

FCU-ALPHA

AUTOPILOT FOR HEAVY UAS SAIL III & IV

ADVANCED FLIGHT CONTROL WITH SCALABLE SAFETY ARCHITECTURE

The **FCU-ALPHA by PrimeCor Systems** is an integrated navigation, flight control and mission management unit designed for heavy and advanced UAS platforms. Its architecture enables scalable redundancy, while maintaining a compact, design to minimize volume and weight.

The system includes dissimilar self-monitoring architecture, providing enhanced operational safety and robustness for demanding missions.

HEAVY-UAS

HIGH-VALUE FOR SAFETY
CRITICAL OPERATIONS

ARCHITECTURE PROVIDING
SCALABLE REDUNDANCY

OPERATIONS REQUIRING
ENHANCED CONTAINMENT



NAVIGATION, GUIDANCE AND CONTROL CAPABILITIES

PLATFORM CONTROL

- Multiple helicopter configurations.
- Fixed-wing aircrafts.
- Multirotor platforms.
- Hybrid multirotor / fixed-wing aircraft.

GUIDANCE AND MISSION MANAGEMENT

- Waypoint-based navigation.
- Automatic Take-Off and Landing (ATOL) capabilities.
- Nominal and contingency flight management.
- Geofencing and geocaging.
- Integrated mission management and emergency recovery logic.

NAVIGATION AND SENSOR FUSION

- GNSS-INS sensor fusion, allowing continued operation during temporary GNSS outages.
- Native integration of DGPS and RTK with ground reference station.
- Capability to integrate third-party navigation sensors, including:
 - Comparison and voting with PrimeCor sensors.
 - Development of custom sensor-fusion solutions using customer-selected sensors.

INTERFACES AND PROTOCOLS

The **FCU-ALPHA** has been designed with maximum interface flexibility, enabling seamless integration into complex and safety-critical UAS architectures.

- Support for multiple standard UAS communication buses and protocols.
- Architecture adaptable to customer-specific aircraft requirements.
- Possibility to implement dedicated interfaces for program-specific needs.

PrimeCor Systems can accommodate the integration requirements of complex and certifiable UAS platforms.



TECHNICAL SPECIFICATIONS

SENSORS

- Gyro (x2): 300-2.000 deg/s
- Accel (x2): 8g & 10g
- Accuracy roll & pitch: 0.1 deg RMS
- Accuracy yaw (external Magnetometer): 1.0 deg RMS
- Pressure altitude accuracy: <10m
- Velocity accuracy: 1m/s
- Position accuracy: 2 - 2.5 m

MECHANICAL & ELECTRICAL

- Temperature range: -40 to 60°C
- IP 67 – enc. Aluminium
- Weight: 500g
- Dimensions: 92 x 92 x 44 mm
- Environmental: DO-160
- Input Voltage: 12 to 32 (MIL-STD-704)
- Power consumption: 10 - 15W

INTERFACES

- 2x CAN BUS
- 2x RS485
- 2x RS232
- 2x GNSS
- 1x Ethernet
- 6X GPIO / PWM
- 4X GPIO
- 6X ADC
- 1x UART



FCU-ALPHA

AUTOPILOT FOR HEAVY UAS SAIL III & IV