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ISO 16315

**Small craft — Electrical systems
used for electrical propulsion**

*Petits navires — Systèmes électriques utilisés pour la propulsion
électrique*

**Second edition
2026-02**

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This second edition cancels and replaces the first edition (ISO 16315:2016), which has been technically revised.

The main changes are as follows:

- the overcurrent protection requirements have been clarified;
- the fault monitoring requirements for isolated DC systems have been revised.

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Electrical propulsion systems are becoming more common in recreational craft and other small craft and propulsion system voltages of up to AC 1 000 V and DC 1 500 V are possible together with variable speed drives operating at frequencies which differ from 50/60 Hz or DC.

Electric propulsion systems for small craft are generally designed and constructed from a number of component parts many of which can be of proprietary origin and all of the electrical and control items are interconnected by cables and operated as a system.

A propulsion system designer/installer should be competent with all components of the system addressed by this standard, as well as all aspects of any other equipment included in the design of a system such that the component parts of the propulsion system are integrated in a complete and safe manner.

There are a significant number of electrical propulsion system architectures for small craft and the main types are the following.

- DC sourced. The main power source is a propulsion battery or battery bank which is either recharged from on-board DC generators, or on-board AC generators/an AC shore supply through battery chargers. The electric propulsion system(s) can be variable speed through a DC motor controller or AC through a Variable Frequency Drive (VFD) or be fixed speed with a variable pitch propeller or other mechanical means of providing thrust. The electric propulsion system can be electrically separate from other electrical systems on-board (e.g. be fully insulated via the motor controller, or be an AC IT system via a VFD or motor starter). Or the electrical propulsion system can be integrated with the whole craft DC electrical system using converters DC/DC, DC/AC to provide for different services/consumers.
- AC sourced. The main power source is AC generator(s). The electric propulsion system(s) can be DC variable speed through an AC/DC converter and DC motor controller, or AC through a VFD, or be fixed speed with a variable pitch propeller or other mechanical means of providing thrust. The electric propulsion system can be DC fully insulated system or be an AC IT system via a galvanically isolated VFD or via an isolating transformer. A DC propulsion system(s) can be supported by a propulsion battery or battery bank.
- Also possible are hybrid systems similar to the types being introduced for road vehicles where the source is an internal combustion engine providing, for example, energy to a relatively lightweight energy storage system with power take-off via converters to propulsion motor(s) and other electrical consumers.

It is essential that the electric propulsion system designer/installer be competent with all aspects of the equipment included in the design of a particular system such that the component parts of the propulsion system are integrated in a coherent and safe manner.

Current electrical standards for small craft of less than 24 m L_H are as follows:

- a) ISO 13297, which covers extra-low-voltage direct current (DC) electrical systems that operate at nominal potentials of 50 V DC or less and single-phase alternating current (AC) systems that operate at a voltage not exceeding AC 250 V. It does not include requirements for electrical propulsion systems.
- b) IEC 60092-507, which is applicable to small craft up to 50 m/500 GT and includes requirements for three-phase systems not exceeding AC 500 V and single-phase systems not exceeding AC 250 V, and for DC systems and sub-systems not exceeding DC 50 V nominal. It includes a section on electric propulsion systems.