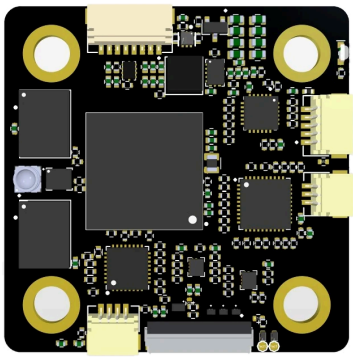
SmartPilot

v3.1031

AI drone autonomy module that adds terminal, failsafe, flight and geolocation autonomy to an existing drone, without replacing its flight controller.



Every flight depends on things that fail: precision in the last seconds, the radio link, pilot training and satellite positioning. Today each is solved, if at all, by a separate product. SmartPilot solves all four on one 19 g board.

MISSION SUCCESS RATE

<15% → **75%**

Flown by hand — With SmartPilot

FPV missions flown by hand succeed only about 10–15% of the time; autonomous guidance raises success to about 70–80% (CSIS, Mar 2025).

42 × 42 × 9 mm	19 g	0.6 TOPS	1080p · 60 fps
SIZE · 30.5 MM M3 STACK	WEIGHT	NEURAL-ART NPU	DIGITAL VIDEO IN

FOUR PROBLEMS. ONE BOARD.

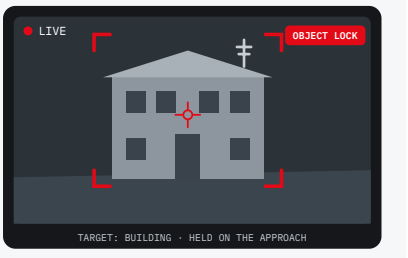
The last seconds
Terminal autonomy
Locks onto a whole target or one exact point of it, and flies the final approach.

The radio link
Failsafe autonomy
Holds position when the link drops, then lands or returns home.

Pilot training
Flight autonomy
Stays in acro mode, yet anyone can fly it, even without GNSS.

Satellite positioning
Geolocation autonomy
Knows where it is from its camera and a map, without GNSS.

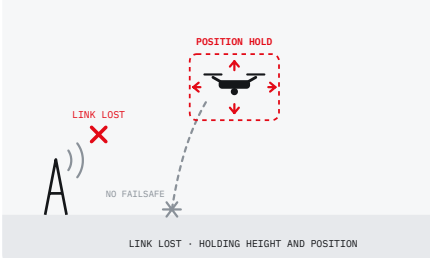
FOUR KINDS OF AUTONOMY



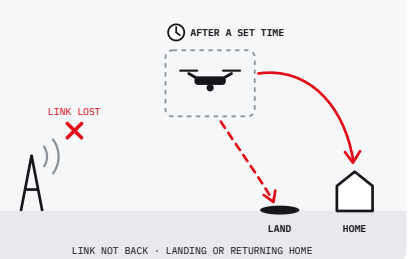
TERMINAL AUTONOMY
Object lock
Locks onto the whole target, aerial or ground, moving or stationary, and flies the final approach in closed loop.



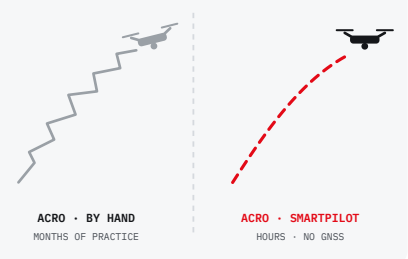
TERMINAL AUTONOMY
Pixel lock
Locks onto one chosen point of the target, such as a door, a window, an antenna or a radar, through the approach.



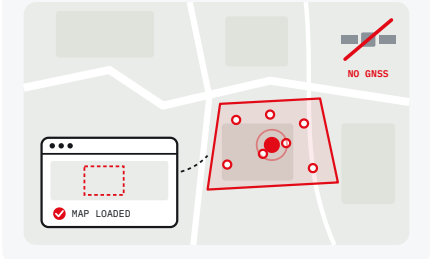
FAILSAFE AUTONOMY
Position hold
When the link drops, even without GNSS and in acro mode, it holds the drone's height and position.



FAILSAFE AUTONOMY
Land or return home
If the link is not back within a set time, it lands or flies home. The wait and the action are configurable.



FLIGHT AUTONOMY
Easy to fly, even without GNSS
The flight controller stays in acro mode; SmartPilot flies it with the ease of loiter mode. Operators are ready in hours.



GEOLOCATION AUTONOMY
Position without GNSS
Matches the camera view to a map loaded before flight on the SmartPilot web platform; no satellite signal needed.

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TECHNICAL SPECIFICATIONS*

v3.1031

Mounted on FPV drones, including interceptors, next to the flight controller already on board. The operator stays in command: SmartPilot never takes over on its own, and control can be taken back at any moment.

COMPATIBLE FLIGHT CONTROLLERS

PX4	ArduPilot	Betaflight	INAV
MAVLINK	MAVLINK	MSP · CRSF	MSP · CRSF

ONE BOARD. THREE CONNECTIONS.

Camera in
Analog, MIPI CSI-2, USB or IPEX; thermal or optical.

Video out
To an analog VTX, or over Ethernet to an IP radio.

Flight controller
One UART, MAVLink or MSP; powered by the FC.

PROCESSOR & COMPUTE

Main MCU	STM32N657X0	CPU	1× Cortex-M55 @ 800 MHz
Internal NPU	0.6 TOPS Neural-ART	Internal GPU	NeoChrom 2.5D
Storage	64 MB Octo-SPI NOR flash	Internal RAM	4.2 MB internal SRAM
Power input	5 V from FC BEC ≥ 3 A · reverse-polarity protected	External RAM	64 MB external PSRAM

ONBOARD SENSORS

IMU	6-axis ICM-45686 (accel + gyro)	Barometer	BMP585 absolute pressure sensor

VIDEO INPUT & OUTPUT

Analog camera	CVBS · JST-SH 4-pin	Digital camera	MIPI CSI-2 via FFC · up to 1920×1080 (1080p)
USB camera	USB 2.0 HS host (UVC) · 4-pin header	IPEX camera	Digital camera via IPEX connector
Analog video out	CVBS · PAL / NTSC to VTX	Pipeline	HW deinterlacer + TBC
Format	NTSC 720×480 @ 60i · PAL/SECAM 720×576 @ 50i	Modality	Thermal & optical

COMMUNICATIONS & FC INTEGRATION

UART	2× UART (connector + solder pads) · 3.3 V or 5 V logic	FC link	UART @ 921600 · MAVLink or MSP
RC link	UART · CRSF direct receiver	VTX OSD	MSP DisplayPort over the FC UART
Ethernet	10/100 Mbps · video output to IP radios	Bus	I²C ×1 · SPI ×1 (solder pads)
Debug	SWD on solder pads		

CONNECTORS

Power in	8-pin · 5 V input (4× VIN, 4× GND)	CSI camera	22-pin FFC, 0.5 mm · 2-lane MIPI CSI-2, camera I²C + power
Analog cam in	4-pin · CVBS in, 5 V camera power, control, GND	Analog video out	3-pin · CVBS out to VTX, control, GND
USB camera	4-pin · USB 2.0 HS (5 V, D-, D+, GND)	Ethernet	5-pin · 10/100 (TX±, RX±, shield)
UART 1	3-pin · TX, RX, GND	Solder pads	UART 2 · SPI · I²C · SWD / reset · boot

MECHANICAL & ENVIRONMENT

Form factor	42 × 42 × 9 mm	Mount	30.5 mm M3 dual stack
Vibration	FPV-class soft mount	Weight	19 g
Compatibility	7″–15″ FPV dual stack	Operating	-20 to +70 °C

***Specifications are subject to change without prior notification.**

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