

FLIGHT CONTROLLER



INDUSTRIAL UAV ARCHITECTURES DESIGNED FOR OPERATIONAL RELIABILITY

XAP develops embedded UAV electronic systems designed for severe operating environments where reliability, redundancy, traceability and long-term maintainability are essential operational requirements.

Based on the latest-generation Pixhawk FMUV6X architecture, the XAP Flight Controller combines high-performance processing capabilities with a fully industrialized embedded system approach.

Unlike conventional Cube-based integrations relying on generic third-party modules, XAP has internally re-engineered the complete critical chain: embedded electronics, power integration, PCB architecture, PX4 extensions, system supervision, and proprietary communication protocols.

The platform integrates three fully independent inertial domains, redundant CAN architectures, native Ethernet connectivity, secure cryptographic authentication and industrial-grade high-endurance memory technologies.

This approach allows XAP to deliver more than a standalone flight controller: it provides a coherent and modular UAV control architecture optimized for high-power drones, regulated environments and sovereignty-sensitive applications.

FLIGHT COMPUTER FOR MISSION-CRITICAL UAV SYSTEMS

INDUSTRIALIZED PIXHAWK FMUV6X ARCHITECTURE:

Latest-generation STM32H7-based flight computer compliant with Pixhawk FMUV6X standards and optimized for industrial UAV deployment.

FULL PX4 & ARDUPILOT COMPATIBILITY:

Native support for both ecosystems enables rapid deployment from initial integration to production-level UAV architectures.

TRIPLE-REDUNDANT INERTIAL ARCHITECTURE:

Three independent IMU domains with separated power supplies ensure real hardware redundancy and continued operation in the event of localized failures.

HIGH-PERFORMANCE PROCESSING:

Advanced computational capabilities support multi-sensor EKF2 estimation, advanced flight control and onboard mission processing.

CERTIFIED SECURE ELEMENT:

Integrated NXP SE050 secure element provides cryptographic authentication capabilities for regulated UAV and defense-oriented applications.

NATIVE ETHERNET CONNECTIVITY:

Integrated 100-BaseT Ethernet enables direct companion computer interfacing, high-bandwidth supervision and real-time system communication.

THREE INDEPENDENT CAN NETWORKS:

Dedicated CAN domains separate propulsion, avionics and sensor architectures while maintaining native DroneCAN / UAVCAN compatibility.

INDUSTRIAL FRAM MEMORY TECHNOLOGY:

High-endurance FRAM technology eliminates flash wear limitations and guarantees long-term persistence of configuration and operational data.

TYPICAL APPLICATIONS

Heavy industrial multirotor UAVs
Tactical and defense drone systems
UAV retrofit and modernization programs
Industrial inspection drones
PX4 / ArduPilot R&D platforms
Autonomous aerial logistics systems
High-power aerospace UAV demonstrators
Regulated and certified drone ecosystems



► DRONES: *FLIGHT CONTROLLER*

SENSOR ARCHITECTURE

Sensor redundancy	3 x IMUs 2 x Barometers, separate buses and power domains
IMU characteristics	Dual-channel Accelerometer • Low-g channel $\pm 2 / \pm 4 / \pm 8 / \pm 16$ g full scale • High-g channel $\pm 32 / \pm 64 / \pm 80$ g full scale Gyroscope: $\pm 250 / \pm 500 / \pm 1000 / \pm 2000 / \pm 4000$ dps
Barometer characteristics	Pressure operating range: 30 → 125 kPa Ultra low noise and current consumption
Magnetometer characteristics	3-axis digital magnetic sensor ± 50 gauss dynamic range Ultra low power
Data transfer	SPI & I ² C interfaces for high-speed sensor data transfers

ENVIRONMENTAL & INDUSTRIAL

Operating Temperature	-40°C to +85°C
Maximum Dimensions	38.8 × 31.8 mm
Standard	DS-012 Pixhawk FMUv6X
PAB Connectors	Hirose DF40HC automotive grade
Thermal Dissipation	Metal enclosure contact cooling

PROCESSOR & MEMORY

Processor	STM32H753 • 32 Bit Arm® Cortex®-M7 • 480MHz
RAM	1 MB
FRAM	256-Kbit
Sensor EEPROM	64-Kbit

CONNECTIVITY & COMMUNICATION

USB	USB-C — USB 2.0 High Speed
Ethernet	100-BaseT RMII
CAN Interfaces	3 high-speed CAN buses
UART	4 × UART RTS/CTS + 2 × UART
SPI	Internal sensors + external SPI5
I ² C	3 × I ² C + NFC GPIO
RC Input	SBUS / DSM / PPM
PWM Outputs	8 × FMU_CH + 8 × IO_CH

SOFTWARE & ECOSYSTEM COMPATIBILITY

PX4 Autopilot	Native support
ArduPilot	Native support
DroneCAN / UAVCAN	Native support
MAVLink	v1 & v2
XAP Baseboard Compatibility	PS0587 Flight controller interface
Automatic Board Identification	Hardware Identifiers + Software Board Matching function
End-to-end Security	NXP EdgeLock SE050

PRODUCT SPECIFICATIONS

Product Type	Stand-alone enclosed module
Date & Revision	April 2026 - VIA
Products variants	Available
Manufacturer	XAP Technology

REFERENCES

EE0260	FLIGHT CONTROLLER MODULE
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