

# DP 1000

## 无刷拉烟油泵

使用说明书

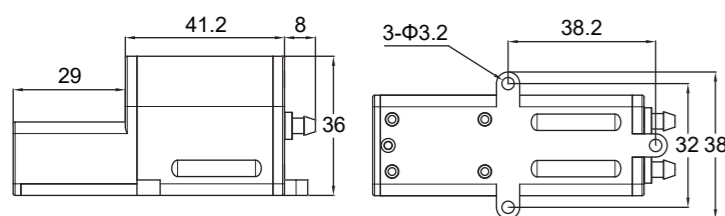
### 主要参数

|      |  |
|------|--|
| 尺寸   | L 70 x W 26 x H 36 mm  |
| 重量   | 89g  |
| 标称电压 | 7.4V, 2S Lipo 锂电池  |
| 工作电流 | 0.9A @7.4V   |
| 电机   | XM1806PU, 无刷外转子电机  |
| 驱动模块 | HM-ESC, 无刷驱动器  |
| 信号格式 | PWM, 1150μs to 1850μs 流量可调   |
| 流量   | 1000PPM @7.4V<br>1330PPM @8.0V   |
| 全铝外壳 | YES, 加工中心制作  |
| 齿轮泵  | YES, 碳素复合齿轮  |
| 配件   | 1x FESTO 油滤 PK-4    1x 油管<br>1x 止流阀                3x 安装螺丝<br>1x 三通                    2x 减震胶带 |
| 推荐电池 | XP10002ECO, 25C, 7.4V, 1000mAh   |
| 应用场合 | 用于汽油发动机或涡喷发动机模型拉烟系统  |

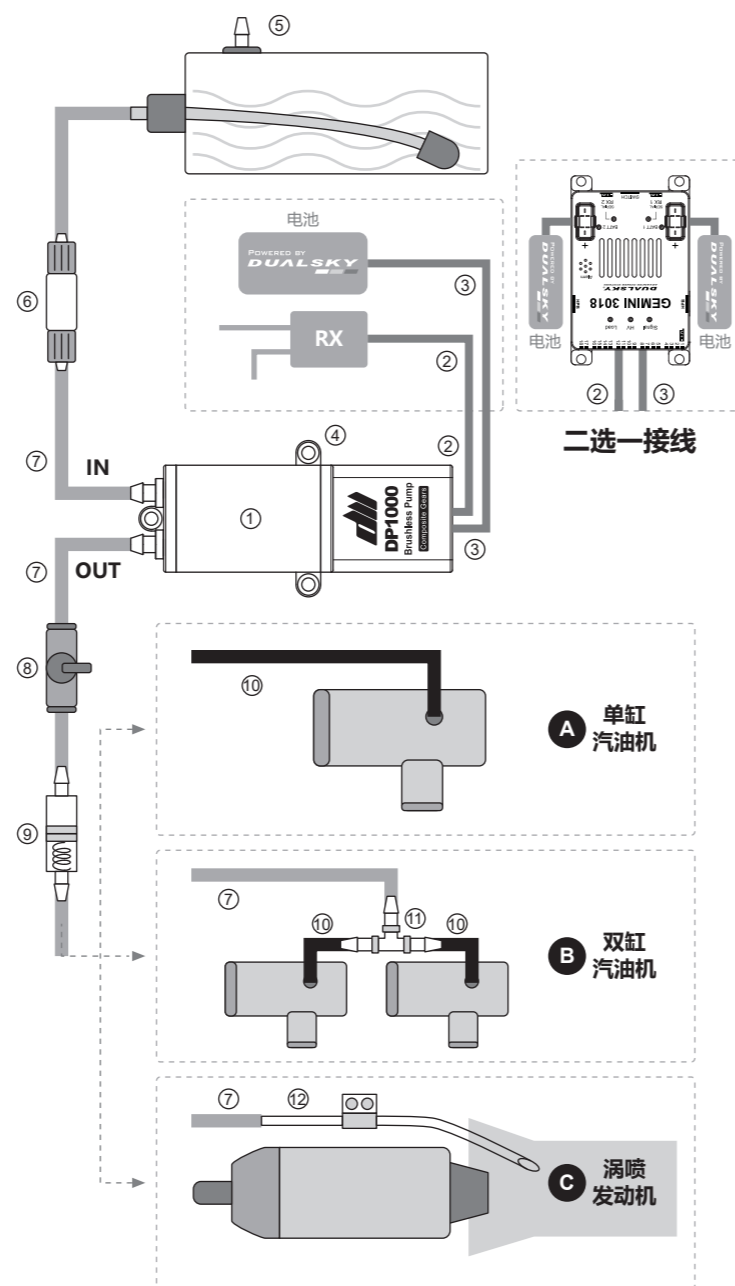
### 注意事项

- 油泵输入电源极性不可反接，哪怕是很短时间，都会造成永久损坏。
- 油泵电路有毫安级自耗电，飞行结束后须断开电源。
- 油泵干转会损坏。特别提醒：空中拉烟油用完，要记得关闭油泵。
- 油泵抽取的液体为轻质拉烟油、含润滑油的燃油。不推荐作为水泵使用。
- 泵体不可自行拆卸，可能会漏油，并导致保修失效。
- 使用正确规格的油管（TPU 6x4mm），以保证能达到最大流量。
- 较细的油管会降低流量。由于过紧，安装和拆卸时，可能会拧松油嘴。
- 不能在油泵和油箱的管路上通过“三通”连接加油管，加油压力会造成油泵出口溢油。
- 汽油机：过多的烟油进入排气管可能会导致熄火。

### 产品尺寸



### 连线示意图



### 二选一接线

### 连线说明

- ① 油泵本体
- ② 流量信号线：接入接收机的流量控制通道，黑线为地线 (GND)，白线为信号线。
- ③ 电源输入线：连接 5.8V-12V 电源（例如：2S Lipo 锂聚合物电池）  
②③ 也可以接入电源管理器（例如：双天 双子星 3018）。省去油泵电池。流量信号线② 插入电源管理器流量控制通道，电源输入线③ 通过转接线插入电源管理器空闲端口取电。
- ④ 油泵固定脚：用自攻螺丝将泵体固定在机体内部层板。如是汽油机，须远离发动机和防火板，底部贴减震双面胶，固定在油箱附近。
- ⑤ 拉烟油箱：拉烟油通常比较浓稠，应采用独立加油口。
- ⑥ 油滤 PK-4：安装在油泵进油口之前。
- ⑦ 透明油管：6x4mm，耐腐蚀，大流量型。
- ⑧ 油阀：选装件（另购），传统意义上的安全配置。

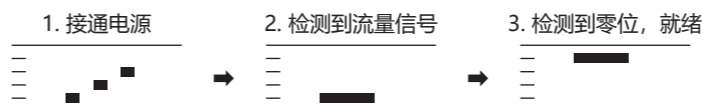
- ⑨ 自闭型单向阀：防止烟油受到排气压力而回流，同时避免因拉烟油箱的位置较高出现渗油现象。
- ⑩ 耐高温油管：用于连接汽油机的高温排气管油嘴。
- ⑪ TPU 三通：多缸汽油机分流用。
- ⑫ 不锈钢出油管：另购件，耐高温，涡喷飞机用。

### 油泵流量调节

DP1000 油泵内置的无刷驱动模块（单向），通过接收机的一个通道信号控制启停 (ON/OFF) 和流量。遥控器上，这个通道可以关联一个物理开关或旋钮。高级的遥控设备，也可以通过飞行模式 (flight mode) 或油门混控 (MIX) 来精准控制。

控制信号规格为标准 PWM 格式，频率 50Hz 至 433Hz，最低值 (Min) 1150μs，油泵不工作。最高值 (Max) 1850μs，油泵全功率运转。  
失控保护：当控制信号中断，油泵会停止工作。信号恢复后，必须归零油泵才可以工作。

#### 上电提示音流程：



#### 各类模型的建议流量 / 功率表：

| 模型种类 (典型)  | 单缸汽油机 | 双缸汽油机 | 涡喷飞机 <18kg | 涡喷飞机 ≥18kg |
|------------|-------|-------|------------|------------|
| 建议流量 @7.4V | 50%*  | 60%*  | 75%        | 100%       |

\* 流量随油门同步增减

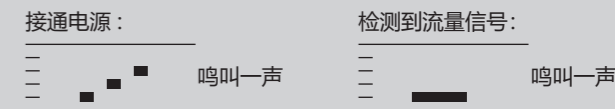
### 故障及对策表

| 故障          | 分析                     | 对策  |
|-------------|------------------------|---|
| 油泵运转，但是不出烟  | 油路连接有误                 | 重点检查<br>1. 油箱管路和通气口堵头<br>2. 单向阀方向 (初次使用时)<br>3. 油阀 (如果有) 开合状态                         |
|             | 进油管中无油                 | 通常是第一次使用，中低功率执行泵油动作   |
| 油泵运转，拉烟断断续续 | 油路故障                   | 检查管路有无弯折，有无漏气点  |
|             | 油管过细                   | 使用原厂指定配件  |
|             | 内部机件松动                 | 与振动有关，返厂  |
| 漏油          | 油嘴松动                   | 酒精清洗后，加螺丝胶装回  |
|             | 油管老化或磨损                | 更换油管或切除不良油管重新安装   |
|             | 内部渗出                   | 密封故障，返厂   |
|             | 仅鸣叫一组                  | 未检测到遥控信号，检查信号线，正确开启遥控系统   |
| 上电后，提示音异常   | 鸣叫一组加一声                | 未检测到信号零位。<br>1. 开关、旋钮不在关闭位置，复位即可<br>2. 初次使用，信号正反不对，更改遥控器设置                            |
|             | 鸣叫多次 [2019 第 46 周之前批次] | 进入了信号校准程序<br>1. 信号处在高位，先断电，复位开关或旋钮<br>2. 初次使用，信号正反不对，先断电，后更改遥控器设置<br>3. 参照 [流量信号校准流程] |
| 间隔提示音       | 空闲待机超时                 | 触发油泵运转即可消除，或断开油泵电源  |

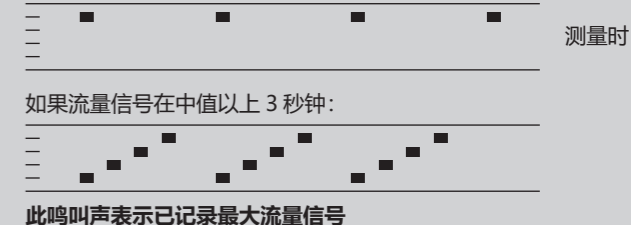
### 流量信号校准流程

【注：仅适用于 2019 第 46 周之前批次】

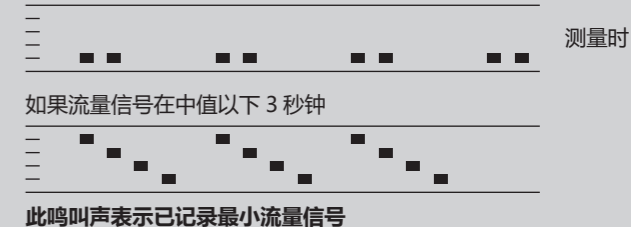
#### 接通电源前将流量信号置于中值以上位置



#### 当流量信号高于中值时 (测量最大流量信号)：



#### 当流量信号低于中值时 (测量最小流量信号)：



此时，将存储流量信号校准值。您可断开 DP1000 油泵的电源，或者继续运行 DP1000 油泵。

### 免责声明

首先非常感谢您，使用本产品。请严格按照手册使用本产品。我们不承担使用本产品或非法改装、操作不当产生的任何责任，包括但不限于间接损失或连带责任，最高赔偿不高于产品本身价格。一旦使用即代表您同意本声明的条款。

### 保修条例

双天电子类产品自售出之日起提供 12 个月的保修服务。如果您想在保修期内索赔，请立即联系您的经销商。

模型店的收银台收据可证明货物是否在保修期内。请注意，任何情况下保修期都不会延长。在保修期内，任何功能缺陷、生产故障或材料缺陷都会免费提供保修服务。我们不会接受任何进一步索赔，如间接损害货物返回时需自行承担运费，我们将支付回程费用。运费未预付，我们将不会接受货物。我们不接受运输造成的损害，也不弥补运输损失。我们建议您投运输险，将您的设备发送到服务中心。

#### 满足以下条件，我们才能处理您的索赔：

- 提供收银台收据
- 按照说明书正确地使用产品
- 使用推荐的电源和配件
- 不是因为进水，反极性，过载而造成的损害
- 请提供一个简洁、准确的故障描述，帮助我们解决问题

**DUALSKY**  
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# DP 1000

## — Brushless Smoke Pump —

### Instruction Manual

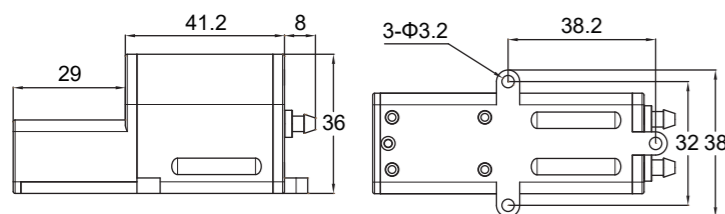
#### Specifications

|                               |   |
|-------------------------------|---|
| <b>Dimension</b>              | L 70 x W 26 x H 36 mm   |
| <b>Weight</b>                 | 89g   |
| <b>Nominal Voltage</b>        | 7.4V,2S Lipo  |
| <b>Working Current</b>        | 0.9A @7.4V  |
| <b>Motor</b>                  | XM1806PU, Outrunner Brushless   |
| <b>Drive Module</b>           | HM-ESC, Brushless Sensorless  |
| <b>Singal Format</b>          | PWM, 1150µs to 1850µs   |
| <b>Quantity of Flow (QoF)</b> | 1000PPM @7.4V<br>1330PPM @8.0V  |
| <b>Fully Aluminium Case</b>   | YES, CNC-made   |
| <b>Gear pump</b>              | YES, Carbon composites  |
| <b>Accessories</b>            | 1x Festo PK-4 Filter      1x Oil Tube<br>1x Check valve            3x Mount Screws<br>1x T-connection          2x Sponge tape |
| <b>Recommended battery</b>    | XP10002ECO, 25C, 7.4V, 1000mAh  |
| <b>Applications</b>           | Smoking Systems for Giant or Jet Models   |

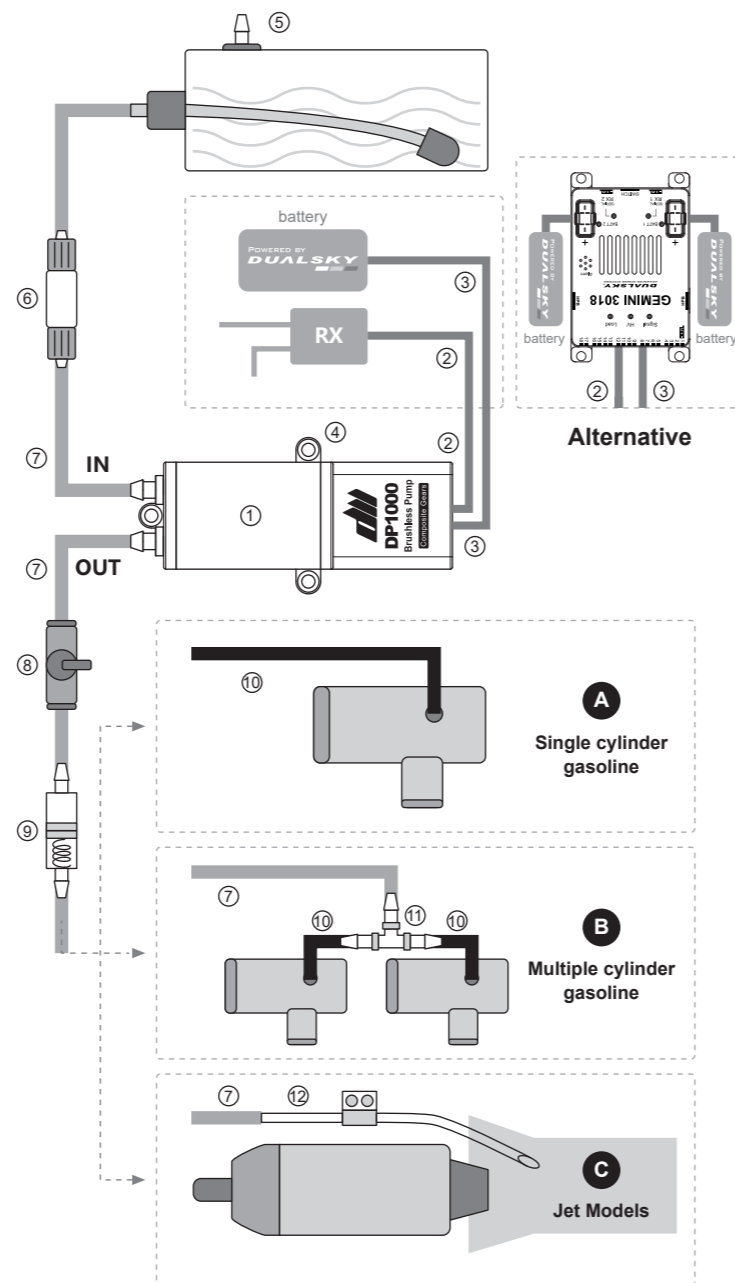
#### Cautions

- Never reverse the polarity of input power. Even for a short time, it can cause permanent damage.
- Disconnect the power after all-day flight. The pump's circuit has a milliamp self-consumption.
- The pump may be damaged if it runs dryly. Special reminder : when the smoke oil is used up during flight, remember to turn off the pump.
- Work with thin smoke oil or fuel containing lubricant oil only. It is not recommended for use as a water pump.
- Do not disassemble pump body. It may cause leakage and warranty void.
- Use the correct tubing ( TPU 6x4mm ) to ensure the maximum flow.
- The thinner tubing reduces the flow. Due to over tightening, the nozzle of pump could be loosened during installation.
- Do not connect the "three-way" valve between pump and tank. The pressure of filling causes oil spill from oil-out of pump.
- For gasoline engine: Excessive smoke oil entering the exhaust pipe may cause flameout.

#### Dimensions



#### Connection Diagram



#### Connection Description

- Smoke pump body**
- Flow control signal wire** - Connect to the flow control channel of the receiver, the black line is the ground wire (GND), and the white wire is the signal line.
- Power input wire** - Connect 5.8V-12V power supply (for example: 2S Lipo battery) ②③ can also be connected to power distributor, for example: Dualsky Gemini 3018. Eliminate the pump's battery. Plug the flow signal wire ② to the flow control channel of power distributor, and the power input wire ③ to any free port to get power.
- Smoke pump mount** - Use self-tapping screws to fix the pump body to the internal deck of model. If it's a gasoline engine powered model, the pump must be far away from the engine and the firewall. Apply shock-absorbing double-sided tape to the bottom and fix near the tanks.
- Smoke tank** - The smoking oil is usually thick, and a separate oil filler should be used.
- Oil filter PK-4** - It is installed between the smoke tank and pump inlet.
- Oil tube** - Corrosion resistant, large flow type (Size 6x4mm).
- Oil valve** - Optional part (sold separately), traditional safety component.

- Self-closing check valve** - To prevent the smoke oil from being reflued by the exhaust pressure and avoid the oil leakage due to the higher position of the smoke tank.
- High temperature resistant tube** - Used to connect high temperature exhaust nozzle of gasoline engine.
- TPU three-way** - The oil bifurcates before reaching each exhaust of multi-cylinder engine.
- Stainless steel outlet pipe** - High-temp resistant, for jets. Sold separately.

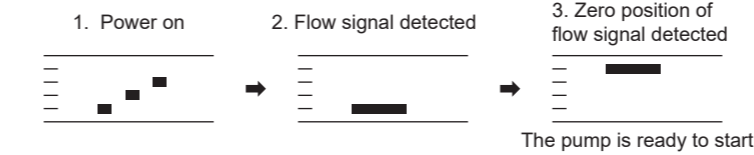
#### Flow Adjustment

The built-in brushless drive module of DP1000 controls ON/OFF and flow through a channel of the receiver. On the transmitter side, this channel can be associated with a physical switch or knob. Advanced radio control equipment can active it through flight mode or throttle mixing accurately.

The control signal specification is the standard PWM format, the frequency is from 50 to 433Hz. the minimum value is 1150µs, the smoke pump doesn't run. The maximum value is 1850µs, the pump runs at full power.

Fail safe protection: when the control signal is interrupted, the pump will stop working. Once recovered, pump must return to minimum(zero) to work.

- Power-on prompt procedure :



- Recommended flow / power value for various models :

| Model type (Typical)        | Single cylinder gasoline model (60cc) | Dual cylinder gasoline model (120cc) | Jet airplane Dry weight <18kg | Jet airplane Dry weight ≥18kg |
|-----------------------------|---------------------------------------|--------------------------------------|-------------------------------|-------------------------------|
| <b>Suggested Flow @7.4V</b> | 50% *                                 | 60% *                                | 75%                           | 100%                          |

\* The flow of pump synchronizes with throttle

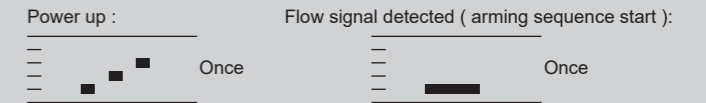
#### Failures and Countermeasures

| Malfunction                                   | Analysis                          | Solution   |
|---|-----------------------------------|--|
| Smoke pump is running, But there is no smoke. | The connection is incorrect       | Key inspections:<br>1.Tubes of tank and the plug of vent<br>2.Direction of check valve (for the first time)<br>3.Status of the oil valve (if any)  |
|   | There is no oil in the inlet tube | It is usually the first time to use pump. Run the pump at low and medium power to suck the oil.  |
| Smoke pump is running, Smoke intermittently   | The connection incorrect          | Check whether the oil tube is bent or air leak   |
|   | The tubing is too thin            | Use the original accessories   |
|   | Internal parts loosed             | Related to vibration, return to factory  |
| Oil leakage                                   | Nozzle loosed                     | Clean by alcohol, reinstall with LOCTITE   |
|   | Oil tube is aging or worn         | Replace the oil tube or cut the bad tube and reinstall   |
|   | Internal leakage                  | Seal failure, return to factory  |
| After power on, the arming tone is abnormal   | Beep one group only               | No radio control signal is detected  |
|   | Beep one group and once           | No zero position signal is detected<br>1.The switch or knob is not at the zero position, just reset.<br>2.For the first time, the signal may be reversed, change it by the transmitter.  |
|   | Beep multiple times               | Signal calibration procedure entered<br>1.The signal is in the high position.Power off firstly, reset the position of switch or knob<br>2.For the first time, the signal maybe reversed. Power off firstly, then change it by the transmitter.<br>3.Refer to section [ Flow Signal Calibration Process ] |
| Interval reminder tone                        | Idle standby overtime             | Running the smoke pump can eliminate it, or disconnect the power of pump   |

#### Flow Signal Calibration Process

【 Only applicable to batches before the 46th week of 2019 】

Put the flow signal above the middle position before turning on the power



When flow signal is above midstick ( measuring max flow signal ) :



If flow signal is above midstick for 3 seconds :



When flow signal is below midstick ( measuring min flow signal ) :



If flow signal is below midstick for 3 seconds :



At this point flow signal calibration values are stored. You may remove power from the DP1000, or just continue running your DP1000.

#### Disclaimer

Thank you very much for using this product. Please use this product strictly in accordance with the manual. We do not assume any liability arising out of the use of this product or illegal modification or improper operation, including but not limited to indirect damage or joint liability, the maximum compensation is not higher than the price of the product itself. By using this product, you agree to the terms of this statement.

#### Warranty

Dualsky electronic products warranty is for 12 months from the date of sale. If you want to claim during the warranty period, please contact your dealer immediately. The cashier receipt at the model store can prove whether the goods are under warranty. Please note that the warranty period will not be extended under any circumstances. Warranty service is provided free of charge for any functional defects, production failures or material defects during the warranty period. We will not accept any further claims, such as the user is responsible to pay the return shipping cost of the indirect damaged goods, we will pay for the return shipping cost to the user. If the shipping costs are not prepaid, we will not accept the goods. We do not accept the damage caused by transportation and do not make up for the loss of transportation. We recommend you to buy transportation insurance and send your equipment to the service center. We can process your claim if the following conditions are met:

- Provide cashier receipts
- Operate the equipment correctly according to the instructions
- Use recommended power supplies and accessories
- The damage is not caused by water, reverse polarity, or over load
- Please provide a concise and accurate description of the fault to help us solve the problem

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