

Inertial navigation for tactical drones.

Where GPS fails.

COMPOSITE is a family of compact, inertial navigation devices that keep unmanned platforms oriented through GNSS jamming, spoofing, and signal loss - engineered for the drone airframe.



Operate [where GPS fails](#). SwiftBird keeps the airframe oriented.

01 · CONTEXT

GNSS denial is no longer the exception.

Across contested airspace, urban operations, maritime work and indoor missions, UAV teams routinely lose, jam, or are spoofed off satellite navigation. COMPOSITE replaces that dependence with inertial sensing and on-board data fusion, so the airframe knows where it is, where it points, and how fast it is moving, without any external signal.

01 Contested airspace

Active jamming or denial-of-service across the L-band. The airframe must hold heading and position through the entire egress.

02 Urban canyon

Multipath reflections and partial sky views make GNSS unreliable. Inertial holds precision through corridors, tunnels and bridges.

03 Maritime & weather

Storms, fog, sea-state, and metal-deck environments. Inertial is independent of optical aiding across the full envelope.

04 Indoor & GPS-denied

Warehouses, infrastructure inspection, sub-surface and indoor flight - environments where no satellite signal exists at all.

HERITAGE

COMPOSITE was first developed for hypersonic flights guidance - the Sztorm experimental rocket (September 2024, Baltic Space). The same core scales to a satellite and UAV variants.

02 · SYSTEM

One core, configured to your mission.

The COMPOSITE computation and fusion core stays the same across every variant. We adjust the grade of sensing unit and the bus interface, never the system itself. Precision tiers are dialled in by sensor configuration, not by redesign.

SENSING UNIT

Gyroscope	× N
Accelerometer	× N
GNSS L1 / L2 / L5	opt.

COMPOSITE+ CORE

COMPOSITE

Computation & fusion unit

HOST INTERFACE

CAN-FD	std.
RS-232	std.
UART · SPI	std.
MAVLink	std.

01

Consultation

Mission profile, environment, and required performance band are captured with the customer.

02

Sensor selection

Grade of sensing unit is tuned to hit the precision target inside the customer's budget.

03

Interface tuning

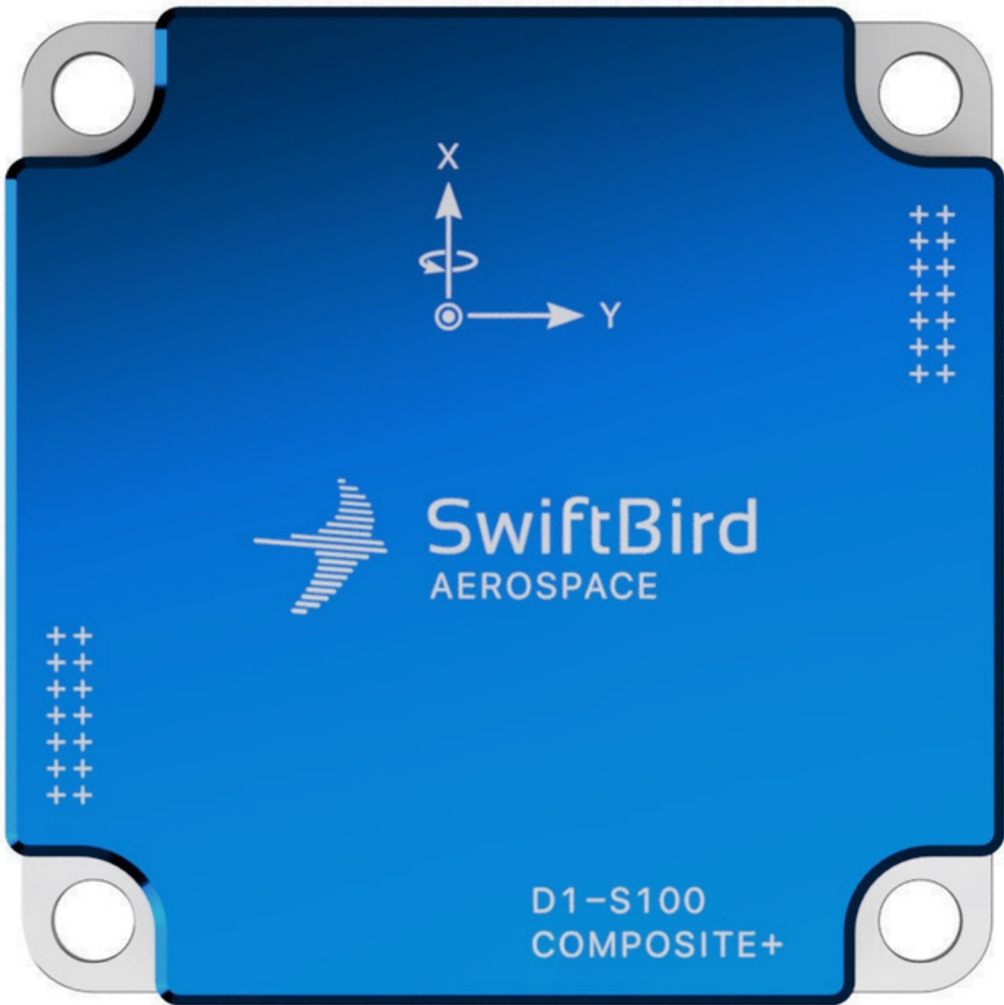
Electrical pinout, bus and message format are matched to the host autopilot or flight controller.

04

Offer & build

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

COMPOSITE D1. Built for the drone airframe.



PERFORMANCE

Output refresh rate	up to 6 kHz
Accelerometer bias instability	< 10 μ g
Gyroscope bias instability	< 0.6 $^{\circ}$ /h
Angular random walk	< 0.04 $^{\circ}$ / $\sqrt$ h
Accelerometer range	$\pm$ 16 g
Gyroscope range	$\pm$ 4000 $^{\circ}$ /s
Interface	UART · CAN-FD · RS-232 · AND MORE
GNSS aiding (optional)	L1 · L2 · L5

MECHANICAL & ENVIRONMENTAL

Dimensions	40 × 40 × 15 mm
Mass	88 g (typ.)
Power	< 1.8 W @ 5 V
Operating temperature	-40 to +85 $^{\circ}$ C
Vibration tolerance	MIL-STD-810H

Why UAV builders choose COMPOSITE.

Six properties that summarise the system - designed once, validated on flight, carried across every COMPOSITE variant.

01 GNSS-denial resilient

Holds orientation and position when satellite navigation is jammed, spoofed, or simply unavailable.

02 Tactical-grade precision

Multi-MEMS fusion at $< 15 \mu\text{g} / 0.6^\circ/\text{h}$ — performance previously reserved for FOG-grade hardware.

03 Drop-in integration

CAN-FD, RS-422, MAVLink and standard avionics connectors. Short bring-up against existing autopilots.

04 All-weather operation

Runs through storms, fog, sea-state and indoor missions. Independent of optical or visual aiding.

05 EU sourcing, ITAR-free

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

06 Configurable precision

Same envelope, same software API. Sensor population is tuned per order to hit the cost / performance band.

Talk to the founders.

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

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