

INTERNATIONAL STANDARD

IEC 61996-2

First edition
2006-03

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

© IEC 2006 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE

XA

For price, see current catalogue

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms, definitions and abbreviations	8
4 Performance requirements	10
4.1 General	10
4.2 Purpose	11
4.3 Operational requirements	11
4.4 Data selection and security	13
4.5 Continuity of operation	14
4.6 Data items to be recorded	15
5 Technical characteristics	18
5.1 Co-relation in date and time	18
5.2 Particular design requirements for the protective capsule.....	18
5.3 Location beacon(s) for the protective capsule.....	19
5.4 Survivability of recorded data	20
5.5 Information to be included in the manufacturer’s documentation.....	20
5.6 Bridge audio specifications.....	21
5.7 Communications audio	22
5.8 Radar data – post-display selection.....	23
6 Methods of testing and required test results	24
6.1 General.....	24
6.2 Data items to be recorded	31
Annex A (informative) IEC 61162 sentence formats	47
Annex B (informative) Cross-references between VDR and S-VDR.....	48
Annex C (informative) SN/Circ.246 Recommended means for extracting stored data from voyage data recorders (VDRs) and simplified voyage data recorders (S-VDRs) for investigation authorities	49
Annex D (informative) Mandatory alarms	50
Annex E (informative) Requirement/test – cross-references	52
Bibliography.....	54
Figure 1 – Test set-up block diagram	39
Figure 2 – Comparison of images	42
Table 1 – Bridge audio, signal to noise measurements	33
Table 2 – Bridge audio, signal to noise and distortion (SINAD) measurements.....	34
Table 3 – Communications audio, signal to no-signal measurements.....	36
Table 4 – Communications audio, signal to noise and distortion (SINAD) measurements	37
Table 5 – Intersection colours of test images 1 and 2.....	41

Table A.1 – References in this standard 47

Table B.1 – Subject list and clauses 48

Table D.1 – IMO instrument: SOLAS Chapter II-1 50

Table D.2 – IMO instrument: SOLAS Chapter II-2 51

Table D.3 – IMO instrument: Resolution A.481 51

Table E.1 – Subject list and clauses 52

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**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**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

This standard cancels and replaces IEC PAS 61996-2 published in 2005. This first edition constitutes a technical revision and additionally incorporates new IMO recommendations on means for extracting data from the S-VDR.

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

FDIS	Report on voting
80/430/FDIS	80/439/RVD

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

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

IEC 61996 consists of the following parts under the general title *Maritime navigation and radiocommunication equipment and systems – Shipborne voyage data recorder (VDR)*:

Part 1: Performance requirements, methods of testing and required test results

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

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.

A bilingual version of this publication may be issued at a later date.

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) at its fifty-first session in June 2005, 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 as SN/Circ.246. This Circular is reproduced as Annex C and its recommendations are referenced in this standard.

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

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

IEC 61097-2:2002, *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*

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: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*