

# ETSI EN 300 338-6 V1.3.1 (2024-03)



**Technical characteristics and methods of measurement  
for equipment for generation, transmission  
and reception of Digital Selective Calling (DSC)  
in the maritime MF, MF/HF and/or VHF mobile service;  
Part 6: Class M DSC**

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## Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is part 6 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.1].

### National transposition dates

Date of adoption of this EN:	26 February 2024
Date of latest announcement of this EN (doa):	31 May 2024
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2024
Date of withdrawal of any conflicting National Standard (dow):	30 November 2025

## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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# 1 Scope

The present document states the minimum requirements for devices using Digital Selective Calling (DSC) Class M, for Man Overboard (MOB). The present document defines the requirements for equipment that uses DSC alerting and signalling in the maritime mobile bands and particularly the GMDSS distress and safety channels. Such equipment is not intended to provide any subsequent communications or telephony facilities.

The present document is part 6 of a multi-part deliverable that covers the channel access rules and technical requirements applicable to these devices.

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## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] [Recommendation ITU-R M.493-15 \(01/2019\)](#): "Digital selective-calling system for use in the maritime mobile service".
- [2] [IEC EN 60945 \(2002\)](#): "Maritime Navigation and Radiocommunication Equipment and Systems - General Requirements - Methods of Testing and Required Test Results".
- [3] [Recommendation ITU-R M.585-9 \(05/2022\)](#): "Assignment and use of identities in the maritime mobile service".
- [4] [Recommendation ITU-R M.821-1 \(02/1997\)](#): "Optional expansion of the digital selective-calling system for use in the maritime mobile service".
- [5] [EN 61108-1](#): "Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 1: Global positioning system (GPS) - Receiver equipment - Performance standards, methods of testing and required test results", produced by CENELEC.
- [6] [EN 61108-2](#): "Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 2: Global navigation satellite system (GLONASS) - Receiver equipment - Performance standards, methods of testing and required test results", produced by CENELEC.
- [7] [EN 61108-3](#): "Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 3: Galileo receiver equipment - Performance requirements, methods of testing and required test results", produced by CENELEC.
- [8] [EN 61108-5](#): "Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS) - Part 5: BeiDou navigation satellite system (BDS) - Receiver equipment - Performance requirements, methods of testing and required test results", produced by CENELEC.
- [9] [Recommendation ITU-R M.1371-5 \(02/2014\)](#): "Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile frequency band".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] [ETSI EN 300 338-1](#): "Technical characteristics and methods of measurement for equipment for generation, transmission and reception of Digital Selective Calling (DSC) in the maritime MF, MF/HF and/or VHF mobile service; Part 1: Common requirements".

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## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

For the purposes of the present document, the terms given in ETSI EN 300 338-1 [i.1] and the following apply:

**acknowledged:** automated procedure which indicates that the objective of the initial DSC message has been achieved

**activation:** initial triggering of the MOB device i.e. both parts of the two step procedure are performed

**active mode:** activated mode, transmitting in an emergency situation

**class M:** specific class of DSC functionality for use by man overboard devices

**closed loop:** individual transmission to own vessel

**default:** value selected or an action taken by the equipment software in the absence of any operator input

**distress alert:** name given to the single distress DSC message with the format symbol 112

**distress DSC message:** DSC message or acknowledgement containing the distress information

**distress information:** symbols within a DSC message describing a distress situation consisting of the MMSI of the vessel in distress, the nature of distress, the position of the vessel in distress, the UTC time of that position and the mode of subsequent communication

**F1D:** direct frequency modulation of data (no subcarrier)

**factory default:** default value that is set by the manufacturer such that the field or behaviour is defined prior to any operator intervention

**G2B:** indirect phase-modulation (frequency modulation with a pre-emphasis of 6 dB/octave)

**information characters:** set of symbols in a DSC message that contains the items of interest for the recipient and is used to compute the ECC symbol that terminates the message

**non distress DSC message:** DSC messages or acknowledgements that do not have the format specifier or category of "distress"

**open loop:** transmitting to all ships (broadcast) 'using All ships call types'

**primary battery:** non-rechargeable primary power source

**symbol (as part of the DSC sentence):** 7 binary bits of a 10 bit DSC word that have the information content

**test mode:** self-testing mode using an individual test call to own vessel

**word (as part of the DSC sentence):** 10 binary bits that make up the coded entities of a transmitted DSC message

NOTE: The 10 bits consist of a 7 bit "symbol" that gives the information content and 3 bit error check that gives the number of 0 binary bits in the 7 bit symbol.

## 3.2 Symbols

Void.

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AIS	Automatic Identification System
CIRM	Comité International Radio-Maritime
COG	Course Over Ground
DSC	Digital Selective Calling
ECC	Error Check Character
EDS	Expansion Data Specifier
EOS	End Of Sequence
FM	Frequency Modulation
GMDSS	Global Maritime Distress and Safety System
GMSK	Gaussian Minimum Shift Keying
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HF	High Frequency
ID	IDentity
ITU	International Telecommunications Union
ITU-R	ITU - Radiocommunications sector
LBT	Listen Before Talk
MF	Medium Frequency
MMSI	Maritime Mobile Service Identity
MOB	Man Overboard
MSLD	Maritime Survivor Locating Device
PM	Phase Modulation
RX	Receiver
SOG	Speed Over Ground
SOTDMA	Self-Organized Time Division Multiple Access
TX	Transmitter
UTC	Universal Time Co-ordinated
VHF	Very High Frequency

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## 4 General requirements

### 4.1 General

Class M MOB devices are employed in situations of grave and imminent danger to persons that require immediate assistance from other vessels or search and rescue services.

MOB devices shall be:

- Fitted with an internal electronic GNSS position fixing device.
- Fitted with a transceiver operating on VHF DSC channel 70.
- Fitted with an Automatic Identification System (AIS) transmitter operating in accordance with annex A to provide radio location.



- Fitted with audio and visual indicators to designate operation of the MOB device, intrinsically safe MOB devices shall be fitted with a minimum of visual indicators.
- Capable of manual activation and deactivation and optionally automatic activation (see clause 4.4).

## 4.2 Frequency of operation

The MOB device shall operate on 156,525 MHz (Channel 70), 161,975 MHz (AIS 1) & 162,025 MHz (AIS 2) only.

## 4.3 Class of emission

DSC: G2B Phase Modulation (PM) with digital information modulated on a sub-carrier.

AIS: F1D GMSK 9 600 baud.

## 4.4 Controls

The MOB device shall be initially activated by the use of two simple, but independent mechanical actions, neither of which on its own shall activate the equipment. If the second mechanical action is replaced by an immersion sensor, then the first mechanical action should be an arming or enabling function thus to ensure the MSLD is armed for automatic activation when submerged.

It should only be possible to activate the equipment after a seal or other mechanical restraint has been removed from the first mechanical action. After activation it shall be possible to de-activate the equipment and the means to deactivate the equipment shall be clearly marked. It should be possible to determine that the equipment has been previously activated.

## 4.5 Indicators

### 4.5.0 General

The MOB device shall be provided with a visual and, with the exception of intrinsically safe MOB devices, audible indications that designate the operation of the MOB device as specified in clauses 4.5.1 and 4.5.2.

### 4.5.1 Audible indicators

The audible indicator shall signal:

- When the MOB device is first activated.
- Prior to any DSC transmission.

### 4.5.2 Visual Indicators

The visual indicator shall clearly distinguish the following states:

- The MOB device has been activated and is transmitting in active mode.
- The MOB device has a GNSS position fix and is transmitting in active mode.
- The MOB device is undergoing test and is transmitting in test mode.
- The MOB device cannot complete a test because it could not obtain a GNSS position.
- The MOB device cannot complete a test because it has not been properly programmed with own vessel MMSI (closed loop devices only).
- The MOB device has completed a test or has been deactivated locally.

- The MOB device has received a DSC acknowledgement and the DSC transmitter has been deactivated.

## 4.6 Labelling

The MOB device shall be provided with a label, or labels, permanently affixed to the exterior, containing the following information:

- Self ID of the MOB device (see clause 4.7) and manufacturer serial number.
- Open loop devices shall be marked DSC-MOB-O.
- Closed loop devices shall be marked DSC-MOB-C.
- Adequate instructions to enable the equipment to be activated and deactivated.
- The type of battery as specified by the manufacturer of the MOB device.
- A warning to not block the GNSS antenna.
- The compass safe distance as measured in clause 11.2 of EN 60945 [2].
- A warning to the effect that the MOB device should not be operated except in an emergency.
- The date on which the battery will need to be replaced (the expiry date of the battery).

## 4.7 Self ID

The MOB device shall have a freeform number identity (self ID) coded in accordance with Recommendation ITU-R M.585-9 [3].

The self ID for the MOB device is 972xyyyyy, where xx = manufacturer ID 01 to 99; yyyy = the sequence number 0000 to 9999 allocated by the manufacturer. Manufacturers IDs are issued by CIRM. Manufacturers shall only use manufacturer IDs that have been issued to them by CIRM, except for training trials and conformance testing purposes where the ID xx = 00 can be used.

After being programmed by the manufacturer, it shall not be possible for the user to change the self ID of the MOB device.

The self ID shall be held in non-volatile memory.

## 4.8 Own vessel MMSI

A closed loop MOB device shall be capable of being programmed with the MMSI of its own vessel or group.

It shall be possible for a MOB device's own vessel MMSI to be re-programmed in the field, for example when MOB devices are moved from one vessel to be stowed on another vessel. It shall be possible for users to re-programme the own vessel MMSI without locating devices having to be returned to the manufacturer.

The own vessel MMSI shall be held in non-volatile memory.

If the own vessel MMSI is not entered or not valid the locating device shall indicate this during test.

## 4.9 Battery requirement

The battery provided as a power source shall be a primary battery and have sufficient capacity to operate the MOB device within the requirements of the present document for an uninterrupted period of at least 12 hours, at a temperature between -23 °C and -17 °C.