
UAS traffic management (UTM) —
Part 8:
Remote identification

Gestion du trafic des aéronefs sans pilote (UTM) —
Partie 8: Identification à distance

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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

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO 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).

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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.

This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 16, *Unmanned aircraft systems*.

A list of all parts in the ISO 23629 series can be found on the ISO website.

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.

Some organizations have already created specific performance requirements of remote identification functions, for example, existing documents and ongoing discussion in ASTM International, ASD-STAN and EUROCAE (Figure 1). ISO/TC20/SC16 recognise that these models share a lot of common aspects and concepts. Annex A shows the gap between this document and standards from other organizations.

The diagram illustrates the relationship between UTM Functional Structure, UAS Remote identification, and various standards and protocols. It is organized into three main columns.

Column 1: UTM Functional Structure and UAS Standards

- Top box: "23629-5 UTM Functional Structure"
- Middle box: "23629-12 Requirements for UTM services and service providers"
- Bottom box: ISO UAS Standards

Column 2: UAS Remote identification and Standards

- Top box: ISO TC20/SC16 Aircraft and space vehicles/ Unmanned aircraft systems
- Middle box: "23629-8 UAS Remote identification"
- Bottom box: High level concept
Common framework
Indication of gaps

Column 3: Standards and Protocols

- Top box: ASTM international F38
- Middle box: Europe standard
- Bottom box: Other countries and regions
- Bottom box: Performance requirements
-Periodicity, power, timing
-Required field
-Testing

Column 4: Reference protocols and formats

- Top box: Bluetooth 4
Bluetooth 5
Wi-Fi aware
Wi-Fi beacon
ANSI/CTA-2063
- Bottom box: Bluetooth 4
Bluetooth 5
Wi-Fi aware
Wi-Fi beacon
ANSI/CTA-2063

Relationships:

- A double-headed arrow connects the "23629-5 UTM Functional Structure" box to the "ISO TC20/SC16 Aircraft and space vehicles/ Unmanned aircraft systems" box.
- A double-headed arrow connects the "23629-12 Requirements for UTM services and service providers" box to the "23629-8 UAS Remote identification" box.
- A double-headed arrow connects the "23629-8 UAS Remote identification" box to the "Europe standard" box.
- A double-headed arrow connects the "Europe standard" box to the "Other countries and regions" box.
- A double-headed arrow connects the "Other countries and regions" box to the "Performance requirements" box.
- A double-headed arrow connects the "Performance requirements" box to the "Reference protocols and formats" box.

The document is applicable to UAS that operate at low-altitude over diverse environments, including but not limited to, rural, urban, networked, network degraded, and network denied environments, regardless of airspace class.

This document does not to purport to address UAS operating with approval to use ADS-B (automatic dependent surveillance – broadcast) or secondary surveillance radar transponders nor does it purport to solve ID needs of UAS for all operations.

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UAS traffic management (UTM) —

Part 8: Remote identification

1 Scope

This document defines the generic concept and common framework of unmanned aircraft system (UAS) remote identification, which is mainly used to electronically identify an in-flight unmanned aircraft (UA). This document sets the minimum performance standards for direct remote identification.

This document does not cover requirements for modules installed in UA or requirements for network remote identification.

This document does not cover the identity of other information technology (IT) entities, such as the station of the remote pilot, the workstation of the fleet manager or any other connected entity.

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given 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

ADS-B

automatic dependent surveillance – broadcast
means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link

[SOURCE: ICAO Doc 4444 PANS-ATM]

3.2

altitude

vertical distance of a level, a point or an object considered as a point, measured from a specified datum

[SOURCE: ASTM F3411-22]

3.3

height

vertical distance of the UA from the ground, referenced to either the take-off position or current position

3.4

network remote identification

a system that ensures the transmission of information about a UA in operation allowing electronic identification of its state, registration, and status, as well as intent

[SOURCE: EUROCAE ED-282]

3.5

direct remote identification

system that ensures the local broadcast of information about an unmanned aircraft in operation, including the identification of the unmanned aircraft, so that this information can be obtained without physical access to the unmanned aircraft

[SOURCE: European Commission, Implementing Regulation (EU) 2019/947]

4 UAS Remote identification overview

4.1 General

UAS remote identification provides a means to address public concerns and public safety vulnerabilities associated with UAS operations, including privacy and security threats. UAS remote identification allows electronic identification of a UA through the use of a unique identifier (similar in concept to an automobile license plate).

This clause provides:

- a conceptual overview of UAS remote identification and minimum requirements of direct remote identification;
- a framework for understanding the generic concept and method of UAS remote identification and requirements in this document.

4.2 Classification of UAS remote identification

UAS remote identification is composed of the following categories.

a) Direct remote identification ([Figure 2 a](#))

Direct remote identification uses the transmit protocol for devices such as smartphones, which allows the device to receive directly from the UA without having to complete a two-way connection. Pervasive technologies such as Bluetooth or Wi-Fi apply to this method.

b) Network remote identification ([Figure 2 b](#))

Network remote identification is based on obtaining UAS remote identification information via the internet from UA directly or indirectly with the UA or supporting RPS. This document does not provide requirements for network remote identification.

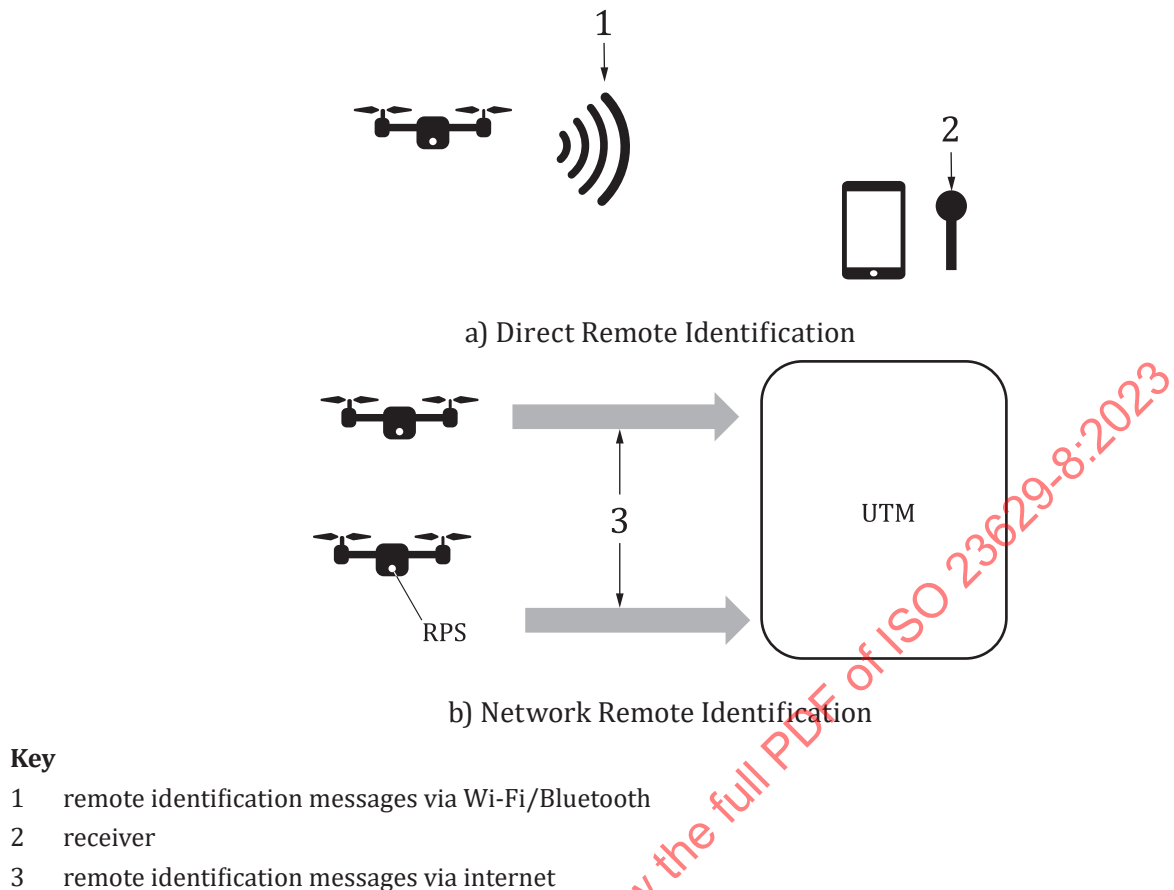


Figure 2 — UAS remote identification overview

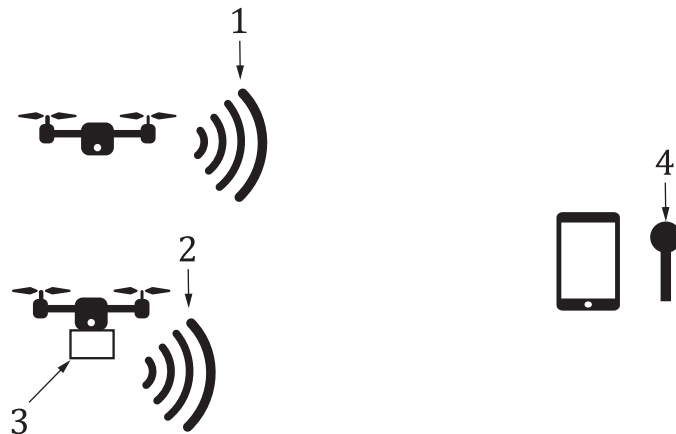
5 Direct remote identification

5.1 General

Equipment on participating UAS continuously transmits remote identification data using one of the transmit protocols (Wi-Fi/Bluetooth). Additional transmit protocols can be added in the future as warranted by available technology. The initial technologies were selected for compatibility with commonly carried hand-held devices such as smartphone or receiver on ground (see [Figure 3](#)). However, equipment to receive the broadcast data is not covered by this document. Other implementations, such as receivers not integrated with hand-held devices to get messages from UA or add-on device, are possible.

Both Bluetooth and Wi-Fi include messages broadcast at a certain rate to advertise the presence of the associated device. These advertisements normally allow other devices to discover and establish connections with the associated device; but the advertisements themselves can carry a payload. These advertisements contain the direct remote identification data.

Direct remote identification can be used anywhere, but can be necessary in areas where network coverage is not available, unreliable, or has been disrupted.



Key

- 1 direct remote identification messages from UA
- 2 direct remote identification messages via from add-on device
- 3 add-on device
- 4 receiver

Figure 3 — Direct remote identification overview

5.2 Direct remote identification message

Direct remote identification messages are packed into lightweight direct broadcast packets within Wi-Fi or Bluetooth advertisements. In order to identify a UA remotely, the message includes a unique UAS ID within the national air space, flight information and timestamp. In addition, that includes authentication information defined by civil aviation authorities of each country as necessary.

UAS ID shall be one or more of the following:

- ANSI/CTA-2063-A serial number format;
- Civil Aviation Authority issued registration ID;
- UTM Assigned ID called session ID.

In addition to the UAS ID, the UA shall send the following flight information:

- a) operational status of the UA (e.g. ground, airborne, emergency);
- b) latitude;
- c) longitude;
- d) altitude or height;
- e) ground speed;
- f) timestamp.

The UA should send the following flight information:

- g) direction;
- h) vertical speed.

5.3 Transmission method and transport protocols

The following broadcast transport mechanisms have already been standardized by industry groups. The UA shall use one or more of the following transmission methods.

- a) Bluetooth;
- b) Wi-Fi.

5.4 Transmission performance

Direct remote identification messages are received by hand-held devices (such as a smartphone) or a placed receiver.

Direct remote identification messages shall be transmitted at regular intervals during flight by the UA.

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