

Order on flights with drones in built-up areas¹

In pursuance of § 126 b (3), § 126 c (3-5), § 126 e (3), § 126 f (2), § 126 h and § 149 (10) of the Danish Air Navigation Act, cf. Consolidation Order no. 1036 of 28 August 2013, as amended by Act no. 602 of 4 June 2016, and after negotiation with the Minister of Justice, the following is stipulated on authority in pursuance of § 152 (1):

Chapter 1

Scope and definitions

Scope

§ 1. This order stipulates provisions regulating flights with small drones in built-up areas.

Definitions

§ 2. For the purposes of this order:

- 1) Autonomic operation shall mean a flight where the drone flies independently, in full or partly, without the possibility of intervention or action from the remote pilot.
- 2) BVLOS (Beyond Visual Line of Sight) shall mean outside the visual line of sight of the remote pilot.
- 3) Built-up area shall mean an area which is essentially used for habitation, commercial or recreational purposes, e.g. sports halls, summer cottage areas, inhabited camping sites and built-up industrial and harbor areas. Parks, beaches or other recreational areas situated within, integrated with or in immediate connection with built-up areas are also considered as built-up areas as such areas typically are situated at a short distance to crowded roads and buildings and are frequented by many people.
- 4) Drone shall mean an unmanned aircraft, i.e. an aircraft without a pilot on board. Drones are divided into the following types: 1) Fixed-wing and glider, II) Helicopter and Multirotor, III) Airship and Balloon, IV) Combined fixed-wing and rotor and V) Special class.
- 5) Remote pilot shall mean a person who steers or starts a flight operation with drones.
- 6) EVLOS (Extended Visual Line of Sight) shall mean outside the visual line of sight of the remote pilot, but within the visual line of sight of the observer.
- 7) Speed shall mean movement above the ground measured in kilometers per hour.
- 8) Column 3 company shall mean a company with very large stock of inflammable and explosive substances, toxic substances or substances that are dangerous for the environment.
- 9) Control station shall mean a device or system used to control or steer one or more drones.
- 10) Military air base shall mean an aerodrome owned by the Danish Defense. Danish military air bases appear from MIL AIP (the Defense's Aeronautical Information Publication).

¹ ¹ This Order contains certain provisions from Regulation (EC) No 785/2004 of the European Parliament and of the Council of 21 April 2004 on insurance requirements for air carriers and aircraft operators with later amendments, Official Journal 2004 No L 138, page 1. According to Article 288 of the Treaty on the Functioning of the European Union, a Regulation shall have general application in all member States. The reproduction of these provisions in this Order is thus exclusively justified in practical considerations and does not affect the immediate applicability of the Regulation in Denmark.

- 11) Small drone shall mean a drone with a maximum take-off mass not exceeding 25 kg. Small drones are divided into 3 categories according to weight and size: Category 1A drones have a maximum take-off mass of less than 1.5 kg. Category 1B drones have a maximum take-off mass of 1.5 kg or more, but less than 7 kg. Category 2 drones have a maximum take-off mass of 7 kg or more, but less than 25 kg.
- 12) Night flights shall mean flights operated in the space of time between sunset and sunrise.
- 13) Professional purpose shall mean flights that are operated with the purpose of carrying out specific tasks, e.g. to inspect a building or make a video recording to be used in a TV transmission. Included in this definition are also using drones for research purposes and for various tests. Professional use may be carried out both by private traders and companies and by public actors, e.g. municipal or state surveillance of the environment, nature, infrastructure etc.
- 14) Visual range shall mean the distance where the remote pilot, under the existing conditions (e.g. visibility) at any time of the flight and without technical aids, can see the drone in a way that ensures that all necessary manoeuvres can be performed safely.
- 15) Special permission shall mean a permission to operate flights upon application. A special permission can be issued for one or more flights or be a general permission with a validity of a long duration according to specific guidelines.
- 16) Particular environmentally sensitive areas shall mean the areas appearing from the Danish Transport and Construction Agency's Regulations for Civil Aviation (BL) no. 7-15, 1 edition of 24 September 2012, Regulations on operations over particular environmentally sensitive areas in Denmark.
- 17) VLOS (Visual Line of Sight) shall mean within the visual range of the remote pilot.

Chapter 2

General

§ 3. Flights with small drones in built-up areas may only be operated for professional purposes and shall be operated in such a way that the lives and properties of other persons are not exposed to danger or other unnecessary inconvenience, cf. § 126 c of the Danish Air Navigation Act.

(2) Flights, cf. (1), shall also be performed in accordance with the provisions in this Order and Chapter 9 a of the Danish Air Navigation Act on regulation of small drones.

(3) It shall be the responsibility of the remote pilot to ensure that the requirements in (1) and (2) are met.

Chapter 3

Pre-flight

Registration and identification

§ 4. A drone shall be registered with the Danish Transport and Construction Agency who will assign a registration number to the drone.

(2) To have a drone registered according to (1), the owner of the drone shall be registered in the Danish Central Business Register (CVR Register).

(3) A drone shall be marked with the name and telephone number of the owner and the registration number assigned by the Danish Transport and Construction Agency, cf. (1).

Insurance

§ 5. Irrespective of take-off mass, drones shall be covered by a valid third party liability insurance with an insurance amount of 0.75 million SDR, cf. Article 7 of Regulation (EC) No 785/2004 of the European Parliament and of the Council of 21 April 2014.

Age and drone license

§ 6. The remote pilot shall have attained the age of 18.

§ 7. The remote pilot shall have a drone license applicable to the relevant category and type of drone issued by the Danish Transport and Construction Agency.

(2) To attain a drone license according to (1), the remote pilot shall have completed a training course and shall have passed the relevant tests applying to the category and type of drone in question at a training organization approved by the Danish Traffic and Construction Agency, cf. § 18 and

1) for drone categories 1B and 2, the remote pilot shall have experience in the form of at least 15 successful flights of a total of at least 3 hours outside built-up areas, or

2) for BVLOS flights, the remote pilot shall have experience in the form of at least 50 successful flights evenly spread over at least 12 months.

(3) The remote pilot shall be able to document, at any time after the issue of the drone license, at least 24 flights with a total flight time of at least 4 hours within the last year. If this requirement is not met, the remote pilot shall complete supplementary training at a training organization approved by the Danish Transport and Construction Agency, cf. § 18.

Flight and safety area

§ 8. The remote pilot shall establish a flight and safety area that follows the drone during the flight, so that the area at any time has its center where the drone is. The flight and safety area shall have a radius of 1 times the flight level during the entire route, however at least 15 meters and not more than 50 meters.

(2) No other person than the remote pilot and an assistant, if necessary, may stay within the flight and safety area, however, cf. (3).

(3) If the drone can be fully controlled in case of loss of an engine, or if it has another safety device (e.g. parachute) during all phases of the flight, persons who have given their consent to the remote pilot may stay within the flight and safety area.

Information regarding airspace

§ 9. The remote pilot shall obtain information on any restrictions for the use of the airspace which is planned to be used.

Special permissions for flights with increased risk

§ 10. Flights connected with increased flight safety risks must not be operated without special permission from the Danish Transport and Construction Agency issued to the remote pilot.

(2) Flights with increased flight safety risks are, among others:

1) Flights outside the visual range of the remote pilot (EVLOS/BVLOS).

2) Flights over people who are not part of the operation

3) Indoor flights in buildings with public access, or indoor arrangements where the need for protection is the same as for public access, for example company parties.

4) Flights with drones with jet engines.

5) Flights at speeds over 50 km/h.

6) Flights in heights above 120 meters above terrain.

7) Flights with fixed-wing drones with a take-off mass above 1.5 kg.

8) Flights with more than one drone from same control station.

9) Autonomic flights.

10) Flights involving dropping from the drone.

11) Flights over defined, private properties.

(3) To obtain a special permission according to (1), the necessary measures must be taken to meet the increased flight safety risk and must be based on and documented by a risk assessment.

Special requirements for night flights

§ 11. The remote pilot shall have a special drone license for night flights. To obtain a drone license for night flights, the remote pilot shall have completed at least 3 hours of night flight outside built-up areas within the last year.

(2) In addition to a drone license for night flights according to (1), the following requirements shall be met in order to operate night flights:

- 1) The drone shall be equipped with lights making it possible for the remote pilot to see the drone during flight, including how the drone is oriented in the air.
- 2) Take-off and landing area shall be sufficiently lighted for people in the area to be seen and the drone to be operated.
- 3) The remote pilot shall wear vest with reflectors which clearly identify the remote pilot.
- 4) Before flight the remote pilot shall have reconnoitered the flight area in daylight.
- 5) Flights must not be operated closer than 5 km from a runway at a public, approved aerodrome and 8 km from a runway at a military airbase.
- 6) Units for remote control of the drone shall be illuminated
- 7) It shall be possible to read the flight level of the drone on the remote control by the remote pilot during flight.

Other permissions and notification

§ 12. Flights closer than 5 meters to buildings must not be operated without the owner's permission and if the building is a residential property, the residents shall be notified.

(2) Flights over properties that are clearly demarcated by fences, hedges, walls or the like, must not be operated without the permission of the owner, unless the flight forms part of work or activities that according to other legislation allows access to the property

(3) The local police authority shall be notified in writing not later than 24 hours in advance of each flight.

Chapter 4

During flight

Drone system and control with the drone

§ 13. The drone and its control system shall be functional during the entire flight.

(2) If the drone is equipped with automatic flying with pre-programmed flight route, it must at all times and without delay be possible to take over and control it manually in order to avoid collision with other aircraft, persons, vessels, vehicles and buildings.

(3) If the operation is performed with more than one drone, each drone must have a remote pilot.

Airspace surveillance

§ 14. The surrounding airspace shall constantly be surveilled by the remote pilot and the flight shall be aborted immediately if a manned aircraft approaches.

Right of way

§ 15. A drone must not fly so close to other drones that there may be danger of collision and the provisions on right of way in (2) and (3) must be observed.

(2) A drone shall give way to the right regarded in relation to its heading to

- 1) drones approaching head-on or approximately so,
- 2) drones converging at approximately the same level, and
- 3) drones flying in front that are being overtaken.

(3) A drone shall unconditionally give way regarded in relation to its heading to

- 1) manned aircraft,
- 2) drones standing still in the air,

- 3) drones that are landing or making the last part of approach to landing,
- 4) drones at a lower level, and
- 5) drones forced to land.

Flight levels and distance requirements

§ 16. The flight level must not exceed 120 meters above terrain unless special permission in accordance with § 10 (1) has been granted, cf. however (2).

(2) The flight level may exceed 120 meters without special permission according to § 10 (1) when the flight is performed closer than 25 meters horizontal distance to an aeronautical obstacle exceeding 120 meters. The aeronautical obstacle must, however, not be overflown.

(3) During the entire flight the drone shall be within sight of the remote pilot, unless special permission has been granted according to § 10 (1).

(4) Flights must not be operated closer than 5 km from a runway at a public approved aerodrome and 8 km from a runway at a military airbase, unless

- 1) the flight level does not exceed 40 meters above runway level in which case flights must be operated at a distance of up to 2 km from a runway at the aerodrome or airbase, or
- 2) special permission according to § 10 (1) has been granted by the Danish Transport and Construction Agency.

(5) Flights must not be operated closer than 150 meters from the royal residences, Christiansborg Castle, the residence of the Prime Minister, Marienborg, embassies, column 3 companies, the Police's properties, prisons, detention buildings and military installations etc., unless prior special permission has been obtained from the authority responsible for the property in question.

(6) Overflights of railways, main roads, expressways and motorways or flights close to such infrastructures where the flight and safety area, cf. § 8, covers the infrastructure, must not take place unless prior special permission has been obtained from the relevant infrastructure manager.

(7) Flights closer than 150 meters from places where accidents have happened and where the police, safety and rescue personnel are working, or flights against the special restrictions made by the rescue authority must not be operated.

(8) Flights over particular environmentally sensitive areas at levels below 300 meters above terrain must only be operated in connection with the performance of necessary tasks in connection with supervision and maintenance etc. of installations, properties, forestry, agriculture, keeping animals and the like.

Chapter 5

After flight

§ 17. Within 24 hours after finishing, the remote pilot shall enter information on the flight in a log or corresponding document. The log shall contain information that can identify

- 1) the drone,
- 2) the control station,
- 3) the remote pilot, including drone license number,
- 4) place or area for the flight
- 5) date and time for the flight,
- 6) duration of the flight,
- 7) maximum flight level,
- 8) type of operation (e.g. VLOS, BVLOS, AUTONOMIC), and
- 9) any problems, incidents or accidents.

(2) The information entered in the log, cf. (1), shall be kept for at least 2 years and shall at any time be presented upon the request of the Danish Transport and Construction Agency or the police.

Chapter 6

Training organizations

§ 18. Training organizations offering training with view to obtaining a drone license shall be approved by the Danish Transport and Construction Agency.

(2) The training organization shall offer one or more kinds of training, including supplementary training, with tests as regards the various categories and types of drones in accordance with appendix 1 to this Order.

(3) The training organization shall ensure that having completed their training, the remote pilots meet all the requirements, cf. § 7 and § 11, if relevant, for issue of the relevant drone license.

(4) An approved training organization shall notify the Danish Transport and Construction Agency in case of changes with the training organization of significance to the approval.

Chapter 7

Procedural provisions

Recommendation for drone license and merit and application for permissions and approvals

§ 19. Recommendation for issue of drone license shall be submitted by the training organization in question to the Danish Transport and Construction Agency with documentation substantiating that all requirements for issue of the drone license in question have been met, cf. § 18 (3).

(2) Recommendation for merit for theoretical subjects on the basis of other relevant formal training, cf. appendix 1, number 3, shall be submitted by the training organization in question together with relevant documentation.

§ 20. Application for permission to flights covered by § 10 shall be submitted by the remote pilot to the Danish Transport and Construction Agency together with the risk assessment required.

§ 21. Application for approval to offer training for drone license according to § 18 shall be accompanied by a training manual containing the elements that appear from summary 3 in appendix 1 to this Order. Application shall be submitted to the Danish Transport and Construction Agency not later than 3 months before the training starts.

Exemption

§ 22. The Danish Transport and Construction Agency may in special cases grant exemption from the provisions in this Order when it is deemed compatible with the considerations on which the provisions in question are based, including international provisions in the area.

Chapter 8

Access to complain

§ 23. Decisions taken by the Danish Transport and Construction Agency under this Order may be brought before the Minister for Transport and Building.

Chapter 9

Punishment and implementation

Punishment

§ 24. Violation of the provisions in § 3, § 4 (1) and (3), § 5 (1), § 6, § 7, (1), § 8 (1) and (2), § 9, § 10 (1) and §§ 11-17 is punishable with fine, unless other punishment is deserved according to § 149 (16) and (17) of the Danish Air Navigation Act.

§ 28. Criminal liability may be imposed on companies etc. (legal persons) under the rules of Chapter 5 of the Danish Criminal Code, cf. § 149 (14) of the Danish Air Navigation Act.

Implementation

§ 26. This Order shall come into force on 1 September 2016.

§ 27. The requirement for drone license in § 7 (1) and the training requirement in § 7 (2) shall not apply to remote pilots covered by an exemption to flying activities with drones for commercial purposes granted by the Danish Transport and Construction Agency's Regulations for Civil Aviation (BL) no. 9-4, 3 edition of 9 January 2004, cf. however (2).

(2) Remote pilots covered by (1) who want to perform flights with drones in accordance with this Order after 1 September 2017 shall not later than that date have issued a drone license for the relevant type of drone, cf. § 7 (1). As a condition for the drone license the remote pilot shall only meet the relevant experience requirements in § 7 (2), no. 1 and 2 and submit the necessary information to the Danish Transport and Construction Agency.

(3) Companies having been granted exemption to fly with drones for professional purposes granted in pursuance of the Danish Transport and Construction Agency's Regulations for Civil Aviation, BL 9-4, 3 edition of 9 January 2004, Regulations on unmanned aircraft not weighing more than 25 kg, may continue operations in accordance with this exemption as long as it is valid and on condition that flights are performed by remote pilots meeting the claims in this Order.

§ 28. This Order shall not be applicable for the Faroe Islands and Greenland.

Danish Transport and Construction Agency, 22 August 2016

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Training requirements for drone license and training organizations, cf. § 18*Training*

1. Training with a view to obtaining a drone license shall contain a theoretical part and for drone categories 1B and 2 also a practical part which is specific for the drone category and type in question.
2. The theoretical part of the training shall have a duration of at least 15 hours and must not be divided into smaller units than 4 lessons. The training shall include the subjects mentioned in Summary 1 below, cf. however item 3. The total theoretical training shall have been completed not later than 3 months after it was initiated.
3. The Danish Transport and Construction Agency may give credit for theoretical subjects based on other relevant, formal training, e.g. pilot licenses.
4. The practical part of the training shall have a duration of at least 7.5 hours and must not be divided into smaller units than 3 lessons. The training shall include the subjects mentioned in Summary 1 below.
5. Supplementary training shall contain a short repetition of relevant subjects and pass a practical flight test. Supplementary training shall have a duration of at least 5 hours.
6. For extension of a drone license to higher weight category, the minimum requirement is passing a flight test for the category in question.

Test

7. The theoretical part of the training, cf. item 2, shall be finalized with a multiple-choice test with 30 questions approved by the Danish Transport and Construction Agency. The questions shall cover all the subjects mentioned in Summary 1 below and shall be held in accordance with the Danish Transport and Construction Agency's current test guidance for the area.
8. At least 24 questions shall be correctly answered in order for a student to pass the theoretical test.
9. If the student does not pass the theoretical test, there is a possibility for a re-test which must not be identical with a former test. If the student does not pass the theoretical test after 3 attempts, the student must repeat the training in order to be allowed to take a new theoretical test.
10. The practical training shall be finalized with a practical test. The test shall cover all the subjects mentioned in Summary 2 below and shall be held in accordance with the Danish Transport and Construction Agency's test guidance. If a remote pilot license for night flights is applied for, the practical test in night flights shall be taken separately.
11. The practical test cannot be held until the student has passed the theoretical test. For license to drone category 1B, 2 and night flights, the experience basis shall also be met.
12. If the student does not pass the practical test, there is a possibility for a re-test. If the student does not pass the practical test after 3 attempts, the student must take further training before a new test is attempted.

Taxonomy for and subjects which the theoretical training for drone license shall include

When the training facilities describe the training in the individual subjects, the below taxonomy shall be applied in order to ensure, among other things, an equal way to state learning depth. At the same time this description model will also indicate the level for test questions.

Knowledge *Know, refer, recognize*

The participant obtains knowledge of, can explain, can describe, can recognize, can identify, can define etc.

Understanding *Understand, explain in own words*

The participant can explain, interpret, calculate, demonstrate, phrase, give examples etc.

Application *Apply, test, use*

The participant can use, choose, distinguish, test, construct, attend to, fulfil, use etc.

Subject

Contents

Rules and regulations etc.

The Danish Transport and Construction Agency and EASA Regulations, Orders, Regulations for Civil Aviation (BLs),

AICs

Insurance
Where may I fly
For which purposes must the drone be used
Operations Manual
Traffic rules

Privacy

Politics
Data safety
Ethical considerations
Legislation in the area (Act on TV surveillance, Act on Processing of Personal Data, Criminal Code)

Airspace

Drone operation in the airspace
Prohibited areas
Aerodromes
VFR map and its use (including measuring of distance to nearest airport)
Indication of altitude (geometric/barometric)

Airmanship and safety

Principles for good airmanship
Condition of the equipment
Planning
Identification of potential problems

Human factors

Health
Fatigue and stress
Weather effects
Decision making

Basic meteorology	<ul style="list-style-type: none"> Use of colour vision Wind and turbulence Fog Fronts Special conditions at tall buildings and structures
Basic map knowledge	<ul style="list-style-type: none"> Compass Map (VFR) Map symbols Degrees of longitude and latitude Coordinates Contour lines Direction descriptions Map references Distances and scale
Basic aircraft knowledge	<ul style="list-style-type: none"> Basic principles for flying (aircraft types) Command and control Limitations Maintenance Propellers and torque Engine installation and check
Drone components	<ul style="list-style-type: none"> Platform Datalink Accelerometers Pressure sensors Payload Ground station Gyroscopes Magnetometers GPS (GPS interruptions/lack of satellites/effect of storage in the vicinity of magnetic fields, especially loudspeakers in cars during transportation) Battery (LI-PO safety and fire extinguishing as well as regulations for dangerous goods in relation to air transport limitations) Software updates Geo-fencing Drone programming Other components
Communication	<ul style="list-style-type: none"> Single person operations Operations with ATC Operations with other airspace users Requirements to persons communicating via radio (licenses etc.) Communication relating to flights in connection with SAR/emergency preparedness/police tasks/scenes of accident etc.
Operational procedures	<ul style="list-style-type: none"> VLOS, E-VLOS, B-VLOS NOTAM Weather conditions Permissions Planning Overview of flying area Communication Pre-flight During flight

After flight
Emergency procedure
Safety
Reporting to the police in case of incident and "Fly Away"

Flight safety

Prevention of "Fly Away"
Command and control link
Prevention of accidents (e.g. protective casing around the propeller etc.)
Protection of third party on ground
Spectators/barring of flight area/landing zone/safety zone
If the accident occurs, who, what, where?

1 lesson is defined as 60 minutes, including a pause of up to 15 minutes.

Persons with no previous knowledge in the area must anticipate a substantially larger amount of time than the requested at least 15 lessons in the theoretical part of the training.

Subjects that must be included in the practical training for drone license

Subject	Contents
Flight rules	This Order, BL 9-4/AIC B 08/14/operations manual for approved operators
The chosen category of drone	Platform Command and control Operation modes
Flight preparation	Weather conditions Limitations (NOTAM) Local conditions (permissions etc.) Check of equipment in relation to operations manual Calibration of equipment Communication VFR map distance to closest airport and operative regulations at the location Emergency procedures (plan)
Carrying out the flight	Flights with/without GPS Flights in heavy wind/turbulence Coordinated flights Precision landing Fail safe (return-to-home function) Battery and fuel consumption Emergency procedures
After flight	Check of equipment Battery and fuel consumption Flight results Documentation (log)

Drone training organization – Training Manual

A training manual, cf. § 21, shall contain the following:

- Description of the organization, including
 - o Responsible head of the organization and requirements to the head of the organization
 - o Employed instructors and their qualifications
 - o Description of the training facilities
 - o Competence requirements to instructors
- Detailed training plans for all training for which approval is applied for. The training plans shall contain a description of:
 - o Purpose
 - o Admittance requirements
 - o Description of the individual subjects with aim, duration and contents
- The following written procedures as a minimum:
 - o Procedure for document handling
 - o Procedure for registration handling
 - o Procedure for evaluation of training, including the students' evaluation
 - o Procedure for follow-up evaluations, authority supervision etc.
- The following documents as a minimum:
 - o Approved tests
- The following updated registrations as a minimum:
 - o Instructors' education, training, skills and experience, including updating to the necessary extent
 - o Training given to each individual student
 - o Test results
 - o Students' evaluation of course
 - o Follow-up on evaluations, authority supervision etc.