EDA
european drone academy

INTRODUCTION

The world of unmanned aviation has numerous abbreviations and specialist terms. Understanding this language is essential to safe flight operations. From 2015 the European Drone Academy has been analysing this jargon to help everyone involved in unmanned aviation.

We have worked on this project with the Netherlands Aerospace Centre (NLR) and TechTrans (specialist technical translators). A range of technical experts, linguists and experienced drone pilots also assisted us. Finally, we compared our dictionary with the EASA (European Aviation Safety Agency) glossary and glossaries in textbooks published by leading organisations such as EuroUSC Benelux and the NLR.

Although this publication has been prepared with the greatest possible care it may still contain inaccuracies. Please send any suggestions for improvement to publications@droneacademy.eu. We wish you safe and successful unmanned flight operations and hope that this publication, available free of charge, will assist you in your work.

A

A
Ampere, unit of electric current

A/V
Audio/video

Acceleration sensor
Sensor that measures the acceleration or deceleration in a certain direction

Acro mode
Also know as manual or rate mode. In this mode the drone holds its current attitude (angle) when the pilot does not give input. This mode is available on almost all FPV racers. Acro mode is not angle limited.

Aerodrome
Location from which aircraft flight operations take place

AGL
Above Ground Level

Aileron
Hinged flight control surface, usually forming part of the trailing edge of each wing of a fixed-wing aircraft, that causes a roll movement on the longitudinal axis

AIP
Aeronautical Information Publication, contains information about airspace, airports and procedures

Airframe
Frame of the drone without propulsion systems and electronics

Airport limit
Outer limits of the airport area

Airspace
Space above the earth's surface in which air traffic is possible

AIS
Aeronautical Information Service (AIS), service to support international civil aviation by providing information for the safety, regularity, and efficiency of international air navigation, such as publication of NOTAMs

AMP
Ampere, unit of electric current

AMSL
Above Mean Sea Level

Anemometer
Device for measuring wind speed

Angle mode
Also known as attitude mode. In this mode the drone returns to a horizontal attitude when no input is given

ANM
Air traffic flow management (ATFM) Navigation Message

ANO
Air Navigation Order 2009 (UK)

ANSP
Air Navigation Service Provider

ANT (ANTENNA)
Component of a radio communications system which radiates or intercepts electromagnetic (radio) waves

AOCS NM
Air Operations Control Station Nieuw Milligen, monitors the airspace over the Netherlands

Arrival checklist
List of items to check on arrival at the site of operations

ASN
Aircraft Serial Number

ATC
Air Traffic Control

ATIS
Automatic Terminal Information Service

ATS
Air Traffic Services

ATTI
Attitude mode (also known as angle mode). In this mode the drone returns to a horizontal attitude when no input is given

ATZ
Aerodrome traffic zone, area around an aerodrome to protect aircraft in the circuit area

B

Banked turn
A normal turn in which the drone banks or rolls into the turn

Battery charge log
A logbook with the charge/discharge history of batteries

BCAA
Belgian Civil Aviation Authority

Bind
Procedure to pair the transmitter (hand-held) with the receiver (in the aircraft)

Black box
Electronic flight data recording device to support the investigation of flight accidents or incidents

BLOS
Beyond Line Of Sight

Bluetooth
Wireless technology for exchanging data over short distances

Body
Fuselage of the drone without wings or motor arms

Braking
The ESC can use the motor as a generator to brake and slow the drone down. Also known as damping light.

BRLOS
Beyond Radio Line Of Sight

Brushless motor
Electric motor without carbon brushes, fitted with several stationary coils (stator) powered in sequence to cause the permanent magnets of the rotor to turn

BVLOS
Beyond Visual Line Of Sight

C

C&C
Radio link for Command and Control of the drone

CALI
Camera operator Person controlling the camera/gimbal during the operation

CAN BUS
Controller Area Network Bus. Serial communications port for communication between electronic devices

CAP
Civil Aviation Publication

CC
Cruise Control

Cells
Single battery element. Most drone batteries consist of multiple cells

CG
Centre of Gravity. Point in an object where all its mass is apparently located

Clockwise
Rotating in the same direction as the hands of a clock

Cloverleaf antenna
A type of radio antenna in the shape of a clover leaf

Compass
Navigation instrument indicating the heading relative to magnetic north

Compass calibration
Correcting a compass to offset any magnetic disturbance, to ensure accuracy

Controller
Transmitter/radio used by the pilot to control the drone remotely. Occasionally: flight controller

Counter-clockwise
Rotating in the opposite direction as the hands of a clock

Crash zone
Safe area where the pilot can crash the drone safely in an emergency to avoid injury to people or damage to objects

CTA
Control Area

CTR
Controlled Traffic Region, normally around an airport

Current
Amount of electric charge flowing in a circuit. Unit: ampere

C-rate
Charge or discharge rate of batteries

Cycle
One round, for example one flight

D

DAP
Directorate of Airspace Policy (the Netherlands, Dutch abbreviation: DGB)

Damping light
ESC function to brake (slow down) the motor for a short period of time

Data link
Wireless data transmission link to transmit and receive digital information. Mostly used for uploading waypoint missions to the flight controller

D-bus
Communications protocol used between systems and computer programs

DGB
Dutch Directorate of Airspace Policy

Diversity receiver
Receiver with multiple antennas which automatically uses the one with the best reception

Drone
Unmanned aircraft

DSM2
Protocol to send and receive digital signals

E

EASA
European Aviation Safety Agency

Elevator
Control surface which causes pitch movement around the lateral axis

Emergency landing zone
Designated area for controlled emergency landing

ESC
Electronic Speed Controller

EUROCAE
European Organisation for Civil Aviation Equipment

EUROCONTROL
European Organisation for the Safety of Air Navigation

EVLOS
Extended Visual Line Of Sight

F

Failsafe
Safety feature which initiates an appropriate procedure if the radio link is lost

FCL
Flight Crew Licence

Firmware
Software permanently or semipermanently stored (flashed) in hardware

FIS
Flight Information Services

FL
Flight level based on the standard barometric preassure setting 1013.25 hPa

Flight controller
Hardware which processes all flight variables to stabilise the drone

Flight plan
Plan for the flight operation

Flight status led
LED showing the status of the drone, connected to the flight controller

Flight mode
The way in which the flight controller controls the drone. Examples of flight modes include: GPS, ATTI, manual, fail safe, etc.

Flight recorder
Electronic recording device on board of an aircraft which records data of the flight, such as height, speed, and track (also known as "black box")

FPS
Frames Per Second

FPV
First Person View: in FPV drone racing, the pilot on the ground controls the drone whilst viewing video streamed from a fixed camera on the drone

Frame
Structure of the drone without propulsion systems and electronics

Frequency
Number of occurrences of a repeating event per unit time

G

Gain
Amplification factor

GCU
Gimbal Control Unit, hardware to control the movement of the gimbal

GHZ
Gigahertz

Gimbal
Pivoted support that allows the rotation of an object (camera) about one or more axes. A three axis gimbal provides three degrees of freedom.

GMT
Greenwich Mean Time, time reference at zero degrees longitude. Identical to UTC and Zulu time

GNSS
Global Navigation Satellite System, positioning system based on satellites

Go-home switch
Switch that commands the drone to return to the home point automatically

GPS
Global Positioning System (American GNSS)

GPS-mode
Flight mode in which GPS is used for holding position and navigation

Ground station
The ground part of the drone system, to control the drone during flight using a remote control transmitter, tablet or laptop

Gyroscope sensor
Sensor which measures changes in angle, used to determine the attitude of a drone

H

Hardware
Physical electronic components

HD-link
High Definition interface for digital video

HDMI
High Definition Multimedia Interface for HD video

Height limit
Vertical limit above ground level

Helicopter
Aircraft with a horizontal main rotor for lift and control, and a smaller vertical tail rotor for yaw control

Helper
Member of the flight crew, in addition to the pilot and payload operator. Usually known as “observer”

Hexacopter
Rotorcraft with six propellers for thrust

Home fence
GPS-based virtual wall with user-configurable settings around the home point

Horizon mode
Same as attitude mode

I

ICAO
International Civil Aviation Organisation, publishes standards for aviation

IFR
Instrument Flight Rules

IMU
Inertial Measurement Unit, measures acceleration and deceleration

iOSD
Intelligent On Screen Display, system for displaying telemetry data on top of video data

J

JARUS
Joint Authorities for Rulemaking on Unmanned Systems

K

KIAS
Knots Indicated Airspeed

kV
Kilovolt

L

Landing area
Designated area for safe landing of aircraft

Landing checklist
List of items to check before landing

Landing gear
Wheels or other components to support the drone on the ground

Latitude
A position north or south of the equator, measured in degrees

LiFe
Lithium iron phosphate, a type of battery

Li-ion
Lithium ion, a type of battery

Link
Digital connection

LiPo
Lithium polymer, a type of battery

LiPo bag
A fireproof bag for storing and charging LiPo batteries

LiPo tester
A device to measure the voltage of a LiPo battery

LLFC
Low Level Forecast, type of weather forecast

Logs
Files containing data logged during a flight

Longitude
A position east or west of Greenwich, measured in degrees

Low flying routes
Designated routes for manned aircraft to fly at low level

Low voltage alert
Alert given when the battery voltage drops below a set level

LT
Local Time

LTA
Lighter Than Air, for example a hot air balloon

LZ
Landing Zone

M

mAh
Milliampere hour, unit of battery capacity

Maintenance log
Document with information about maintenance carried out

Manual mode (MAN)
Manual mode, the drone holds its current angular position when there is no pilot input. Manual mode is not angle limited

Memory card
Card used to store data

METAR
Meteorological aerodrome report, weather report for an airport

Micro-SD card
Type of memory card

Module
One piece or set of hardware or electronics

Monitor
Electronic visual display

Motor idle speed
Rotational speed of the motor at minimum throttle

MSL
Mean Sea Level

MTOM
Maximum Take-Off Mass

Multicopter
Rotorcraft with two or more horizontal rotors

Multirotor
Rotorcraft with two or more horizontal rotors

N

NAA
National Aviaton Authority

NiCd
Nickel cadmium, a type of battery

NiNM
Nickel metal hydride, a type of battery

No flying zone
Zone where it is not permitted to fly aircraft

No flying area
Area where it is not permitted to fly aircraft

NOTAM
Notice To Airmen

O

Observer
Member of the flight crew, in addition to the pilot and payload operator, who is responsible for checking the surrounding area

Obstacle avoidance system
System to detect and avoid objects in or near the flight path

Octocopter
Rotorcraft with eight propellers for thrust

OMNI
All directions, around

Oneshot
ESC communications protocol for faster motor response

Operation manual
Document describing all operational procedures and information about a drone operator

Operational plan
Plan describing the flight to be made

P

Parachute
Device used to slow down an object moving through the air

Payload
Non flight essential hardware or cargo carried by the drone
Payload operator
Person operating/controlling the payload (for example a camera)

PB
The symbol for the chemical element "lead"

PDB
Power Distribution Board

PIC
Pilot In Command

PID
Control algorithm (Proportional Integral Derivative)
P:Proportional: extent to which the angle is corrected
I: Integral: extent to which the current angle is maintained
D: Derivative: amount of energy needed to return to the original position

Pilot
Person operating the aircraft

Pitch
Angular movement around the lateral axis (nose up/down)

PMU
Power Management Unit

POI
Point of Interest

Position hold
Command to the drone to stay at the current GPS position

Post flight checklist
List of items to check after landing

Power cycle
Switch (cycle) the power off and on

PPM
Pulse Position Modulation, method for sending multiple PWM signals over a single digital link

Preflight checklist
List of items to check before taking off

Pre site survey checklist
List of items to check at the site of operations

Prop guards
Protective structure around the propeller to prevent contact with surrounding objects

Prop
Propeller

PWM
Pulse Width Modulation, method for sending a single digital signal over a link

Q

Quadcopter
Rotorcraft with four propellers for thrust

R

Radio
Communication system which carries information using electromagnetic waves; a transmitter or receiver

RC
Radio-controlled

Realsense
3D camera platform for implementing gesture-based human-computer interaction, created by Intel

Receiver
Device for receiving radio signals

Retractable landing gear
Landing gear that can be retracted

Retracts
Landing gear that can be retracted

RMZ
Radio Mandatory Zone, designated airspace where an aviation radio is required

Roll
Angular movement around the longitudinal axis (wing tip up/down)

Rotorcraft
Aircraft which flies using the lift and control provided by rotors

RPA
Remotely Piloted Aircraft (air system only)

RPAS
Remotely Piloted Aircraft System (ground and air systems)

RP-SMA
Reverse Polarity subminiature coax RF connector type A

RSSI
Received Signal Strength Indicator

RTF
Registered Training Facility

RTF
Ready To Fly

Rudder
Control surfaces causing yaw movement around the vertical axis

S

SD card
Type of memory card

Sense and avoid
System used to sense objects and steer around them to avoid collisions

Shutter cable
Cable for remotely triggering the camera's shutter button

SMA
Subminiature coax RF connector type A

Spotter
Member of the flight crew, assists the pilot by watching out for airplanes, people, animals, etc. Warns the pilot if necessary. Also known as "observer"

SRG
Safety Regulations Group (part of CAA-UK)

Sticks
The physical control sticks on the transmitter

SUA
Small Unmanned Aircraft

SUSA
Small Unmanned Surveillance Aircraft

T

Take-off checklist
List of items to check before taking off

Take-off point
GPS point from which the drone takes off

TCAS
Traffic Collision Avoidance System

TDA
Temporary Danger Area

Telemetry
Automatic process which takes measurements and transmits them back to a receiver

Throttle
Input to control the flow of electricity to an electric motor or the flow of fuel to an engine

Thrust
The propulsive force of a propeller

TMZ
Transponder Mandatory Zone

TPA
Throttle PID Attenuation, used to reduce the PID value beyond a particular stick position

Transmitter
Device to transmit radio signals

Tricopter
Rotorcraft with three propellers for thrust

TUG
Dutch abbreviation of "temporary and exceptional use". Temporary exemption to use a site for the take-off and landing of aircraft

U

UA
Unmanned Aircraft

UAS
Unmanned Aicraft Systems

UART
Universal asynchronous receiver/transmitter. Type of serial data port used to connect components to the flight controller

UAV
Unmanned Aerial Vehicle

UDP
Uniform Daylight Period, daylight period which starts 15 minutes before sunrise and ends 15 minutes after sunset

UTC
Universal Time Coordinated, worldwide, standard time based on an atomic clock, identical to GMT and Zulu time

UVSI
Unmanned Vehicle Systems International, international drone organization

V

V
Volt

VFR
Visual Flight Rules

VLOS
Visual Line Of Sight

VMC
Visual Meteorological Conditions

Voltage
The difference in electric potential energy between two points per unit electric charge

VR
Virtual Reality

W

Waypoint
Reference point in physical space used for navigation

Waypoint flight
Flight defined by a number of waypoints

Y

Yaw
Angular movement around the vertical axis (aircraft rotates to the left/ right)

2D Gimbal
Gimbal with two axes to stabilise a camera or other payload

3D Gimbal
Gimbal with three axes to stabilise a camera or other payload