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**Data specifications of unmanned aircraft cloud system
(English Translation)**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by the Flight Standards Department of the Civil Aviation Administration of China.

This standard is under the jurisdiction of the China Academy of Civil Aviation Science and Technology.

The organization responsible for drafting this standard. China Academy of Civil Aviation Science and Technology.

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1 Scope

This standard specifies that the data in the cloud system of civil drones that meet the requirements of the "Regulations on the Operation of Light and Small UAVs (Trial)" (AC-91-31) Data transmission requirements, data encryption requirements, coding rules, and performance requirements between content and format and civil UAV cloud systems.

This standard applies to civil UAV cloud systems operating in China and the data exchange and integration between them.

2 Normative references

The following documents are indispensable for the application of this standard. For dated reference documents, only the dated version applies to this standard.

For undated references, the latest version (including all amendments) is applicable to this standard.

3 Terms and definitions

Flight control system, FCS A system that performs one or more flight-related controls through an automatic control system, generally including pre-flight route, attitude, airspeed, Control of aerodynamic shape, structural mode, etc.

UAV flight data

The longitude, latitude, altitude, speed, direction, mission and other related information of the UAV flight.

Data link, DL

Data terminal and data communication regulations for UAV system management and control, remote control, telemetry, tracking and positioning, and mission load information transmission an established data communication network, where equipment includes airborne data terminals, ground (ship) data terminals, and data communication procedures including transmission channels, Communication protocol, standardized message format.

Mandatory data

In order to ensure flight safety, the regulator requires the drone system and the data content that its owner and users must report, including the drone's Static data such as identification, performance parameters, owner information, operator information, and

dynamic data such as flight plans and real-time trajectories.

Extended data

In order to improve service levels, the cloud system encourages UAV systems and their owners and users to choose the data content to report, including UAV Static data such as flight envelope and mission load information, as well as dynamic operating data such as telemetry data and detection data.

Basic service

In order to ensure flight safety, the cloud system provides all UAV systems and their owners, managers and operators with the minimum Limited information services mainly include services such as airspace information, safety warnings, and plan applications.

Third party system

A system that provides services such as data, information, and location for UAV cloud systems and UOM.

Unmanned aircraft cloud exchange system A real-time dynamic database system that can provide real-time data exchange and sharing for multiple UAV cloud systems. It is a comprehensive civil unmanned aircraft Integrated management platform (UAS Operation Management System, UOM) subsystem.

4 Abbreviations

The following abbreviations apply to this standard.

5 Overview

5.1

The relationship between UAV cloud system and surrounding network elements this standard specification is based on the classification and classification stipulated by MH/T 2009, and is oriented to drones with different performances, operating scenarios, and flight tasks.

Define unified UAV cloud system data requirements, and support through the optional/required definition of information elements and the ability of UAV cloud system Flight management with drones. The UAV cloud system and surrounding network elements are shown in Figure 1.

Figure 1 Schematic diagram of UAV cloud system and surrounding network elements

The air traffic management information service system for unmanned aircraft in Figure 1 is the Civil Aviation Administration of China (CAAC for short) Pilot aircraft flight activities, provide airspace, planning, safety assessment and other services for unmanned aircraft

flight, realize and relevant supervision the information system for departmental collaborative management is the window for the operation and management of unmanned aircraft.

5.2 Data link description

The scope of data link applicable to this standard includes. data transmission link between UAV system and UAV cloud system, UAV cloud system Data transmission link with UAV cloud exchange system (referred to as exchange system). This standard mainly defines related transmissions for these two data links.

Output requirements, ability requirements, test requirements, etc. Figure 2 shows the data link between UAV system and UAV cloud system.

Figure 2 Schematic diagram of data link between UAV system and UAV cloud system

UAV system and UAV cloud system mainly include the following data link communication.

a) Command and control data link, which is used for the flight operation data link between the UAV and the controller/ground station. It mainly includes two modes.

formula.

1) The driver directly controls the UAV through the local controller, including distributed local control UAV, the data link physical layer There are huge differences in communication modules;

2) The driver remotely controls the drone through the network, including the distributed network remote control of the drone. In this case, the enterprise server needs to be used.

The server establishes the data link relationship between the UAV and the controller;

b) UAV management and control data link, used for UAV management and control data link between UAV system and UAV cloud system, including Two sub data links.

1) The data link between the controller and the UAV cloud system is used to control the data between the controller and the UAV cloud system chain. There are multiple data transmission methods between the controller and the UAV cloud system. the controller communicates directly with the UAV cloud system, or relay communication based on enterprise server, etc.;

2) UAV and UAV cloud system data link, used for UAV control data between UAV and UAV cloud system chain. There are multiple data transmission methods between drones and drone cloud systems. direct communication between drones and drone cloud systems, Controller-based relay communication, or enterprise server-based relay communication, etc. Different transmission methods to connect to drones the cloud system meets the requirements of different communication capability levels.