



FURUNO®

GMDSS GUIDE



© The future today with FURUNO's electronics technology

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GENERAL CONCEPT

The **Global Maritime Distress and Safety System (GMDSS)** has been developed by the maritime nations in the International Maritime Organization (IMO) and is the result of their adoption of amendments made in 1988 to the 1974 International Convention on the Safety of Life at Sea (SOLAS).

Based on recent developments in the marine communications such as satellites and digital technologies, GMDSS is designed to ensure

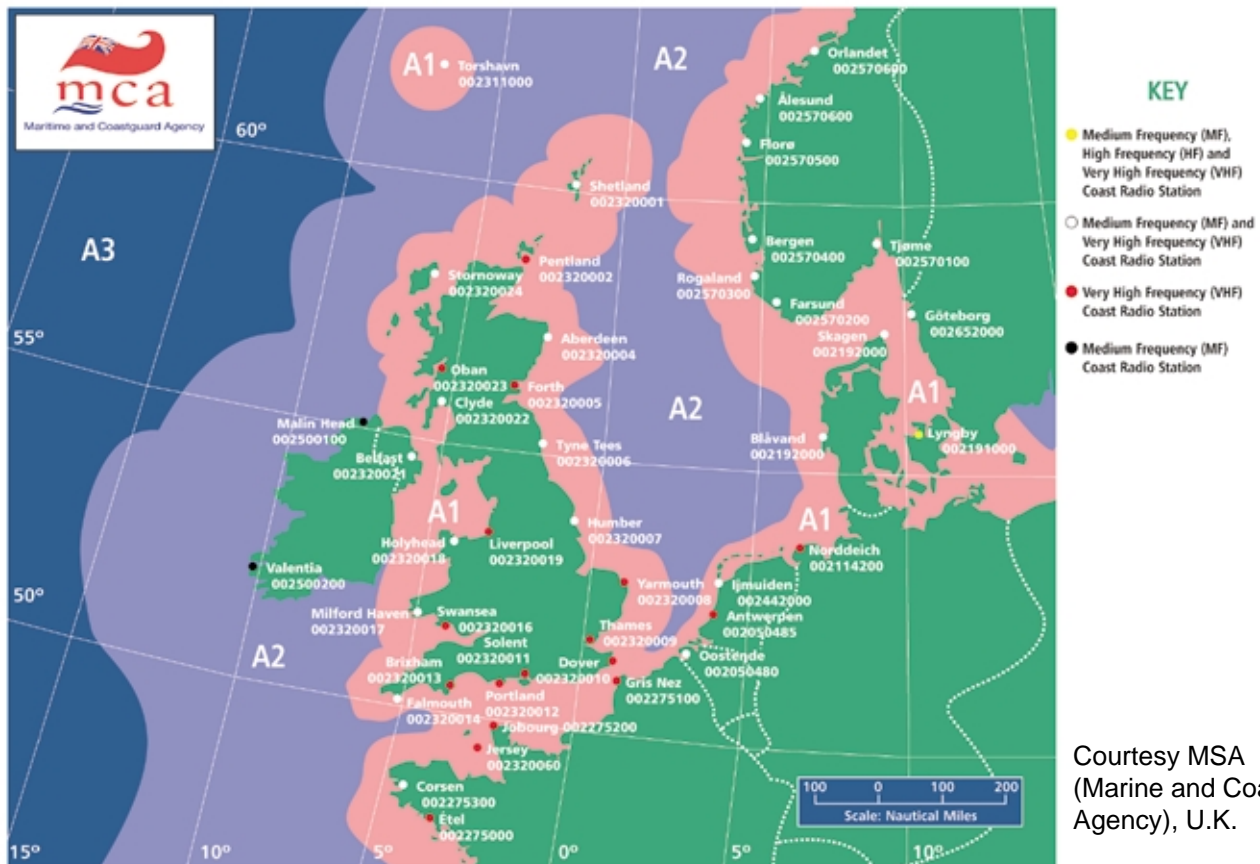
maximum availability of safety communications for all passenger vessels and also on cargo vessels of 300 GT and upwards engaged in international voyages.

A principal aim of GMDSS is to virtually guarantee that complying vessels will be able to communicate with a shore station at any time, from any location, in case of distress or to exchange safety information.

SEA AREAS

The GMDSS defines four sea areas based on the location and capability of shore-based communications facilities.

European GMDSS SEA AREAS



Courtesy MSA (Marine and Coastguard Agency), U.K.

Sea Area A1:

An area within the coverage of at least one VHF coast station in which continuous DSC (Digital Selective Calling) alerting is available, as defined by a Contracting Government. Normally 20 to 30 nm. (Not

all Contracting Governments have set Sea Area A1 for the GMDSS implementation date.)

Sea Area A2:

An area, excluding Sea Area A1, within the coverage of at least one MF coast station in which

continuous DSC alerting is available, as defined by a Contracting Government. Normally within 150 nm.

Sea Area A3:

An area, excluding Sea Areas A1 and A2, within the coverage of an Inmarsat Satellite in which

continuous alerting is available, as defined by a Contracting Government.

Sea Area A4:

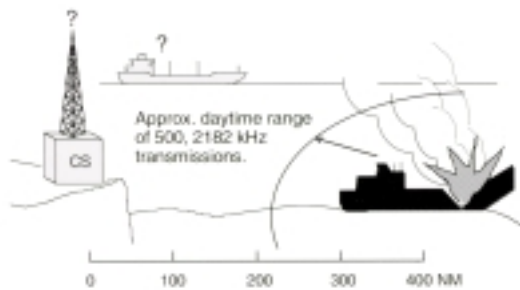
An area outside sea areas A1, A2 and A3.

Note

For other countries, only Sea Area A3 is defined until coast stations are implemented.

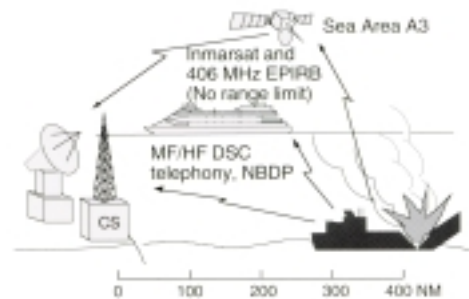
Comparison of old distress system and GMDSS

Reliance on ship in vicinity



Because of the inherently limited range of transmissions on the previous commonly used distress and calling frequencies of 500 and 2182 kHz, there was no guarantee that a call for assistance would be received if the vessel was more than a few hundred miles from a coast station. Assistance would only be available if another vessel was within range.

Worldwide coverage



The GMDSS vessels carry the communications equipment appropriate to the Sea Area in which they are operating. Having the capability to choose a long range method when necessary, a call for assistance can reach a coast station and will have a greater chance of being heard by other ships.

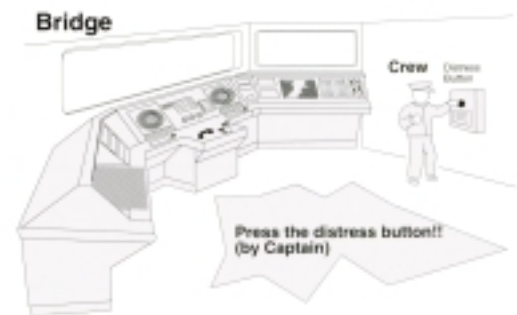
With GMDSS

Special skill to operate



Radio officers send a distress call in Morse Code on 500 kHz through complicated operations such as the switching and adjustment of transmitters. A successful distress attempt relies heavily on his skill. On the contrary, the

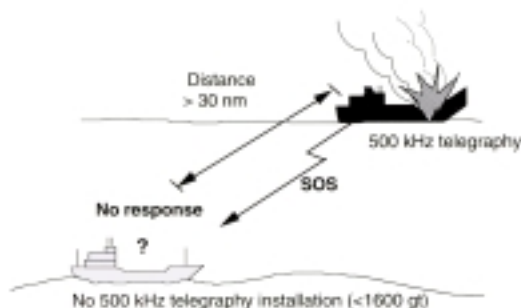
Simple and automatic operation



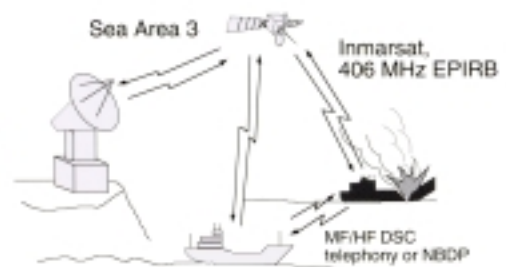
GMDSS equipment provides easy operation in an emergency situation just by pressing the distress button on Inmarsat Maritime MES or DSC. In addition, a float-free EPIRB automatically transmits a distress alert and location.

With GMDSS

Equipment compatibility



With the previous system, it was only possible for a vessel in distress to ask for assistance of other vessels in the vicinity as the communication equipment has limited ranges. Another problem was incompatibility of communicating between a telephony vessel and a

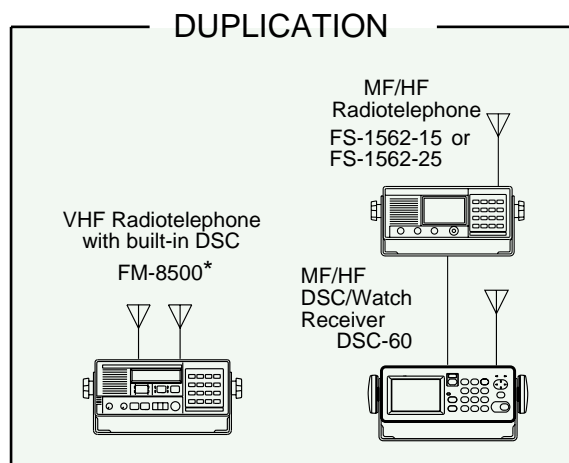
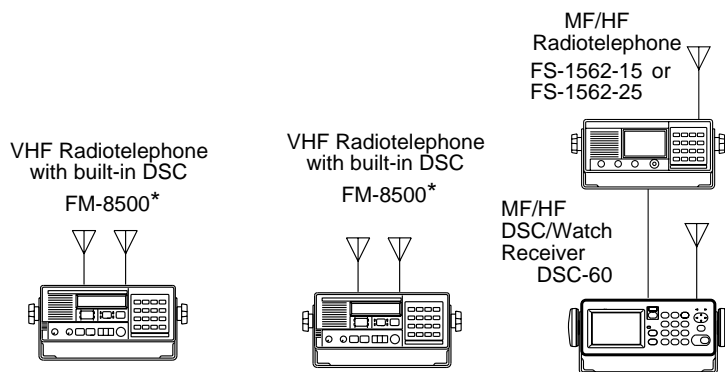


telephony vessel. All GMDSS vessels carry standard equipment for the Sea Area they are in, operating on the same frequencies and modes; thus, the compatibility between them is completely assured.

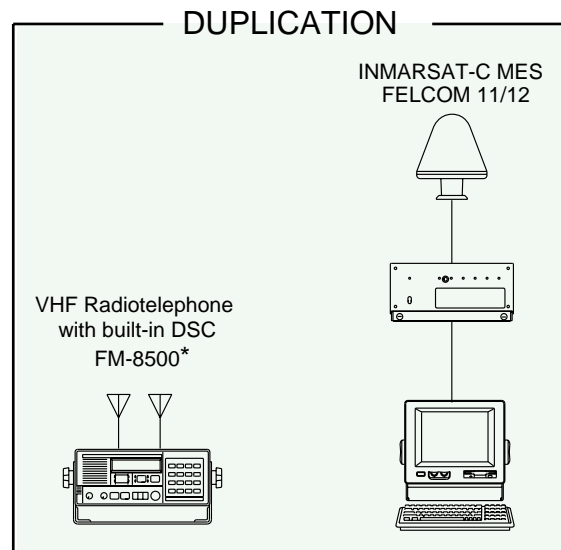
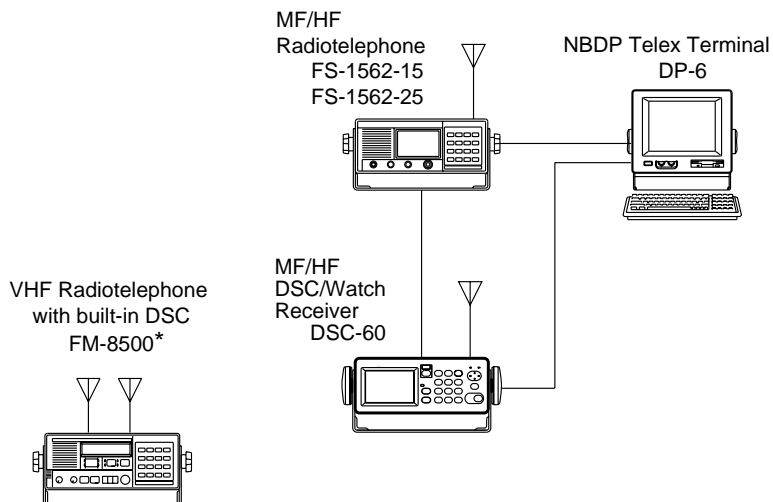
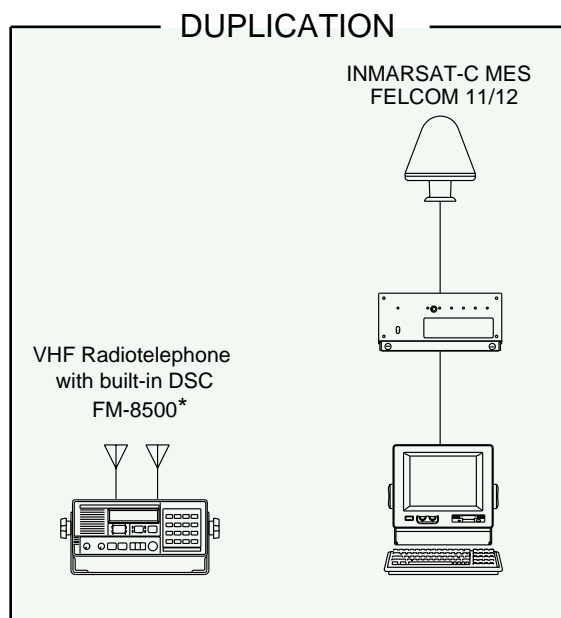
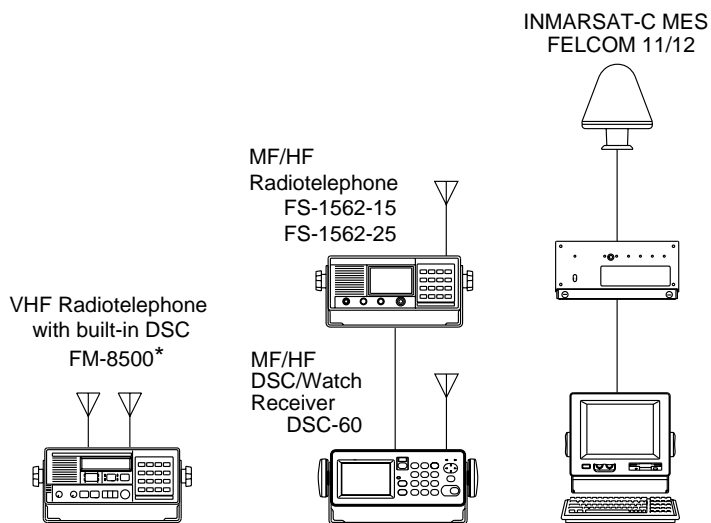
With GMDSS

FURUNO recommendations for compliance with GMDSS

Sea Area **A1** Sea Areas **A1-A2**

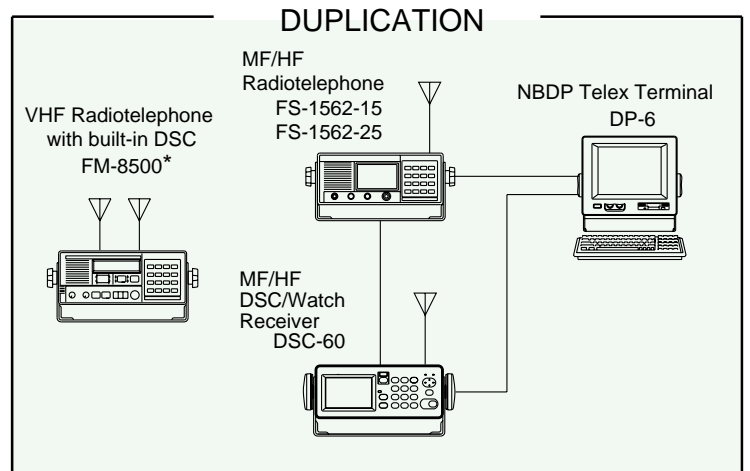
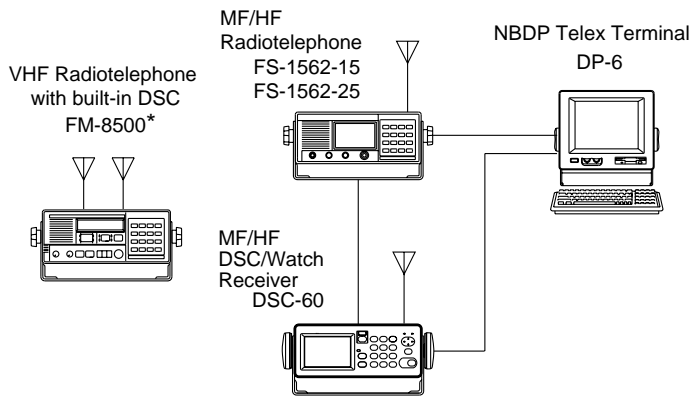


Sea Areas **A1-A2-A3**



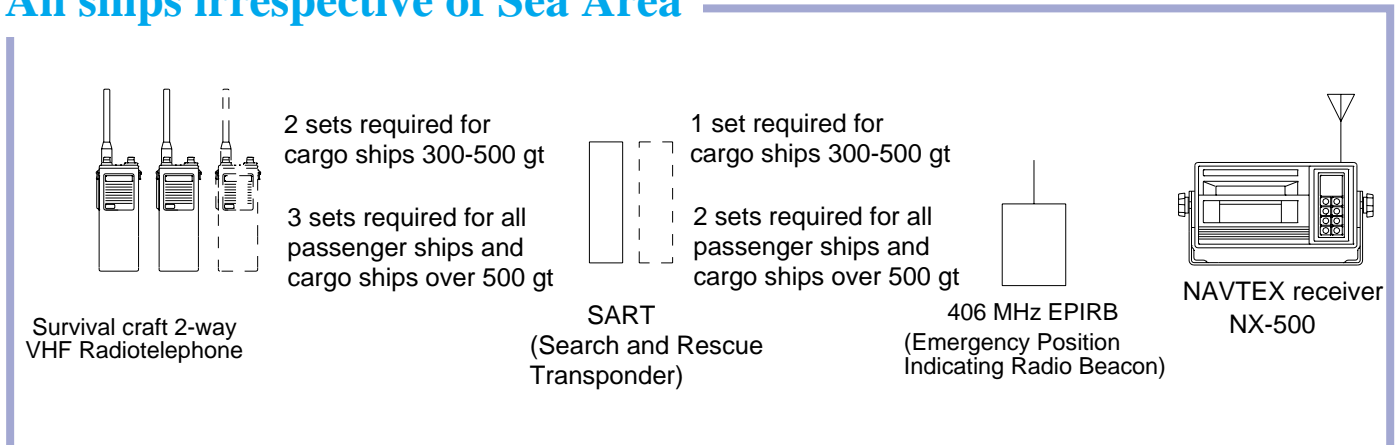
Sea Areas **A1-A2-A3**

Sea Areas **A1-A2-A3-A4**



* FM-8700 for full-duplex

All ships irrespective of Sea Area



AVAILABILITY OF RADIOCOMMUNICATIONS BY DUPLICATION OF EQUIPMENT

Sea Areas **A1** and **A2**:

Either of the following as approved by the Administration;

1. Duplication of equipment (VHF, MF radio, DSC)
2. Shore-based maintenance
3. At-sea electronic maintenance capability

Sea Areas **A3** and **A4**:

Combination of at least two of the following as may be approved by the Administration;

1. Duplication of equipment (VHF, MF/HF radio, DSC)
2. Shore-based maintenance
3. At-sea electronic maintenance capability

If availability is ensured by using a combination of methods including duplication of equipment, the following equipment should be available in addition to the Shore-based maintenance requirements:

Sea Area **A3**: a VHF radio (VHF+DSC) and either MF/HF radio (MF/HF+DSC+NBDP plus DSC watch) or an Inmarsat Maritime MES

Sea Area **A4**: a VHF radio (VHF+DSC) and an MF/HF radio (MF/HF+DSC+NBDP+DSC watch). For ships in A4 only occasionally but mostly in A3, the additional MF/HF radio may be substituted by an Inmarsat Maritime MES

FURUNO GMDSS EQUIPMENT offers QUALITY COMMUNICATIONS

VHF Radiotelephone with built-in DSC FM-8500



The FURUNO FM-8500 is a cost-effective **all-in-one** marine VHF radio system consisting of a simplex/semi-duplex 25 W VHF radiotelephone, a DSC modem and a CH 70 Watch Receiver. It complies with GMDSS carriage requirements for safety and general communications.

If a full-duplex communication is required, FM-8700 is recommended.

150 W SSB Radiotelephone **FS-1562-15** 250 W SSB Radiotelephone **FS-1562-25**



The FS-1562-15/1562-25 are semi-duplex, SSB radiotelephones. They offer easy and instant selection of 2182 kHz, 2187.5 kHz, ITU channels, and 400 programmed transmit and receive frequency pairs.

Transmit and receive frequencies can be recalled by channel numbers or separately by direct frequency entry. The large backlit LCD displays operation status and has a bar graph for signal strength and antenna current, in addition to the frequency readouts.

The basic system consists of Transceiver Unit, Automatic Antenna Coupler and Control Unit.

If a higher power SSB is required, FS-5000 (400 W) or FS-8000 (800 W) is recommended.

MF/HF DSC/Watch Receiver **DSC-60**

The DSC-60 is a Class A MF/HF Digital Selective Calling (DSC) system with built-in DSC-Watch Receiver. The primary purpose is transmitting distress alerts on DSC frequency from ships in distress for improved operation. The DSC-60 incorporates a DSC Watch Receiver which provides continuous scanning of six distress frequencies: 2187.5, 4207.5, 6312, 8414.5, 12577, 16804.5; and 1.6 to 27.5 kHz.



Inmarsat-C Maritime Mobile Earth Station **FELCOM 12**

The FELCOM 12 is an Inmarsat-C Maritime Mobile Earth Station which provides quality two-way telex and data link between ships and other parties at sea or land.

The FELCOM 12 offers all functions and services that Inmarsat provides: EGC, E-mail, distress message handling, polling, data reporting, etc. The system works in store and forward mode.

An optional GPS receiver can be fitted in the communication unit.



NBDP Telex Terminal **DP-6**



The DP-6 is an NBDP (Narrow-Band Direct-Printing) terminal and provides general telex message transfer and distress message handling via MF/HF radiotelephone FS-1562-15, FS-1562-25 or other FURUNO MF/HF equipment.

The DP-6 system consists of the 9.5" LCD monitor with built-in 3.5-inch floppy disk drive and ITU-T standard keyboard, and com unit. File management, text editor and utility programs are included.

Navtex Receiver **NX-500**



The NX-500 is a compact Navtex receiver. It stores 64 message identifications for 66 hours, verifying the ID of every newly received message and printing only the new ones.

In the European area and the East/West coast of the USA, the NX-500 automatically selects an optimum Navtex station with regard to ship's position when connected with a radionav receiver. A 2.6 m whip antenna and an Active Antenna (pre-amp) are optionally available.

GMDSS Radio Console for Sea Areas A1-A2-A3

FURUNO's systematic design concept provides flexible installation on bulkhead or radio table, in a rack or console. Shown below is a typical equipment package fitted in the radio console RC-1800T.



Console includes:

MF/HF radiotelephone

FS-1562-15 (150 watt) or

FS-1562-25 (250 watt)

If higher power model is required,

FS-5000 (400 W) and FS-8000

(800 W) are available.

MF/HF DSC/Watch Receiver

DSC-60

NBDP telex terminal

DP-6

Inmarsat-C Maritime MES

FELCOM 12



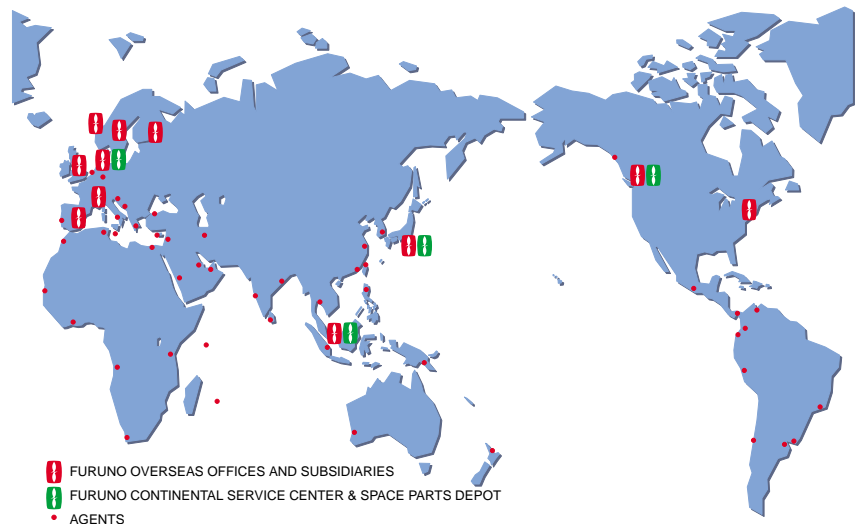
VHF Radiotelephone with built-in DSC

FM-8500

The 1974 SOLAS as amended by 1988 GMDSS conference requires the VHF radio installation to be fitted at the conning position in the navigation bridge.

FURUNO DEEP SEA WORLDWIDE SERVICE NETWORK

FURUNO Worldwide Service Organization provides spares and qualified technical services wherever you are, whenever in need. The service organization is composed of three continental Service Centers in **Denmark**, **U.S.A.** and **Japan**, and over 40 national Agents.



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