

INTERNATIONAL STANDARD



**Global maritime distress and safety system (GMDSS) –
Part 6: Narrowband direct-printing telegraph equipment for the reception of
navigational and meteorological warnings and urgent information to ships
(NAVTEX)**

IEC 61097-6:2005+AMD1:2011 CSV

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

GLOBAL MARITIME DISTRESS AND
SAFETY SYSTEM (GMDSS) –**Part 6: Narrowband direct-printing telegraph equipment
for the reception of navigational and meteorological warnings
and urgent information to ships (NAVTEX)**

FOREWORD

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This consolidated version of IEC 61097-6 consists of the second edition (2005) [documents 80/419/FDIS and 80/424/RVD] and its amendment 1 (2011) [documents 80/619/CDV and 80/648/RVC]. It bears the edition number 2.1.

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience. A vertical line in the margin shows where the base publication has been modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through.

International Standard IEC 61097-6 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

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

IEC 61097 consists of the following parts under the general title *Global maritime distress and safety system (GMDSS)*:

- Part 1: Radar transponder – Marine search and rescue (SART) – Operational and performance requirements, methods of testing and required test results
- 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
- Part 3: Digital selective calling (DSC) equipment – Operational and performance requirements, methods of testing and required testing results
- Part 4: INMARSAT-C ship earth station and INMARSAT enhanced group call (EGC) equipment – Operational and performance requirements, methods of testing and required test results
- Part 5: Inmarsat-E – Emergency position indicating radio beacon (EPIRB) operating through the Inmarsat system – Operational and performance requirements, methods of testing and required test results
- Part 6: Narrowband direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)
- Part 7: Shipborne VHF radiotelephone transmitter and receiver – Operational and performance requirements, methods of testing and required test results
- Part 8: Shipborne watchkeeping receivers for the reception of digital selective calling (DSC) in the maritime MF, MF/HF and VHF bands – Operational and performance requirements, methods of testing and required test results
- Part 9: Shipborne transmitters and receivers for use in the MF and HF bands suitable for telephony, digital selective calling (DSC) and narrow band direct printing (NBDP) – Operational and performance requirements, methods of testing and required test results
- Part 10: Inmarsat-B ship earth station equipment – Operational and performance requirements, methods of testing and required test results
- Part 12: Survival craft portable two-way VHF radiotelephone apparatus – Operational and performance requirements, methods of testing and required test results
- Part 13: Inmarsat F77 ship earth station equipment – Operational and performance requirements, methods of testing and required test results

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability 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 standard may be issued at a later date.

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INTRODUCTION

NAVTEX provides shipping with navigational and meteorological warnings and urgent information by automatic display and/or print out from a dedicated receiver.

NAVTEX is a component of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) defined by IMO Assembly Resolution A.706(17), as amended, and the WMO Manual on Marine Meteorological Services, Part Ibis, Provision of warnings and weather and sea bulletins (GMDSS application). It has been included as an element of the Global Maritime Distress and Safety System (GMDSS).

The original NAVTEX specification allowed for equipment with integral printers and precluded the fitting of equipment which relied on other ways of recording and displaying NAVTEX data. The use of Liquid Crystal Displays and other Visual Display Units is now ubiquitous on ships' bridges and this revision of the specification allows for their use in displaying NAVTEX data.

As a result of the final cessation of the distress watch on 500 kHz in 1999 the frequency 490 kHz became available for use as a national NAVTEX channel and this has now been widely implemented around the world. This NAVTEX specification therefore requires simultaneous operation on an additional channel to the international channel of 518 kHz.

IMO Resolution MSC.148(77) states that the equipment should comprise radio receivers, a signal processor and:

- a) an integrated printing device, or
- b) a dedicated display device, printer output port and a non-volatile message memory; or
- c) a connection to an integrated navigation system and a non-volatile message memory.

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INTRODUCTION (to Amendment 1)

The amendment removes the description in Annex C of the sentences NRX and NRM. These sentences are now described in IEC 61162-1 (see NOTE below).

NOTE Applies as of edition 4 (2010).

IMO Resolution MSC/Circ.1122 *Adoption of the revised NAVTEX manual*

ITU-R Recommendation M.540-2:1990, *Operational and technical characteristics for an automated direct printing telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships*

ITU-R Recommendation M.625-3:1995, *Direct-printing telegraph equipment employing automatic identification in the maritime mobile service*

3 Definitions and abbreviations

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

3.1 Definitions

3.1.1

LORAN-C

long range radio-navigation system operating on an assigned frequency of 100 kHz

3.1.2

NAVTEX

system for the broadcast and automatic reception of maritime safety information by means of narrow-band telegraphy

3.1.3

Test script

text file containing a number of NAVTEX messages formatted as defined in 5.5. The STF is a particular example of a test script

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3.2 Abbreviations

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ASCII	American Standard Code for Information Interchange
CER	character error rate
EMC	electromagnetic compatibility
EUT	equipment under test
HMI	human-machine interface
INS	integrated navigation system
IMO	International Maritime Organization
ITU	International Telecommunication Union
PC	performance check
PT	performance test
RTC	real time clock
SAR	search and rescue
STF	standard test file
STS	standard test signal
USB	Universal Serial Bus
UTC	Co-ordinated Universal Time

4 Performance requirements

4.1 General

(148/A.1.1) *The equipment, in addition to meeting the requirements of the Radio Regulations, the provisions of Recommendation ITU-R M.540 applicable to shipborne equipment and the general requirements set out in resolution A.694(17), and specified in IEC 60945 shall comply with the revised IMO performance standards for NAVTEX equipment Resolution MSC 148(77).*

(148/A.2.1) *The equipment shall comprise radio receivers, a signal processor and: either*

- a) *an integrated printing device; or*
- b) *a dedicated display device, printer output port and a non-volatile message memory; or*

NOTE Where there is no printer, the dedicated display device shall be able to be located in the position from which the ship is normally navigated.

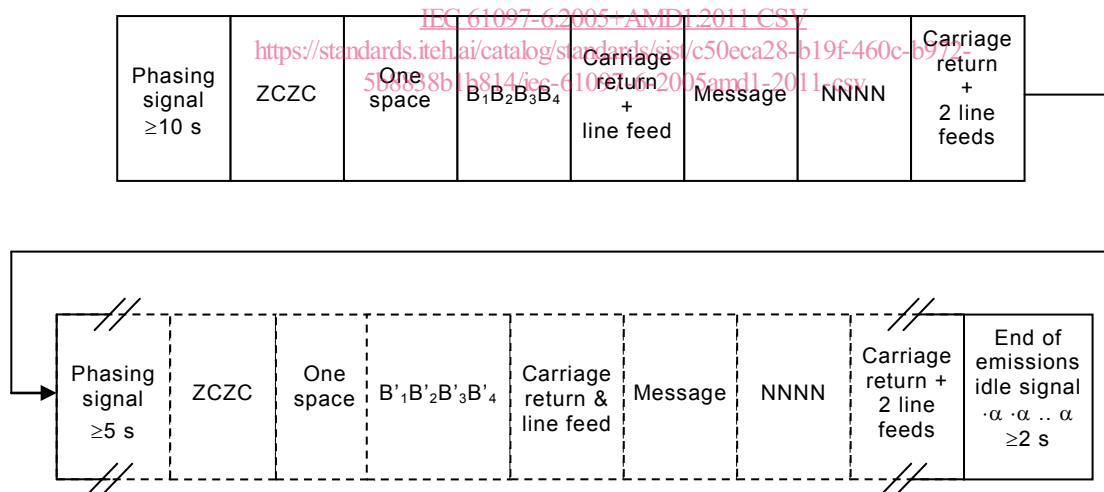
- c) *a connection to an integrated navigation system (INS) and a non-volatile message memory.*

Examples of NAVTEX systems are given in Annex A.

4.2 General characteristics

(540/AII.2) The equipment shall be capable of receiving messages in *the collective B-mode of the direct printing system specified in ITU-R Recommendation M.625, Annex I,4.*

(540/AII.3) *The technical format of the transmission shall be in accordance with ITU-R Recommendation M.540, Annex II,3 as follows:*



where

ZCZC defines the end of the phasing period

B₁ character is a letter (A-Z) identifying the transmitter coverage area.

B₂ character is a letter (A-Z) for each type of message as follows:

- A navigational warning
- B meteorological warning
- C ice report
- D search and rescue information/piracy and armed robbery
- E meteorological forecast

- F pilot message
- G AIS
- H LORAN-C message
- I reserved presently not used
- J SATNAV message
- K other electronic navigational aid system message
- L navigational warning (additional)
- M to Y reserved presently not used
- Z QRU (no message on hand)

B₃B₄ characters are the serial number of the message between 01 and 99.

4.3 Specific characteristics

4.3.1 B₁ and B₂ characters

(540/AII.2.1) The B₁ characters *identifying the different transmitter coverage areas and the B₂ characters identifying the different types of messages are defined by IMO and chosen from table 1 of ITU-R Recommendation M.625, combination numbers 1-26.*

- a) Ship equipment shall be capable of automatically rejecting unwanted information using character B₁.
- b) Ship equipment shall be capable of disabling print-out, transmission to the INS port or display of selected types of messages using character B₂ with the exception of messages with B₂ characters A, B, D and L.
- c) If any facility is rejected (transmitter coverage area) or disabled (type of message) the extent of any such limitation shall be clearly indicated to the user (see 4.3.7).

4.3.2 B₃ and B₄ characters

(540/AII.2.2) B₃ B₄ is a two-character serial number for each B₂, starting with 01 except in special cases where the serial number 00 is used (see 4.3.5).

4.3.3 Preamble

(540/AII.3) The printer or message store shall only be activated if the preamble B₁ B₂ B₃ B₄ is received without errors.

4.3.4 Repetition of printing/display

(540/AII.4) Facilities shall be provided to avoid printing, storage or display of the same message several times on the same ship, when such a message has already been satisfactorily received.

(540/AII.5) The necessary information for these measures shall be deduced from the sequence B₁ B₂ B₃ B₄.

4.3.5 Mandatory printing/display

(540/AII.6) A message shall always be printed, stored and displayed if B₃ B₄ = 00 and if it is transmitted by a coast station that the equipment is programmed to select.

(540/AII.2.3) The characters ZCZC B₁ B₂ B₃ B₄ need not be printed/displayed.

4.3.6 Reception of messages with character errors

4.3.6.1 Messages with character error rate of $>4\%$ and $\leq 33\%$

The EUT shall store the message (non-printing EUTs) or message identification (printing EUTs) but shall allow the stored message/message identification to be replaced if it is subsequently received with lower error rate.

An EUT with an integral printer shall print the messages indicating a character error rate of $\leq 33\%$.

An EUT with an integral display shall display the messages indicating a character error rate of $\leq 33\%$.

4.3.6.2 Messages with character error rate of $>33\%$

The EUT shall not store or print messages if the received character error rate $>33\%$. See Annex B.

4.3.7 Controls and indicators

(148/A.3.1) *Details of the coverage areas and message categories which have been excluded by the operator from reception and or display shall be readily available.*

It shall be possible to exclude at least four different message categories. It shall not be possible to exclude message categories A, B, D and L.

4.3.8 Programmable control memories

(148/A.6.3) *Information for location (B_1) and message (B_2) designators in programmable memories shall be permanently stored in non-volatile memory and shall not be erased by interruptions in the power supply of less than 6 h.*

Default programmable settings shall be, for the location (B_1) designators set to all characters and for the message (B_2) designators set to characters ABCDEFHJKLVZ.

NOTE Location (B_1) and message (B_2) designators are described in 4.2.

4.3.9 Alarms

4.3.9.1 Generation of alarms

(148/A.7) *The receipt of search and rescue information ($B_2 = 'D'$) shall give an alarm at the position from which the ship is normally navigated. It shall only be possible to reset this alarm manually.*

The EUT may either contain an integral alarm sounder or a pair of relay contacts for the provision of an external sounder.

If an additional alarm is provided at the equipment to indicate, for example, the reception of navigational and/or meteorological warnings, it shall be capable of being suppressed.

If an additional alarm is provided it shall be distinguishable from a search and rescue alarm.

The audible volume of the alarm shall be 75 dBA to 85 dBA.

If a pair of relay contacts is provided to switch an external sounder on for an alarm condition then the relay contacts shall be free of earth.

The alarm condition shall be reported via an ALR command on the INS serial port.