IEC 61996-2

Edition 2.0 2007-11

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Maritime navigation and radiocommunication equipment and systems – Shipborne voyage data recorder (VDR) –
Part 2: Simplified voyage data recorder (S-VDR) – Performance requirements, methods of testing and required test results

Matériels et systèmes de navigation et de radiocommunication maritimes – Enregistreur de données de navigation embarqué (VDR) –
Partie 2: Enregistreur de données de navigation simplifié (S-VDR) – Exigences de performance, méthodes d'essai et résultats d'essai exigés

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FOREWORD

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International Standard IEC 61996-2 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

This bilingual version (2017-01) corresponds to the English version, published in 2007-11.

This second edition cancels and replaces the first edition published in 2006, and constitutes a technical revision. A new requirement has been added to 4.3.6 for an interface to be used for downloading the stored data to an external computer. This is defined in Annex C which replaces the Annex C of the first edition which contained an IMO Circular which recommended such an interface. An optional LAN interface for connection to radar has been added in 5.8. Some corrections to the text have also been made.

The text of this standard is based on the following documents:

CDV	Report on voting
80/471/CDV	80/500/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61996 series, under the general title *Maritime navigation and radiocommunication equipment and systems – Shipborne voyage data recorder (VDR)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The S-VDR has been introduced by IMO for fitting to existing ships as a simplified alternative to the voyage data recorder (VDR) which is required for all new ships.

This part of IEC 61996 provides information on the testing requirements for S-VDR as defined in IMO performance standard MSC.163(78).

The specification for S-VDR differs significantly from that for VDR in two areas:

a) the requirements for monitoring certain sensors are reduced when the data is not provided in IEC 61162 format, and

b) the requirements for the protective S-VDR capsule are different from the VDR capsule, both for the fixed and float-free versions.

Annex B provides a cross-reference between this standard and IEC 61996-1 to aid test houses who may already have test results for VDRs which are being submitted as S-VDRs.

Subsequent to publishing the performance standard for S-VDR, MSC.163(78), in 2004, the IMO sub-committee on Safety of Navigation (NAV) discussed the issue of download and playback of information. Recognising that after an accident there is a need for investigators to be able to download the stored data and playback the information from VDRs/S-VDRs without delay, the sub-committee agreed on recommended means for extracting stored data for investigation authorities. This was adopted by MSC.81 in 2005 as an amendment to resolution MSC.163(78) given in resolution MSC.214(81). This edition of the standard incorporates this amendment.

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – SHIPBORNE VOYAGE DATA RECORDER (VDR) –

Part 2: Simplified voyage data recorder (S-VDR) – Performance requirements, methods of testing and required test results

1 Scope

This part of IEC 61996 specifies the minimum performance requirements, technical characteristics and methods of testing, and required test results, for simplified shipborne voyage data recorders (S-VDRs) as required by IMO MSC.163(78). It takes into account IMO resolution A.694(17) and is associated with IEC 60945. When a requirement in this standard is different from IEC 60945, the requirement in this standard takes precedence.

NOTE All text of this standard, whose wording is identical to that of IMO MSC.163(78) or A.861(20) is printed in *italics,* and the Resolution and associated performance standard paragraph numbers are indicated in brackets.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*

IEC 60268-16:2003, *Sound system equipment – Part 16: Objective rating of speech intelligibility by speech transmission index*

IEC 60945:2002, *Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results*

IEC 61097-2, *Global maritime distress and safety system (GMDSS) – Part 2: COSPAS SARSAT EPIRB – Satellite emergency position indicating radio beacon operating on 406 MHz – Operational and performance requirements, methods of testing and required test results*

IEC 61097-7:1996, *Global maritime distress and safety system (GMDSS) – Part 7: Shipborne VHF radiotelephone transmitter and receiver – Operational and performance requirements, methods of testing and required test results*

IEC 61162-1, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners*

IEC 61162-2, *Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 2: Single talker and multiple listeners, high-speed transmission*

IEC 61260:1995, *Electroacoustics – Octave-band and fractional-octave-band filters*

IEC 61672-1:2002, *Electroacoustics – Sound level meters – Part 1: Specifications*

IMO A.658(16), *Use and fitting of retro-reflective materials on life-saving appliances*

IMO A.662(16), *Performance standards for float-free release and activation arrangements for emergency radio equipment*

IMO A.694(17), *General requirements for shipborne radio equipment forming part of the Global maritime distress and safety system (GMDSS) and for electronic navigational aids*

IMO A.810(19), *Performance standards for float-free satellite emergency position-indicating radio beacons (EPIRBs) operating on 406 MHz*

IMO A.830(19), *Code on alarms and indicators*

IMO A.861(20), *Performance standards for shipborne voyage data recorders (VDRs)*

IMO MSC.81(70), *Testing of life saving appliances*

IMO MSC.163(78), *Performance standards for shipborne simplified voyage data recorders (S-VDR)*

IMO MSC.214(81), Annex 2, *Amendments to the recommendation on performance standards for shipborne simplified voyage data recorders (VDRs) (Resolution MSC.163(78))*

IMO:1974, *International Convention for the Safety of Life at Sea (SOLAS), as amended*

ITU-R M.633-3:2004, *Transmission characteristics of a satellite emergency position-indicating radiobeacon (satellite EPIRB) system operating through a low polar-orbiting satellite system in the 406 MHz band*

Eurocae: ED56A Amendment 1 – *Minimum operational performance specification (MOPS) for cockpit voice recorder system*

VESA:1996, *Video electronics standards association – Discrete monitor timings standard 1.0, Revision 0.7 (DMT)*

SAE AS 8045:1988, *Engineering Society for advancing mobility land sea air and space – Minimum performance standard for underwater locating devices – acoustic-self-powered*

3 Terms, definitions and abbreviations

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

3.1 Definitions

3.1.1
activation of a suitable alarm
mutable audible alarm and persistent visual indication, given according to the requirements of IMO A.830(19) but with an audible level in the range of 55 dBA to 65 dBA

3.1.2
combined EPIRB/S-VDR capsule
a single unit which meets all the requirements of a satellite EPIRB (as required by the carriage requirements of SOLAS IV) and all the requirements of a S-VDR (as required by the carriage requirements of SOLAS V)

3.1.3
bridge work station
position at which a person is expected to be when performing one of the normal bridge duties at, for example, the following work stations:

- centre line conning
- bridge wing(s)
- main radar
- chart table
- helms
- communication

3.1.4
data
any item of information received by the S-VDR for recording, including numerical values, text and audio or radar signals, except where specifically stated or the context dictates otherwise

3.1.5
dedicated reserve power source (MSC.163(78) 4.5)
secondary battery, with suitable automatic charging arrangements, dedicated solely to the S-VDR, of sufficient capacity to operate it as required by 4.5.3

3.1.6
final recording medium (MSC.163(78) 4.3)
(FRM)
any item of hardware on which the data is recorded such that access to it would enable the data to be recovered and played back by use of suitable equipment

3.1.7
playback equipment (MSC.163(78) 4.4)
any equipment, compatible with the recording medium and the format used during recording, employed for recovering the data. It includes also the display or presentation hardware and software that is appropriate to the original data source equipment

3.1.8
recorder (MSC.163(78) 4.1)
(S-VDR)
complete system, including any items required to interface with the sources of input data, for processing and encoding the data, the final recording medium in its capsule, the power supply and dedicated reserve power source

3.1.9
resolution
smallest detectable increment between two values

3.1.10
sensor (MSC.163(78) 4.2*)*
any unit external to the S-VDR to which the S-VDR is connected and from which it obtains data to be recorded

3.2 Abbreviations

AIS	Automatic identification system
ALR	IEC 61162 sentence: Set alarm state
DPT	IEC 61162 sentence: Depth relative to the transducer
DTM	IEC 61162 sentence: Geodetic datum reference

EPFS	Electronic position fixing system
EPIRB	Emergency position-indicating radio beacon
EUT	Equipment under test
GMDSS	Global maritime distress and safety system
GNS	IEC 61162 sentence: GNSS fix data
GNSS	Global navigation satellite system
HDG	IEC 61162 sentence: Magnetic compass heading
HDT	IEC 61162 sentence: True heading
HTC	IEC 61162 sentence: Heading/track control command
HTD	IEC 61162 sentence: Heading/track control data
IMO	International Maritime Organization
INS	Integrated navigation system
ITU	International Telecommunication Union
MWV	IEC 61162 sentence: Wind speed and angle
OOW	Officer of the watch
ROV	Remotely operated vehicle
RPM	IEC 61162 sentence: Revolutions per minute
RSA	IEC 61162 sentence: Rudder sense angle
SAR	Search and rescue
SENC	System electronic navigation chart
SINAD	Signal to noise and distortion
STI	Sound transmission index
TXT	IEC 61162 sentence: Text message
UTC	Coordinated universal time
VDM	IEC 61162 sentence: AIS – VHF data link message
VDO	IEC 61162 sentence: AIS – VHF data link own-vessel message
VHF	Very high frequency
VBW	IEC 61162 sentence: Dual ground water speed
XDR	IEC 61162 sentence: Transducer measurements
ZDA	IEC 61162 sentence: Time and date

NOTE For IEC 61162 sentences, see Annex A.

4 Performance requirements

Performance requirements described in the following Clauses are specified, where relevant, by reference to the numbered paragraphs of IMO MSC.163(78), if not otherwise indicated.

4.1 General

Requirements specified in this standard are only relevant to equipment designated as an S-VDR and required to meet IMO MSC.163(78).

For equipment designated as a VDR to IMO Performance standards defined in resolution A.861(20) refer to IEC 61996-1.

A table of cross-references between this standard and IEC 61996-1 is included in Annex B.

4.2 Purpose

(MSC.163(78) 1)

The purpose of a simplified voyage data recorder (S-VDR) is to maintain a store, in a secure and retrievable form, of information concerning the position, movement, physical status, command and control of a vessel over the period leading up to, and following, an incident having an impact thereon. Information contained in a S-VDR shall *be made available to both the Administration and the shipowner. This information is for use during any subsequent investigation to identify the cause(s) of the incident.*

4.3 Operational requirements

(MSC.163(78) 5)

4.3.1 Design and construction

(MSC.163(78) 5.1.4)

The design and construction, which shall *be in accordance with the requirements of resolution A.694(17) and international standards acceptable to the Organization*[1], shall *take special account of the requirements for data security and continuity of operation as detailed in* IMO MSC.163(78) 5.2 and 5.3 and in this standard 4.3, 4.4 and 4.5.

4.3.2 Maintenance of sequential records

(MSC.163(78) 5.1.1)

The S-VDR shall *continuously maintain sequential records of pre-selected data items relating to the status and output of the ship's equipment, and command and control of the ship, referred to in* 4.6.

4.3.3 Co-relation in date and time

(MSC.163(78) 5.1.2, 5.4.1)

To permit subsequent analysis of factors surrounding an incident, the method of recording shall *ensure that the various data items can be co-related in date and time during playback on suitable equipment.*

The recording method shall *be such that the timing of all other recorded data items can be derived on playback with a resolution sufficient to reconstruct the history of an incident in detail* (see 4.6.1).

4.3.4 Protective capsule

4.3.4.1 Final recording medium

(MSC.163(78) 5.1.3)

The final recording medium shall *be installed in a protective capsule*. The capsule may be designed to remain fixed to the ship in all circumstances. Alternatively, it may be designed to float free automatically if the ship sinks (see 5.2). The fixed capsule may also comply with the requirements of IEC 61996-1.

4.3.4.1.1 Fixed capsule

(MSC.163(78) 5.1.3.2)

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1 Refer to IEC 60945: *Maritime navigation and radiocommunication equipment and systems – General requirements, methods of testing and required test results*.