FURUNO

DEEPSEA WORLD

www.furuno.com

FURUNO, a world's leading manufacturer of Marine Electronics, offers a comprehensive range of Navigation and Communications equipment

For safe and efficient navigation, FURUNO provides a wide range of innovative radio-communications and radio-navigation equipment complying with IMO, ITU, IEC, ISO and other relevant standards. Our equipment and systems are designed with state-of-the-art technologies, software expertise and sensor engineering. We can also provide you with spare parts and technical back-up through our World-Wide Service network supported by Continental Service Centers.

VOYAGER
FURUNO BRIDGE SYSTEM

Integrated Navigation System

FURUNO VOYAGER is an Integrated Navigation System comprising ECDIS, Radar, conning display, steering system, radio-navigation equipment, VHF radios, chart table, etc., and offers Track Control System. The bridge console complies with the requirements set by various classification societies and matches with a bridge layout of modern merchant vessels.

RADAR

Radar

Models: **FAR-21x7 (19" LCD)/FAR-28x7 (23.1" LCD)**

FURUNO radar can be connected to an Ethernet network for a variety of user requirements. Each of X- and S-band radar can be interswitched without using extra equipment.

Model: FAR-28x7

ECDIS

Electronic Chart Display and Information System

Models: **FMD-3200 (19" LCD)/FMD-3300 (23.1" LCD)**
Model: **FMD-3100 (24" wide LCD)**

Displays official Electronic Navigational Charts (ENC) S-57 Edition, ARCS charts and C-MAP CM 93 Edition 3.
The ECDIS can overlay a radar image, ARPA and AIS data with the chart, when conducting, route planning and route monitoring.

Model: FMD-3200

Model: FMD-3100

CHART RADAR

Chart Radar

Models: **FCR-21x9 (19" LCD)/FCR-28x9 (23.1" LCD)**
Models: **FAR-32xx (19" LCD)/FAR-33xx (23.1" LCD)**

Featuring total integration of ARPA Radar and ENC Display System, FURUNO Chart Radar series display the radar images together with ENC at the same time.

Model: FAR-33xx

NAVIGATION

Bridge Navigational Watch Alarm System

Bridge Navigational Watch Alarm System (BNWAS)

Model: **BR-500**

BNWAS BR-500 monitors the watch officers' awareness for early detection of emergency.

GNSS

Global Navigation Satellite System

Models: **GP-170**

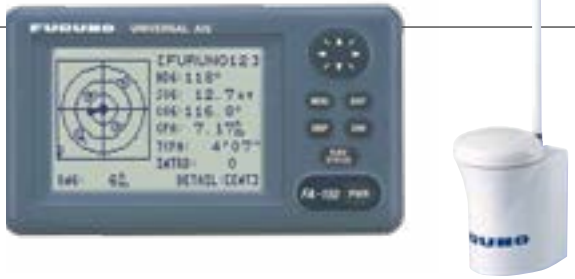
The GNSS navigator is an ideal position sensor for radar, AIS, ECDIS, autopilot, echo sounder and other navigation and communications equipment. Newly designed GPS chip and antenna unit deliver enhanced stability and precision in position fixing.

AIS

Automatic Identification System

Model: **FA-150**

The FA-150 enhances the safety and efficiency in navigation by automatically exchanging navigational status and other safety-related information within VHF coverage.



Doppler Sonar

Speed and Distance Measuring Equipment

Model: **DS-60**

The DS-60 is a precision, 3-axes Doppler Sonar designed to output the required information for berthing and docking operation of vessels. It offers 3 display modes: 3-axis speed, berthing and NAV data.

Doppler Speed Log

Speed and Distance Measuring Equipment

Model: **DS-80**

The paired beam transmission of the DS-80 eliminates effect of pitching, and velocity correction for change of water temperature.

Satellite Speed Log

Satellite Speed Log

Model: **GS-100**

The measurement capability at dead slow speed is vital for precise docking of large ships. The GS-100 offers speed accuracy of ±0.02 kn, which is of great help during berthing operations.

Navigational Echo Sounder

Navigational Echo Sounder

Model: **FE-800**

The navigational echo sounder displays the clearance below the ship in the dual frequency operation (50/200 kHz), when interfaced with two transducers. The depth at the FORE and AFT positions can be displayed simultaneously.

(option)

Remote Display

Remote Display

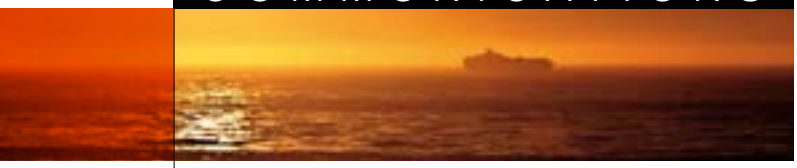
Models: **RD-20/RD-50**

The RD-20/RD-50 display the data from onboard sensors. The displays are switched by the remote controller. The display brilliance of all units connected can be centrally controlled from 1 dimmer controller.

Model: RD-20

Model: RD-50

COMMUNICATIONS



GMDSS

Global Maritime Distress and Safety System Radio Console

Model: **RC-1800F2**

Contains all the necessary radio equipment for ships operating in the GMDSS sea areas A2-3.

VHF

VHF Radiotelephone

Model: **FM-8900S**

VHF radiotelephone designed to comply with the GMDSS carriage requirements. All the necessary facilities such as a Class A DSC modem and a CH 70 watch receiver are included in the transceiver unit.

MF/HF

MF/HF Radiotelephone

Models: **FS-1575/FS-2575/FS-5075**

In addition to MF/HF marine telephony communication facility, the FS-1575/2575/5075 is equipped with DSC plus DSC Watch Receiver capability on all distress and safety frequencies in MF and HF bands. NBDP facility is optionally available.

NAVTEX

NAVTEX Receiver

Models: **NX-700A/NX-700B**

The NX-700 can receive the NAVTEX messages on 518 kHz and 490 kHz or 4209.5 kHz at the same time.

Model: NX-700A (display with a printer)

Model: NX-700B (display only)

MES

Mobile Earth Station

Model: **FELCOM18**

Delivers full coverage of Inmarsat-C services: EGC reception, Inmarsat E-mail, distress message handling, polling, and data reporting.

SSAS

Ship Security Alert System

Models: **FELCOM18/FELCOM19**

The FELCOM18/19 with SSAS kit are the ship security alert systems using the Inmarsat-C system to transmit an alert to a competent authority on shore when the ship is attacked by pirates, terrorists, etc.

WEATHER FAX

Weather Facsimile Receiver

Model: **FAX-30**

The FAX-30 automatically receives high quality weather maps and satellite images and displays them on an interfaced PC screen.

Model: **FAX-410**

The FAX-410 automatically receives and reprints high quality weather maps and satellite images on a sheet of 10" paper by a quiet reliable thermal printing mechanism.

Model: FAX-30

Model: FAX-410

VDR

Voyage Data Recorder

Model: **VR-7000**

The VR-7000 records the navigation data and assists investigators in identifying the causes of maritime casualty as well as to use the data for future reference to further incident prevention.

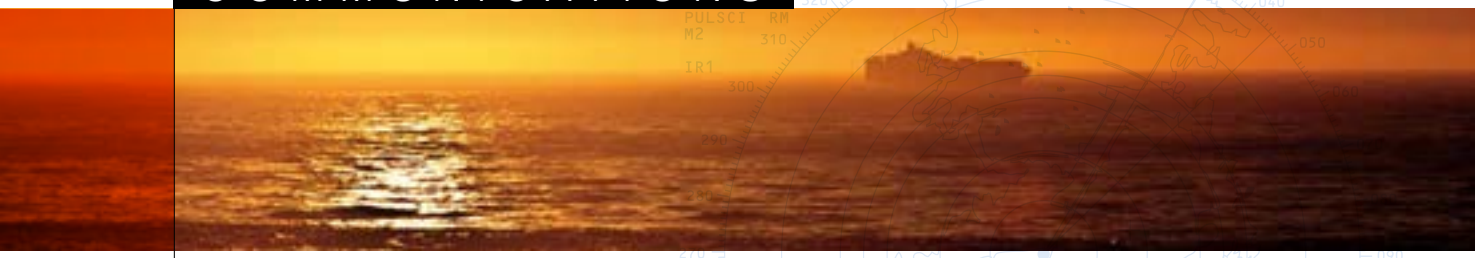
Data Collecting Unit

Float-free DRU

Fixed DRU

Remote Alarm Panel

COMMUNICATIONS



SafeComNet™
FURUNO Mobile Satellite Services

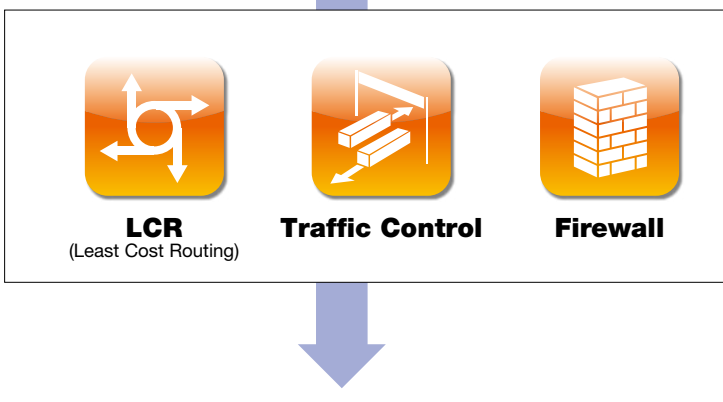
Stay connected through SafeComNet™:
Seamless broadband communications for ocean-going fleets

VSAT
Ku-Band VSAT

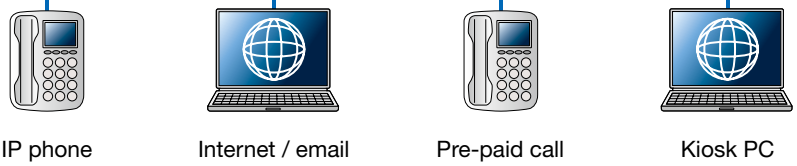
General overview of Ku-band VSAT

Data rate (shared service)	up to 1024 kbps downlink up to 512 kbps downlink
Data rate (desicated service)	available on special arrangement
Voice	available (VoIP)
Service area	regional (seamless roaming possible)
Billing	fixed monthly fee

For making use of VoIP service, extra fee will be charged.



Onboard LAN Network



LCR (Least Cost Routing)

LCR is the process of selecting the path of communications traffic based on cost, allowing for automatic selection of the most cost-efficient communication line available. It is possible to set VSAT, which is charged by monthly fixed flat rate, as the default communication means, and switch over to “pay-as-you-go” FleetBroadband whenever the VSAT line is out. This way, total cost for communicatoin can be reduced.

Traffic Control

Traffic control is the control of computer network traffic to optimize performance of communication. This can be achieved by setting order of priority for data to be handled (Quality of Service: QoS), and restricting the volume of communication at a time, applications to be used as well as access to certain contents.

Firewall

A firewall is designed to permit or deny network transmissions to protect networks against unauthorized access by malware from the public Internet, i.e., computer viruses and keyloggers, while permitting legitimate communications to pass.

IP Routing

IP routing is a set of protocols to facilitate IP connection between onboard network and the public Internet.

VPN

VPN (Virtual Private Network) is a secure way of connecting to onshore office network from a remote location, using the Internet. Since encryption is applied to the communication, the network data packets can be transported privately, preventing unauthorized users from reading the private network packets. This way, the same network environment as onshore offices can be constructed onboard vessels. Compared with using exclusive circuit services to construct secure network between vessels and onshore offices, VPN has the advantage of reducing communication cost.

IP PBX

IP PBX is a PBX for IP telephones utilizing IP network, unlike PABX commonly used for analog telephone network. The system is designed to interoperate with the conventional PABX, onboard public addressor system as well as VoIP of Inmarsat and VSAT.

inmarsat

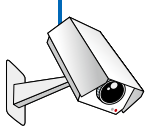
FleetBroadband

Inmarsat FleetBroadband

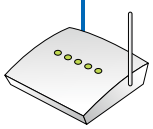
General overview of FleetBroadband

Data rate (shared service)	up to 432 kbps (FELCOM500) up to 284 kbps (FELCOM250)
Data rate (desicated service)	up to 256 kbps (FELCOM500) up to 128 kbps (FELCOM250)
Voice	available (3.1 k audio)
FAX	available (3.1 k audio)
SMS	available
Service area	global
Billing	pay-as-you-go

IP Routing VPN IP PBX



Surveillance camera

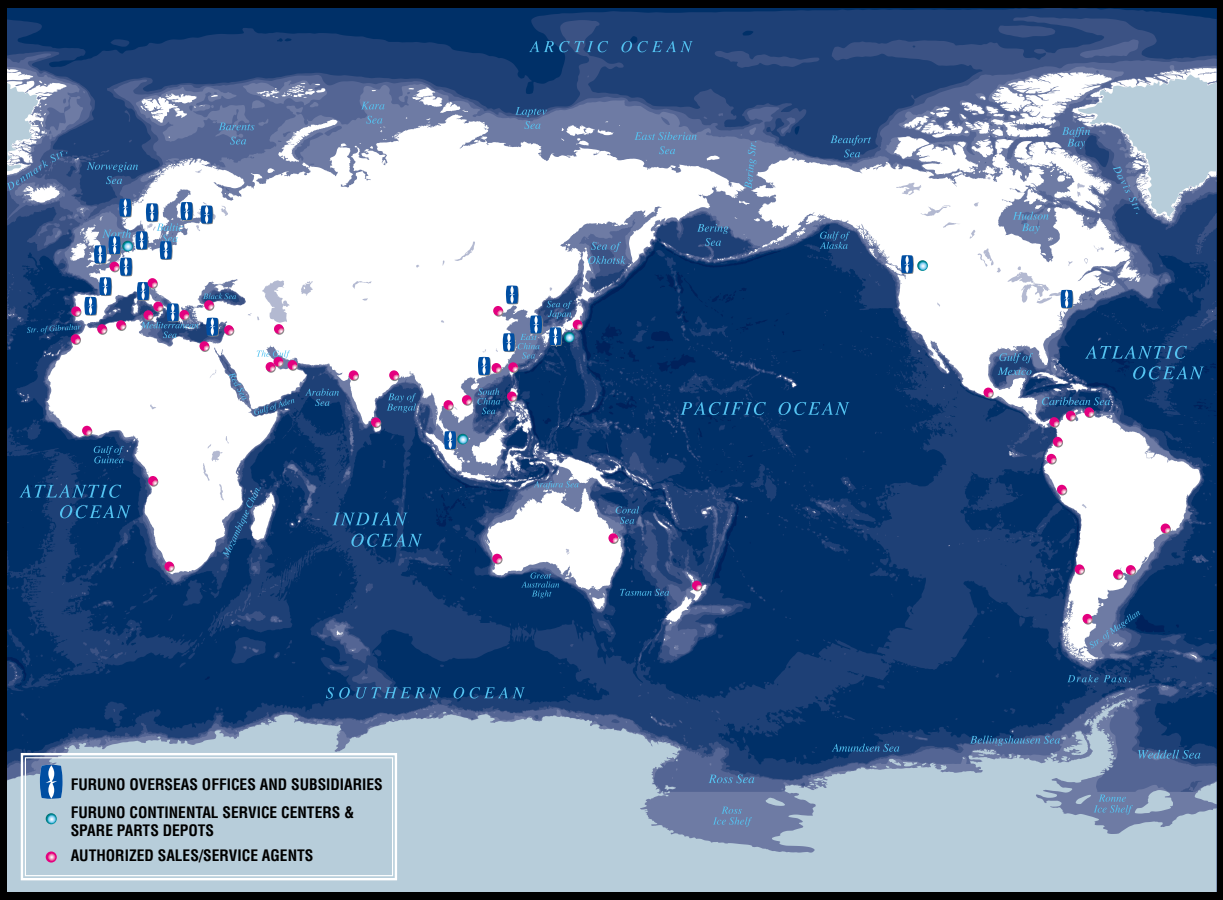


Hotspot

Monitoring system

www.safecomnet.com

World Wide Service Network



FURUNO has the website to introduce the company's active roles and efforts in the deepsea market, the contents of which include:

▶**FURUNO Deepsea Product Lineup** ▶**In-house Quality Assurance System** ▶**Additional Values from FURUNO**

The site will be updated on occasions, such as, new products launches, FURUNO's participation in events and so forth, in an effort to keep the customers updated.

Please visit furuno.com

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