SWIFTBIRD AEROSPACE

ALLOY SERIES · FLEET-GRADE INERTIAL NAVIGATION

Inertial, sized for the drone. Priced for the fleet.

ALLOY is a cost-engineered inertial navigation system designed exclusively for unmanned platforms. Same fusion core as our tactical line - stripped to what a drone airframe actually needs, at a price the production line can absorb.

Drone INS that scales.

ALLOY AND ALLOY+

WWW.SWIFTBIRD.EU

01 · CONTEXT

Drone programs can’t pay tactical-grade prices.

Modern drone fleets move in volume - commercial swarms, one-way effectors, trainers, ISR workhorses. Every airframe still needs to hold attitude when GNSS drops, but legacy INS units were priced for crewed avionics. ALLOY closes that gap: a drone-only inertial module engineered for unit economics, not exotic platforms.

01 Volume production

Hundreds to thousands of airframes per program. Unit cost, lead time and yield matter more than headline precision.

02 One-way & expendable

Loitering platforms and effectors where the avionics never come back. The cost of the INS lands in the bill of materials, every flight.

03 Commercial & ISR drones

Inspection, mapping, agriculture, surveillance - operations where GPS is usually present, occasionally not, and the budget is fixed.

04 Trainers & spare units

Fleet operators need a stocked, drop-in inertial that costs less than the airframe, not more.

HERITAGE

ALLOY inherits the algorithms from COMPOSITE family, which was first developed for hypersonic flights guidance - the Sztorm experimental rocket. The same core concept but scaled.

02 · SYSTEM

Two SKUs. One core.

ALLOY and ALLOY+ share the same fusion core, the same enclosure, and the same host interface. The only delta is a GNSS receiver board on ALLOY+. Choose by mission: inertial-only for cost-down airframes, or ALLOY+ when GPS aiding is on the table.

SENSING UNIT

Gyroscope	× N
Accelerometer	× N
GNSS L1	opt.

ALLOY CORE

ALLOY

Computation & fusion unit

HOST INTERFACE

CAN FD	std.
RS-232	std.
UART CMOS	std.
OTHER	opt.

01

Pick the SKU

ALLOY for inertial-only airframes. ALLOY+ if you want GNSS aiding on the same board.

02

Match the bus

Confirm CAN, UART or MAVLink against the host autopilot. Pinout is fixed across both SKUs.

03

Volume commit

Quote scales with annual volume. ALLOY is priced for production lines, not one-off avionics.

04

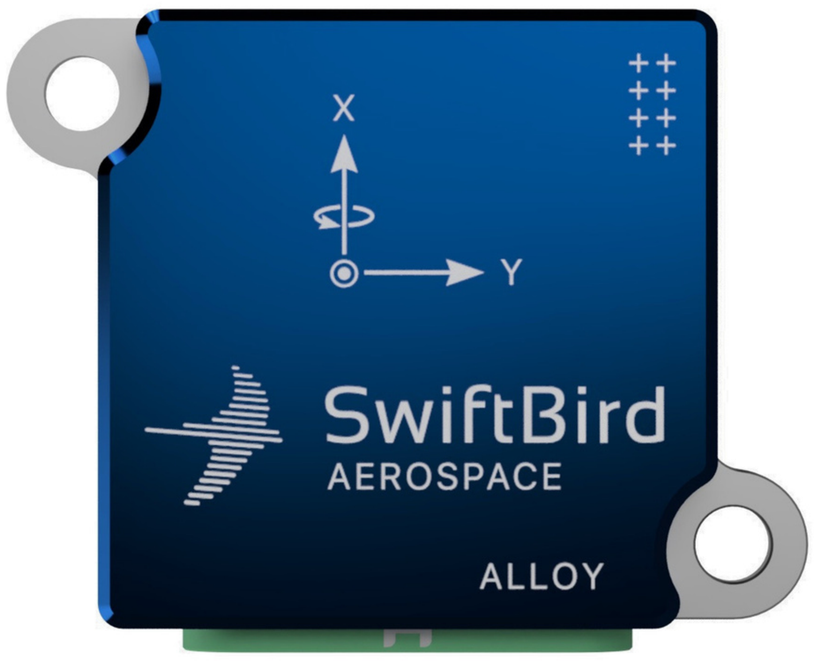
Offer & build

Manufacturing begins on acceptance. Each unit ships with a full calibration certificate.

03 · DATASHEET · PN ALLOY-D1

ALLOY 1D.

Drone platform, by design.



PERFORMANCE

Output refresh rate	up to 6 kHz
Accelerometer bias instability	< 20 µg
Gyroscope bias instability	< 1.5 °/h
Angular random walk	< 0.1 °/√h
Accelerometer range	± 16 g
Gyroscope range	± 4000 °/s
Interface	UART · CAN-FD · RS-232 · AND MORE
GNSS aiding (optional)	L1

MECHANICAL & ENVIRONMENTAL

Dimensions	24 × 24 × 10 mm + mounting
Mass	<20 g (est.)
Max power	< 0.5 W @ 5 V < 0.75 W @ 5 V with GPS
Operating temperature	-40 to +85 °C

04 · CAPABILITIES

Why drone programs choose ALLOY.

Six properties that summarise the line - cost-engineered hardware, the same fusion core as our tactical product, and a clear upgrade path when the mission grows.

01

Engineered for unit cost

Sensing unit, bus and enclosure stripped to the minimum a drone airframe actually needs. Priced to land in the BoM.

02

20 g, 0.5 W, 24 mm

Sized for FPV, loitering, and small commercial UAVs. No bracket gymnastics, no thermal redesign.

03

ALLOY+ adds GPS

Same footprint, same pinout - drop in GNSS L1 when the program asks for it, without touching the airframe harness.

04

Standard drone buses

CAN, UART, I²C, SPI and MAVLink out of the box. Bring-up against PX4, ArduPilot or a custom stack takes a day, not a week.

05

EU sourcing, ITAR-free

Components and assembly inside the European Union. Clean export paths, predictable lead time for fleet programs.

06

Heritage

The fusion algorithms carried over from our tactical line. Clear upgrade path the day mission requirements change.

05 · GET IN TOUCH

Talk to the founders.

For technical evaluation kits, NDA-gated documentation, or to scope a custom ALLOY build against your mission profile.

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