



Intelligent Robot

AUTOFLY

spring

Drone Manufacturing and Control Using Open Platform

Mission Flight Autofly Using GPS and GCS

※ GPS(Global Positioning System) / GCS(Ground Control System)

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Product specifications and appearance of this catalog are subject to change without notice for quality improvement.

V2.0.0



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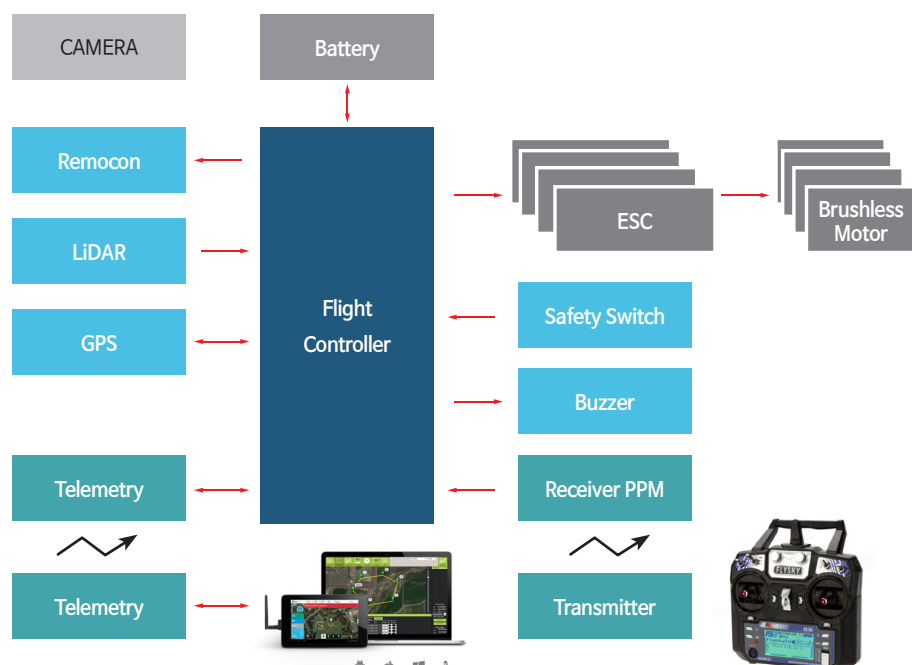
spring

Product

- Drone flight and control (driver source code and flight mode source code provided)
- 4-propeller Quad Copter
- Learn how to assemble hardware and fly with open source
- Hovering function using LiDAR
- Drone flight using controller
- Support Ground Control System capable of drone control on Windows or Android OS
- Support auto-flight using GPS and Ground Control System configured in drone
- Mission planning function : Waypoint routing, event execution (Go to designated place and carry out mission (photographing, collecting geographic information, etc.))



Block Diagram



Hardware Spec

Item	Spec	Item	Spec
Flight Controller	Processor : Cortex-M4F 168MHz / 252MIPS	Battery	11.1V, 3S1P, 45C+ 2800mAh Li-Polymer Battery
	14 PWM / Servo outputs (8 with failsafe and manual override, 6 auxiliary, high-power compatible)	Charger	Charging Power 20W, Charge Current 1.6A, Balance Charging Current : 16mA
	Abundant connectivity options for additional peripherals (UART, I ² C, CAN)	Telemetry	Radio Telemetry Air/Ground Module with OTG Cable
	Backup system integrates mixing, providing consistent autopilot and manual override mixing modes (fixed wing use)		Support MWC / APM / PIXHAWK / PX4 open source Flight Controller, etc
	Redundant power supply inputs and automatic failover		Receivers sensitivity : -118dBm
	External safety switch		MAVLink framework agreement
	Multicolor LED main visual indicator		FHSS
	High-power, multi-tone piezo audio indicator	Camera	2way full-duplex communication adaptive TDM
	microSD card for high-rate logging over extended periods of time		CMOS Sensor : SONY 179 8M
	16GB TF Card		Viewing Angle : 170°
	Focus 12cm ~ Unlimited		
	LCD 2.0" LTPS LCD		
	Storage : Micro SD 16GB		
	Video Output : 4K (3264 * 1836) 30FPS, MP4		
	Effective Pixels : 16M / 12M / 8M / 5M / 2M, JPEG		
Frame	Wheel-base 450mm 4EA, Landing Support 4EA, BASE PCB(For Fixing Frames)		RF Remocon : Single Shot, Recording Movie
Motor	Brushless, 22x12mm, 920RPM/V, 4EA	Controller/ Receiver	Controller 10channel, Receiver: 14channels
ESC	5.6V ~ 16.8V (2~3 Cell LiPo, 5~12 Cell NiHm Battery Support), Constant Current 30A (less than 40A 10 secd), BEC 2A 4ea		RF Range 2.40 ~ 2.48GHz
Propeller	For Prevention of Loosening (CW / CCW) 2 sets ea, 9x4.5 inch		Band width : 500kHz
Guard	For Prevention of Contact between surrounding obstacles and propellers, 13 inch		Band : 142
GPS	168dBm navigation Sensitivity, Navigation update rate up to 10Hz, include Digital Compass Sensor		RF Power : Less than 20dBm
LiDAR	- Operating Range : 0.3m ~ 12m		2.4GHz System : AFHDS 2A and AFHDS
	- Applicable voltage range : 4.5V ~ 6V (Serial TTL Level is 3.3V)		Code Type : GFSK
	- Acceptance angle : 2.3°		Sensitivity : 1024
	- Frequency : 100Hz		DSP Port : PS2, Output : PPM
	- Accuracy : 1% (~6m), 2% (6m~12m)	KC Certification	
	- Laser Wavelength : 850nm	Dimension	Size : 520 x 520 x 230 (Except Propeller Guard)
	- Light Sensitivity : 70,000lux		Weight: 2.3kg
	- Communication Interface : UART		

Software Spec

Item	Spec		
Firmware	[ArduPilot Platform Support and Source Description] - Support Copter, Plane, Rover, Antenna Tracker - Package for Integrated Controlling of Peripheral Sensor Controller and Output Device - Support Code or Function executed on Controller	GCS	Select Mission from Dropdown Menu - Download and Analyze Mission Record File
			[QGround Control (Android Environment)] - Open Source (GPLv3) - Platform : Windows , Linux, Android, iOS - Mission Planning for autonomous flight - Marking the Location, Flight Trajectory, and Waypoint of Body on Flight Map

Port Driver

Port Name	Related File
SPKT/DSM	AP_RCProtocol_DSM.cpp
TELEM 2	AP_Radio.cpp
	AP_Radio_backend.cpp
TELEM 1	GCS_MAVLink.cpp
USB	USBDriver.cpp
SPI	SPIDevice.cpp
POWER	
SWITCH	AP_Arming.cpp
BUZZER	Buzzer.cpp
SERIAL 4/	AP_RangeFinder_LightWareSerial.cpp

Port Name	Related File
GPS	AP_GPS_NMEA.cpp
CAN	CAN.cpp
I2C	I2CDevice.cpp
ADC 6.6V	Analogin.cpp
ADC 3.3V	
LED	AP_BoardLED.cpp
SD	DataFlash.cpp
RCIN	RCInput.cpp
AUX OUT	SRV_Channel_aux.cpp
	AP_Relay.cpp
MAIN OUT	SRV_Channel_aux.cpp

Flight Software

Function	Related File
Auto-flight mode	mode_auto.cpp
Loiter mode	mode_loiter.cpp
Land mode	mode_land.cpp
Altitude hold mode	mode_althold.cpp
Circular flight mode	mode_circle.cpp
Return to home mode	mode_rtl.cpp
Sports mode	mode_sport.cpp
Throw mode	mode_throw.cpp
Data communication	GCS_mavlink.cpp
Total file size	860KB

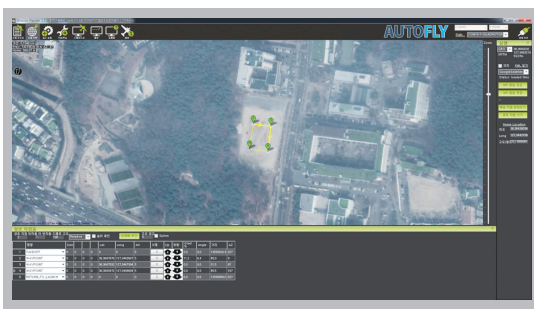
Contents

- **Drone Intro** : Definition / Type / Configuration / Principles of Operation / Frame Selection / Flight Controller Selection / Ground Station Selection / Hardware, Firmware, Software Preparation / Additional Hardware / Safety Precautions
- **Drone Manufacturing** : Hardware Assembly / Mission Planner Installation / Firmware Programming / Connecting Mission Planner and Ardupilot / Hardware Set-up
- **Flight** : Flight Mode Set-up / Safety Inspection Before Motor Operation / Start & Stop Motor / Tips for Beginners / Basic Tuning / Measuring Vibration / Hovering Set-up / Trimming Set-up / Safety Device / Pre-Flight Checklist
- **Advanced Set-up** : Auto Tune / Auxiliary Function / Gyro Calibration / Battery Power Limit Set-up /

EKF / Flight Time Record / Take-off & Landing Control Set-up / Motor Scaling Ratio Set-up / Offset Compensation Set-up for Sensor Location / Sensor Check / Remote Port Configuration / Tuning

- **Flight Controller and Source** : Flight Controller Hardware / Source Code
- **GCS-Mission Planner** : Mission Planning through Waypoint and Event / Mission Command List / Application
- **GCS-QGROUND CONTROL** : Intro / Download and Install App / Menu / Planning / Set-up / Flight / Application
- **LogData** : Diagnose problems using Log Data / Analyze Dataflash Log Data / Remote Communication Log Data / Save and Execute Log Data
- **Others** : FPV / Indoor Flight Guide / Multi-Flight / Antenna Tracking / Simulation / Reference

Examples



[WayPoint Routing using Mission Planner]



[Hovering using GPS and LiDAR]

※ The product will be delivered in the pre-assembly state. Support is sold separately.