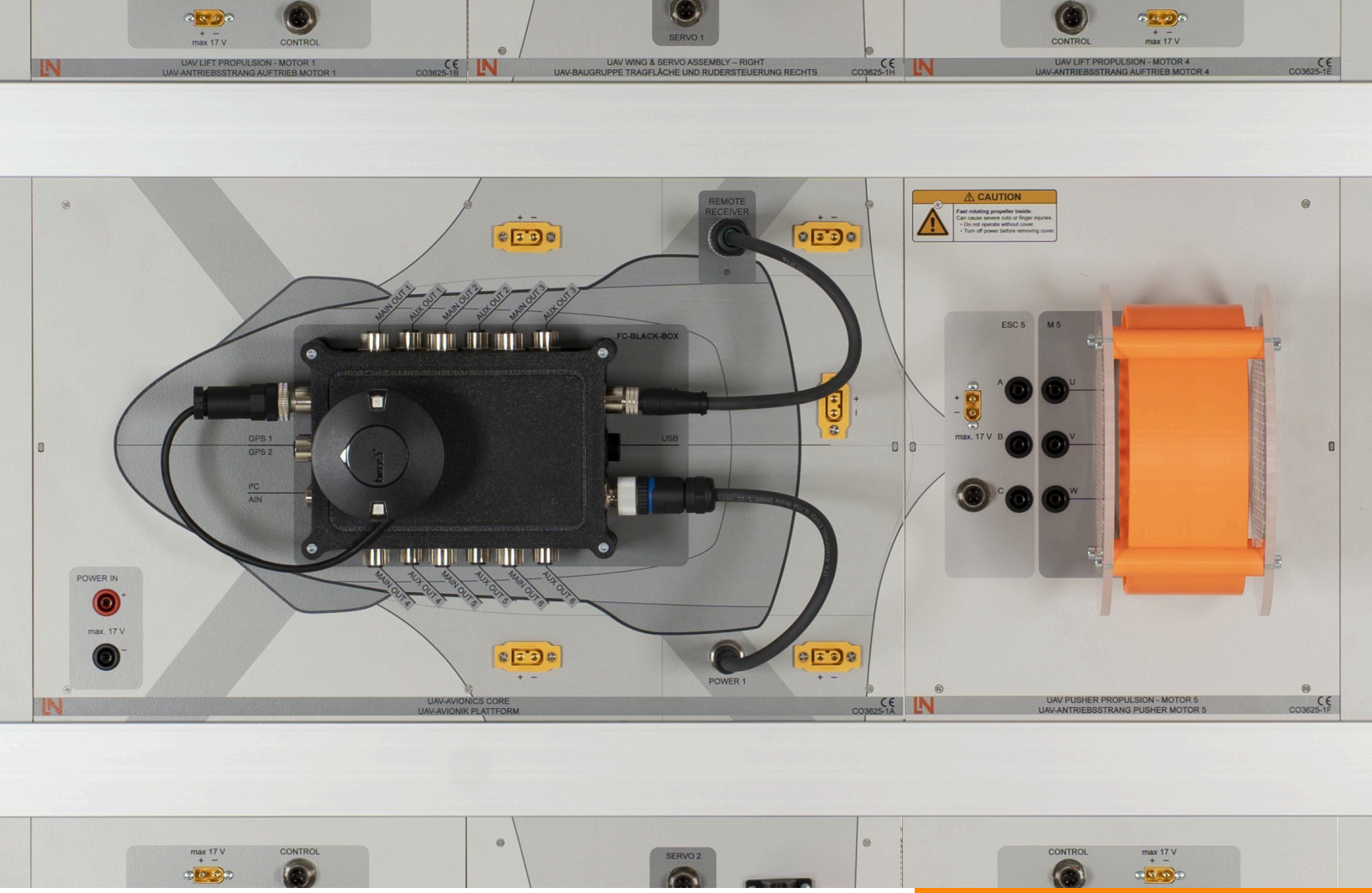


Real Drone Avionics Instead of Hobby Parts.

UAS10PT: Assembly, function and maintenance of industrial UAVs

Learners wire, calibrate and test the avionics of modern drones, safely in the lab instead of on a closed aircraft. One set of hardware, four flight concepts: multicopter, fixed wing, flying wing and VTOL.

REAL EXPERIENCE LEARNING

THE SYSTEM

State-of-the-art drone technology in a safe lab

Drones are used in intralogistics, energy supply, precision farming and public safety. Their technology is becoming more complex, and the demand for qualified technicians is growing rapidly.

The bottleneck is less about flying and more about system maintenance and keeping fleets ready for operation. The UAS10PT brings the technology of modern drones into a safe, controlled laboratory environment. It is based on the PanelTrain system and uses genuine industrial components, encapsulated drives and a battery simulation.

Instead of working on a closed aircraft, learners assemble the entire signal chain and powertrain themselves. They take on the role of avionics technicians: they bring hardware and software up to date, test the system under load and finally release it for operation.



UAS10PT in VTOL configuration with the RXLea learning world

Professional flight control

Cube Orange type flight controller with triple-redundant IMU, open ArduPilot architecture and the MAVLink standard.

Safe work on the electronics

A battery simulation replaces lithium polymer batteries. Rotors run behind transparent covers, connectors are reverse-polarity protected.

One set of hardware, four flight concepts

The same modules form a multicopter, fixed wing, flying wing or VTOL. Learners configure the flight logic directly in the system.

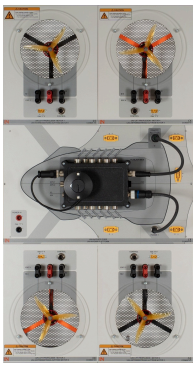
Troubleshooting on two levels

Measurements in the power and signal paths on the hardware, analysis of log files and parameter conflicts in the software.

CONFIGURATIONS

One system, four flight concepts

All configurations use the same avionics core. Learners mount the modules in the experiment frame without tools, rewire them and adjust the parameters in ArduPilot. This shows how strongly the software determines the behavior of identical hardware.

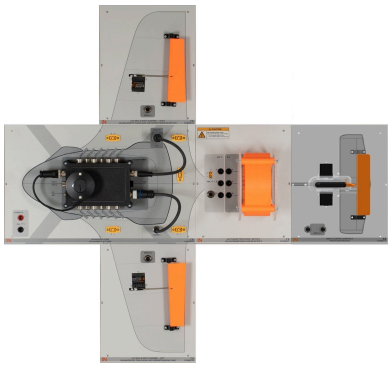


Multicopter

Quadcopter

Avionics core · 4 lift powertrains

Four powertrains generate lift and control the attitude. Learners assign the ESCs, test each motor individually and correct rotation directions in software.

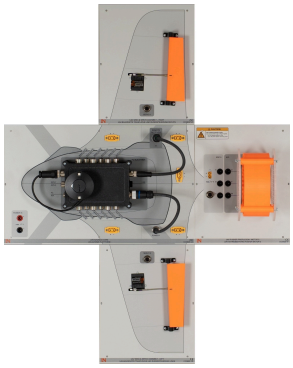


Fixed wing

With tail unit

Avionics core · pusher · wings · tail unit

Thrust from the pusher, control via ailerons, elevator and rudder. Learners integrate the servos and calibrate the control surface deflections.

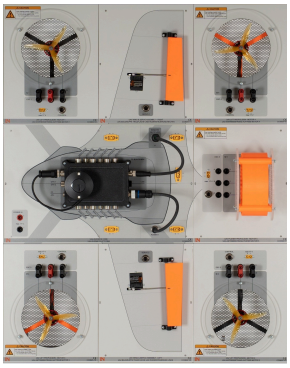


Flying wing

Tailless

Avionics core · pusher · wings

Without a tail unit, combined control surfaces (elevons) act as ailerons and elevator. Learners match control signals to surface deflections.



VTOL

Quadplane

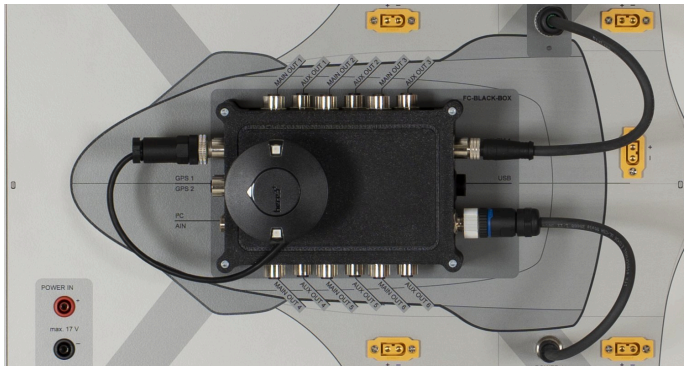
Avionics core · 4 lift powertrains · pusher · wings

Vertical takeoff with four lift motors, forward flight with pusher and wings. Learners configure the transition via flight modes.

MODULES

The modules in detail

Each module is a separate experiment panel with an open design. Power runs through 4 mm safety sockets, control signals through reverse-polarity-protected industrial connectors. Learners wire the modules themselves and measure directly at the connections.

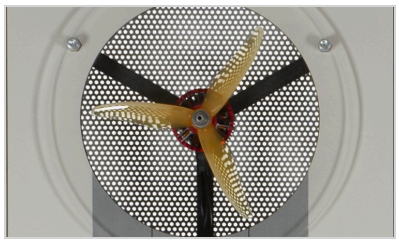


Avionics core

CO3625-1A

The control center of the system. The flight controller and sensors sit in a black box that can be removed without tools. Learners calibrate the IMU and compass directly at the PC. During operation, they tilt and rotate the box and see in real time how the controller adjusts the motors and servos.

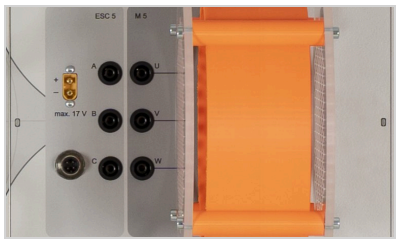
Flight controller	Cube Orange type, H7 processor, triple-redundant IMU in an isolated, temperature-controlled sensor compartment
GNSS	Here3+ with RTK and compass, connected via CAN bus
Remote control	Permanently installed ELRS receiver, multi-channel remote control included
Airspace	ADS-B receiver to detect manned aircraft
Interfaces	Main Out, AUX Out, CAN, I^2C, telemetry, USB
Power	Supply via 4 mm safety sockets, distribution to XT60 outputs



Lift propulsion

CO3625-1B to **CO3625-1E**

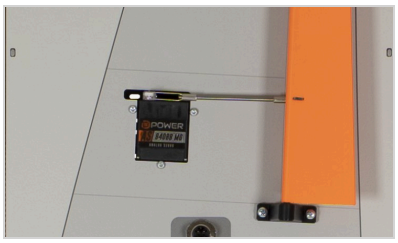
Four powertrains for multicopter and VTOL: BLDC motor with 5-inch rotor, integrated ESC up to 45 A, controlled via PWM or DShot.



Pusher propulsion

CO3625-1F

Powertrain for forward flight in fixed-wing, flying-wing and VTOL configurations. Motor and ESC as on the lift modules, rotor fully enclosed by a transparent cover.



Wings and tail unit

CO3625-1G, **CO3625-1H**, **CO3625-1J**

Digital servos move the control surfaces via a visible linkage. The tail unit has one servo each for elevator and rudder.

RXLEA LEARNING WORLD

Six projects, one learning path

The RXLea learning world guides learners through six projects, from wiring to troubleshooting. Each project starts with a real-world scenario. ArduPilot tools such as Mission Planner or QGroundControl are closely linked to the work on the real hardware.



Flight simulation in RXLea with live telemetry

1 System integration of UAVs

PPC030001

Identify components, transfer circuit diagrams to the hardware, wire systems and check signal paths. RXLea verifies the wiring against the ArduPilot pin assignments.

approx. 180 minutes · Intermediate

2 UAV sensors, calibration and setup

PPC030002

Understand IMU, compass, barometer and GNSS, then set up and calibrate the flight controller. A live HUD shows all sensor values during calibration.

approx. 180 minutes · Intermediate

3 UAV actuators, configuration and validation

PPC030003

Commission motors and servos for all four flight concepts, check rotation directions, calibrate control surface deflections and configure transitions.

approx. 180 minutes · Intermediate

4 UAV remote control: binding, flight modes and failsafe

PPC030004

Bind the remote control via ELRS, assign channels, set up flight modes such as Stabilize, AltHold and Loiter and define failsafe routines.

approx. 180 minutes · Intermediate

5 UAV flight simulation: flight training and flight modes

PPC030005

After the pre-flight check, learners fly different drone types with the real remote control in 3D terrain scenarios based on satellite imagery.

approx. 180 minutes · Intermediate

6 Systematic troubleshooting

PPC030006

Locate faults in the power circuit with a multimeter, analyze Dataflash logs for vibrations, voltage dips and GPS glitches, and fix pre-arm errors.

approx. 180 minutes · Intermediate

Each project is a digital project in the RXLea learning world: site license, one-time purchase, product updates for 5 years.

Scope of delivery and technical data

DESCRIPTION	CATALOG NO.	QTY
UAS10PT basic equipment set		
UAV avionics core system	**CO3625-1A**	1
UAV powertrain, lift motor 1	**CO3625-1B**	1
UAV powertrain, lift motor 2	**CO3625-1C**	1
UAV powertrain, lift motor 3	**CO3625-1D**	1
UAV powertrain, lift motor 4	**CO3625-1E**	1
UAV powertrain, pusher motor 5	**CO3625-1F**	1
UAV assembly: wing and left control surface	**CO3625-1G**	1
UAV assembly: wing and right control surface	**CO3625-1H**	1
UAV empennage assembly (tail unit)	**CO3625-1J**	1
UAV power supply and battery simulator	**CO3625-1K**	1
RXLea learning world		
RXLea projects UAS10PT, projects 1 to 6 (see page 5)	**PPC030001 to PPC030006**	1 each
Accessories		
SybaPro experiment trolley, 3-level, 6 sockets	**ST7200-7A**	1
Monitor holder for flat screens up to 15 kg (33 lbs)	**ST8010-4T**	1

TECHNICAL DATA	
Flight controller	Cube Orange, H7 processor, triple-redundant IMU
Software	ArduPilot, Mission Planner or QGroundControl
GNSS	Here3+ with RTK and compass, CAN bus
Remote control	ELRS receiver, multi-channel remote control
Airspace	ADS-B receiver
Drives	BLDC, 5-inch rotor, ESC up to 45 A, PWM or DShot
Panel size (H × W)	Avionics core 297 × 460 mm (11.7 × 18.1 in), modules 297 × 230 mm (11.7 × 9.1 in)
Trolley (W × H × D)	1250 × 1970 × 800 mm (49.2 × 77.6 × 31.5 in)
PC	Office PC with USB port

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A member of the Real Experience Learning Group. PCs and network components are not included in the scope of delivery. Images may differ from the scope of delivery due to technical improvements or optional add-ons. As of October 2026

REAL EXPERIENCE LEARNING