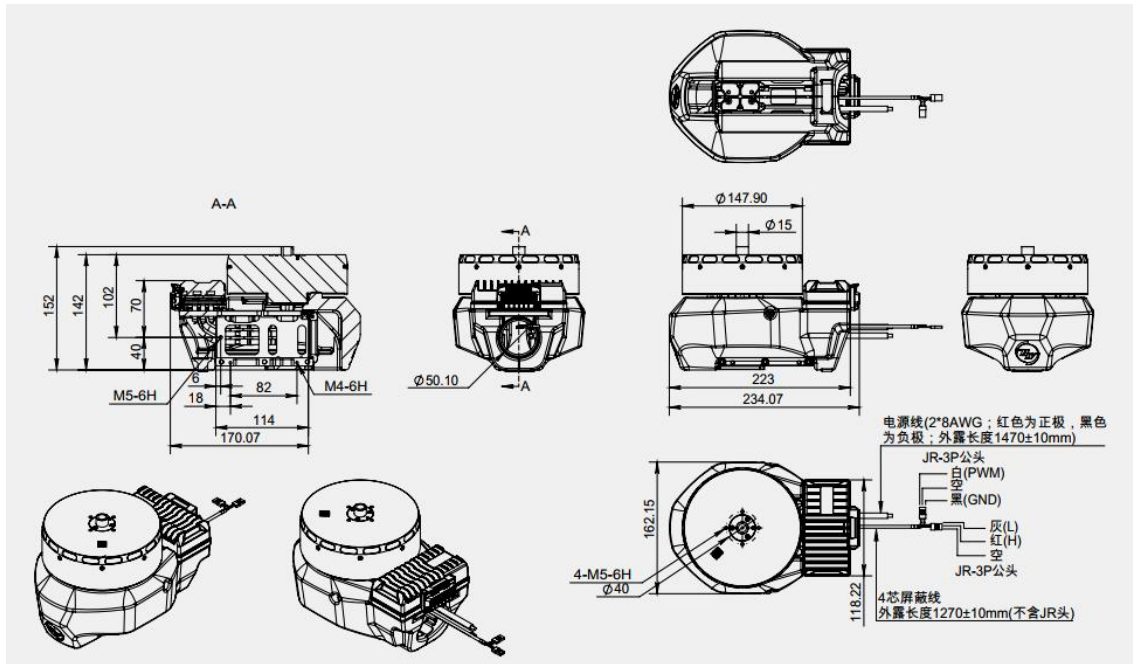
### 4.环境适应性及寿命参数 Environmental adaptability and life parameters

| 序号<br>NO. | 项目<br>Topic                              | 规格<br>Requirements | 备注<br>Remarks |
|-----------|--|--------------------|---------------|
| 1         | CASS 盐雾试验(h)<br>CASS salt spray test (h) | ≥24                |               |

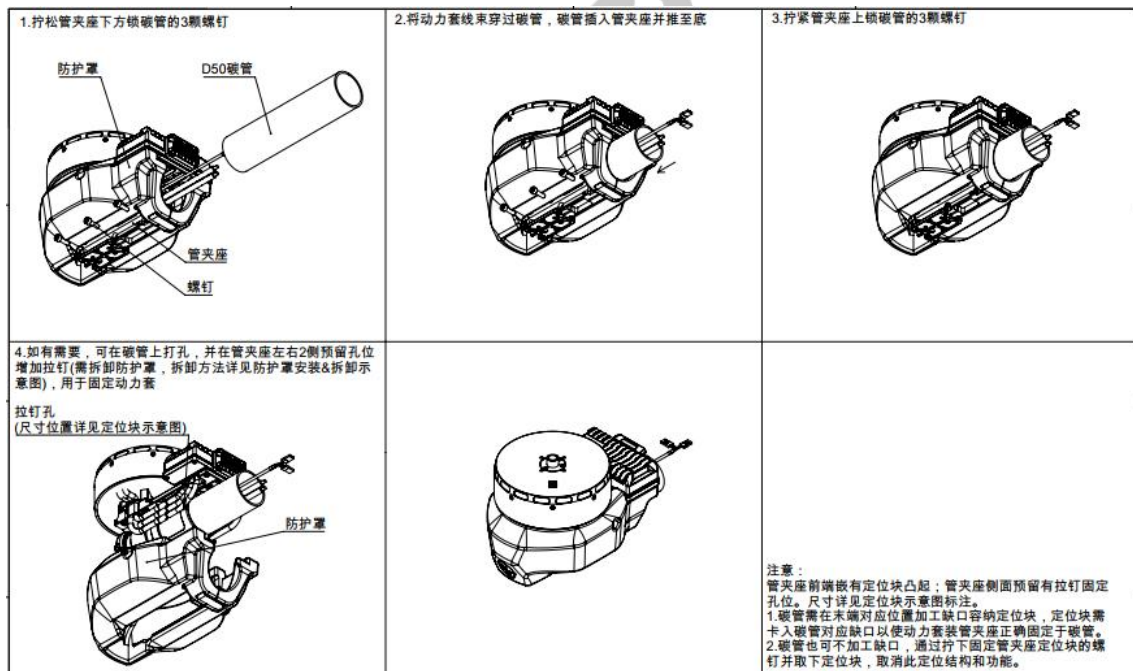
|    |   |  |  |
|----|---|--|--|
| 2  | 防护等级<br>Protection level                          | IPX6   |  |
| 3  | 高低温启动 (°C)<br>High and low temperature start (°C) | 高温+65/低温-20,可正常启动各 20 次<br>High temperature +65/low temperature -20, can be started normally 20 times each   |  |
| 4  | 高温运行 (h)<br>High and low temperature start (°C)   | ≥2(+65°C, 额定负载, 连续运行)<br>≥2(+65°C, load, continuous operation, PWM1300-1800us)   |  |
| 5  | 低温运行 (h)<br>Low temperature operation (h)         | ≥2(-20°C, 额定负载, 连续运行)<br>≥2(-20°C, load, continuous operation, PWM1300-1800us)   |  |
| 6  | 随机振动试验<br>Random vibration test                   | 频率范围: 5-40Hz, 功率频谱密度: 3dB/Oct g <sup>2</sup> /Hz 频率范围: 40-200Hz, 功率频谱密度: 0.1 g <sup>2</sup> /Hz 频率范围: 200-300Hz, 功率频谱密度: -12dB/Oct g <sup>2</sup> /Hz 置于高温 +65°C, 起停 2000 次, 功能正常<br>Frequency range: 5-40Hz, power spectrum density: 3dB/Oct g <sup>2</sup> /Hz Frequency range: 40-200Hz, power spectrum density: 0.1 g <sup>2</sup> /Hz Frequency range: 200-300Hz, power spectrum density: -12dB/Oct g <sup>2</sup> /Hz Placed in high temperature +65°C, started and stopped 2000 times, the function is normal |  |
| 7  | 整机平均无故障时间(h)<br>Mean time between failures (h)    | ≥1000 整机动力套能正常运行。<br>≥1000 The power of the overall unit can run normally.   |  |
| 8  | 电磁兼容性<br>Electromagnetic compatibility            | 辐射发射 RE: <40/47 (dBuV/m)<br>(30MHz-230MHz-1GHz, 10m 处测量)<br>辐射抗扰度 RS: ≥10V/m (80MHz-1GHz)<br>Radiated Emission RE: <40/47 (dBuV/m)<br>(30MHz-230MHz-1GHz, test on 10m distance)<br>Radiated susceptibility RS: ≥10V/m (80MHz-1GHz)   | Reference standards:<br>EN55032 or<br>GB/T 9254.1-2021 or<br>GB/T 17626.3-2016 |
| 9  | 运行温度范围(°C)<br>Operating temperature range         | -20~50   | 推荐<br>Recommended  |
| 10 | 工作湿度范围(RH)<br>Working humidity range              | 5%~95%   | 推荐<br>Recommended  |
| 11 | 贮存温度范围(°C)<br>Storage temperature range           | -10~40   | 推荐<br>Recommended  |
| 12 | 贮存湿度范围(RH)<br>Storage humidity range              | 30%~70%  | 推荐<br>Recommended  |

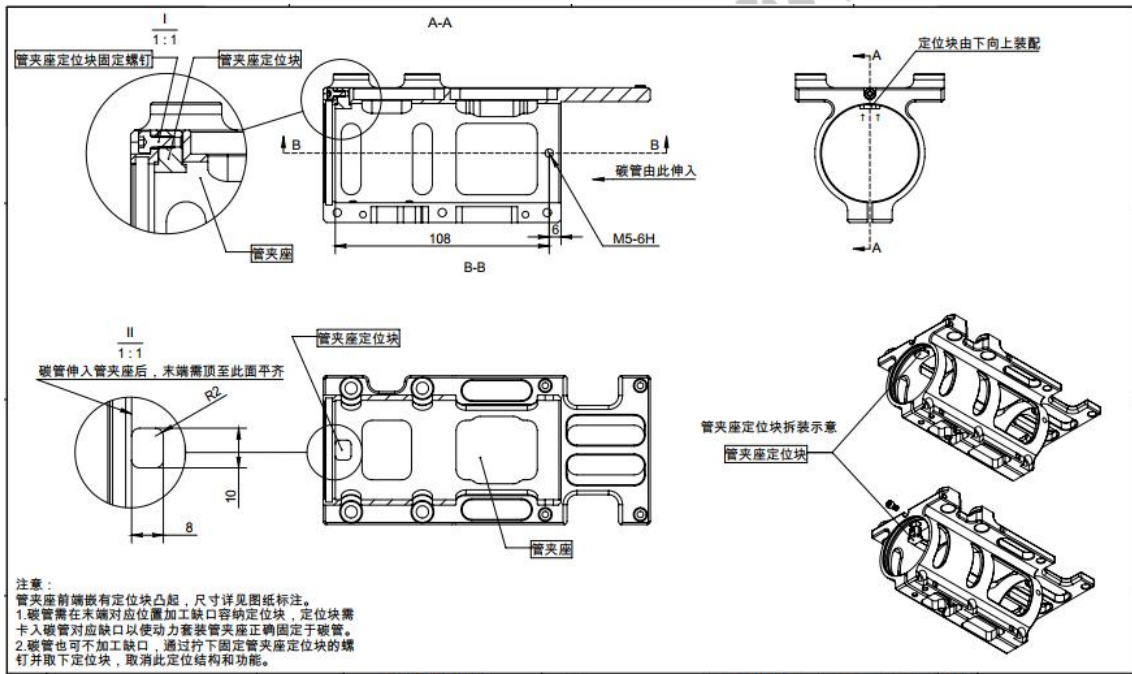
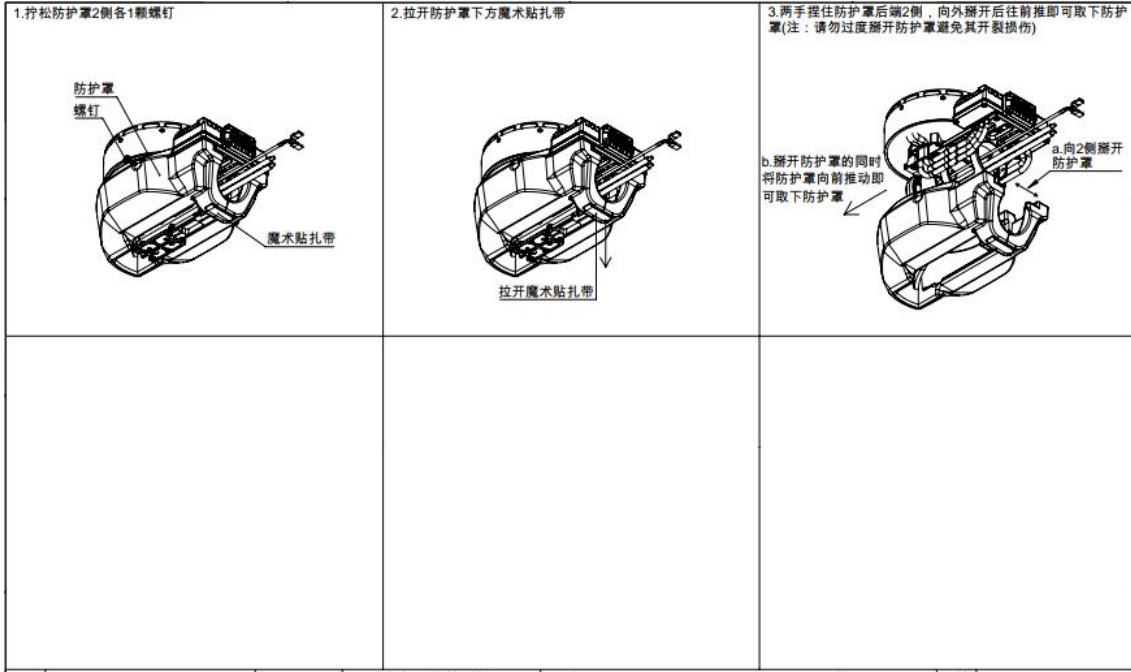
## 5.外形图 Exterior drawing

### 5.1.一体机组外形图 All-in-one machine combination outline drawing

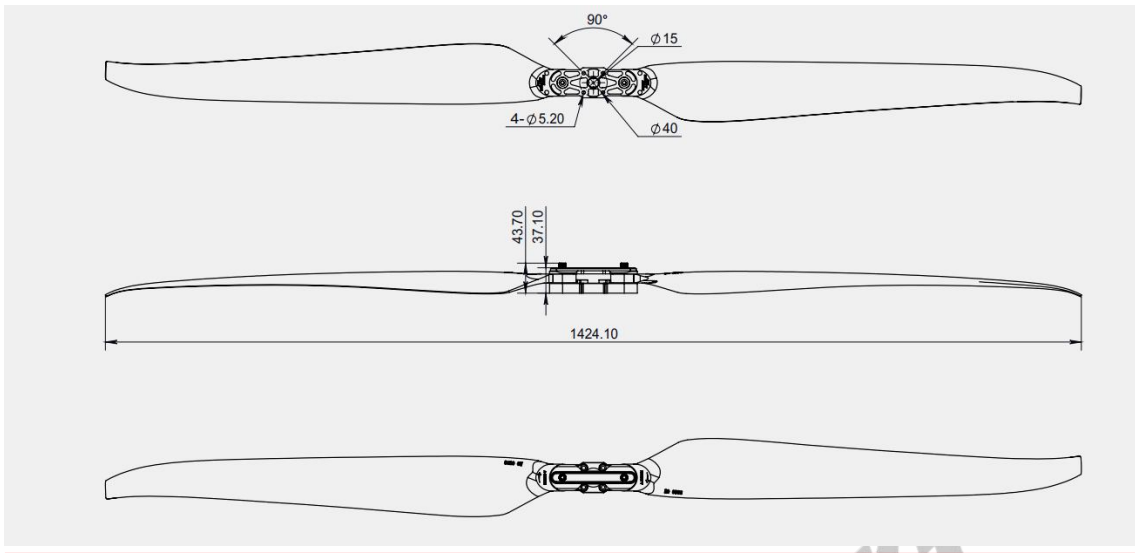


### 5.2 安装图 Installation diagram



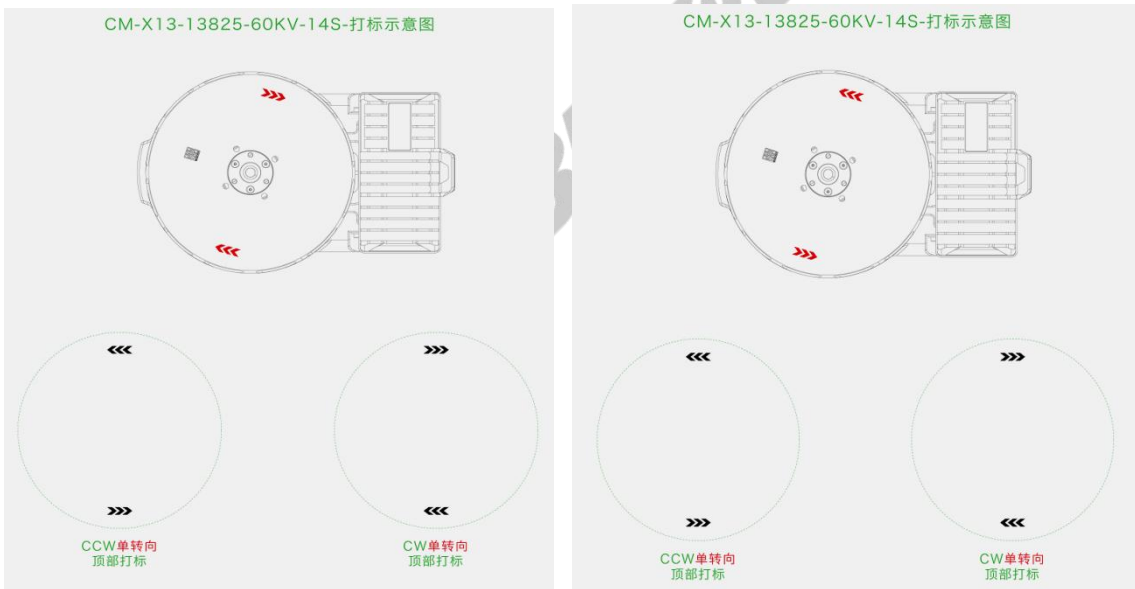


### 5.3 桨叶外形图 Propeller outline drawing



## 6. 包装 Packaging

### 6.1 产品外观图 Drawing of the appearance of the product







6.2 动力套包装图 All-in-one thrust system packaging diagram



### 6.3 桨叶包装图 Propeller packaging diagram



## 7.说明 Instructions

### 7.1.注意事项 Notes

- 7.1.1. 切勿将电源正负极接反，否则产品将致命损坏并不可恢复；
- 7.1.2. 请不要自行拆装本产品，产品如果发生性能不良，请联系我司售后处理；
- 7.1.3. 提供的产品应在规格书指定的条件内使用，如果您的应用超出规格极限，我们对此不保证产品质量；
- 7.1.4. 在对产品进行焊接作业时，建议使用恒温烙铁进行焊接，控制焊接温度，过高功率的电烙铁在焊接时易损坏产品；
- 7.1.5. 注意产品的工作环境，避免含铁质等物体被吸住或吸入，从而产生噪声甚至降低产品可靠性；
- 7.1.6. 产品不能跌落以及碰撞，如有此类情况发生，即使当时产品可以使用，但质量将不能得到保证；
- 7.1.7. 请顾客对产品在实际装配的状态进行确认，验证实际使用时的适用性，合理搭配使用，可以延长产品使用寿命；
- 7.1.8. 折叠桨叶根部印有追溯码，一个追溯码对应一副桨叶(两支叶片)，需搭配相同追溯码的叶片使用，不能随意更换使用，否则有可能会造成运行时抖动；



7. 1. 9. 桨叶跌落或受到冲击后，会引起桨叶变形或者有裂纹等情况，请立即更换使用；
7. 1. 10. 请不要在有腐蚀性气体（SO<sub>2</sub>、NO<sub>2</sub>、CL<sub>2</sub>）的有害环境及含有害气体的物质（特别是有机硅系列、氰基系列、苯酚系列）之场所使用本产品。此外还应事先确认贵公司产品内是否存有上述物质，如存在有可能造成产品腐蚀与寿命影响；
7. 1. 11. 产品储存，应避开上述腐蚀性气体和有害环境。特别是长期库存时，更应多加注意。保管的允许条件为常温、常湿环境在 6 个月以内；
7. 1. 1. Do not reverse the positive and negative poles of the power supply, otherwise the product will be fatally damaged and cannot be restored;
7. 1. 2. Please do not disassemble or assemble this product by yourself. If the product has poor performance, please contact our after-sales service;
7. 1. 3. The products provided should be used within the conditions specified in the specifications. If your application exceeds the specification limits, we do not guarantee the product quality;
7. 1. 4. When welding products, it is recommended to use a constant temperature soldering iron to control the welding temperature. A soldering iron with too high power can easily damage the product during welding;
7. 1. 5. Pay attention to the working environment of the product and avoid iron-containing objects from being sucked or inhaled, which may cause noise or even reduce product reliability;
7. 1. 6. The product cannot be dropped or collided. If such a situation occurs, even if the product can be used at that time, the quality will not be guaranteed;
7. 1. 7. Customers are asked to confirm the actual assembly status of the product, verify its applicability in actual use, and use it in reasonable combination to extend the service life of the product;
7. 1. 8. There is a traceability code printed on the root of the folding blade. One traceability code corresponds to one pair of blades (two blades). It must be used with blades with the same traceability code and cannot be replaced at will, otherwise it may cause jitter during operation;
7. 1. 9. If the blade falls or is impacted, it may cause deformation or cracks. Please replace it immediately;

7. 1. 10. Please do not use this product in harmful environments with corrosive gases (SO<sub>2</sub>, NO<sub>2</sub>, CL<sub>2</sub>) and substances containing harmful gases (especially silicone series, cyano series, phenol series). In addition, you should confirm in advance whether the above substances are present in your company's products. If they are present, they may cause corrosion and affect the life of the product;
7. 1. 11. Product storage should avoid the above corrosive gases and harmful environments. Especially when it comes to long-term inventory, more attention should be paid. The permitted storage conditions are normal temperature and humidity within 6 months;

## 7.2.警告 Warning

7. 2. 1. 禁止电调短路。禁止在使用过程中将产品电源端正负极短路、MOS 之间短路、电机连接线之间短路，否者将损坏电调并造成危险；
7. 2. 2. 对于损坏无法维修的产品，禁止随意丢弃，应进行专门的回收处理；
7. 2. 3. 禁止在强静电，强磁等复杂环境下操作此产品。在操作、使用、安装产品时应注意静电的防护；不要在易产生静电的场所使用此产品。
7. 2. 4. 禁止改装共轴或者桨叶重叠使用，此产品为平铺使用，若因改装导致桨叶断裂或者损伤，本公司将概不负责。
7. 2. 5. 此产品为平原设计，桨叶非高原桨叶，不能在高原使用。如需在高原使用，请降低负载；或者联系好盈及更换合适的高原桨叶。
7. 2. 6. 如果是串口通讯的产品，严禁私自水平剪切通讯线（一刀剪），因此造成炸机，本公司将概不负责。如必须剪断通讯线，请分开梯度剪断，并将剪断的线分别做绝缘处理。
7. 2. 7. FOC 程序需要搭配固定电机使用，请勿随意搭配，否则会造成产品异常工作。
7. 2. 1. Short circuit of ESC is prohibited. It is prohibited to short-circuit the positive and negative terminals of the product's power supply, short-circuit between MOS, and short-circuit between motor connecting wires during use, otherwise the ESC will be damaged and cause danger;
7. 2. 2. Products that are damaged beyond repair are prohibited from being discarded at will and should be recycled specifically;

7. 2. 3. It is prohibited to operate this product in complex environments such as strong static electricity and strong magnetism. Pay attention to static electricity protection when operating, using, and installing the product; do not use this product in places prone to static electricity.
7. 2. 4. It is prohibited to modify the product to coaxial use. Our company will not be responsible if the blades are broken or damaged due to modifications.
7. 2. 5. This product is designed for plains. The blades are not plateau blades and cannot be used on plateaus. If you need to use it on plateau, please reduce the load; or contact Hobbywing and replace it with a suitable propeller.
7. 2. 6. If it is a UART communication product, it is strictly prohibited to cut the communication cables parallel with a scissors without permission (it's very easy to casue short circuit). If this causes a crash, the company will not be responsible. If communication cables must be cut, please cut them separately and insulate the cut cables separately.
7. 2. 7. The FOC program in the ESC is fixed with it's motor. Please do not mix them randomly, otherwise it will cause the product to work abnormally.

### 7.3.其他要求 Other requirements

7. 3. 1. 贵公司如有新的参数要求，须事先与我司协商确认，否则出货产品与此份规格书一致，未在此份规格书中指定的参数与贵公司最终承认的样品相同；
  7. 3. 2. 在保证产品性能及寿命不变，或者得以提升的条件下。除非事先约定，我们保留使用同等规格多种来源零件的权利，原材料变更不做预先通知；
  7. 3. 3. 贵公司须按照此承认书关于“工作/贮存环境”和“使用说明”等的规定对我司交付产品予以贮存、保管、使用等处分， 否则由此导致的一切损失，我司概不负责。
7. 3. 1. If your company has new parameter requirements, it must be negotiated and confirmed with our company in advance. Otherwise, the shipped products will be consistent with this specification. Parameters not specified in this specification will be the same as the samples finally recognized by your company. ;
  7. 3. 2. Under the condition that the performance and life of the product remain unchanged or improved. Unless agreed in advance, we reserve the right to use parts from multiple sources of the same specifications, and raw materials may change without prior notice;

7. 3. 3. Your company must store, keep and use the products delivered by our company in accordance with the provisions of this acknowledgment on "working/storage environment" and "instructions for use". Otherwise, our company won't be responsible for all losses caused thereby.

#### 7.4. 免责声明 Disclaimer

7. 4. 1. 产品是用于控制和调节电子设备速度的重要部件，非法更改可能会破坏产品的稳定性和安全性，甚至可能引起相关设备故障或事故。
7. 4. 2. 非法改装产品可能涉及到违反知识产权和法律法规的问题。如果客户进行非法更改，可能会面临法律责任和处罚。
7. 4. 3. 关于经济损失与人生安全，这是非常严肃的问题。任何形式的非法改装都可能导致产品损坏、性能下降、安全风险增加等后果。如果客户因为非法改装而遭受经济损失或人身伤害，需要自行承担责任。
7. 4. 4. 强烈建议客户不要对产品任何形式的非法改装，特别是涉及到主要器件的改装。如果客户需要修改或升级设备，应该寻求本公司售后团队推荐合法改装。
7. 4. 1. The product is an important component used to control and regulate the speed of electronic equipment. Illegal changes may destroy the stability and safety of the product, and may even cause related equipment failures or accidents.
7. 4. 2. Illegal modification of products may involve violations of intellectual property rights and laws and regulations. Customers may face legal liability and penalties if they make illegal changes.
7. 4. 3. Regarding economic losses and life safety, this is a very serious issue. Any form of illegal modification may lead to product damage, performance degradation, increased safety risks and other consequences. If customers suffer financial losses or personal injuries due to illegal modifications, they need to bear their own responsibility.
7. 4. 4. Customers are strongly advised not to make any form of illegal modification to the product, especially modifications involving major components. If customers need to modify or upgrade their equipment, they should seek recommendations from our after-sales team for legal modifications.