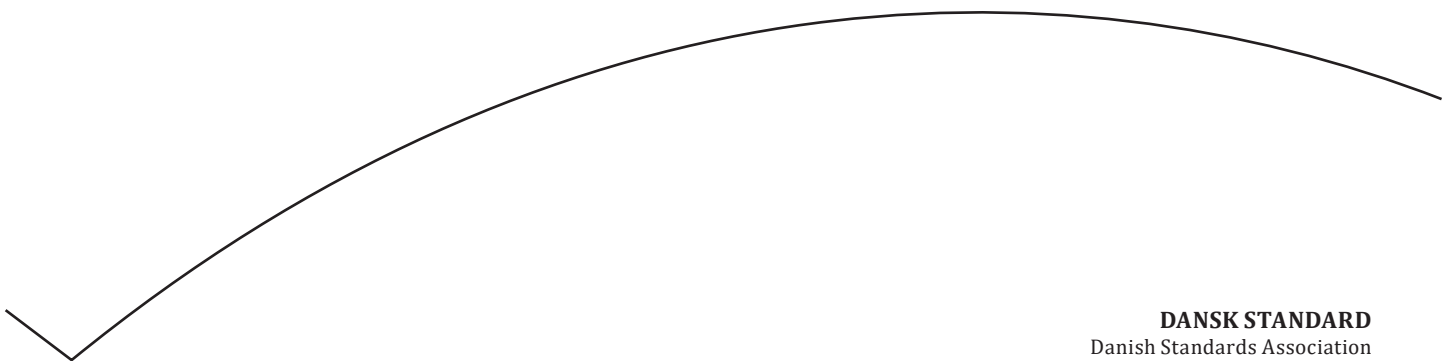


This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

# Prøvningsmetoder for civil multikopter-UAS

Test methods for civil multi-copter unmanned aircraft system



**DANSK STANDARD**  
Danish Standards Association

Göteborg Plads 1  
DK-2150 Nordhavn

Tel: +45 39 96 61 01  
[dansk.standard@ds.dk](mailto:dansk.standard@ds.dk)  
[www.ds.dk](http://www.ds.dk)

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

DS projekt: M356426

ICS: 49.020

**Første del af denne publikations betegnelse er:**

**DS/ISO, hvilket betyder, at det er en international standard, der har status som dansk standard.**

**Denne publikations overensstemmelse er:**

**IDT med: ISO 4358:2023**

**DS-publikationen er på engelsk.**

---

I tilfælde af redaktionelle fejl i DS-publikationen kan der skrives til:

[editorial-mistakes@ds.dk](mailto:editorial-mistakes@ds.dk)

**ADVARSEL:** DS-publikationer revideres over tid. Derudover kan sådanne publikationer ændres ved rettelserblade og/eller tillæg. Der kan også udgives rettelserblade, der udelukkende angår oversættelsen af en publikation. Det er derfor vigtigt at sikre sig, at man benytter en gældende udgave, medmindre fx lovgivning kræver andet. Den enkelte publikations status fremgår af <https://webshop.ds.dk/>. Her kan man desuden tilmelde sig en gratis notifikationservice og følge en udgivet DS-publikations udvikling ved at klikke på "Følg standarden".

En oversigt over forskellige DS-publikationstyper og -betegnelser findes her:

<https://www.ds.dk/publikationstyper>.

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

First edition  
2023-05

---

---

## Test methods for civil multi-copter unmanned aircraft system

*Méthodes d'essai pour les multicoptères civils télépilotés*



Reference number  
ISO 4358:2023(E)

© ISO 2023

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2023, Published in Switzerland

All rights reserved. Unless otherwise specified, 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  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

## Contents

Page

<b>Foreword</b> .....	<b>v</b>
<b>Introduction</b> .....	<b>vi</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 General principles</b> .....	<b>1</b>
4.1 Test purpose .....	1
4.2 Test conditions and requirements.....	2
4.2.1 Technical document .....	2
4.2.2 Test article.....	2
4.2.3 Equipment and instruments .....	2
4.2.4 Personnel requirements.....	2
4.3 Test environmental requirements.....	2
4.4 Test interruption and recovery.....	2
4.5 Test outline.....	3
4.6 Test report .....	3
<b>5 Test methods</b> .....	<b>3</b>
5.1 Test item .....	3
5.2 Basic inspection.....	5
5.2.1 Completeness.....	5
5.2.2 Appearance.....	5
5.2.3 Size .....	5
5.2.4 Weight and centre of gravity .....	5
5.2.5 Moving and rotating parts check.....	5
5.2.6 Connectors .....	6
5.3 Functional inspection and testing .....	6
5.3.1 Identification.....	6
5.3.2 Route loading.....	6
5.3.3 Self-test.....	6
5.3.4 Information display.....	6
5.3.5 Data record .....	6
5.3.6 Return to home .....	6
5.3.7 Automatic obstacle avoidance .....	7
5.3.8 Typical failure protection .....	7
5.3.9 Take-off/launch and landing/recovery .....	7
5.3.10 Warning.....	7
5.3.11 Locking and starting of the motor .....	7
5.3.12 Control mode switching .....	7
5.4 Flight performance test.....	8
5.4.1 Maximum take-off weight.....	8
5.4.2 Maximum flight range .....	8
5.4.3 Maximum flight altitude.....	8
5.4.4 Maximum horizontal flight speed .....	9
5.4.5 Maximum steady climb rate .....	9
5.4.6 Altitude hold performance.....	9
5.4.7 Speed hold performance.....	10
5.4.8 Flight endurance.....	10
5.4.9 Fixed-point hovering .....	12
5.4.10 Positioning navigation .....	12
5.4.11 Trajectory tracking accuracy.....	13
5.4.12 Capability of wind resistance.....	13
5.5 Navigation system test .....	13

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

5.5.1	Static attitude accuracy .....	13
5.5.2	Static positioning accuracy .....	13
5.6	Data link system test .....	14
5.6.1	Remote control distance and telemetry distance.....	14
5.6.2	Information transmission distance .....	14
5.7	Environmental test.....	15
5.7.1	High temperature.....	15
5.7.2	Low temperature.....	15
5.7.3	Rainfall.....	16
5.7.4	Humidity and heat.....	16
5.7.5	Vibration .....	16
5.7.6	Shock .....	16
5.8	Electromagnetic compatibility.....	17
5.8.1	General principles.....	17
5.8.2	Emission test.....	17
5.8.3	Immunity .....	19
<b>Annex A (informative) Test procedure of remote control and telemetry distance .....</b>		<b>24</b>
<b>Bibliography .....</b>		<b>26</b>

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

## 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 documents 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO 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](http://www.iso.org/patents)).

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](http://www.iso.org/iso/foreword.html).

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

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](http://www.iso.org/members.html).

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

## **Introduction**

Multi-copter unmanned aircraft system (UAS) is the most popular UAS in the market at the time of publication of this document, but the quality of products can vary significantly. However, it is difficult to evaluate the function and performance of these products as there is no unified standard test method and means to evaluate and test the multi-copter UAS. Therefore, the development of test method standards for civil multi-copter UAS is intended to provide a basis for product testing, in order to improve the product quality of the multi-copter UAS as a whole.

This is a preview of "DS/ISO 4358:2023". [Click here to purchase the full version from the ANSI store.](#)

# Test methods for civil multi-copter unmanned aircraft system

## 1 Scope

This document specifies test methods for civil electric multi-copter unmanned aircraft systems (UAS). This document is intended to be a general standard for testing the overall UAS functionality with the support of subsystems.

It is applicable to the category of civil electric multi-copter UAS with maximum take-off mass (MTOM) level I to level V according to [ISO 21895](#). The configuration control and subsystem (e.g. energy system and flight control system tests) test methods are out of the scope of this document. In addition, test methods for operations in snow and icing conditions are not included either, manufacturers have procedures identified to cope with flight in those conditions.

## 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*

[ISO 21895](#), *Categorization and classification of civil unmanned aircraft systems*