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Eidgenössisches Departement für Umwelt, Verkehr,
Energie und Kommunikation UVEK

Bundesamt für Zivilluftfahrt BAZL
Strategie- und Führungsunterstützung
UAS Bewilligung und Aufsicht

Directive on the Use of Mode-S Transponders for Unmanned Aircraft

Date:	30.08.2024
For:	Operators of unmanned aircraft

Reference: BAZL-311.340-22/41

1 General

The Federal Office of Civil Aviation (FOCA) is responsible for monitoring civil aviation in Switzerland and aviation development, including unmanned aircraft (commonly called “drones”, but also including model aircraft). See the FOCA website: Drones (admin.ch)

Unmanned aircraft also fall within the remit of the Federal Office of Communications (OFCOM) regarding frequency spectrum and radio equipment regulations, as well as in respect of the legal requirements for their market access and conformity. More information can be found on the OFCOM website: Drones and model aircraft (admin.ch)

The process explained here is that of authorising the installation and usage of a transponder or an ADS-B equipment onboard an unmanned aircraft, including but not limited to, the allocation of the radio licence. The first step is that the applicant reaches out to FOCA with a request for transponder use on an unmanned aircraft at: rpas@bazl.admin.ch

FOCA then checks the operational considerations and the technical requirements. These steps are explained in more detail below in chapters 2 and 3. Once this check is done, FOCA will reach out to skyguide for a statement on the feasibility in terms of operational impact on ATC services. If skyguide and FOCA both agree on the operational and technical conformity of the application, FOCA will allocate the ICAO 24-bit address (ICAO code) and send it to the applicant. With this information, the applicant can then apply for the notification of the radio equipment at OFCOM through their eGovernment portal: Notify radio equipment in an aircraft - Detailed information | eGovernment DETEC.

For questions about the use of the eGovernment portal, OFCOM provides guidance at: kf-fk@bakom.admin.ch

2 Operational considerations

Regardless of their size, mass and speed, all aircraft interact with each other by using the same airspace. In the aviation industry, the transponder is an important means used to keep aircraft apart by ATC (Air Traffic Control; legal requirement between IFR/IFR and VFR/IFR[i], depending on airspace).

Aircraft are equipped with transponders in accordance with EU rules (Commission Implementing Regulation (EU) No 2023/1770 of 12 September 2023)[ii] laying down requirements for the performance and interoperability of surveillance for the Single European Sky and Swiss rules (DETEC Ordinance on Traffic Rules for Aircraft (TRAO) Art. 29) for the obligation to carry and operate a transponder. This obligation does not apply to drones.

The 1030/1090 MHz band is already congested and the number of interrogations received by aircraft often exceeds the limits defined in the standards issued by the International Civil Aviation Organization (ICAO). In addition, the number of ICAO-codes available is hardly enough for HB-registered aircraft. This means that only a small proportion of operators will be able to use mode-S transponders in the future. Hence, the use of transponders on drones is restricted, so it is important that applications include full details giving reasons for the specifics of the proposed operation, such as:

1. why the device is to be used, and

2. whether the device is to be used in a predefined and limited space and time period.

3 Technical requirements

3.1 ICAO 24-bit Code

Where a transponder is to be installed, the corresponding code will be sent to the applicant by the Swiss Aircraft Register, once the operational and technical requirements are checked and approved by FOCA. The code is sent to the applicant directly after the check and does not have to be applied for separately.

3.2 Transponder Installation requirements

The transponder system must meet the requirements of CS-ACNS[iii] and must be appropriately certified (e.g. EASA Form 1 or FAA Form 8130-3). Compliance with CS-ACNS requirements can be demonstrated through a normal minor change in accordance with EASA Part 21 or by complying with the applicable requirements of CS-STAN[iv] CS-SC002d.

For a combined transponder system with ADS-B Out, compliance can be demonstrated by complying with the applicable requirements of CS-STAN CS-SC005b.

3.3 Continuous airworthiness requirements

The transponder installation must be checked and certified by an approved aircraft maintenance organisation. This check must be repeated every two years (see TN 20.100-20).

3.4 Release to service

Appropriately, approved staff (EASA Part-66 licensed personnel) may use the instructions in sections 3.1 and 3.2, and reference to this directive, for the release of the installation and testing of the transponder system on drones and model aircraft.

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[i] IFR: instrument flight rules/VFR: visual flight rules
[ii] This will become applicable in Switzerland only in October this year To date Reg (EC) 262-2009 and IR (EU) 1206/2011 and 1207/2011 still apply and the requirements applicable to civil airspace users are transposed one to one in IR (EU) 2023/1770
[iii] Certification Specification – Airborne Communications, Navigation and Surveillance
[iv] Certification Specification for Standard Changes and Standard Repairs