Parrot

Parrot unveils CHUCK 3.0:
The sovereign AI autopilot for any UAV

Empowering OEMs with advanced AI including optical navigation for GPS denied environments, day/night stabilized imaging, jam-resistant multi-band radio and an open-source SDK

Paris, France, June 16, 2025 at 8:00 am – Paris Air Show (Le Bourget) – Parrot, the European leader for professional micro-UAV, today announces CHUCK 3.0, a breakthrough all-in-one autopilot that turns any UAV platform into a high-performance system. The compact unit fuses AI-driven autonomous flight, a spoof-proof multi-band frequency hopping radio and real-time optical navigation for GNSS-denied airspace. It also brings obstacle avoidance and a stabilized three-axis gimbal with day- and night-grade imaging. CHUCK 3.0 seamlessly integrates with quadcopter, VTOL, fixed-wing, helicopter, or hybrid UAVs. It streamlines OEM workflows from initial concept to mission-ready deployment in a matter of months, with Parrot's extensive UAV expertise embedded.

Unveiled today at the Paris Air Show, CHUCK 3.0 features a secure long-range ground controller, offers native links for MARS frequency-hopping radio, 5G, LoRa, satellite connection, and exposes its full capability set through an open-source SDK and the Parrot FreeFlight 8 mission-planning suite. Thanks to its simplified integration and trusted 100% non-Chinese component base, CHUCK 3.0 lets UAV manufacturers accelerate development while bolstering overall supply-chain resilience.

"Current conflicts show that secure, high-performance UAVs must be fielded not only faster in R&D but also at industrial scale", **says Henri Seydoux, Founder and CEO of Parrot**, *"CHUCK 3.0 answers that need. It packs fifteen years of Parrot experience into one module, trims development time to a few months and removes any reliance on Chinese components. With jam-resistant radios, AI optical navigation and an open SDK in the same unit, backed by its dedicated controller, simulator and FreeFlight 8 mission software, CHUCK 3.0 lets our partners build mission-ready drones at true industrial scale."*

Rapid, sovereign upgrade path for any UAV

Today's drone market counts thousands of manufacturers, yet most still assemble unsecured, off-the-shelf components and miss the real technological advancements. This fragmentation lengthens development cycles, injects supply-chain risk and leaves reliability unproven. CHUCK 3.0 breaks that pattern: it delivers top-tier autonomy, sensing and secure connectivity in as little as four months of integration, versus the multi-year, nine-figure costs of developing an equivalent bespoke platform.

Every component has been sourced outside of China, guaranteeing supply-chain resilience and full compliance with stringent defense and government-procurement standards, an essential requirement for nations seeking technological sovereignty and local industrial leverage.

Hardware highlights include a 35× optical-zoom payload, FLIR Boson 640 thermal core and a three-axis stabilized gimbal supported by four robotics-grade sensors. Alongside its jam- and spoof-resistant multi-band (MARS) radio suite, the module can also ship in an "autopilot-only" configuration for drop-in use with an operator's existing RF links.

Parrot supports CHUCK 3.0 with a comprehensive ecosystem of peripherals such as multi-payload ports, night-vision modules and MARS remote-antenna kits. For night operations, the module is compatible with the Parrot NIGHTVISION module, an optional intelligent payload designed to extend optical navigation performance in complete darkness. On the software side, the FreeFlight 8 mission-planning app, Sphinx flight simulator and open-source SDK extend and future-proof the platform, making it the most complete, scalable and secure solution in the professional UAV market.

Quality & reliability: built for rugged environment

Building on 15 years of UAV innovation and eight years of CHUCK concept development, Parrot has consolidated its cutting-edge smartphone-chipset architecture and AI neural-network-based flight algorithms into a unique module that addresses the rapid needs of professional and defense UAV markets.

Engineered to aerospace-grade standards, CHUCK 3.0 couples a ruggedized enclosure with an extensive qualification campaign. The module and controller withstand cold to –40 °C, heat to +70 °C, IP5X/IPX3 ingress, random and sine vibration, drop and HALT endurance.

CHUCK 3.0 was tested against several EMC test standards such as MIL-STD-461G and EN 300 328. It shows exceptionally low radiated and conducted emissions, guaranteeing zero interference with neighboring avionics. In immunity trials, against radiated electric fields up to 300 V/m, electrostatic discharge and power transients, CHUCK 3.0 maintained full performance, confirming operational integrity in demanding electromagnetic environments.

Secure-boot chains, AES-256 encrypted links and cryptographically signed OTA updates protect every software release. All sensitive electronics are sourced exclusively from Europe, the United States or NATO-partner nations, providing a fully traceable, non-Chinese supply chain.

CHUCK 3.0 turnkey integration & lifecycle support

CHUCK 3.0 SDK minimizes integration effort, and Parrot's methodology team stands ready to guide in the critical "last-mile" integration phase to the OEM's frame.

Parrot delivers a turnkey integration program that lets OEMs embed CHUCK 3.0 in less than four months, following a standardized five-phase methodology documented in detail for every customer. Each phase (mechanical integration, electronic integration, flight-controller tuning, sensor validation and final flight validation) comes with step-by-step instructions, indicative timelines and required

flight hours. A mid-process design review conducted by Parrot at the end of the sensor validation ensures the module meets all specifications before flight qualification begins.

Throughout the life of the project, customers receive update notes for the CHUCK firmware, ground-controller software and FreeFlight 8 app, while the starter package ships with everything needed to begin work immediately.

This structured, tool-rich approach minimizes risk, accelerates time-to-air and guarantees consistent results across all platforms.

Availability

CHUCK 3.0 has entered production, with shipments already underway with initial Taiwanese and Ukrainian partners while several other integrations are in the due diligence phase.

Media Resources

High-resolution photos, product visuals, demo videos and technical datasheets are available for editorial use on www.parrot.com

ABOUT PARROT

Parrot is Europe's leading group in the field of professional micro-UAVs and 3D mapping and modeling solutions. The Group designs, develops and markets a complementary range of high-performance micro-UAVs and photogrammetry software, serving both operational and analytical needs of security forces, industrial and commercial operators as well as public authorities worldwide.

Parrot integrates artificial intelligence at the core of its microdrone systems, enabling advanced capabilities in autonomous flight, detection, tracking, and analysis in complex environments. Its ANAFI range, renowned for its compact design, robustness and ease of deployment, is built to meet the demanding requirements of critical missions in Intelligence, Surveillance and Reconnaissance (ISR), public safety, and technical inspection.

Parrot is also behind Pix4D, a leading suite of software solutions for photogrammetry and geospatial data processing. Designed for professionals in surveying, construction, infrastructure, agriculture, public safety and environmental monitoring, Pix4D enables advanced 2D and 3D modeling, mapping and digital twin generation.

Founded in 1994 by Henri Seydoux, Chairman, CEO and main shareholder, Parrot is headquartered in Paris and develops its products in Europe. Manufacturing is carried out in the United States and South Korea, combining technological sovereignty with industrial agility. The Group employs over 400 people and generates most of its revenue, €78 million in 2024, internationally. With subsidiaries in Switzerland, the United States, South Korea, the United Kingdom, Australia, Japan, Germany and Spain, Parrot serves governments, enterprises and operators in more than 50 countries. Parrot is listed on Euronext Paris (FR0004038263 - PARRO). For more information: www.parrot.com, www.pix4d.com

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KEY FEATURES

RADIO LINK

• 5G
• MARS (Radio-jamming resistance through Frequency Hopping)
• Over 1.5 GHz bandwidth spread over 10 bands across 1.8 - 5 GHz
• Encrypted backup LoRa radio
• Direct video stream resolution: 1080p at 30 fps
• AES 256 encryption: packet and radio level

SENSORS

• Satellite navigation: GPS, GLONASS, Galileo & BeiDou
• Barometer and magnetometer
• Front and vertical stereo cameras, and vertical range sensor
• 4 x 6-axis IMU (3-axis accelerometers + 3-axis gyroscopes) (Flight IMU: ICM-40609-D)

EO IMAGE CHAIN

• 2 sensors: 1/2.4"
• Digital zoom: 35x
• Electronic shutter speed: 1/25 s to 1/10,000 s
• ISO range: 100 - 3,200
• Video resolution: 4K / FHD / HD
• Video format: MP4 (H.264 & H.265)
• Photo resolutions:
• Wide: 21 MP (84° FOV)
• Rectilinear: up to 16 MP (up to 75.2° FOV)
• Photo formats: JPEG, DNG (Digital NeGative RAW)

IR IMAGE CHAIN

Sensor: FLIR BOSON
• Resolution: 640 x 512 px
• Temperature range: -40 °C to +250 °C (-40 °F to +482°F)
• Thermal sensitivity: ≤60 mK
• Measured IR wavelength range: 8 to 14 micrometers
• Video resolution: UHD (2160p) at 8.6 fps
• Video format: MP4 (H.264 / H.265)
• Photo formats: JPEG

IMAGE STABILIZATION

• 3-camera IR/EO stabilized gimbal:
• Hybrid: 3-axis
• Mechanical: 3-axis
• Electronics (EIS): 3-axis
• Controllable gimbal tilt range: -90° to +90°

CYBERSECURITY

• Zero data shared without user consent
• Manage your data privately between drone and device or share anonymous data on secured European servers
• MicroSD card AES-XTS encryption with a 512-bit key
• Digitally signed firmware
• Compliant with FIPS140-2

CONNECTIVITY & STORAGE

• Ports: USB-C, Ethernet
• Connectors: XT30 power jack, GPS, Interface board, (x2) TELEM, (x8) external SMA antenna
• MicroSD and SIM cards ports
• 512 GB internal memory

ADVANCED FLIGHT APP - FREEFLIGHT 8

• Flight Planning with waypoints and points of interest
• Object recognition & tracking
• Cursor On Target
• Video streaming & recording
• EO and IR cameras settings management
• Touch & Fly
• System settings and management
• Flight logs recording and reviewing

MEASUREMENTS

• Size: 222 x 100 x 85 mm (8.7 x 3.9 x 3.3")
• Mass: 390 g (0.86 lb)

GLOSSARY

UAV / micro-UAV: Uncrewed (unmanned) aerial vehicle; "micro" refers to small, sub-25 kg professional systems.

Autopilot module: Onboard computer that controls flight attitude, navigation and payload functions without human stick input.

AI optical navigation: Computer-vision algorithms that recognise ground patterns and landmarks to guide the drone when GPS is jammed or unavailable.

GPS- / GNSS-denied airspace: An environment where satellite-navigation signals are absent, blocked / jammed or spoofed.

LoRa: Low-Power Long-Range radio protocol used for low-bandwidth telemetry over many kilometres.

VTOL: Vertical Take-Off and Landing aircraft combining rotor lift for take-off/hover with fixed-wing cruise.

Robotics-grade sensors: Industrial IMUs, barometers and vision units specified for low drift and high shock/vibration tolerance.

Smartphone-chipset architecture: Use of high-performance mobile SoCs (CPU + GPU + AI accelerator) repurposed for onboard processing.

Neural-network flight algorithms: Deep-learning models embedded on the autopilot for target recognition, obstacle detection and navigation.

IP5X / IPX3 ingress: Ingress-protection ratings: IP5X = dust-protected; IPX3 = protected against spraying water.

HALT (Highly Accelerated Life Test): Stress test applying extreme temperature cycling and vibration to reveal early hardware failures.

MIL-STD-461G: U.S. military standard for electromagnetic emission and immunity of electronic equipment.

EN 300 328: European radio standard ensuring 2.4 GHz devices (Wi-Fi, etc.) meet emission and coexistence limits.

Radiated Electric Field immunity 300 V/m: Ability to keep working when exposed to external radiated electric fields up to 300 volts per meter in all directions (reverberation chamber method).

Secure-boot chain: Cryptographic check at power-on that only authentic, untampered firmware runs.

AES-256 encrypted links: Data links protected by 256-bit Advanced Encryption Standard, a widely accepted high-strength cipher.

Cryptographically signed OTA updates: Firmware updates delivered "Over The Air" and accepted only if their digital signature matches Parrot's keys.