

The KA Flight Basket utilizing UxV/35™ 12 June 2024

The USA manufactured Kairos Autonomi Flight Basket is a 5" small form factor quadcopter that utilizes easy to assemble and repair UxV/35™ components. Surrounding the quadcopter is a carbon geodesic sphere that provides the ability to bounce off objects, prevent propeller strikes, and recover from crashes.

UxV/35™ is an unmanned systems hardware standard created by Kairos Autonomi in conjunction with the PC/104 consortium. This standard utilizes a novel connector design that eliminates soldering and difficult connectors during assembly.



More information on the UxV/35™ standard can be found here:
<https://www.kairos82nd.com/uploads/files/114/Kairos82nd-UxV-35-datasheet-20231019.pdf>

Key Features:

UxV/35™ Drone Stack:

Components in the stack can be easily reconfigured, added, or removed based on the mission criteria.

The ready to fly "RTF" Flight Basket consists of 10 modules (Top to Bottom):

- GPS
- Mission Controller
- Telemetry Radio
- Gimbal Module
- (4X) ESC and Motor Modules
- SBUS Radio
- Power Module



Flight Basket:

Surrounding the quadcopter is a carbon geodesic sphere that protects the drone from obstacles and, by using a gimbal, allows the drone to reorientate itself after a crash to continue flying. This technology was originally developed in conjunction with Office of Naval Research (ONR).

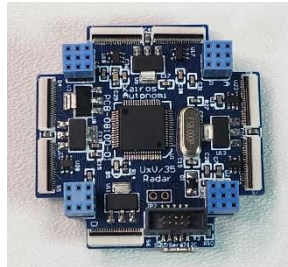


Autonomic Functions:

The Flight Basket runs ArduPilot which provides functionality to run autonomous waypoint missions along with obstacle avoidance utilizing rangefinder modules. Kairos currently offers two obstacle detection modules.

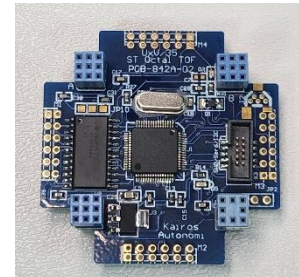
Radar:

- Up to 8 Sensors
- 20m range
- Configurable FOV



LIDAR TOF:

- Up to 8 Sensors
- 4m range
- Narrow fixed FOV



Battery Options:

Two battery options are available based on the Power Base board selected:

18650 Configuration



Li-Po Configuration



Specifications

| | |
|---|---|
| Length – No Props | 7in / 17.8cm |
| Width – No Props | 7in / 17.8cm |
| Height – Without Flight Basket | 4in / 10.1cm |
| Flight Basket | 14in Diameter Sphere |
| GNSS | GPS |
| Takeoff Weight – Average | 550g/19.4oz |
| Flight Time | 10 minutes |
| Power Supply | 4x 2800mAh 18650 Li-Ion Batteries -or- 1x 1500mAh Li-Po Battery |
| Max Horizontal Speed | 45mph / 20m/s |
| Operational Radius | 0.6mi / 1km |
| Max Altitude | 328ft / 100m |
| Max Wind | 7 mph |
| Mission Controller Software | Ardupilot |
| Autonomous Mission Planning | Available through ArduPilot Mission Planner |
| Obstacle Detection (Optional) | Radar / LIDAR TOF |
| Ruggedized Transportation Case (Optional) | Pelican 1650 designed for 2X Flight Baskets |

Version History

| Date and Signature | Revisions | Reasons for Revision |
|-----------------------|-----------------------------------|----------------------|
| 06/12/2024 Jack R. | Document was written. (v01.00.00) | |



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