Hybrid Power System for drone Generator for Hybrid Drone

Hybrid Power System for drone FLY2400 generator is a high efficiency generator designed for multi-copters.

FLY2400 generator is only 4.2kg which is much lighter than any other generators that produce 2400w output power, so FLY2400 generator is five times the efficiency of other generators.

The continuous power output of generator is 2000w. An internal combustion engine consumes gasoline and spins a generator to ensure a 48V output.

Besides this, a 12S lipo battery package is also needed to be installed onboard to offer emergency back-up power for quick climbing and quick maneuvering.

With this generator, the max take-off weight can reach 19kg (according to your power system), and the max flight time is about 5 hours.

FLY2400 generator is suitable for those multi-copters whose power is still lower than 2000w even with 6kg generator system(including generator, fuel tank and 1L gasoline).

As for the fuel, the auto gasoline is available.

When the generator running, its noise level is about 80 dBA. But the noise has no effect if you talk 10 meters away from the drone. We also provide the silencer if you need which could reduce the noise to 60 Dba

.

Also maintenance is necessary for FLY2400 to keep its high performance.

The maintenance cycle is 50 hours. Accessories for generator maintenance are provided

Hybrid Power System for drone Generator for Hybrid Drone

Specifications:

Weight: 4.5kg
Size: 430x284x181mm (LxWxH)
Applicable models: Multi-rotors / VTOL Fixed Wing
Max take-off weight: 18kg
Power voltage: 12S
Fuel consumption: 600g/kW*h (Hovering 1.5L/h)
Working Temperature: -20℃-40℃
Theoretical ceiling (Altitude): 1000m
Petrol: 95# or above (petrol+2T lubricant two-stroke lubricants that meet JASO FC/FDIOS-L-EGD standards)

Main Features:

1. Integrated design of Start up and power generation, and the air start function can be realized without relying on external starting equipment.
2. The one-piece design allows for easy suspension in all types of Frame kit and a variety of mission load suspensions on the bottom.
3. No need charge preparation time, no complicated ignition action, it can quickly perform tasks.
4. The backup battery can provide power for emergency short-range return or forced landing in an emergency.
5. For light load service, additional fuel tanks can be added to expanded to flight time to 4-6 hours.
6. Quick and easy engine installation method, convenient to replace and maintain.

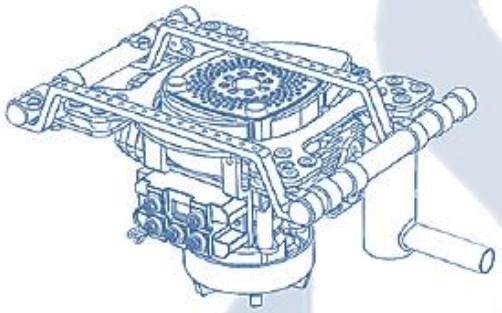
Package Included:

Hybrid powertrain x 1
6s 4000mah battery x 2
Starter x 1
Controller x 1
Spark plug wrech x 1 (Gift)
Petrol Proportional bucket x 1 (Gift)

2019-02-1

F2400 Gas-Electric Hybrid Power System

Manual

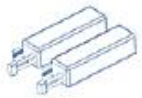


F2400

www.international-armour.com

Packing Lists

Hybrid powertrain*1



6s 4000mah battery *2

Starter *1

Controller*1

Spark plug wrench*1 (Gift)

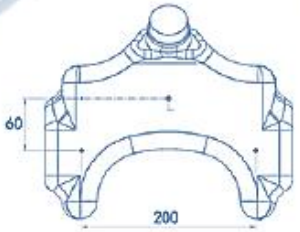
Proportional bucket*1 (Gift)

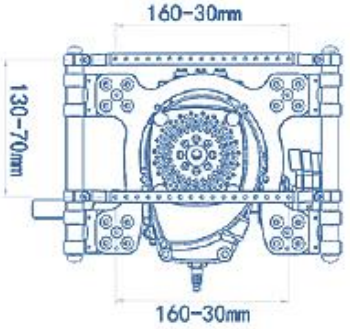
Specifications

Tital Weight	4.2kg
Power	2.0kW Continuous power/2.4kW Max power
Size	430*234*191mm (L * W * H)
Applicable models	Multi axis rotor/VTOL fixed wing
Max Take-off weight	18kg
Power voltage	12S
Fuel consumption	600g/kW·h (Hover 1.5 liters/hour)
Available ambient temperature	-20~40℃
Theoretical ceiling(Altitude)	1000m (standard atmosphere)
Fuel	95#Or above (petrol) +2Tlubricant two-stroke lubricants that meet JASO FC/FDIOS-L-EGD standards

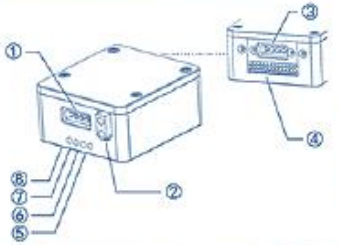
Preparations

1. Install





Controller Connection



① Starter Port (red) (Start engine)
② 48V Power Supply Port (Output should not exceed 3A)
③ Data Cable Port A (black) (Links to Engine and other equipment)
④ Data Cable Port B

⑤ LED -Red (Red always On-Flameout ; Red Flash - No Signal)
⑥ LED -Yellow (Yellow always On-Idle speed; Yellow Flash -abnormal)
⑦ LED -Green (Green always On-Operation;Non-operating state This lamp is not lit)
⑧ LED -Blue(Blue always On-Over 49.5V;Blue off - less than 49.5V)

Fuel

Fuel/Lubricant Proportion 25:1

(1) Add more than #95 gasoline to the reticle

(2) Add lubricant to the reticle

(3) Proportional bucket is convert to shake the fuel well.

Forbidden to mix lubricants of different manufactures and models. Otherwise it will cause serious blockage of carburetor.

Start-up

Figure 1

1、Press the carburetor until there are no bubbles in the blue inlet pipe, and oil circumfluence in the yellow return pipe. (Figure 1)

2、Connect the start-up controller, the system is powered on, the control switch in the idle gear position, the controller LED lamp is yellow, and the motor buzzed when powered on. (Figure 2)

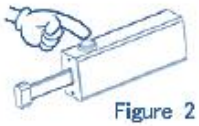


Figure 2

3、Press the starter switch,Release the engine when it starts. If pressing for more than 2 seconds does not start, close the damper, press the start switch for 1 second to absorb oil, and then open the damper to start the engine.Pull out the startup controller immediately after startup.(Oil absorption is required in cold weather after long time no use.Generally, it can be started directly)

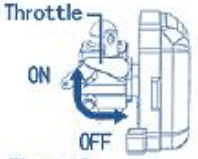


Figure 3

4、Excessive oil absorption will cause engine block. The spark plug needs to be removed ,then use Starter to race an engine and oil extraction.
If the motor can not work by pressing the starter button, please pull out the starter connector and reinsert to restart the program.

5、If the engine can not work, please refer to the error listing to troubleshooting .

Pre-start inspection

1、Check whether the exhaust pipe is firmly installed and whether the outlet connection is leaking.
2、Check whether the tubing is leaking
3、Check whether the fuel ratio is correct and whether the fuel is clean and impurities.
4、Check the position of control switch and whether the LED display is normal

Operation

1、Preheat the machine by keeping engine running for around 1min when cold boot it, while in a hot-boot, it won't be necessary.

2、When Control switch in operation position, controller LED display in "Green "lamp. (Attention! When the Startup controller is not unplugged, Please do not change to running state)

3、Observe blue lamp to know the controller bus voltage.
Blue lamp flash show the bus under voltage , Please keep running.
Blue lamp always On show the bus voltage reach the rated value, can initiator program to take off.

4、When flight, bus voltage will fluctuate up and down due to the rapid change of flight attitude.
If it is found that the bus voltage drops rapidly to below 45V, in order to ensure safety flight, please land immediately to check the fault.

5、The capacity and load of the batteries allocated determine the backup time of the spare batteries

Warning **Do not touch the engine and exhaust pipe when operation or within 5 minutes after parking , avoiding high temperature scald!**

Parking

After landing, Set the switch to idle position for one minute to make engine fully cooled(LED-Yellow lamp). Then set the switch to stall position(LED-Red lamp).

Or press the extinguishing button on the engine to park.
Clean the engine after using. To avoid accidents, please ensure that all remaining fuel in the tank is stored in other containers.

Troubleshooting

Can Not Boot

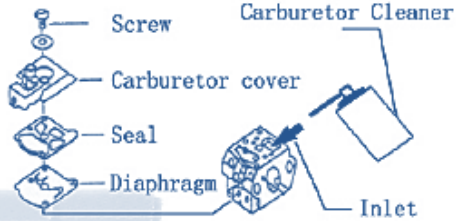
LED display	Troubleshooting items	Solution
RED	Control switch	Switch to idle position
No display	Cable interface	Re-plug, confirm it solid
Yellow	Check whether the choke is closed	Open the choke
	Check whether fuel supply pipe is damaged and Leakage	Replacement of fuel supply pipe
	1、Remove the spark plug to check if there is any gasoline infiltration 2、If the fuel supply is normal, put the spark plug on the engine housing and rotate the engine to observe whether the spark plug sparks dazzlingly bright.	1、Carburetor Blockage 2、Spark plug sparks dark or no spark, please replace the spark plug 3、Unqualified ignition coil, Please contact the manufacturer to maintain.
	Air filter blocking	Remove the air filter housing and clean the sponge filter core, and then reinstall it.

Operation Fault

	Reason	Solution
Fluctuation of Engine Speed and Insufficient Output Power	Fuel poor quality or long-term storage	Replacement of fuel
	Carburetor Blockage	Cleaning carburetor
	Air filter blockage	Clean Air Filter and Sponge Filter
	Bubbles in the fuel supply pipe	Check whether tubing is damaged and replaced it
	Controller unhealthy	Contact supplier
	Engine power reduce	
	Mechanical parts unhealthy	

Maintenance

Carburet



1、Check and removal of spark plug carbon deposition regularly. Check spark plug electrode interval, the normal value is 0.6-0.7 mm.

Spark plug model: NGK-CMR7H

2、Clean carburetor regularly. When operation, if insufficient fuel supply will cause engine overheating and shorten service life, even damage the engine seriously.

3、Check spare batteries regularly. If each battery has a voltage difference, please use a balanced charger to Voltage balance..

4、Please unload the spark plug after long-term nouse, Inject 10g-2T fuel into the cylinder, turn the engine five times before reinstall the spark plug.

Multi-rotor power configuturation Reference

F2400混合动力总成-适用多旋翼动力配置参考 (F2400 Hybrid Powertrain - Multi-rotor Power Configuration Reference)

电机 (Motor)	螺旋桨 (propeller)	轴数 (Number of axes)	电压V (Voltage)	最大起飞重量 (Maximum takeoff weight)	推荐起飞重量 (Recommended takeoff
EAGLEPOWER (鹰动力) UA90 KV120	28寸-30寸 (28 inches to 30 inches)	4	48	17.8KG	16.2KG
EAGLEPOWER (鹰动力) EA85 KV110	30寸-32寸 (30 inches to 32 inches)	4	48	18.3KG	16.8KG
DJI E5000 M10 KV110	DJI 2880 or UF2880	4	48	19.1KG	17.8KG
EAGLEPOWER (鹰动力) EA80 KV135	UF2272L or UF2478L	6	48	15.9KG	14.5KG
EAGLEPOWER (鹰动力) UA90 KV120	UF2478L or JXF2685	6	48	17.3KG	15.1KG
EAGLEPOWER (鹰动力) EA80 KV85	UF2788L or UF2880L	6	48	18.5KG	16.5KG
DJI E2000 6010 KV130	DJI 2170 or UF2280	6	48	14.6KG	13.5KG