EMBENTION

Enabling drones to populate our skies





4X 2.2

Triple redundant flight control system

Built for defense and civil drones and manned eVTOL. Triple redundancy with dissimilar processors in a single unit, designed for DAL A, ready to fly or open to your own flight software.

DAL A	737 g	10^{-9}	DO-160G
CERTIFICATION READY	TOTAL WEIGHT	CRITICAL FAILURE / FH	QUALIFIED

TRIPLE REDUNDANT

Dissimilar processors, embedded or distributed redundancy.

CERTIFICATION

Certifiable for FAA Part 23/25, EASA SC-VTOL and UAS.

OPEN SOFTWARE

Ready to fly, custom C/C++ or your own flight software.

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VERONTE AUTOPILOTS

PRODUCT OVERVIEW

Three autopilot lanes in 737 g

Primary, Monitor and Recovery lanes run in parallel, with processor dissimilarity and a sensor suite per lane. If the Primary fails, the Monitor hands control to the Recovery lane through hardware multiplexers, transparently to the actuators.

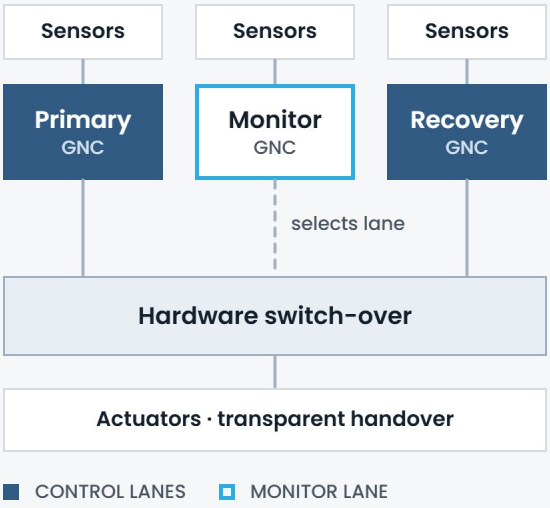
Fail-operational

Four independent power inputs and dual-channel I/O on two MIL-DTL-38999 connectors.

Designed for DAL A

DO-178C, DO-254, ARP4754B and ARP4761A processes, with certification datapack.

INSIDE ONE 4x 2.2 UNIT



CAPABILITIES

Detect & avoid	ADS-B In/Out and Remote ID, with embedded DAA logic.
GNSS-denied	Inertial navigation, TRN and external vision modules.
Formation & swarm	Formation flight with a mother vehicle and swarm operations.
Multidomain	Fixed-wing, VTOL, multirotor, rotorcraft, parafoil, UGV, USV.
External sensors	Any external sensor via CAN, serial, ARINC 429 or Ethernet.
Sovereignty	Multi-site production and trusted supply chains.

OPEN SOFTWARE

Ready to fly	Proven on unconventional layouts, set up by configuration.
Custom code	C/C++ or Simulink autocode on a dedicated processor core.
Full custom	Own flight software, with optional Veronte monitoring.
Platform	Bare-metal platform software, the certifiable base of the Veronte lanes.
Verification	Automatic verification, traceability, SIL, HIL, Monte Carlo.
Operation	Veronte Ops or third-party GCS via STANAG 4586.

APPLICATIONS



MANNED EVTOL

Certifiable path for Part 23/25 and SC-VTOL.



FLY-BY-WIRE

Crewed and uncrewed, embedded or distributed.



DEFENSE DRONES

Sovereign, designed for NDAA and Blue UAS.



CIVIL DRONES

Cargo, agro, SAR, etc. with fail-operational safety.

MAIN FEATURES

All vehicles	Fixed-wing | VTOL | Multirotor | Helicopter | Autogyro | Parafoil | UGV | USV
Control modes	Automatic | Assisted | Manual | Fly-by-wire
Redundancy	Triple, dissimilar | Single unit or distributed
Detect & avoid	ADS-B In/Out | Remote ID (FAA & EU)
GNSS	3x multi-constellation | RTK | Heading | OSNMA
Sensors & air data	Redundant IMU, baro, mag | Pitot & static
Communications	Internal 4G LTE, eSIM | LOS & BLOS | Black box

I/O · 2X MIL-DTL-38999 (J1 & J2)

CAN FD	8x (4 J1 + 4 J2) | 8 independent or 4 redundant
SAIL Bus	2x (1 J1 + 1 J2) | Distributed redundancy link
ARINC 429	4x Tx (2 J1 + 2 J2) | 8x Rx (4 J1 + 4 J2)
Ethernet	2x TSN (1 J1 + 1 J2) | Internal shared switch
Serial	2x RS232 | 2x RS485 | Duplicated on J1 & J2
PWM / digital out	4x PWM or 5V digital | Duplicated on J1 & J2
Analog / digital in	6x analog 5/12/54 V (3+3) | 4x digital (2+2)

SOFTWARE

Platform software	Bare-metal | Designed for DAL A
Application	Veronte flight software | C/C++ | Simulink autocode
Native functions	GNC | Geofencing | Geocaging | DAA
Full custom	Own flight software | Optional monitoring | SDK
Verification	Automatic verification | Traceability | SIL / HIL

SAFETY & CERTIFICATION

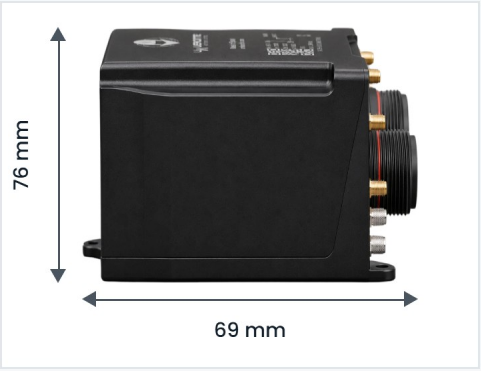
Robustness	No single point of failure | Dual-channel I/O
Reliability	MTBF 20,000 h per unit | 10^{-9} critical failures/FH
Protections	FTS | BIT | Reverse polarity | Short circuit
Environmental	DO-160G | EMI/EMC | HIRF | Lightning
Certification	Designed for DAL A | DO-178C | DO-254 | ARP4754B
Certifiable for	FAA Part 23/25 | EASA SC-VTOL | STANAG 4703 | UAS

GENERAL

Power input	8 – 54 VDC | 4 inputs on 2 connectors
Power	14 W nominal | 18 W peak
Temperature	Operating -40 to 65 °C | Storage -55 to 85 °C
Dimensions	136 × 76 × 69 mm (W × H × D) | IP67
Weight	737 g



FRONT



SIDE



PERSPECTIVE 136 × 76 × 69 mm

QUALITY · ISO 9001 · EN 9100 · EASA APDOA & POA · ISO 27001

P016242 Veronte Autopilots: 4x 2.2