lightforce

Autonomous Control System

RESILIENT SCALABLE AUTONOMY

SEA | LAND | AIR

Core Architecture Attributes

From resilient navigation to resilient autonomy, LightForce is optimized for control, longevity, and operational relevance. LightForce adapts across vehicles, environments, and evolving mission demands.

Developer-First Autonomy

Purpose-built Linux OS for your software and custom development

Future-Ready by Design

AI

High compute supports evolving autonomy and sensing technologies

GNSS-Optional Architecture

Robust navigation with no reliance on regular satellite positioning

Cross-Domain Flexibility

Modular hardware and flexible I/O support virtually all applications

Built by developers for developers, LightForce supports native workflows with an interoperable development environment compatible with C, C++, Java, Simulink, and Python. That means smarter onboarding, stronger performance, and quicker rollout across every platform you build.

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SPECIFICATIONS

Mission Processor
4x Cortex-A76 @ 2.5GHz

I/O Processor
2x Cortex-M33 @ 150MHz

Embedded GPU
VideoCore VII @ 800MHz

Storage
16GB eMMC
1TB internal M.2 NVMe SSD

Power Distribution
Dual-redundant 5-32V Input
16x 5A Monitored Output

Internal Sensors
IMU
Dual Antenna RTK GNSS

Communications
Wifi
Bluetooth
2x ISM LOS
LTE

Input / Output
1x 4-lane MIPI CSI
2x 1 Gbps Ethernet
1x USB2 OTG @ 480 Mbps
16x PWM
1x I2C
1x CAN FD @ 8 Mbps
16x UART **
16x RS422/485 **
16x RS232 **
8x GPIO
8x ADC

Note: I/O further extendable with multiple units
** Software selectable

Looking for something?

LightForce is made to be customized and adapted. We offer a wide range of extension modules as well as bespoke solutions made to match your requirements. Contact us for more information!

MODULAR CAPABILITIES

Intelligence
Detect & Avoid
Smart Health Monitoring
Dynamic Path Planning
Swarming

External Sensors
Lidar
Airdata (Multi-hole Pitot)
Fibre Optic Gyroscope IMU
Visual / Thermal Camera

Navigation
Dead Reckoning
Vision-based guidance
GNSS Spoof/Jam Detection

Safety
Flight Termination (FTS)
ADS-B
Triple Redundant Voting
Remote ID
Geofencing

Advanced Control
Adaptive
Non-linear
Tethered

Communication
SATCOM
Fibre Optics

Actuators & Motors
Servo / Stepper / BLDC / +

Ground Support
Ground Control Station
SIL / HIL
MAVLink

Supported Platforms
UAV / USV / UGV
Hybrid Robotic Systems
Coordinated Swarms
Systems of Systems (SoS)
Distr. Sensor Networks