BS ISO/IEC 4005-1:2023

BSI Standards Publication

Telecommunications and information exchange between systems — Unmanned aircraft area network (UAAN)

Part 1: Communication model and requirements

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 4005-1:2023

National foreword

This British Standard is the UK implementation of ISO/IEC 4005-1:2023.

The UK participation in its preparation was entrusted to Technical Committee IST/6, Data communications.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2023
Published by BSI Standards Limited 2023

ISBN 978 0 539 13064 5

ICS 35.100.05; 49.020

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2023.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 4005-1:2023

INTERNATIONAL STANDARD

ISO/IEC 4005-1

First edition
2023-03

Telecommunications and information exchange between systems — Unmanned aircraft area network (UAAN) —

Part 1: Communication model and requirements

Télécommunications et échange d'information entre systèmes — Réseau de zone de drones (Unmanned aircraft area network - UAAN) —

Partie 1: Modèle de communication et exigences

Reference number
ISO/IEC 4005-1:2023(E)

Documents
Document Sharing Hub
© ISO/IEC 2023

Full document details: BS ISO/IEC 4005-1:2023

COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

© ISO/IEC 2023 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 4005-1:2023

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Abbreviated terms **3**
5 Communication model and requirements **3**
5.1 UA communication model 3
5.2 UA communication requirements 3
5.3 Communication structure and operation 4
5.4 Purpose of the three types of communication and related services 11
5.4.1 General 11
5.4.2 Shared communication 11
5.4.3 Control communication 13
5.4.4 Video communication 13
5.5 Interoperation of three types of communication 13
5.6 Interworking with upper layers 15
Annex A (informative) **Information tone slot example** **18**
Bibliography **19**

© ISO/IEC 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 4005-1:2023

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see https://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

A list of all parts in the ISO/IEC 4005 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

© ISO/IEC 2023 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS ISO/IEC 4005-1:2023

Introduction

Unmanned aircrafts (UAs) operating at low altitudes will provide a variety of commercial services in the near future. UAs that provide these services are distributed in the airspace. In level II, many people operate their own UAs without the assignment of communication channels from a central control centre. In this case, wireless fidelity (Wi-Fi) is mainly used as a control channel and a video channel in the unlicensed band. However, when using Wi-Fi, level II UAs can experience loss of control and video links due to communication resource collision. In addition, UA-related units, such as vertiports and obstacles, need a way to exchange information with UAs. This document introduces a wireless distributed communication model to solve these problems.

The wireless distributed communication described by this document is intended to be used in licensed frequency bands. By using licensed frequency bands, each unit is able to reliably allocate and use radio resources at the desired time, various UA communications can coexist and cooperate, and the probability of radio resource collision is very small.

Many services are required for UA operations. In order to support these services, communication between units related with UAs, UA control communication, and video communication, are generally needed.

The ISO/IEC 4005 series consists of the following four parts:

— ISO/IEC 4005-1 (this document): To support various services for UAs, it describes a wireless distributed communication model and the requirements that this model shall satisfy.

— ISO/IEC 4005-2: It describes communication in which all units that can communicate with UAs can broadcast or exchange information by sharing communication resources with each other.

— ISO/IEC 4005-3: It describes the control communication for the controller to control the UA.

— ISO/IEC 4005-4: It describes video communication for UAs to send video to a controller.

© ISO/IEC 2023 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO/IEC 4005-1:2023

Documents
Document Sharing Hub

Telecommunications and information exchange between systems — Unmanned aircraft area network (UAAN) —

Part 1: Communication model and requirements

1 Scope

This document describes a communication model and requirements for unmanned aircraft area network (UAAN), which is a wireless distributed communication network for units related with UA services in level II.

It describes:

— the communication structure and operation;

— the purpose of the three types of communication and related services;

— the interoperation of the three types of communication;

— the interworking with upper layers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 4005-2, *Telecommunications and information exchange between systems — Unmanned aircraft area network (UAAN) — Part 2: Physical and data link protocols for shared communication*

ISO/IEC 4005-3, *Telecommunications and information exchange between systems — Unmanned aircraft area network (UAAN) — Part 3: Physical and data link protocols for control communication*

ISO/IEC 4005-4, *Telecommunications and information exchange between systems — Unmanned aircraft area network (UAAN) — Part 4: Physical and data link protocols for video communication*

ISO 21384-4, *Unmanned aircraft systems — Part 4: Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in ISO 21384-4 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
level II
airspace where maximum height is between 15 m (above ground level) and 120 m (above ground level)

© ISO/IEC 2023 – All rights reserved

Documents Document Sharing Hub
Full document details: BS ISO/IEC 4005-1:2023