**S-98**



Published by the

International Hydrographic Organization

4b quai Antoine 1er

Principauté de Monaco

Tel: (377) 93.10.81.00

Fax: (377) 93.10.81.40

info@iho.int

www.iho.int

**S-98 Annex A**

**S-100 ECDIS Data Constraints**

**Edition 2.0.0 – October 2025**

|  |
| --- |
| © Copyright International Hydrographic Organization 2025 |
| This work is copyright. Apart from any use permitted in accordance with the [Berne Convention for the Protection of Literary and Artistic Works](http://www.wipo.int/treaties/en/ip/berne/trtdocs_wo001.html) (1886), and except in the circumstances described below, no part may be translated, reproduced by any process, adapted, communicated or commercially exploited without prior written permission from the International Hydrographic Organization (IHO). Copyright in some of the material in this publication may be owned by another party and permission for the translation and/or reproduction of that material must be obtained from the owner. |
| This document or partial material from this document may be translated, reproduced or distributed for general information, on no more than a cost recovery basis. Copies may not be sold or distributed for profit or gain without prior written agreement of the IHO Secretariat and any other copyright holders. |
| In the event that this document or partial material from this document is reproduced, translated or distributed under the terms described above, the following statements are to be included: |
| *“Material from IHO publication [reference to extract: Title, Edition] is reproduced with the permission of the IHO Secretariat (Permission No ……./…) acting for the International Hydrographic Organization (IHO), which does not accept responsibility for the correctness of the material as reproduced: in case of doubt, the IHO’s authentic text shall prevail. The incorporation of material sourced from IHO shall not be construed as constituting an endorsement by IHO of this product.”* |
| *“This [document/publication] is a translation of IHO [document/publication] [name]. The IHO has not checked this translation and therefore takes no responsibility for its accuracy. In case of doubt the source version of [name] in [language] should be consulted.”*  The IHO Logo or other identifiers shall not be used in any derived product without prior written permission from the IHO Secretariat. |

Contents

[1 Overview 5](#_Toc211346984)

[1.1 Introduction 5](#_Toc211346985)

[1.2 Scope 5](#_Toc211346986)

[1.3 References 5](#_Toc211346987)

[1.4 Terms, definitions and abbreviations 6](#_Toc211346988)

[1.4.1 Terms and Definitions 6](#_Toc211346989)

[1.4.2 Abbreviations 8](#_Toc211346990)

[1.5 Use of Language 9](#_Toc211346991)

[1.6 General Data Product Description 9](#_Toc211346992)

**Document History**

Changes to this Annex are coordinated by the IHO S-100 Working Group. New editions will be made available via the IHO web site. Maintenance of the Specification shall conform to IHO Resolution 2/2007 (as amended).

|  |  |  |  |
| --- | --- | --- | --- |
| **Version Number** | **Date** | **Approved By** | **Purpose** |
| 2.0.0 | October 2025 |  |  |
|  |  |  |  |

1. Overview

This Annex to S-98.

* 1. Introduction

This Annex defines

.

* 1. Scope

This Annex is intended for ECDIS and Navigational Systems.

* 1. References

IEC 61174 *Maritime navigation and radiocommunication equipment and systems – Electronic chart display and information system (ECDIS) – Operational and performance requirements, methods of testing and required test results*. International Electrotechnical Commission (IEC), Edition 4.0, 2015.

RFC 2141 *URN Syntax*. Internet Engineering Task Force (IETF), May 1997.

S-52 *Specifications for Chart Content and Display Aspects of ECDIS*, Edition 6.1.1, June 2015.

S-100  *IHO Universal Hydrographic Data Model*, Edition 5.0.0, December 2022.

S-101 *Electronic Navigational Chart (ENC) Product Specification*, Edition 1.1.0, April 2023.

S-102 *Bathymetric Surface Product Specification*, Edition 2.2.0, April 2023.

S-104 *Water Level Information for Surface Navigation Product Specification*, Edition 1.1.0, March 2023.

S-111 *Surface Currents Product Specification*, Edition 1.2.0, March 2023.

S-122 *Marine Protected Areas Product Specification*. Draft Edition 1.0.0, January 2019.

S-123 *Marine Radio Services Product Specification*. Draft Edition 1.0.0, January 2019.

S-129 *Under Keel Clearance Management Product Specification*, Edition 1.0.0, June 2019.

IMO MSC.1/Circ.1512 *Guideline on Software Quality Assurance and Human-Centred Design for e-Navigation*.

IMO MSC 232(82) *Revised Performance Standards for Electronic Chart Display And Information Systems (ECDIS)*, IMO Resolution MSC.232(82), 2006.

ISO 19115-1 ISO 19115-1:2014, *Geographic information – Metadata – Part 1 - Fundamentals*. As amended by Amendment 1, 2018.

ISO 19115-3 ISO/TS 19115-3:2016, *Geographic information - Metadata - XML schema implementation for fundamental concepts*.

XPath *XML Path Language (XPath) 3.1 - W3C Recommendation 21 March 2017* (World-Wide Web Consortium – W3C). URL: <https://www.w3.org/TR/2017/REC-xpath-31-20170321/> (Retrieved 2017-12-08).

NOTE: Plain “S-100” in this document and its Parts, Annexes, or Appendices means S-100 Edition 5.0.0, any clarification.

* 1. Terms, definitions and abbreviations

### Terms and Definitions

### Abbreviations

ARPA Automatic Radar Plotting Aid

AIS Automatic Identification System

AIS ASM AIS Application Specific Messages

CRS Coordinate Reference System

DCEG Data Classification and Encoding Guide

DQ Data Quality

ECDIS Electronic Chart Display and Information System

ECS Electronic Chart System

ENC Electronic Navigational Chart

EPSG European Petroleum Survey Group

FC Feature Catalogue

HCD Human-Centred Design

IEC International Electrotechnical Commission

IC Interoperability Catalogue

IHO International Hydrographic Organization

IMO International Maritime Organization

ISO International Organization for Standardization

GFM General Feature Model

MPA Marine Protected Area

MRN Maritime Resource Name

OEM Original Equipment Manufacturer

OGC Open Geospatial Consortium

PC Portrayal Catalogue

PDC Pre-Defined Combination

PS Product Specification

SENC System Electronic Navigational Chart

SOLAS Safety of Life at Sea (Convention)

SQA Software Quality Assurance

UI User Interface

URI Uniform Resource Identifier

URL Uniform Resource Locator

URN Uniform Resource Name

XML eXtensible Markup Language

XSD XML Schema Definition (a format for formally describing the elements in an XML document)

XSL eXtensible Stylesheet Language

XSLT XSL Transformations

* 1. Use of Language

Within this document:

* “Must” indicates a mandatory requirement.
* “Should” indicates an optional requirement, that is the recommended process to be followed, but is not mandatory.
* “May” means “allowed to” or “could possibly” and is not mandatory.
  1. Description of functionality described.