

---

---

**Small craft — Electrical/electronic  
control systems for steering, shift and  
throttle**

*Petits navires — Systèmes électriques/électroniques pour le contrôle  
de la direction, de l'inverseur et des gaz*

**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

[ISO 25197:2020](https://standards.iteh.ai/catalog/standards/iso/07fa547e-69cf-413a-bb46-d41fa5b5ca61/iso-25197-2020)

<https://standards.iteh.ai/catalog/standards/iso/07fa547e-69cf-413a-bb46-d41fa5b5ca61/iso-25197-2020>



**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

[ISO 25197:2020](https://standards.iteh.ai/catalog/standards/iso/07fa547e-69cf-413a-bb46-d41fa5b5ca61/iso-25197-2020)

<https://standards.iteh.ai/catalog/standards/iso/07fa547e-69cf-413a-bb46-d41fa5b5ca61/iso-25197-2020>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2020

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  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

|  | Page      |
|--|-----------|
| <b>Foreword</b> .....  | <b>iv</b> |
| <b>1 Scope</b> .....   | <b>1</b>  |
| <b>2 Normative references</b> .....  | <b>1</b>  |
| <b>3 Terms and definitions</b> .....   | <b>2</b>  |
| <b>4 General requirements</b> .....  | <b>5</b>  |
| <b>5 Control head</b> .....  | <b>6</b>  |
| <b>6 Command station transfer</b> .....  | <b>8</b>  |
| <b>7 Portable helm station controls</b> .....                                    | <b>8</b>  |
| <b>8 Dynamic-positioning system (DPS)</b> .....                                  | <b>8</b>  |
| <b>9 Failure modes and responses</b> .....                                       | <b>9</b>  |
| 9.1 Loss of operation.....   | 9         |
| 9.2 Loss of computer command logic.....  | 9         |
| <b>10 Test requirements</b> .....  | <b>10</b> |
| 10.1 General test requirements.....  | 10        |
| 10.2 Steering.....   | 10        |
| 10.3 Control lever(s) for separate or combined shift and throttle functions..... | 10        |
| 10.4 Joystick.....   | 11        |
| 10.5 Environmental-test requirements.....  | 12        |
| 10.5.1 General.....  | 12        |
| 10.5.2 Salt mist tests.....  | 13        |
| 10.5.3 Damp heat — Cyclic.....   | 14        |
| 10.5.4 Damp heat — Steady state.....   | 14        |
| 10.5.5 High-temperature test — Operation.....                                    | 14        |
| 10.5.6 High-temperature test — Storage.....                                      | 14        |
| 10.5.7 Low-temperature test — Operation.....                                     | 15        |
| 10.5.8 Low-temperature test — Storage.....                                       | 15        |
| 10.6 Vibration tests and requirements.....                                       | 15        |
| 10.7 Shock testing.....  | 16        |
| 10.8 Drop test.....  | 16        |
| 10.9 Resistance to UV.....   | 16        |
| 10.10 Electromagnetic compatibility (EMC).....                                   | 17        |
| 10.10.1 Electromagnetic interference tests.....                                  | 17        |
| 10.10.2 EMC performance criteria.....  | 17        |
| 10.10.3 Immunity to conducted low-frequency interference.....                    | 17        |
| 10.10.4 Immunity to conducted radio-frequency interference.....                  | 18        |
| 10.10.5 Immunity to radiated radio-frequency fields.....                         | 18        |
| 10.10.6 Immunity to fast, low-energy transients (bursts).....                    | 18        |
| 10.10.7 Immunity to slow, high-energy transients (surges).....                   | 19        |
| 10.10.8 Immunity to electrostatic discharge (ESD).....                           | 19        |
| 10.10.9 Immunity to power supply variation.....                                  | 19        |
| 10.10.10.....  |           |
| Radiated emissions.....  | 20        |
| 10.10.11.....  |           |
| Conducted emissions.....   | 20        |
| 10.11 Compass safe distance.....   | 20        |
| 10.12 Insulation resistance.....   | 20        |
| <b>11 Labelling</b> .....  | <b>20</b> |
| <b>12 Instructions to be included in the owner's manual</b> .....                | <b>20</b> |
| <b>Bibliography</b> .....  | <b>22</b> |

## 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 Committee ISO/TC 188, *Small craft*.

This second edition cancels and replaces the first edition (ISO 25197:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the terms and definitions have been revised to give coherency with other standard definitions; new terms, such as input device and output device, have been introduced;
- the figures have been revised to clarify the concepts illustrated;
- [7.2](#), on portable helms, has been revised to make it coherent when an electric propulsion motor is used;
- [9.1](#) has been revised to include the fail-safe mode and the alarm policy;
- the main change is in [10.1](#): the request to use three different samples for all tests (except for EMC test) has been deleted because it would have involved a great expense without having significant improvement; only one sample is used for all tests described on the subsequent subclauses;
- the durability test on joystick described in [10.4](#) has been made an operational test;
- [Table 1](#) in [10.5.1](#) has been updated introducing the column “immersion” to handle test on immersed components;
- in [10.5.2](#), all ways to conduct the salt mist test, based on different standards, have been homogenized;
- in [10.7](#), the shock test has been revised;
- in [10.8](#), the free fall test has become the drop test with the addition of the UV test;
- the UV test, described in [10.9](#), has been clarified;

- in [10.10](#), there are many changes due to the revision of IEC 60533 and the forthcoming release of IEC 62742; to avoid any direct link to those standards, all tests previously required by IEC 60533 have been embedded and all standards cited have been added to the normative reference list.

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).

**iTeh Standards**  
**(<https://standards.itih.ai>)**  
**Document Preview**

ISO 25197:2020

<https://standards.itih.ai/catalog/standards/iso/07fa547e-69cf-413a-bb46-d41fa5b5ca61/iso-25197-2020>