



Digital Selective Calling (DSC)

Digital Selective Calling (DSC) is an integral part of the GMDSS and is used for transmitting distress alerts from ships and for transmitting the associated acknowledgements from coast stations. It is also used by ships and coast stations for relaying distress alerts and for other urgency and safety calls.

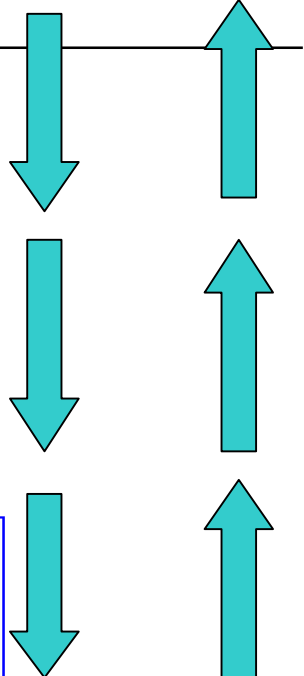
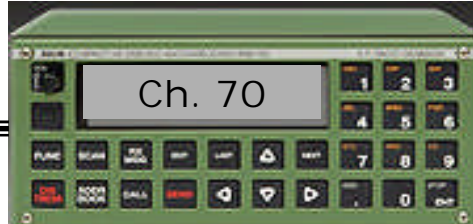
Mayday.....
This is.....
Over!



PRESS for 5
Secs.

Press SEND
to
acknowledge

Understood!....
Assistance will
be....



BASIC DESCRIPTION OF DSC TECHNICAL Characteristics

1. The system is a synchronous system using a ten-unit error-detecting code.

The information in the call is presented as sequence of seven-unit binary combinations


example of error on DSC display

Nat*re of di*tre*s: Collis*on

DSC with error-detection


Nature of distress: Collision





2. The classes of emission, frequency shifts and modulation rates are as follows:

- (a) **F1B** or **J2B** 170Hz and 100 band for use on HF and MF channels. When frequency-shift keying is effected by applying audio signals to the input of single-side band transmitters (J2B), the center of the audio frequency spectrum offered to the transmitter is 1700 Hz.



(b) Frequency modulation with a pre-emphasis of 6 dB/octave with frequency shift of the modulating subcarrier for use on VHF channels:

- the frequency shift is between 1300Hz and 2100 Hz, the subcarrier being at 1700 Hz;
- the frequency tolerance of the 1300 Hz and 2100 Hz tones is ± 10 Hz;
- the modulation rate is 1,200 baud;
and
- the modulation index is $2.0 \pm 10\%$.

Operational procedures

1. The content of a DSC call includes the numerical address of the station (or stations) to which the call is transmitted, the self-identification of the transmitting station and a message which contains several fields of information indicating the purpose of the call.




- MMSI-Maritime Mobile Service Identity

XXX123456

MID-Mobile Identification

Digit

- Type of call
- Nature of distress
- Type of Communication desired, etc.

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2. Various types of DSC calls are available, being broadly either distress and safety-related calls or "commercial" calls (to indicate that a commercial communication, e.g. a telephony or telegraphy call, etc., is required). In the case of VHF, automatic connection to the public network can also be established through suitably equipped coast stations.

3. The receipts of a DSC call by a receiving station is accompanied by a suitable display or print-out of the address, the self-identification of the transmitting station and the content of the DSC message, together with an audible or visual alarm or both for certain categories of calls (ex. for distress and safety-related calls).

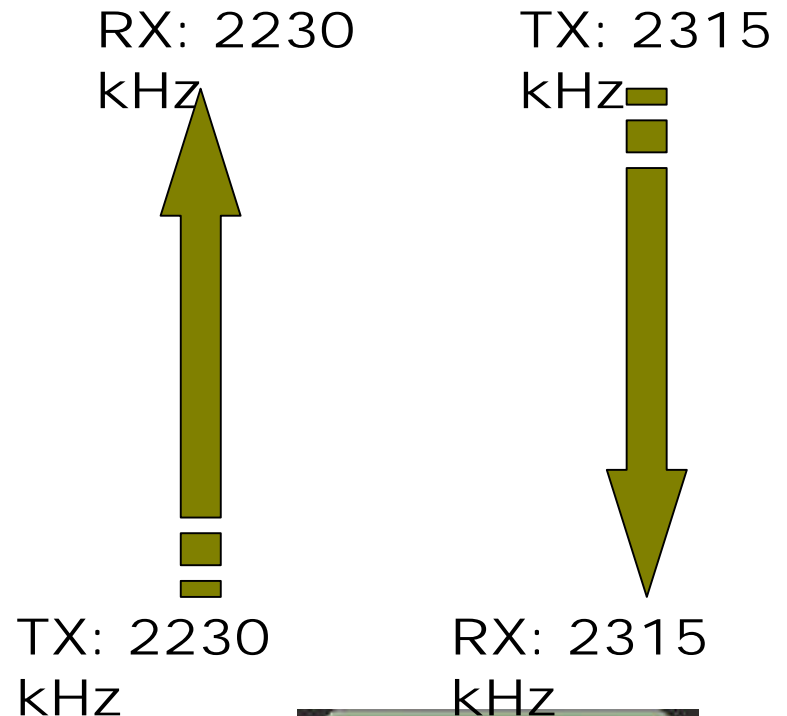


Distress alert received.....
Press SEND to
acknowledge

4. The transmission speed of a DSC call is 100 baud on MF and HF and 1,200 baud on VHF. Error-correction coding is included, involving the **transmission of each character twice together** with an overall message-check character. The duration of a single DSC call varies between **6.2 and 7.2** seconds on MF and HF or **0.45 and 0.63** second on VHF, depending on the type of DSC call transmitted.



5. For distress and safety operation, **simplex frequencies** are used. For commercial operation at MF and HF, paired frequencies are used, but at VHF, the simplex channel 70 is used for both distress and safety calling and commercial calling.



In order to increase the probability of a DSC distress call or a DSC distress relay being received it is repeated several times to form a **distress call attempt**.

Methods:

MF/HF – **5 consecutive** DSC distress calls on one frequency (single-frequency call attempt)

MF/HF – up to **6 consecutive** DSC distress calls dispersed over any of the 6 frequencies

(multi-frequency call attempt)

VHF – only a single-frequency call attempt

VHF and MF/HF distress calls may be transmitted simultaneously.