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Marine technology — Ocean observation systems — Design criteria of ocean hydro-meteorological observation systems reuse and interaction

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National foreword

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Foreword

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This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 13, *Marine technology*.

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.

Introduction

Ocean hydro-meteorological observation is an important means for human cognition and research on the ocean. It plays an important role in the study of ocean science, protection of the ocean environment, early warning of ocean disasters, and development of ocean resources. Observation activities are coordinated by ocean hydro-meteorological observation systems at observing sites. The observation system is responsible for receiving, storing, displaying, processing and analyzing ocean hydro-meteorological data, providing software support for accurate and efficient observation activities.

The lack of design standards for ocean hydro-meteorological observation systems leads to different system structures, poor interface versatility, and diverse data types, which seriously affects the reusability and interactivity of the system, and brings a series of comprehensive problems, mainly in the following aspects: the system function coverage is imperfect and cannot meet all observation requirements; the interconnection between systems is difficult, which hinders the analysis and application of large-scale ocean data; the system development efficiency is low, the upgrade cost is high, and the ocean observation cost increases.

This document provides an overall framework for ocean hydro-meteorological observation systems. It standardizes the functional composition of such systems, their structure type of the data, their data transmission format and protocol, and their input and output interfaces. As such, this document contributes to improving the development and operation efficiency of these systems, and to meeting diverse needs. It also improves the application analysis and integrated management capabilities of ocean big data.

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1 Scope

This document specifies the overall framework of ocean hydro-meteorological observation systems, including the system function composition, the data structure type and data transmission format and protocol, as well as the input and output interface. These systems support automatic measurement of e.g. buoy, submersible and shore station instruments, with output interfaces, and provide observations on e.g. water temperature, salinity, depth, current, ocean wave, temperature, pressure, humidity, wind, visibility and precipitation. They have the ability to receive, store, display, process, and analyze data. This document is intended for both developers of ocean observation systems and ocean observers.

2 Normative references

There are no normative references in this document.

3 Terms and definitions, and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

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

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

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

3.1 Terms and definitions

3.1.1
interface
function used to implement data reception or transmission

3.1.2
standardized interface
interface (3.1.1) for the uniform specification of names, functions, *parameters* (3.1.5) and return values

3.1.3
instrument
device with a sensory environmental characteristic parameter function for implementing ocean hydro-meteorological observation activities

3.1.4
precision
closeness of agreement between indications or measured quantity values obtained by replicate measurements on the same or similar objects under specified conditions

[SOURCE: ISO/IEC Guide 99:2007, 2.15, modified - Preferred term "measurement precision" deleted; Notes 1 to 4 to entry deleted.]