

FURUNO

Marine Electronics Catalog



FURUNO

FURUNO

For those who demand the best, Furuno offers even more.

For 70 years, Furuno has been continuously imagining and creating new solutions, making new marine electronic equipment with the goal of offering both performance and simplicity for everyone. Not only for men and women who make a living on the seas, but also for those who simply want to enjoy the boating lifestyle. For them, Furuno has become synonymous with quality, performance, and reliability.

Furuno offers the ultimate response to all kinds of situations by providing a wide range of devices, making each operation more intuitive and each trip more enjoyable than the last. Backed by an unrivaled worldwide sales/service network spanning every corner of the globe, Furuno delivers unparalleled service and equipment maintenance. If that's not enough, Furuno guarantees the highest of quality in all of our products, even offering a two-year parts and labor warranty program.

For Furuno, **the best is not an option; it's a promise.**





CONTENTS

NavNet Series	07
Radar	27
GPS/Chart Plotters	43
Fish Finders	49
Sonars	55
Multi Beam Sonars	61
Autopilots	65
Instruments/Data Organizers	67
Monitors	69
Remote Displays	71
Compasses	73
Communications	79
Technical Specifications	87
Recommended Systems	139
Furuno's Global Network	143

FURUNO

SCX20

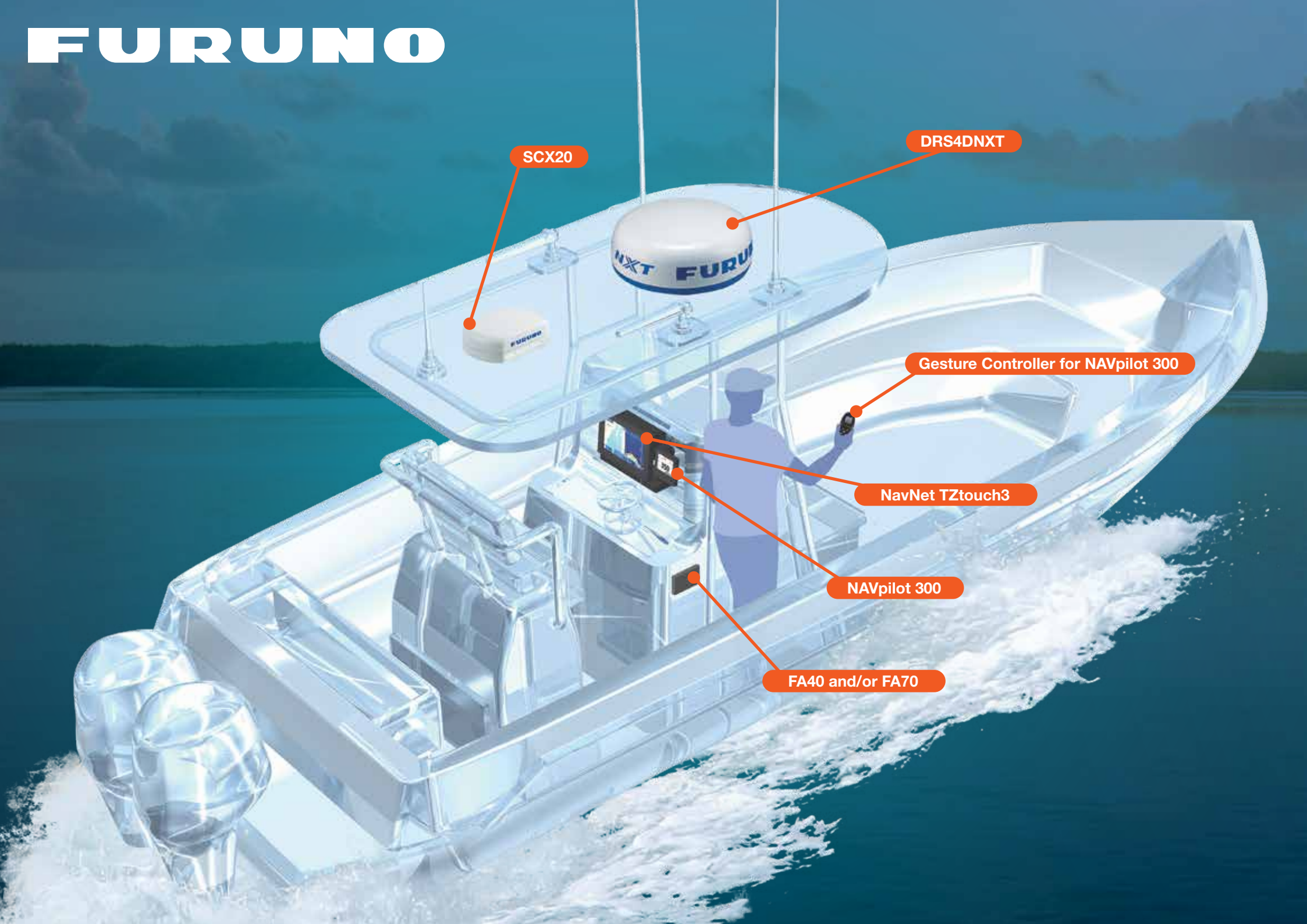
DRS4DNXT

Gesture Controller for NAVpilot 300

NavNet TZtouch3

NAVpilot 300

FA40 and/or FA70



Powerful Technology, *Compact Design*

- Automatic Identification System (AIS) Receiver and Class-B+ AIS Transceiver (coming soon)
- Revolutionary quad-antenna, solid-state Satellite Compass™ for NMEA2000
- Self-learning, adaptive Autopilot with Gesture Controller
- 12" or 16" TZtouch3 with Built-in Dual Channel 1kW TruEcho CHIRP™ Amp and GPS Receiver

NEW



Satellite Compass™
Model **SCX20**

NEW



AIS Receiver
Model **FA40**

NEW



Class-B+ AIS Transceiver
Model **FA70**



NAVpilot
Model **NAVpilot 300**



Gesture Controller

Solid-State Radome
Model **DRS4DNXT**



NEW



Hybrid Control MFD with built-in
TruEcho CHIRP™ Fish Finder
Model **TZT12F**

NEW



Multi-Touch MFD with built-in
TruEcho CHIRP™ Fish Finder
Model **TZT16F**



FURUNO

NAVpilot 711C

Satellite Compass™

Radar Sensor

NavNet TZtouch3

Network Sonar/Fish Finder

NEW!
HI-POWER
200W

NEW!
HI-POWER
100W

Solid-State Doppler Radar
Model **DRSNXT Series**
(DRS12A/25ANXT)

NEW

Satellite Compass™
Model **SCX20**

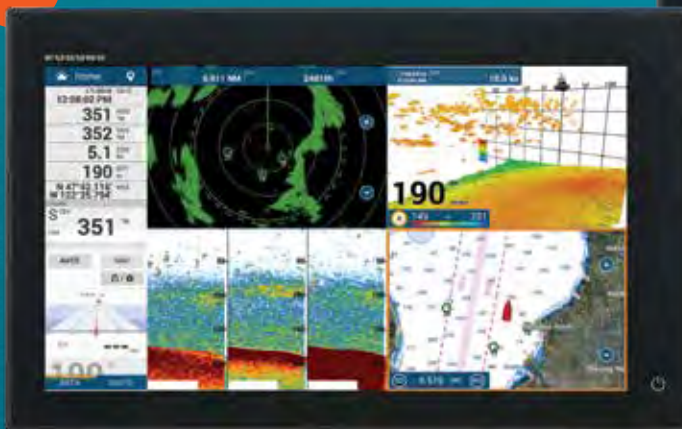
Powerful Tools for Powerful Boats

- Built-in Dual Channel 1kW TruEcho CHIRP™ & GPS Receiver (TZT12F/TZT16F)
- Large 19" and 16" Multi-Touch IPS displays, and 12" Hybrid Control IPS display with RotoKey™
- High-power sensor options - 2/3kW TruEcho CHIRP™ Amp & 100W or 200W Solid-State Doppler Radars

NAVnet

TZ3
touch

NEW



Multi-Touch IPS MFD with built-in
TruEcho CHIRP™ Fish Finder

Model **TZT16F**

NEW



Multi-Touch IPS MFD with built-in
TruEcho CHIRP™ Fish Finder

Model **TZT19F**



NAVpilot

Model **NAVpilot 711C**

NEW



Black Box
TruEcho CHIRP™ Fish Finder Amp

Model **DI-FFAMP**



Black Box Network
TruEcho CHIRP™ Fish Finder

Model **DFF1-UHD**



Black Box Network
Multi Beam Sonar

Model **DFF3D**



Model SDU001

SD Card Unit (option)
for TZT12F/TZT16F/TZT19F

NEW!
12"

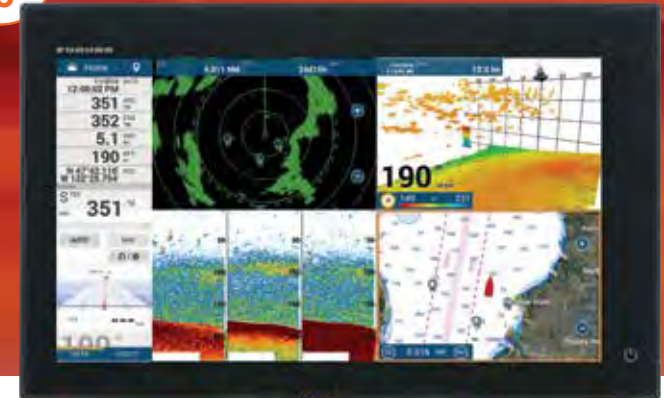


Model TZT12F - 12"

Spec P88

12" Hybrid Control MFD 1280x800 (WXGA)
with built-in TruEcho CHIRP™ Fish Finder

NEW!
16"

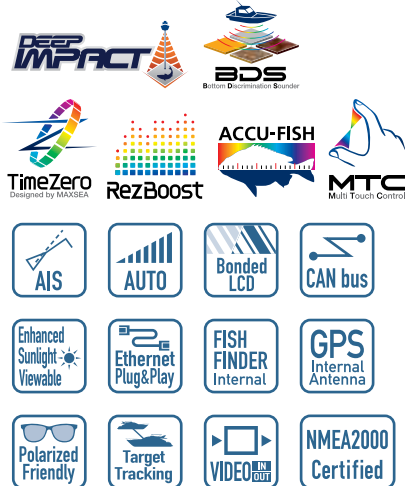


Model TZT16F - 16"

Spec P88

16" Multi-Touch MFD 1920x1080 (FHD)
with built-in TruEcho CHIRP™ Fish Finder

Your favorite MFD just got a major upgrade. Experience speeds so fast you'll be going on a power trip.



KEY FEATURES:

- Available as 12" Hybrid Control, 16" or 19" All-Glass In-Plane Switching (IPS) Multi-Touch MFD
- Quad-Core CPU powers TimeZero technology with lightning speed!
- Quad-Screen display configuration allows for presentation of 1, 2, 3, or 4 different functions
- IPS LCD provides superior viewability from virtually any angle
- Internal GPS receiver
- Built-In True Dual-Channel 1kW TruEcho CHIRP™ Fish Finder
- Deep Impact high-power 2kW/3kW TruEcho CHIRP™ Fish Finder for NavNet TZtouch3; go deeper by connecting a 5kW/10kW transducer (BT-5 required)
- Compatible with NavNet TZtouch2 networks
- Sync up any data with a tablet or smartphone
- Add Autopilot, Instruments, Radar, AIS, Multi-Beam Sonar, and a variety of other sensors to your NavNet TZtouch3 network
- Full Autopilot control from MFD when connected to the NAVpilot 300/711C
- Compatible with CZone digital switching
- Tablet & Smart phone apps: TZ First Mate with cloud backup, NavNet Remote, NavNet Viewer and NavNet Controller for your iOS and Android™ devices

Go On A POWER TRIP

NEW!
19"



Model TZT19F - 19"

►►► Spec P88

19" Multi-Touch MFD 1920x1080 (FHD)
with built-in TruEcho CHIRP™ Fish Finder



Model MCU002

Remote Control Unit (option)



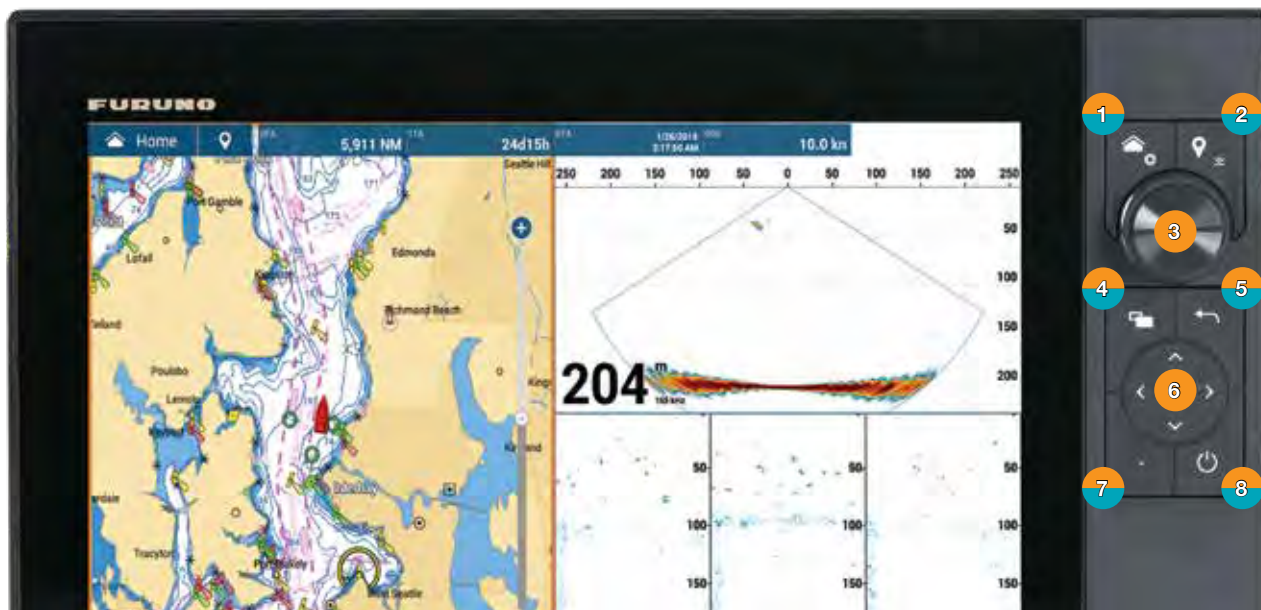
Model MCU004

Remote Control Unit (option)



Model MCU005











Control Unit (option)



THE RETURN OF HYBRID CONTROL

Captains who have smaller boats know that when you are crashing through the waves, it can be difficult to get an accurate tap on the screen. That's why we made our TZtouch3 12" MFD with Hybrid Control. You get the best of both worlds with a full multi-touch display and a handy, built-in keyboard that features a RotoKey™, cursor pad and dedicated buttons.

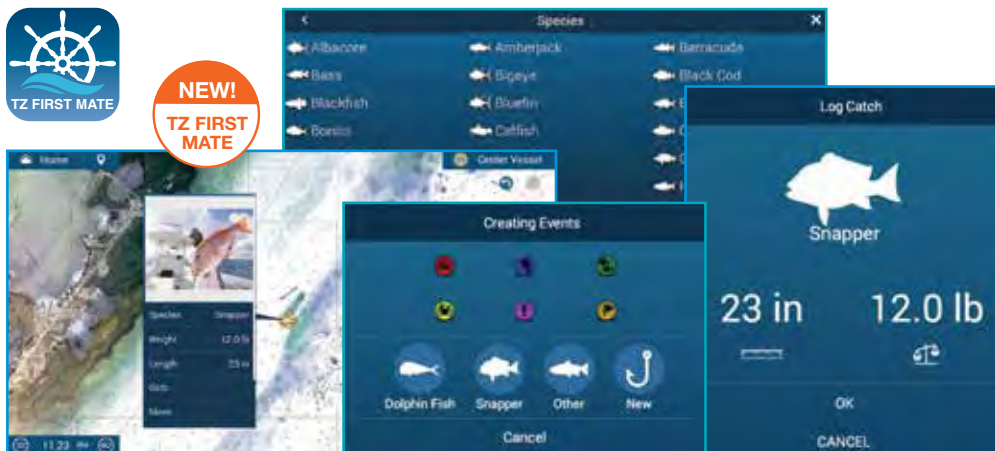
Key:

- | | | |
|---|---|---|
|  Short Press |  1 Home/Settings |  5 Cancel/Center |
|  Long Press |  2 Event/MOB |  6 Cursor Pad |
| |  3 RotoKey™ |  7 Function 1/Function 2 |
| |  4 Shift Screen Control/Fullscreen |  8 Power/Quick Access Page |

NavNet Series

TZ FIRST MATE KEEPS TRACK OF YOUR CATCH & LOCATION

When you're out on the water, you want to be on top of your game. So, you train like the professionals. You prepare all of your equipment. And before you head out, you do your homework. The good news, TZtouch3 just made it all easier with TZ Cloud and the new TZ First Mate App. See page 22 for more details.



MAPMEDIA VECTOR & RASTER CHART LIBRARY

Freely choose the charts that fit your individual needs. Easily select either raster, vector or fishing charts, Mapmedia brings an authentic vector and raster chart library to your NavNet TZtouch3. "C-MAP" as well as "Datacore by Navionics" vector cartography are optional charts that can be easily unlocked. Mapmedia cartography integrates cutting edge algorithms with high resolution image processing techniques to deliver a fusion of digital navigation charts and satellite photography.



Vector Mode

Raster Mode



SATELLITE PhotoFusion™



Satellite photography is included in the MapMedia raster and vector charts, simply called Satellite PhotoFusion™. Land areas (zero depth) are completely opaque, displayed as satellite photos on the chart. As the depth increases, the satellite image is merged with the chart data to provide you with added detail on seabed areas in shallow water without losing vital chart information.

CMOR CHARTS (US ONLY)

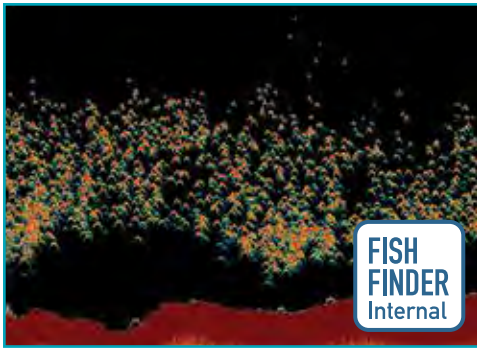


CMOR's high-resolution, shaded-relief bathymetric bottom images help navigators identify suitable locations for fishing and diving.

	DOMES	OPEN ARRAYS - 3.5', 4', OR 6'		
NXT	DRS4DNXT	DRS6ANXT	DRS12ANXT	DRS25ANXT
X-CLASS	DRS4DL+	DRS6AX	DRS12AX	DRS25AX

See page 16 for more details.





FISH
FINDER
Internal

FIND MORE FISH WITH TruEcho CHIRP™

The internal 1kW TruEcho CHIRP™ Fish Finder inside TZtouch3 is designed to operate across a wide range of frequencies utilizing a broadband transducer and delivers significant advantages to signal clarity & target definition. Due to the constant sweeping of frequencies, it is capable of gathering more & higher quality data than traditional Fish Finders.



NEW!
2kW/3kW
CHIRP
AMP

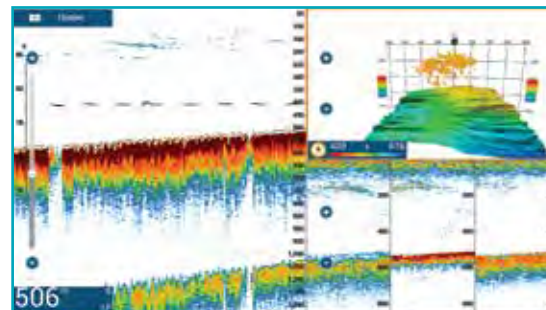


DEEP IMPACT TruEcho CHIRP™

Introducing Deep Impact - DI-FFAMP, a new high-power TruEcho CHIRP™ Fish Finder designed specifically to work with NavNet TZtouch3. This 2kW or 3kW TruEcho CHIRP™ Fish Finder gets you down to the deepest waters to find your catch. You can even connect a 5kW or 10kW transducer! (BT-5 required)



DFF3D



EASILY SEE WHERE TO DROP LINES

When you find fish, you can quickly drop a mark on your Chart Plotter for a return drift. Then looking at the DFF3D's Cross Section and Side Scan Modes, you can easily determine which side of the boat the fish are on, how deep they are, and how far out from the boat they are swimming. It's almost like you have a tracker attached to them!

USE DFF3D WITH YOUR FISH FINDER

This is a powerful combination that helps you get on the fish like never before. Use your standard Fish Finder on low-frequency to go deep and then use the DFF3D for your high-frequency to see fish in the water column. With the 3D History and Triple Beam Modes, you can easily see which side of the boat the fish are located, so you know where to drop your line.



Model TZTL12F - 12.1" >>> Spec P89
12.1" MFD 1280 x 800 (WXGA)



Model TZTL15F - 15.6" >>> Spec P89
15.6" MFD 1366 x 768 (FWXGA)

"The user interface is the simplest and best I have seen on the many iterations of Furuno hardware that I have owned over the years." Fred K., Panbo

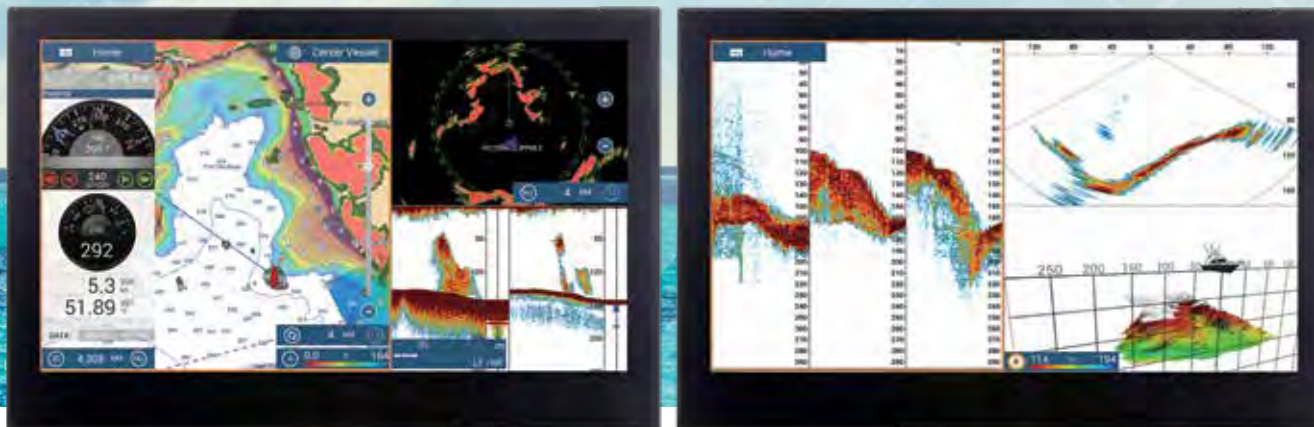


KEY FEATURES:

- Internal GPS Antenna
- Edge-to-edge glass front
- Internal RezBoost™ Fish Finder
- Compatible with CZone Digital Switching
- Seamless, smooth chart operation with TimeZero™ Technology
- Enhanced touch gestures like edge swiping for frequently used functions
- The graphical user interface has been renewed and refined, focusing on usability and ease of operation
- Add Autopilot, Instruments, Radar, AIS, and a wide variety of other sensors to your NavNet TZtouch2 network
- Connect up to 6 NavNet TZtouch2/TZtouch displays on one network
- Manual Fuel Management enables visual evaluation of fuel levels and consumption

- With an Internet connection, NavNet TZtouch2 can wirelessly access real-time weather data
- Sunlight viewable multi touch display with impressive brightness, 1300 cd/m² for TZTL12F and 1000 cd/m² for TZTL15F
- Tablet & Smart phone apps: NavNet Remote, NavNet Viewer and NavNet Controller for your iOS and Android™ devices

Total Control, Simply Refined



Model TZT2BB

►►► Spec P89

Multi Touch Marine Display* with TZT2BB Processor Unit (Model MPU004) and Control Unit** (Model MCU005) * Local supply ** Option

MFD Black Box

1920 x 1080 (16:9), 1280 x 1024 (5:4), 1024 x 768 (4:3)

KEY FEATURES:

- Internal RezBoost™ Fish Finder
- Full HD HDMI video input available
- Compatible with CZone Digital Switching
- Fast processor (CPU) for impressive performance
- Seamless, smooth chart operation with TimeZero™ Technology
- Enhanced touch gestures like edge swiping for frequently used functions
- The graphical user interface has been renewed and refined, focusing on usability and ease of operation
- Independent display and operation of dual screens with built-in dual CPU
- Add Autopilot, Instruments, Radar, AIS, and a wide variety of other sensors to your NavNet TZtouch2 network



- Connect up to 5 NavNet TZtouch2/TZtouch displays on one network
- With an Internet connection, NavNet TZtouch2 can wirelessly access real-time weather data
- Tablet & Smart phone apps: NavNet Remote, NavNet Viewer and NavNet Controller for your iOS and Android™ devices
- Manual Fuel Management enables visual evaluation of fuel levels and consumption



Model SDU001

SD Card Unit (option)
for TZTL12F/TZTL15F



Model PSD003

Switch Box for TZT2BB



Model MCU002

Remote Control Unit (option)



Model MCU004

Remote Control Unit (option)

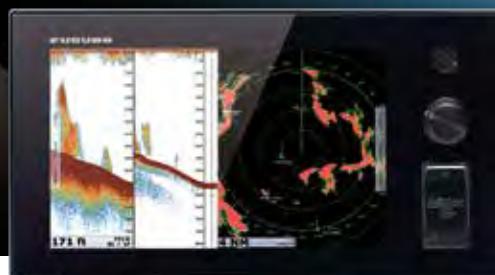


Model MCU005

Control Unit (option)

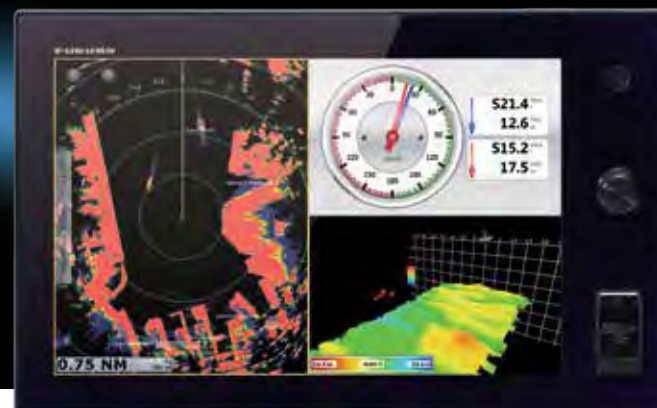
TZTL12F/15F: Software version 6.01 or later





Model TZT9 - 9"
9" MFD 800 x 480 (WVGA)

►►► Spec P90

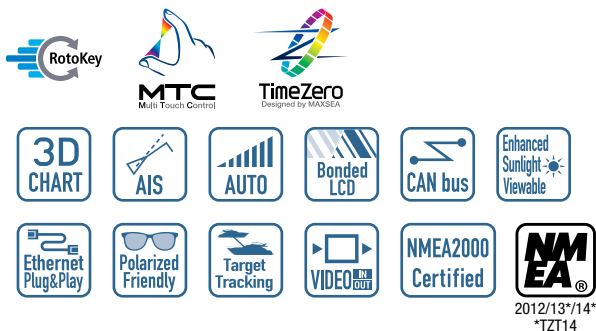


Model TZT14 - 14.1"
14.1" MFD 1280 x 800 (WXGA)

►►► Spec P90

Discover the world's first multi-touch marine display units with unmatched quality only

Furuno can offer.



KEY FEATURES:

- Dual SD Card slots
- NMEA2000 network interface
- Sunlight viewable multi touch display
- Simple, flat display with minimal mechanical keys
- Luxury, piano-black wide screen coated with glass panel
- Synchronize data with NavNet TZtouch2 instantaneously
- Easy, intuitive and slick operation with touch screen and RotoKey™
- Seamless, instant chart/Radar redraw with TimeZero™ Technology
- Detailed 3D and 2D charts and high resolution satellite images

- Add Radar, Network Fish Finder, Multi Beam Sonar, AIS, and a variety of other sensors
- Connect up to 6 TZtouch/TZtouch2 displays, 5 when connecting a TZT2BB Black Box.
- Save up to 30,000 user points, 30,000 ship's track points and 200 planned routes with up to 500 waypoints per route
- Wireless LAN connectivity for weather information and automatic chart unlocking
- Tablet & Smartphone apps: NavNet Remote, NavNet Viewer and NavNet Controller for your iOS and Android™ devices

Total Control at your fingertips



Model TZTBB

►►► Spec P90

Multi Function Display Black Box
1280 x 720 (16:9), 1280 x 800 (16:10),
1280 x 960 (4:3), 1280 x 1024 (5:4)



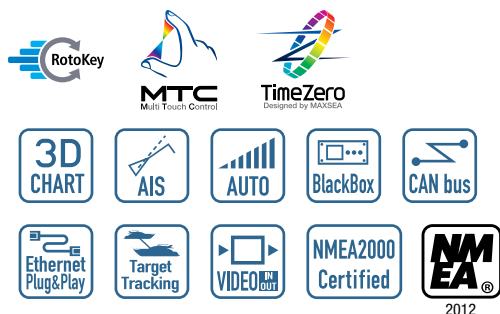
Model MCU002

Remote Control Unit (option)



Model MCU004

Remote Control Unit (option)



MULTI TOUCH CONTROL

Furuno elevated marine touch screen technology to an entirely new level with the industry's first multi touch MFD. The use of multi touch technology opens the door to a wide variety of gesture-based commands.

TOUCH... AND GO! MENU SELECTION

Be more hands-on with our easy-to-understand touch screen interface. You'll have full control of each component connected to the network right at your fingertips.

NXT Radar



Model DRS4DNXT

►►► Spec P95

NXT Radome

Model DRS6A/12A/25ANXT

►►► Spec P95

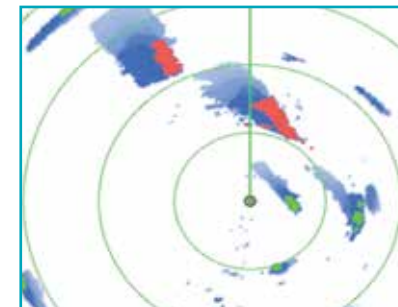
NXT Radar Array

KEY FEATURES:

- Solid State pulse compression Doppler Radar with no preheating time and low energy consumption (no use of a magnetron)
- Revolutionary Target Analyzer™ function instantly identifies hazardous targets
- Fast Target Tracking and Auto Target Acquire function, up to 100 targets
- RezBoost™ beam sharpening to increase resolution
- Effective horizontal beam width* can reach 0.7° with DRS6A/12A/25ANXT (XN13A), and 2.0° with DRS4DNXT *when using RezBoost™
- Bird Mode to find the best fishing grounds by tracking birds
- Simple installation, no need to open the radome (DRS4DNXT only), external PSU is not required
- New smart-connector cable for retrofitting existing DRS cable installations (DRS4DNXT only)

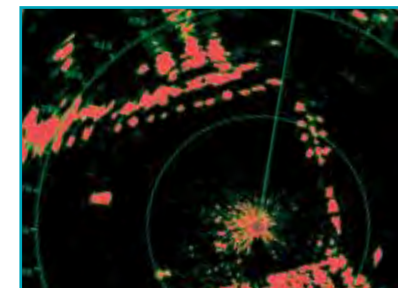
SPOT HAZARDOUS TARGETS INSTANTLY

The NXT series are the first Radars in the world to use Furuno's exclusive Target Analyzer™ function. Targets that are approaching your vessel automatically change color to help you identify potentially dangerous targets. Green echoes are targets that are stationary, or are moving away from you, while red echoes are hazardous targets that are moving towards your vessel. Echoes dynamically change color as targets approach, or get farther away from your vessel. Target Analyzer™ improves situational awareness and can increase safety by showing you which targets to look out for.



REZBOOST™ BEAM SHARPENING

Furuno's exclusive RezBoost™ technology has been incorporated into our Radar units for enhanced resolution and impressive performance. With RezBoost™ set to MAX, the sharpness offers an incredibly detailed image with more targets and less clutter.



X-Class Radar

Model DRS6AX/12AX/25AX

Spec P96

X-Class Radar

Model DRS4DL+

Spec P95

Radome



KEY FEATURES:

- Digital Signal Processing enhances short and long range detection
- Dual range scanning for two different radar ranges (not available on DRS4DL+)
- Enhanced auto gain anti-clutter controls and auto tuning
- Bird mode helps you identify birds, automatically adjusting the gain and sea for optimal visibility
- Fast Target Tracking takes only seconds for a speed and course vector to be displayed
- Advanced side lobe reduction technology
- Spot-on Radar-Chart Overlay on both 2D and 3D chart presentations
- AIS overlay "AIS-over-Radar" presentation for precise vessel tracking*
- Radar Guard Zone and Watchman features alert you to potential dangers
- VRM (Variable Range Marker) and EBL (Electronic Bearing Line) give distance and bearing indications
- Low noise gearbox that is 20% lighter than previous models
- No Power Supply Unit required for most installations

* Appropriate sensor required.

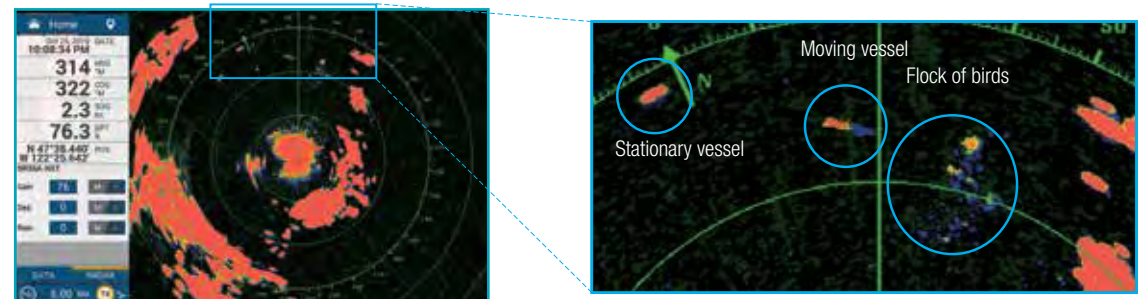
		DRS4D	DRS4DL+	DRS4DNXT	DRS6ANXT	DRS12ANXT	DRS25ANXT	DRS6AX X-Class	DRS12AX X-Class	DRS25AX X-Class
Output Power		4 kW	4 kW	Solid-state, 25 W	Solid-state, 25 W	Solid-state, 100 W	Solid-state, 200 W	6 kW	12 kW	25 kW
Size		24 inch	19 inch	24 inch	3.5 ft/4 ft/6 ft	3.5 ft/4 ft/6 ft	4 ft/6 ft	3.5 ft/4 ft/6 ft	4 ft/6 ft	4 ft/6 ft
Antenna Type		Radome	Radome	Radome	Open	Open	Open	Open	Open	Open
Beam Width	Horizontal	4°	5.2°	3.9°	2.3°/1.9°/1.35°	2.3°/1.9°/1.35°	1.9°/1.35°	2.3°/1.9°/1.35°	1.9°/1.35°	1.9°/1.35°
	Vertical	22°/22°/22°	25°	25°	22°/22°/22°	22°/22°/22°	22°/22°	22°/22°/22°	22°/22°	22°/22°
Max. Range		36 NM	36 NM	48 NM	72 NM	96 NM	96 NM	96 NM	96 NM	96 NM
48 rpm Capability		—	—	•	•	•	•	•	•	•
Functions		Head-up, North-up*, True Echo Trail, TT, AIS	Head-up, North-up*, True Echo Trail, TT, AIS	Head-up, North-up*, True Echo Trail, Bird mode, TT, AIS, Target Analyzer	Head-up, North-up*, True Echo Trail, Bird mode, TT, AIS, Target Analyzer	Head-up, North-up*, True Echo Trail, Bird mode, TT, AIS, Target Analyzer	Head-up, North-up*, True Echo Trail, Bird mode, TT, AIS, Target Analyzer	Head-up, North-up*, True Echo Trail, Bird mode, TT, AIS	Head-up, North-up*, True Echo Trail, Bird mode, TT, AIS	Head-up, North-up*, True Echo Trail, Bird mode, TT, AIS
Dual Range Scanning		—	—	(Range is limited to 12 NM)	(Range is limited to 12 NM)	(Range is limited to 12 NM)	(Range is limited to 12 NM)	•	•	•
Fast Target Tracking		•	•	•	•	•	•	•	•	•
MFD version required	TZtouch2	5.01	5.01	3.01	5.01	6.21	6.21	3.01	4.01	4.01
	TZtouch	5.01	5.01	4.21	5.01	6.01	6.01	4.21	5.01	5.01

* Heading input required for North-up. Heading input is not required for Target Analyzer function, but is recommended for greater performance. The Radar antenna complies with IEC62252 Ed. 1:2004 (Clauses 4.33, 5.33, Annex D) relevant to radio characteristic.



BIRD MODE

The DRS X-Class and NXT Series feature a Bird mode that helps you identify birds congregating around schools of fish near the sea surface. Bird mode works by automatically adjusting the gain and sea settings for optimal visibility.



High Power TruEcho CHIRP™ for T2touch3

NEW!
2kW/3kW
CHIRP
AMP



Model DI-FFAMP

►►► Spec P94

Deep Impact TruEcho CHIRP™ Amp

KEY FEATURES:

	DI-FFAMP
Frequency	18 to 225kHz
Output Power	2kW/3kW
ACCU-FISH	Yes**
Bottom Discrimination*	Yes**
Transducer	2kW or higher compatible transducer

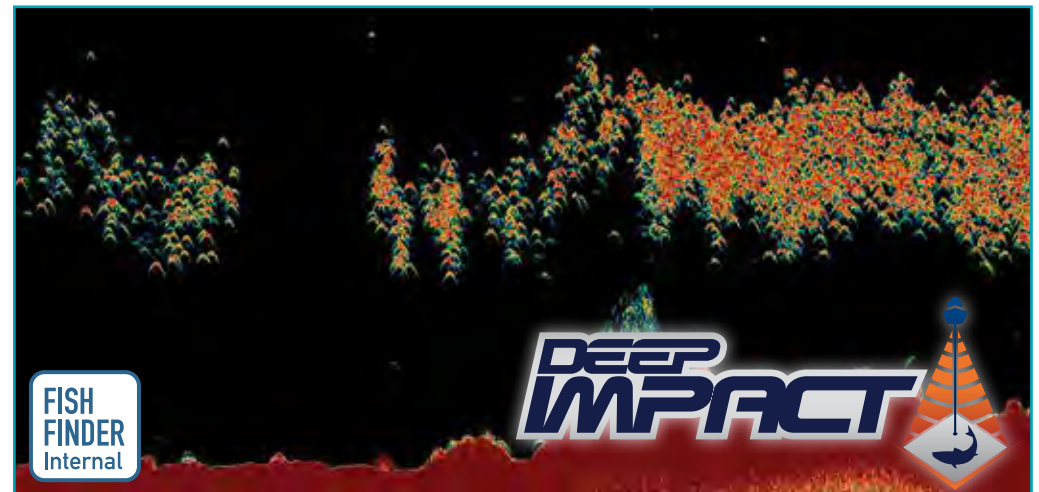
* Depending on bottom type and water conditions

** With appropriate transducer



GO DEEPER WITH MORE POWER THAN THOUGHT POSSIBLE

You spoke. We listened. And now we delivered! TZtouch3 incorporates a powerful internal 1kW TruEcho CHIRP™ Fish Finder. For many, this is the perfect Fish Finder, but for some, they need more power. So, we proudly bring you Deep Impact (DI-FFAMP), a high-powered 2kW/3kW amplifier that connects to the internal TruEcho CHIRP™ Fish Finder. But if that's not enough, Deep Impact gives you 5kW with the right booster (BT-5 Booster). Go big or go home!



Multi Beam Sonar



Model DFF3D*

►►► Spec P94

Black Box Network

Multi Beam Sonar *see page 57 for details

KEY FEATURES:

	DFF3D
Frequency	165 kHz
Range Scale	Up to 1,200 m
Detection Range	200 m* (Side beam best performance) 300 m* (Main beam directly under boat)
ACCU-FISH	N/A
Bottom Discrimination	N/A
Transducer	800 W

* Depending on bottom type and water conditions.

MULTI BEAM SONAR

The Multi Beam Sonar gives you real-time 120° port-starboard view of the water column and seabed up to 200 m depth*. The DFF3D allows you to explore fishing spots and find fish in deep water far faster than conventional single beam sounders. The main beam penetrates right under the boat at a depth of approximately 300 m*.

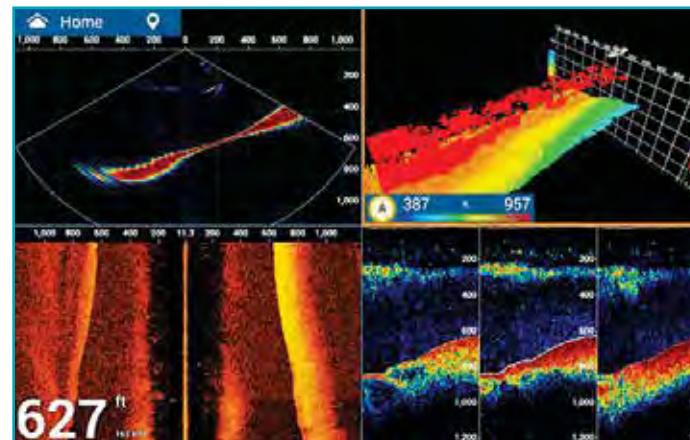
* Maximum depth depending on installation, bottom type and water conditions.

Cross Section

Cross section displays the real-time sea column echo in 120 degrees port and starboard.

Side Scan

Side scan clearly displays the shape of structure as a high definition image in port and starboard direction.



3D History Mode

The 3D sounder history provides an intuitive and easy to understand 3D image of the seafloor, along with fish school icons.

3-way Split

A single (directly under boat) or triple direction (middle, left and right) Fish Finder image are displayed simultaneously.



2017

Digital Fish Finders

FURUNO



Model DFF1-UHD

►►► Spec P93

**Black Box Network
TruEcho CHIRP™ Fish Finder**

KEY FEATURES:

	DFF1-UHD
Frequency	Dual frequency 50 ± 20 kHz and 200 ± 25 kHz
Range Scale	Up to 1,200 m
Broadband	Available
ACCU-FISH	Available
Bottom Discrimination	Available
Transducer	1 kW



Model BBDS1

►►► Spec P93

**Black Box Network
Bottom Discrimination Fish Finder**

KEY FEATURES:

* For BBDS1 with 50/200-IT transducer only

	BBDS1
Frequency	Dual Frequency 50/200 kHz
Range Scale	Up to 1,200 m
ACCU-FISH*	Available
Bottom Discrimination	Available
Transducer	600 W/1 kW



Model DFF3

►►► Spec P93

**Black Box Network
Network Fish Finder**

KEY FEATURES:

* For DFF3 with 50/200-IT transducer only

	DFF3
Frequency	Two frequencies from 28 kHz to 200 kHz
Range Scale	Up to 3,000 m
ACCU-FISH*	Available
Bottom Discrimination	Available
Transducer	1/2/3 kW



MONITOR SEA SURFACE TEMPERATURE

Sea surface temperature (SST) is one of the most important pieces of information for fishing in order to find the best spot or area.

◆ TZtouch2/TZtouch3

◇ TZtouch

TRACK RECORDING ◆◇

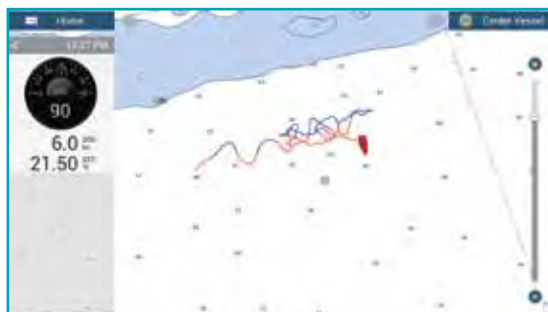
Track recording by SST Variation draw a ship's track in variable colors, helping you find the best spot or area.

SHEAR ALARM ◆

The Shear Alarm lets you know when there is a sudden change in sea surface temperature, often caused when two currents meet. This is usually a good indication of a great fishing spot.

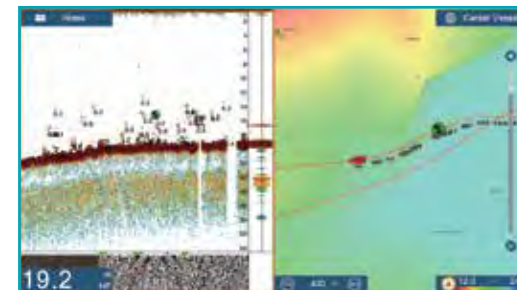
SST GRAPH ◆

SST Graph on the Fish Finder display, instrument display or data box shows you the history of SST in the trip.



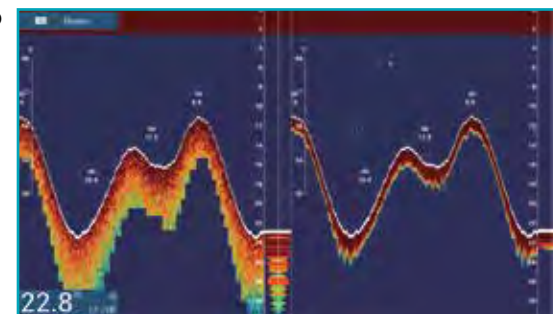
KEEP TRACK WITH SCROLL-BACK ◆◇

Found a fishing hot spot? Simply tap the screen and add a fish mark. With the scroll-back feature, you can look at past echoes simply by swiping the screen, adding new fish marks that will automatically show the captured location on your plotter screen.



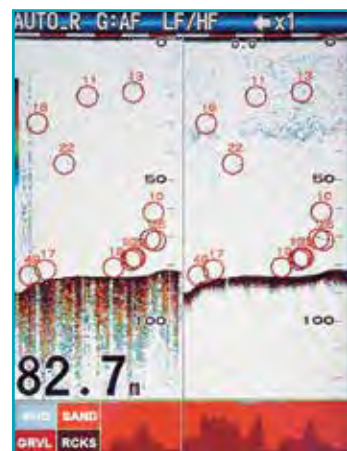
WHITE EDGE HELPS EASILY IDENTIFY SEABED ◆

The top of the seabed is displayed in white to easily discern seabed structure from bottom fish returns. While conventional bottom discrimination function (i.e.: White Line) is applied to the strongest echoes, the White Edge function enhances the discrimination between bottom fish and the seabed.



BOTTOM DISCRIMINATION FUNCTIONALITY ◆◇

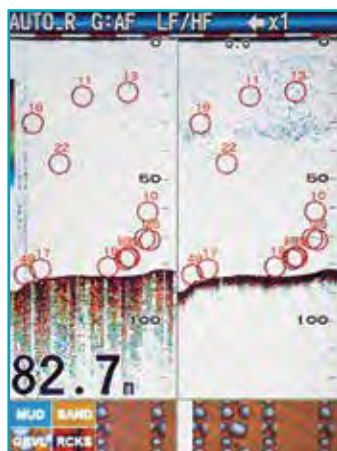
The Bottom Discrimination function enables the Fish Finder to indicate whether the bottom is composed mainly of rocks, gravel, sand or mud.



Probability mode

Probability Mode:
Rocks Gravel
Sand Mud

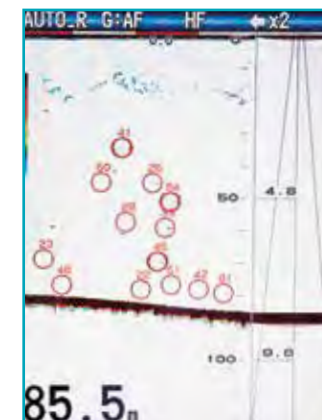
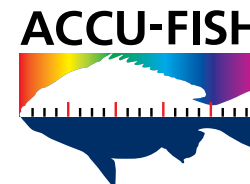
Graphic Mode:
Rocks Gravel
Sand Mud



Graphic mode

ACCU-FISH™ (FISH SIZE ANALYZER) ◆◇

ACCU-FISH™ is a fish size assessment function that is unique to Furuno. In order to assess individual fish size, echo returns are evaluated based on strength and turned into fish size display on screen. ACCU-FISH™ can detect fish size from 10 to 199 cm, in depths of 2 to 100 m. In some instances, fish size indicated may differ from actual size. Please read the operator's manual carefully before using this feature.



Onboard Systems Monitoring

CZONE DIGITAL SWITCHING

CZone digital switching by BEP simplifies the installation and operation of complex electrical systems. NavNet TZtouch2/ TZtouch3 is compatible with CZone controls, allowing you to operate CZone equipment.

* Lean more about CZone Digital Switching at www.czone.net



CZone, engine, navigation and various NMEA2000 data can be laid out on the same screen.



CZone Control & Monitoring



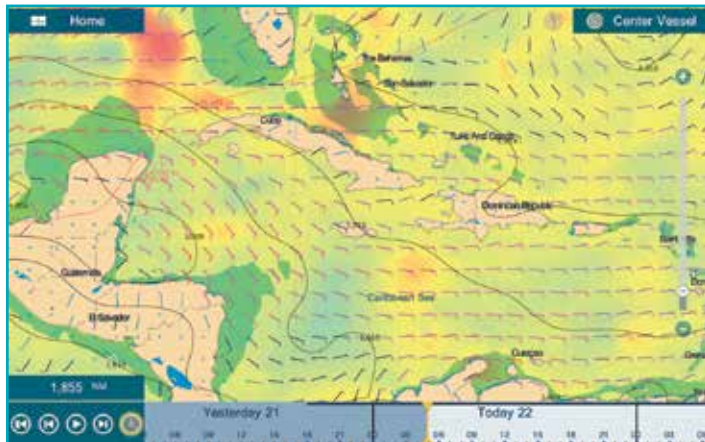
MARINE WEATHER FORECAST

The weather tool is completely free and easy to use, giving you unlimited access to weather forecasts, worldwide, 24 hours a day, provided by NavCenter. NavNet Series can display up to 16 days of downloaded weather forecasting.

* Internet connection is required.

BBWX4 SiriusXM Satellite Weather:

Keep track of weather with Furuno's BBWX4 Fourth-Generation Sirius/XM Satellite Weather Receiver for NavNet TZtouch/TZtouch2/TZtouch3. (Only available in U.S. and Canada)



MARINE AUDIO FUSION-LINK

Enjoy the ability to control all FUSION-Link enabled 700/750/755 series marine entertainment system capabilities and functions directly from the NavNet TZtouch Series. FUSION-Link makes it easy for you to enjoy your onboard audio and video entertainment from the NavNet TZtouch Series.



MY TIMEZERO™ CLOUD DATA

Connect your NavNet TZtouch3/TZtouch2 to the Internet and login to your My TimeZero™ account, and you will be able to back up or restore points, routes, tracks and settings to/from the cloud server. Plan routes on your tablet at home and transfer them to your TZtouch3/TZtouch2 onboard through the cloud.

View Info On Your Smart Devices Wirelessly

TZ FIRST MATE KEEPS TRACK OF YOUR CATCH & LOCATION

You put in blood, sweat, and tears finding the perfect hot spot, and guess what, it paid off! Wouldn't it be nice to make a note of what you caught and how big it was? Now your TZtouch3 display can do that when you drop an event mark. Choose the species, enter length & weight, and even take a picture with your phone. View & edit the marks on your smart devices with the TZ First Mate App, TZ PC Software, or TZ iBoat.



TZ CLOUD: NEVER LOSE WAYPOINTS, ROUTES OR SETTINGS AGAIN

Create your routes at home using TZ Navigator, a web browser*, or TZ iBoat iOS App. Then you can retrieve them from the cloud & download to your TZtouch3. Also, create events on your MFD and retrieve them at home because the data is synchronized automatically & securely to My TimeZero. TZ Cloud also stores marks, routes, boundaries, photos, and catch data!

(*cloud.mytimezero.com raster planning charts for US only)

TZ PC Software



cloud.mytimezero.com



TZtouch3



TZ iBoat iOS App

FOR APPS AND SMART DEVICES

NavNet TZtouch, TZtouch2 and TZtouch3 open the door to cutting edge Wireless LAN features, such as iOS and Android™ apps, real-time weather data, software updates and much, much more.

NAVNET VIEWER APP

Conveniently view instruments as well as the Fish Finder of your NavNet TZtouch/TZtouch2/TZtouch3 on your smart devices over the Wireless LAN network. Key navigational information such as Depth, Temp, Wind, COG as well as Engine information can all be accessed from the palm of your hand. Even if you change the display on your NavNet MFD, you can still view the Fish Finder on your smart devices.



Compatible with NavNet TZtouch/TZtouch2/TZtouch3

NAVNET CONTROLLER APP

Wirelessly control NavNet TZtouch/TZtouch2/TZtouch3 with touch controls just like the real thing. With a scroll pad, cursor pad and dedicated keys within the app, controlling NavNet TZtouch/TZtouch2/TZtouch3 is simple and straightforward.



Compatible with NavNet TZtouch/TZtouch2/TZtouch3

NAVNET REMOTE APP

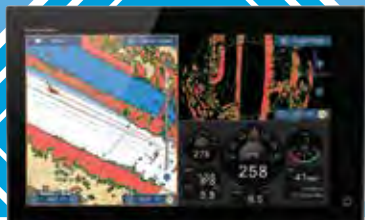
Take full control of your NavNet TZtouch/TZtouch2/TZtouch3 in a whole new way. The NavNet Remote app allows you to remotely operate and view your system with your smart devices when connected to the Wireless LAN network.



Compatible with NavNet TZtouch/TZtouch2/TZtouch3

NavNet Series

Network Product Lineup



NAVnet
TZtouch2

NAVnet
TZtouch3

NMEA0183 to CAN bus converter available; The optional IF-NMEA2K2 converts NMEA0183 sentences to FURUNO VCAN bus and NMEA2000 PGN's, enabling conventional NMEA0183 navigation devices to be incorporated into the NavNet TZtouch3/TZtouch2 network

RADAR



Radar Sensor
DRS4D (U.S. only)
DRS4DL+
DRS NXT Series
DRS X-Class Series
Ethernet



Marine Radar
FAR1513BB/1518BB* Series
Ethernet



Marine Radar
FAR21x7BB/22x8BB* Series
Ethernet

*TZtouch2 software version 6.01 or later
**1 TZtouch3 unit required

FISH FINDERS



External Fish Finders can also be connected to the TZtouch3/TZtouch2. The internal and external Fish Finder cannot operate simultaneously. You can select which one to use from the settings menu.



Multi Beam Sonar
DFF3D
Ethernet



Network Fish Finder
DFF1-UHD/DFF3/DI-FFAMP**
Ethernet



Bottom Discrimination Fish Finder
BBDS1
Ethernet



Depth/Speed/Temp Sensor
DT-800/DST-800
CAN bus

AIS



AIS Receiver
FA40
CAN bus NMEA0183



Class-B+ AIS Transceiver
FA70
CAN bus NMEA0183



U-AIS Transponder
FA170
Ethernet

GPS



External GPS antennas and navigators can also be connected to NavNet TZtouch2/ TZtouch3. You can select which one to use from the settings menu. *Not available for TZT2BB



GPS Navigator
GP33
CAN bus NMEA0183



GPS/WAAS Receiver Antenna
GP330B
CAN bus

INSTRUMENT/ DATA ORGANIZERS



Data Organizer
FI70
CAN bus



Data Organizer
RD33
CAN bus



Radar Sensor
DRS4D (U.S. only)
DRS4DL+
DRS NXT Series
DRS X-Class Series
Ethernet



Marine Radar
FAR1513BB/1518BB* Series
Ethernet

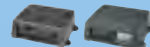


Marine Radar
FAR21x7BB/22x8BB* Series
Ethernet

*TZtouch2 software version 6.01 or later
**TZtouch3 unit required



Multi Beam Sonar
DFF3D
Ethernet



Network Fish Finder
DFF1-UHD/DFF3
Ethernet



Bottom Discrimination Fish Finder
BBDS1
Ethernet



Color LCD Sounder
FCV1150
Ethernet



Depth/Speed/Temp Sensor
DT-800/DST-800
CAN bus



AIS Receiver
FA30
Ethernet



Class-B AIS Transponder
FA50
Ethernet



U-AIS Transponder
FA170
Ethernet



GPS/WAAS Receiver Antenna
GP330B
CAN bus NMEA0183



GPS Navigator
GP33
CAN bus NMEA0183



Data Organizer
FI70
CAN bus



Data Organizer
RD33
CAN bus

AUTOPILOT



Autopilot
NAVpilot 300
CAN bus



Autopilot
NAVpilot 711C
CAN bus NMEA0183

COMPASS



Integrated Heading Sensor
PG700
CAN bus



Compass
SC70
CAN bus CAN bus



Satellite Compass™
SC33
CAN bus NMEA0183



Satellite Compass™
SCX20/21
NMEA2000 NMEA0183 NEW

VHF COMMUNICATION



Marine VHF Radiotelephone
FM4800
CAN bus

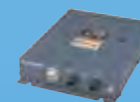


Marine VHF Radiotelephone
FM4850
CAN bus



Marine VHF Radiotelephone
FM4800S

WEATHER/PC PLOTTER



Network Weather Facsimile Receiver
FAX30
Ethernet



Satellite Weather
BBWX4
Ethernet



TIMEZERO
Marine Software
Ethernet

OTHER



Thermal Camera
Video Ethernet



Analog Camera
Video



IP Camera
Ethernet



FUSION
Marine Entertainment System
MSRA670/770 Series, etc.
Ethernet



Digital Switching System
CZONE
CAN bus



HDMI*
*T2T2BB/T2T16F/T2T19F only



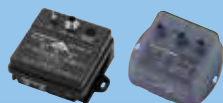
Autopilot
NAVpilot 300
CAN bus



Autopilot
NAVpilot 700
CAN bus NMEA0183



Autopilot
NAVpilot 711C
CAN bus NMEA0183



Integrated Heading Sensor
PG700 **PG500R**
CAN bus NMEA0183



Compass
SC70
CAN bus NMEA0183



Satellite Compass™
SC33
CAN bus NMEA0183



Satellite Compass™
SCX20
CAN bus



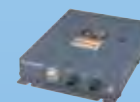
Marine VHF Radiotelephone
FM4800
CAN bus



Marine VHF Radiotelephone
FM4850
CAN bus



Marine VHF Radiotelephone
FM4800S



Network Weather Facsimile Receiver
FAX30
Ethernet



Satellite Weather
BBWX4
Ethernet



Analog Camera
Video



IP Camera
Ethernet



FUSION
Marine Entertainment System
MS750 Series, etc.
Ethernet



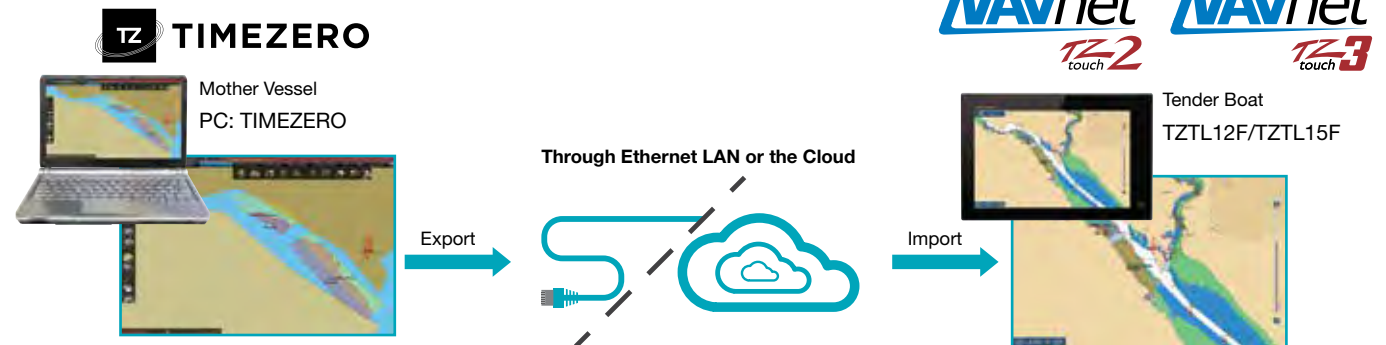
TIMEZERO IS A POWERFUL NAVIGATION TOOL

Today's captains expect a lot from their navigation systems. TIMEZERO Navigation Software is the ideal system for captains and crews that demand the best. TIMEZERO is the only navigation platform that combines intelligent weather with superior raster and vector charting support, hallmarks of MaxSea's superior engineering and expertise. TIMEZERO is a powerful navigational tool capable of blending and analyzing data from multiple sources in real-time. Features such as multi-screen support and full network compatibility make it, without a doubt, the most accurate and advanced onboard tool of its kind. TIMEZERO offers simple operation, increased productivity and the comfort of added confidence and safety.

SEAMLESSLY EXCHANGE YOUR USER OBJECTS WITH TZTOUCH3/TZTOUCH2 SERIES*

All your User Objects (Marks, Routes, Boundaries, Photos, Catches) are automatically synchronized between TIMEZERO PC Software and your MFD as soon as they are connected on the same local network (Ethernet LAN). In addition, if the computer has access to the Internet, TIMEZERO PC Software will be able to back up your data to the cloud using your My TIMEZERO account. A maximum of 100 boundaries can be imported to NavNet TZtouch2/TZtouch3.

* Software version 4.01 or later



TZ iBoat (iPad APP)

TZ iBoat is the best marine navigation app for coastal sailing, featuring easy-to-use functions and the fastest and smoothest chart display ever, as well as 3D data and weather information for an unparalleled experience. TZ iBoat is powered by the amazing TIMEZERO technology, featuring a 2D/3D chart display, PhotoFusion™ and the most accurate marine charts thanks to MapMedia's unique Raster mm3d format.

TZ iBoat can connect to the Wireless Hotspot created by the NavNet TZtouch3/TZtouch2 Series and use the navigation data (Position, COG/SOG, Heading, Depth, Wind and AIS*) available on the NavNet network. In addition, TZ iBoat also has the capability to synchronize all your User Objects with the MFD (including the Active Route). If the iPad has access to the Internet, TZ iBoat Software will be able to back up your data to the cloud using your My TIMEZERO account.

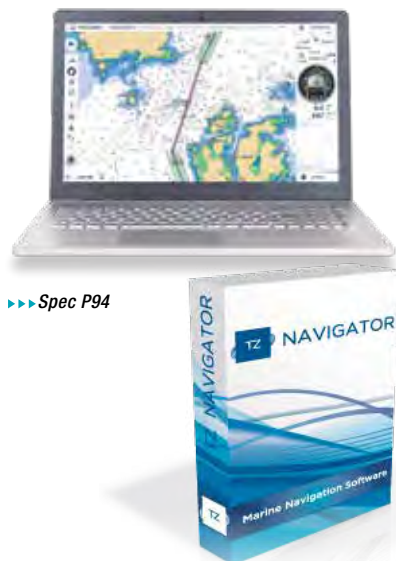
*AIS module sold separately.



Furuno 1st Watch Wireless Radar DRS4W with the TZ iBoat provides a Radar overlay image across the App's navigational chart on your iPhone or iPad in real-time.* Additional modules allow radar overlay from DRS series antennas.

* Radar Module (in-app purchase) required.

TZ NAVIGATOR V4

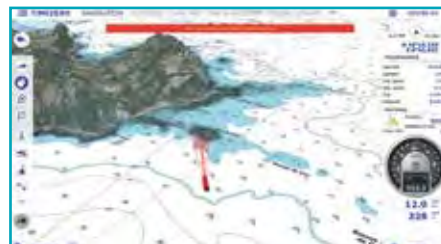


- Marine navigation software with a fast and smooth full 2D/3D chart engine: our navigation software operates in a fully rendered 3D environment and delivers unparalleled speed and a seamless chart plotting experience
- Worldwide chart coverage: mm3d chart catalogue with raster and vector charts (C-MAP and Datacore by Navionics)
- Connect your GPS and Autopilot (NMEA compatible serial ports or Ethernet by Furuno)
- Free worldwide weather forecast service: download/overlay weather updates for free, allowing you to perform advanced planning
- New redesigned and user-friendly interface: the exclusive TIMEZERO interface combines functionality with ease of use, providing for a practical and personalized navigating experience
- Exclusive PhotoFusion™: fuse satellite images to the marine chart

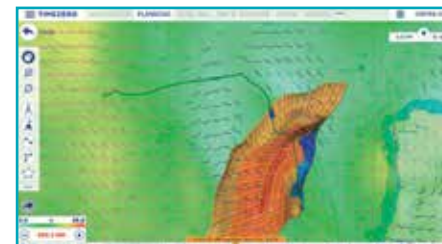
- AIS/TT function included: TIMEZERO can be connected to any AIS using NMEA0183 or via Ethernet
- ActiveCaptain integration: TIMEZERO is the first navigation software to offer ActiveCaptain Points-of-Interest (POI) integration and real-time updating
- Marine charts, 3D data, worldwide tide database (display tidal data on TIMEZERO to know about water depth in ports) and standard satellite photos
- Routes & Waypoints management
- New Route Planning Wizard/Security Cone/Odometer NavData
- New Furuno advanced compatibility
- Radar overlay module available (requires DRS series antenna)



New Route Planning Safety



New Security Cone



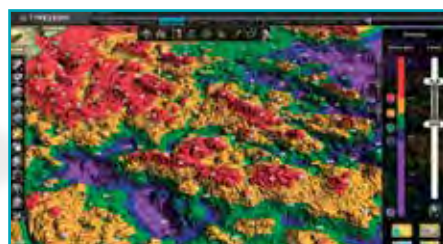
The Weather Routing with the TZ Routing Module

TZ PROFESSIONAL V4

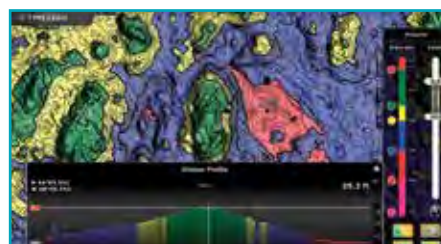


- The latest version of the PBG module allows you to create clearer, more realistic charts of the seafloor. Connect to DFF3D Multi Beam Sonar with optional module
- Instantaneously display a point to point depth profile window. This 2D view allows you to identify the depth variations with unequalled precision (rocks, shipwrecks, etc.)
- A workspace exclusively dedicated to professional fishermen allows for personalization of 2D/3D, so information that is most pertinent is shown first
- Keeping up-to-date charts is an essential element to ensure the safety of all those at sea. Now compatible with the official S57/S63 formats

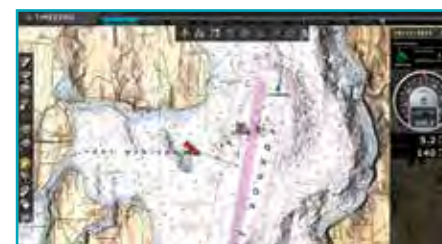
- Thanks to augmented reality cutting-edge technology, TZ professional allows you to display the active route and cross track distance directly on the camera video feed. Identify all boats equipped with AIS system surround you and prevent any collision risk
- Up to three monitors can be used simultaneously working on independent workspaces
- TZ Professional introduces the new Premium Oceano-O service for pelagic fishing. It provides higher resolution and a new type of multi-layer data. This service is geared toward commercial fisherman and advanced sport fishermen who want to target best possible fishing spots



New PBG Module



New Profile Window



TZ Professional V3 charts + AIS



MODEL 1623

►►► Spec P99

5.7" Silverbright LCD Marine Radar

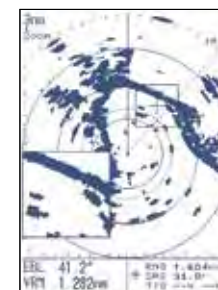
KEY FEATURES:

- Exceptional short-range target detection
- Automatic adjustment of antenna rotation speed according to selected range scale for optimum performance at all ranges
- Watchman mode with very low power consumption — only 8W
- Display a “lollipop” indication of selected waypoint position (optional input required)
- Excellent screen clarity, day or night
- Reverse video feature for nighttime visibility
- Zoom window for close observation of a specific area
- Intuitive operation with simple key layout
- Not available in EU

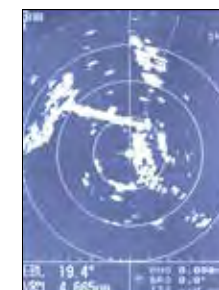
Antenna Selections:

Model	MODEL 1623
Output Power (kW)	2.2
Size	15" Radome
Range Scale (NM)	0.125-16
Rotation Speed	24/31/41 rpm

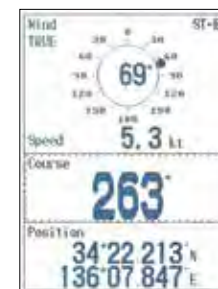
Big Radar Features in a compact display designed for pleasure craft and small fishing boats!



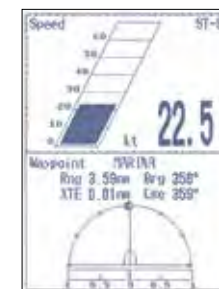
Zoom



Reverse



NAV Data





NAV Data



With image quality comparable to that of a conventional 10" LCD wired Radar, the DRS4W offers impressive performance!



	Radar App	Simulator App*
		
App version	2.0.0	Simulator_2.0.2
Compatible iOS	iOS6.1 or later	
Language	English	

* Simulator App will help you learn how to use the DRS4W in an off-line environment before you navigate with the DRS4W onboard.

Model DRS4W

▶▶▶ Spec P98

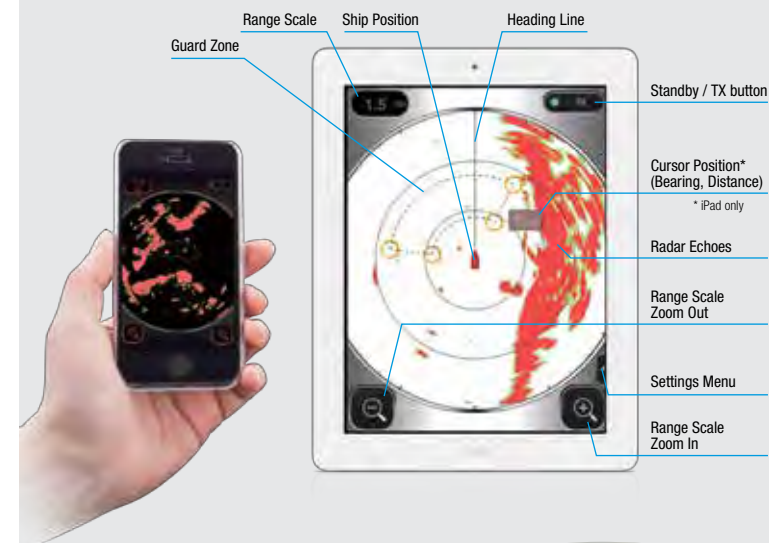
1st Watch Wireless Radar

KEY FEATURES:

- Powerful yet compact Wireless Radar antenna
- First Radar in the world accessible from your iOS devices
- Simple touch interface with familiar gestures
- User selectable range scale from 0.125 to 24 NM
- Two iOS devices – simultaneous operation
- Wirelessly connect to GP1871F or GP1971F and one iOS device
- TIMEZERO Marine Navigator (TZ iBoat), provides a Radar overlay image across the App's navigational chart on your iPad in real-time*

* Radar Module (in-app purchase) required.

Model	DRS4W
Output Power (kW)	4 kW
Size	19" Radome
Range Scale (NM)	0.125-24
Rotation Speed	24 rpm



Model GP1871F/GP1971F



The Furuno DRS4W Wireless Radar can be connected to the GP1871F/GP1971F GPS/WAAS Chart Plotter.*

* Refer to pages 44-45 for details.



MODEL1815

►► Spec P99

8.4" Color LCD Radar

KEY FEATURES:

- Compact radome antenna with 4 kW transmitter output power
- Low power consumption - 38W max
- Easy installation and intuitive operation
- Advanced auto-adjust settings for Gain/Sea clutter and Rain clutter
- Fast Target Tracking: Target speed and course vector are displayed seconds after target acquisition
- True Trail Mode: Moving objects will appear on the main screen with a colorful trail
- True View Mode: Based on the head-up mode, reduces the discrepancy between an observed target and what is displayed on the Radar
- Echoes in yellow, green, orange or multiple colors
- User-programmable function keys
- Swivel mounting bracket to adjust the angle of the display unit



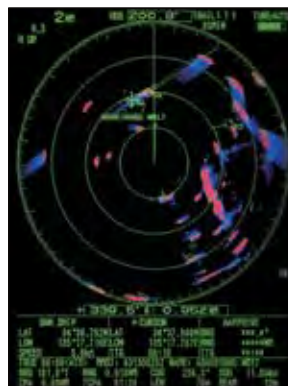
Antenna Selections:

Model	MODEL1815
Output Power (kW)	4
Size	19" Radome
Range Scale (NM)	0.0625-36
Rotation Speed	24 rpm

FAST TARGET TRACKING

Fast Target Tracking function manually or automatically acquires and tracks 10 targets. After selecting a target, it only takes a few seconds for a speed and course vector to be displayed. With accurate tracking information, estimation of other vessel's course and speed is made easier.

When connecting a Furuno FA40/70 AIS unit, up to 100 AIS targets can be tracked and displayed on the Radar screen. You can easily read detailed information about other AIS equipped vessels nearby, such as speed and heading. Additionally, the FA70 AIS transponder improves safety during travel by sharing the status and position of your vessel with other AIS-equipped vessels nearby.



AIS/ Fast Target Tracking

AIS Symbols



Sleeping AIS Target



Lost Target



Activated Target



Dangerous Target



Selected Target

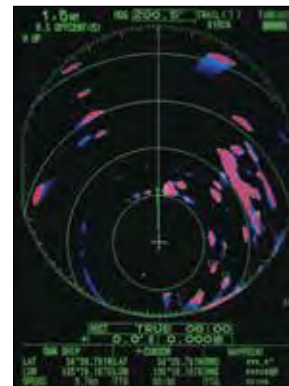
Target Tracking (TT) Symbols



At acquisition



a few seconds after acquisition



Off center

OFF CENTER

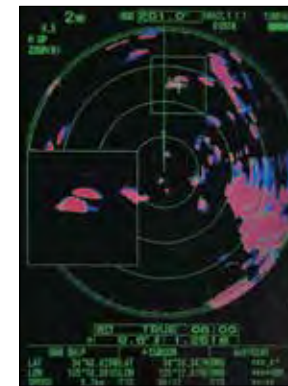
Own ship position can be shifted to a pre-selected point on the screen. This allows the operator to focus on a specific area ahead of or around the vessel without losing track of the position.



Gain/Sea/Rain setting menu

GAIN/SEA/RAIN

To display targets clearly and accurately, the gain must be adjusted. The 1815 can do this automatically for you. By automatically adjusting the gain, the Radar eliminates unnecessary echoes and displays a clear image.



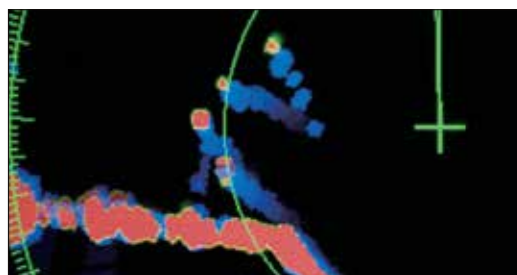
Zoom

ZOOM MODE

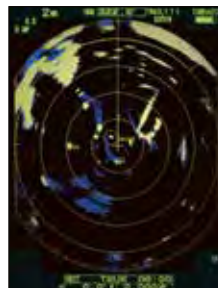
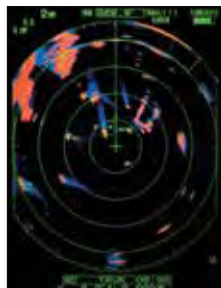
The Zoom function expands the length and width of a selected target with the magnification of 2.0, in the zoom window.

TRUE TRAIL MODE

When using the True Trail Mode, moving objects will show up on the main screen with a gradational trail. These trails make it possible to see the movement of nearby vessels in the blink of an eye.



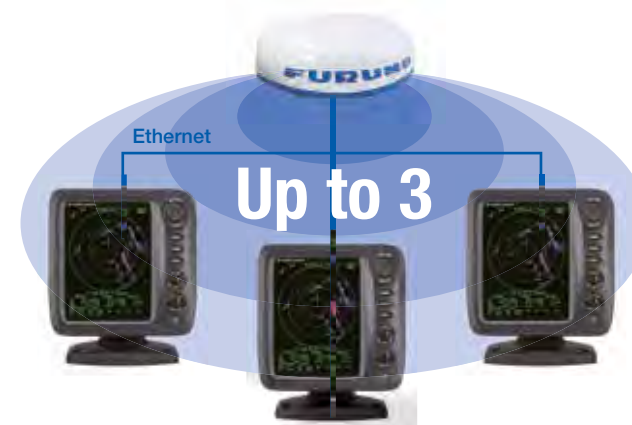
True Trail Mode



Adjustable display colors

MULTI-STATION CONFIGURATION

Multi-station configuration allows up to three RDP157 (1815 displays) to be connected to a single antenna, via an ethernet hub, without the need to install individual antenna units on each display. This configuration provides a cost saving and dynamic setup for situations requiring the ability to monitor the Radar from different locations on the vessel.





Reliability, durability, and flawless performance are the hallmarks of this user-friendly and feature-packed Radar series!



MODEL 1835/1935/1945

►►► Spec P100

10.4" Color LCD Radar

KEY FEATURES:

- Easy-to-install 10.4" color LCD (350 cd/m2) display
- Bonded LCD provides clear view in all weather conditions
- Stable AIS/TT* with zoom display function
- Full Screen Mode allows operators to observe a wider range around the vessel
- Enhanced Auto Tuning/Gain/Anti-Clutter controls
- Echoes in yellow, green, orange or multiple colors

*Optional input required

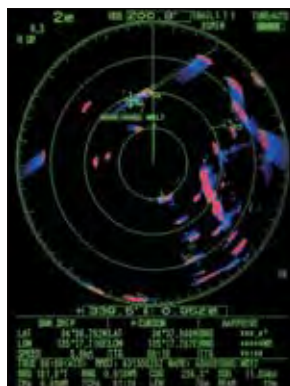
Antenna Selections:

Model	MODEL 1835	MODEL 1935	MODEL 1945
Output Power (kW)	4	4	6
Size	24" Radome	3.5' Open	4' Open
Range Scale (NM)	0.0625-36	0.0625-48	0.0625-64
Rotation Speed	24 rpm	24 rpm 48 rpm (option)	

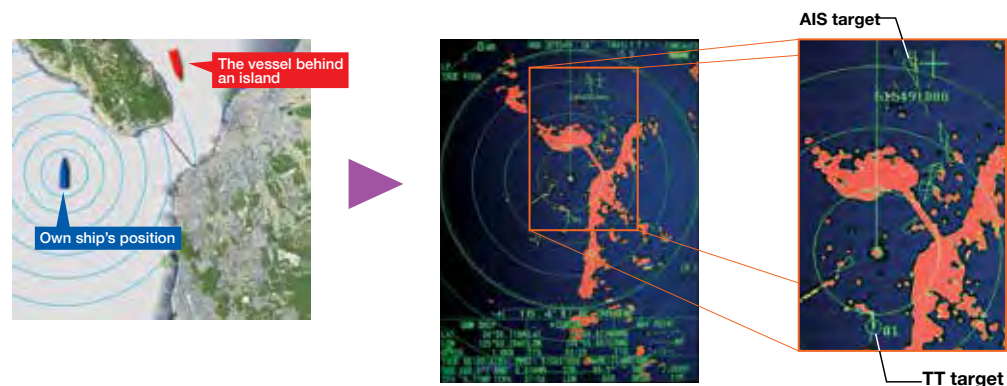
AIS/TARGET TRACKING

Up to 100 AIS and 10 TT targets can be tracked and overlaid on the Radar screen to assist the operator in tracking vessel movements. Since AIS works by a VHF transceiver system, a variety of navigational information such as vessel name, speed, ROT, draft, and the destination of the selected targets can be included in real time. Unlike TT targets, AIS targets are visible even if they are located behind large ships or islands.

AIS targets can show that a vessel is coming from behind an object such as an island, where the Radar beam does not reach.

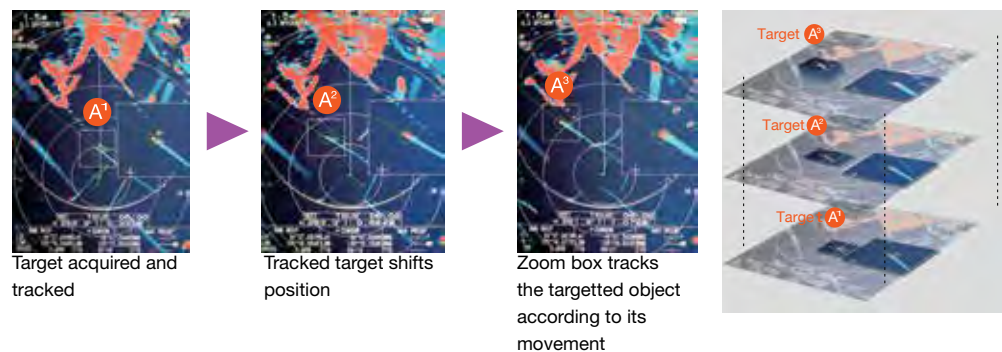


AIS/ Fast Target Tracking



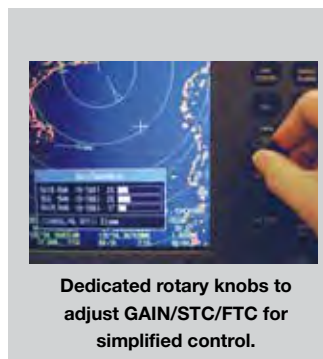
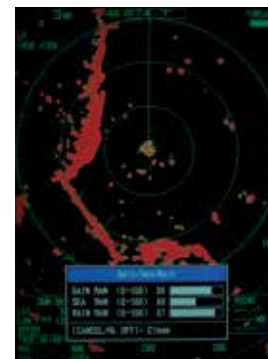
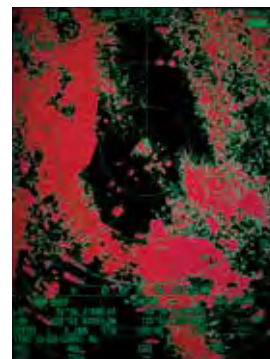
TARGET ZOOM

A target can be shown in a zoom display while its detailed movements are tracked by AIS or TT. Conventional zoom function is also available by which the operator sets the zoom function on the target manually.



ANTI-CLUTTER CONTROLS

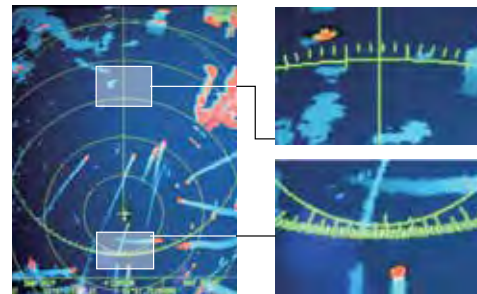
Adding to the enhanced auto clutter controls, dedicated rotary knobs are provided for the suppression of unwanted echoes from sea clutter, rain and other forms of precipitation. Anti-clutter settings can be adjusted manually to remove sea and rain clutter from the Radar screen to gain a clearer view of Radar targets.



Dedicated rotary knobs to adjust GAIN/STC/FTC for simplified control.

OFF-CENTER MODE

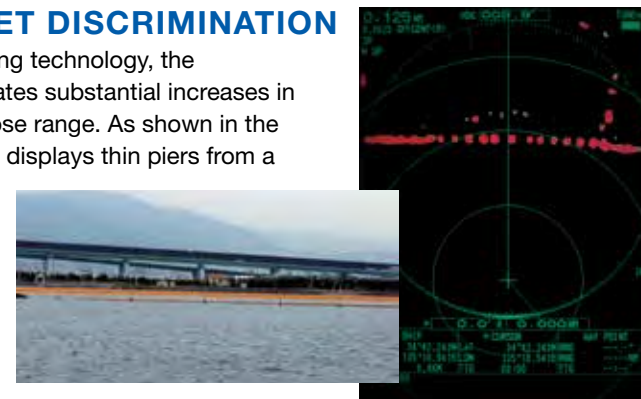
With a push of the "OFF CENTER" button, own ship position is shifted to a pre-selected point on the screen. This allows the operator to focus on a specific area ahead of or around the vessel without losing track of the position.



Clearance between the markings of the bearing scale is changed according to the proximity between own ship and the bearing circle, as shown in the images on the left-hand side. This is useful when estimating a target echo's bearing without using an EBL.

SHORT-RANGE TARGET DISCRIMINATION

With its advanced signal processing technology, the 1835/1935/1945 series demonstrates substantial increases in target detection, particularly in close range. As shown in the pictures at right, the Radar clearly displays thin piers from a very short distance.





Discern between vessel traffic, rain, and surface reflections to find and track the movement of targets and remove unnecessary echoes.



Model FR8065/8125/8255

►►► Spec P101

12.1" Color LCD Radar

KEY FEATURES:

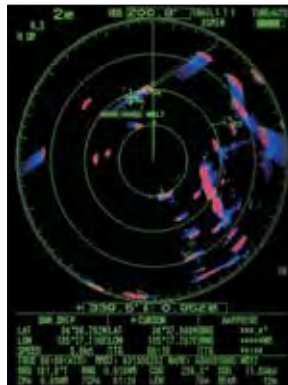
- One-touch auto-adjust settings for Gain/Sea/Rain clutter
- 48 rpm high-speed antenna rotation provides clear information in narrow passages and on high-speed vessels
- Wide viewing angle LCD for great visibility from any angle
- True Motion Trails and AIS/TT Target Tracking with a zoom display function
- State-of-the-art signal processing makes it easy to identify targets in rain and poor visibility
- "True View Mode" means Radar echoes move smoothly when own vessel is in motion

Antenna Selections:

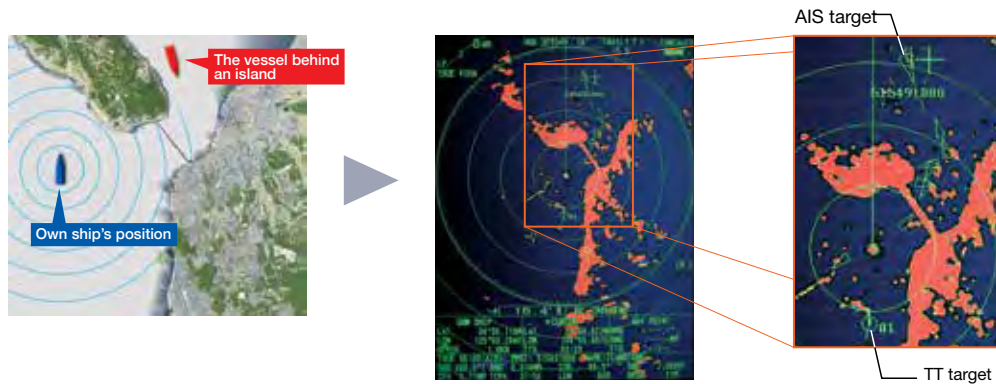
Model	MODEL FR8065	MODEL FR8125	MODEL FR8255
Output Power (kW)	6	12	25
Size	4/6' Open Array		
Range Scale (NM)	0.0625-72		0.0625-96
Rotation Speed	24 or 48 rpm		

AIS/TARGET TRACKING

Up to 100 AIS and 10 TT targets can be tracked and overlaid on the Radar screen to assist the operator in tracking vessel movements. Since AIS works by using a VHF transceiver system, a variety of navigational information such as vessel name, speed, ROT, draft, and the destination of the selected targets can be included in real time. Unlike TT targets, AIS targets are visible even if they are located behind large ships or islands. AIS targets can show that a vessel is coming from behind an object, such as an island, where the Radar beam does not reach.



AIS/ Fast Target Tracking



TARGET ZOOM

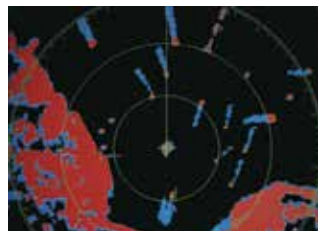
A target can be shown in a zoom display while its detailed movements are tracked by AIS or TT. Conventional zoom function is also available by which the operator sets the zoom function on the target manually.



* AIS transponder and ARP11 are required to use the zoom display function

TRUE TRAIL MODE

When using the True Trail Mode, moving objects will show up on the screen with a colorful trail. True trails make it possible to see the movement of nearby vessels at a glance!



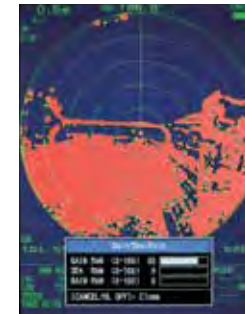
TRUE VIEW MODE

The Radar echoes move smoothly on the main display thanks to "True View Mode". True View Mode is based on the head-up mode. During the Radar sweep, the echoes move according to the heading of your ship.

Since echoes move in real-time, the discrepancy between an observed target and what is displayed on the Radar screen is greatly reduced.

ADVANCED SIGNAL PROCESSING

Even during rainfalls or severe weather conditions, Radar echoes are clearly displayed, and unnecessary echoes can easily be removed instantly. The technology for removing sea, rain and snow clutter has been greatly enhanced, utilizing Furuno's state-of-the-art knowledge in digital signal processing.



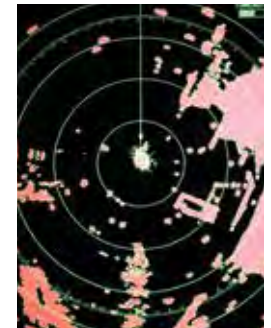
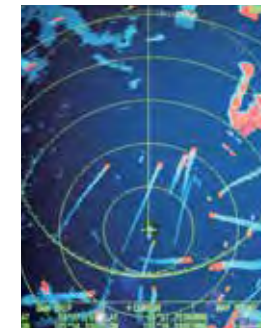
A/C Rain turned off, the marina is completely covered by the rain echo.

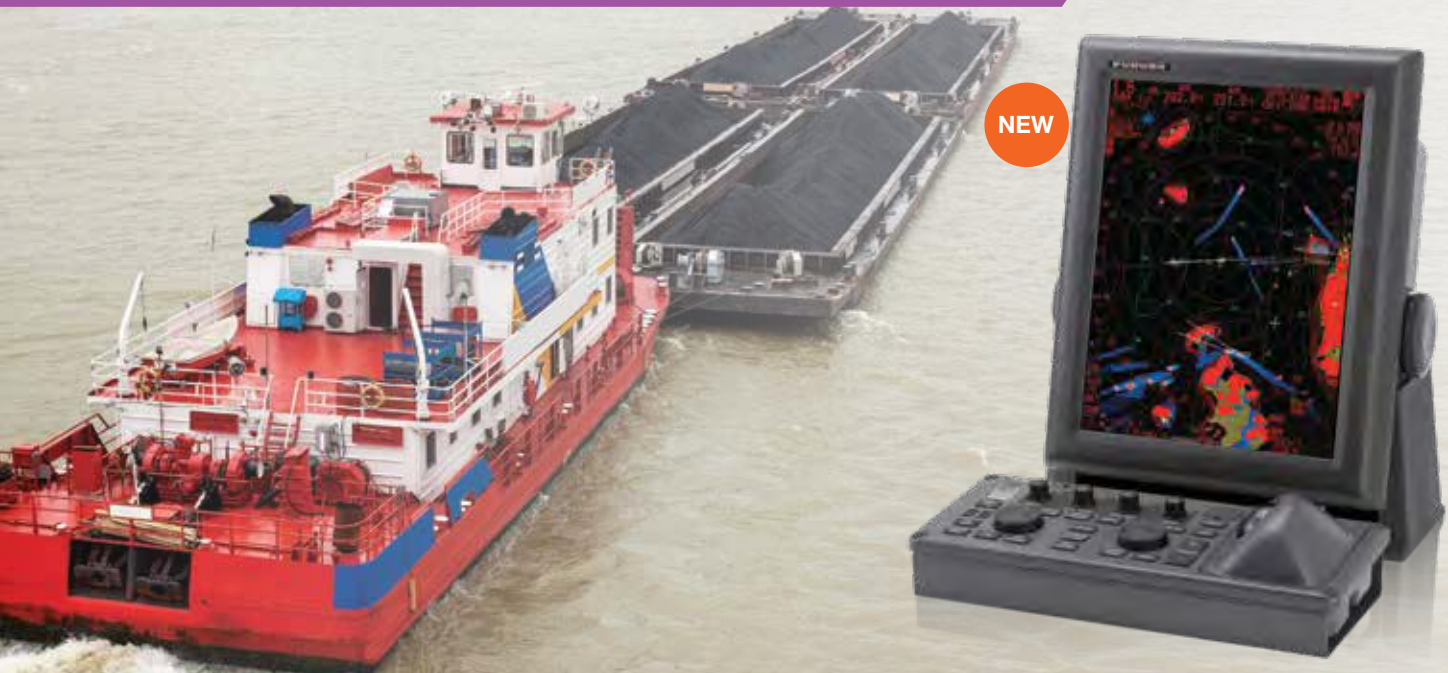


A/C Rain turned on, the marina appears clearly.

FULL SCREEN AND OFF-CENTER MODES

Make use of the whole display surface with Full-Screen mode, giving you more information when making important decisions. When combining Full-Screen mode with Off-Center mode, any target or point of interest can be observed in detail. The overlay information can be turned off to observe targets obstructed by the text, as well as providing an unobstructed Radar view.





Model FAR1416/1426

Spec P102

15" Color LCD Radar with Chart Plotter

KEY FEATURES:

- Simple operation with "point-and-click" menu functionality
- Built-in chart overlay on Radar presentation
- Use Target Analyzer™ to discern hazards, simply by looking at the color of their echo
- Instant speed vector display for tracked targets
 - A speed vector will be displayed after clicking on a select target.
- Improved sea and rain clutter removal function
 - Automatic Clutter Elimination (ACE) function provides clear echoes.
- Space-saving and straightforward installation with processor built into the display
- Straightforward operation using a trackball and wheel menu selector

Model	FAR1416		FAR1426	
Output Power (kW)	12		25	
Size	4' Open	6' Open	4' Open	6' Open
Range Scale (NM)	0.125-72		0.125-96	
Rotation Speed	24/48 rpm			

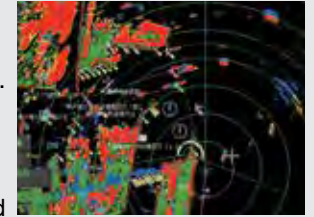


Monitor can be mounted in portrait or landscape orientation to easily fit your bridge space.



CHART OVERLAY ON RADAR

By overlaying Radar on the chart, you can easily recognize coastlines and buoys at a glance. Records of your vessel's track points and waypoints will help memorize fishing points. When the Chart Radar presentation and chart map are overlaid, North-Up, Course-Up, and Head-Up direction modes are available.

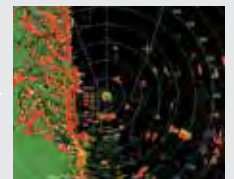


AUTOMATIC CLUTTER ELIMINATION (ACE) PROVIDES UNPRECEDENTED ECHO CLARITY

Quickly adjust the Radar image with the push of a single button. With ACE activated, the system automatically adjusts clutter reduction filters and gain control according to sea and weather conditions selected by the user (calm/rough sea/hard rain).



ACE OFF

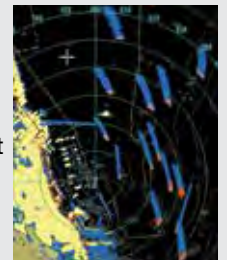


ACE ON

TARGET ANALYZER™ FUNCTION

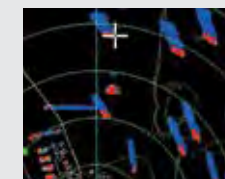


Target Analyzer™ function displays moving targets, stationary targets, rain, sea surface and targets closing in on your vessel in different colors. It can increase your safety, as well as improve situational awareness.



FAST TARGET TRACKING

After selecting a target, it only takes a few seconds for a speed and course vector to be displayed. With accurate tracking information, estimation of other vessels' course is made easier.



Before selecting a target



After selecting a target



SIMPLIFIED CONTROLS

The Radar can be controlled with only a Furuno RCU030 Controller (optional supply), or a standard PC mouse or trackball - that's how simple it is to use!

Antenna Selections:

Model	FR1908VBB	FR1918VBB
Output Power (kW)	4	12
Size	6.5' or 8' Open	
Range Scale (NM)	0.125-96	
Rotation Speed	26 rpm	

Model **FR1908VBB/1918VBB**

►►► Spec P102

Black Box River Radar

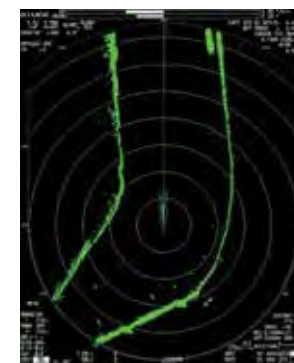
KEY FEATURES:

- Utilizes 17"-19" Portrait LCD Display (Supplied separately, MU190V 19" Display shown)
- Compact "Black Box" processor w/high-resolution (SXGA 1024 x 1280) output
- Commercial-grade gearbox with choice of 6.5 or 8-foot antenna
- 4kW or 12kW transmitter output power
- 10 preset tow configurations for fast creation & call-up of barge/vessel icons
- Distances in inland units (statute mile, barge length/width in feet)
- Slim RCU032 keyboard for saving space on dashboard or captain's chair, or RCU030 trackball only
- Remote USB mouse capability for dual-station control
- Rate of Turn (ROT) indicator and rudder position indicator (with NMEA input)
- Easy single port connection to SC70 Satellite Compass offers heading, rate of turn, position, course/speed and new three-axis speed display for accurate docking and tow building



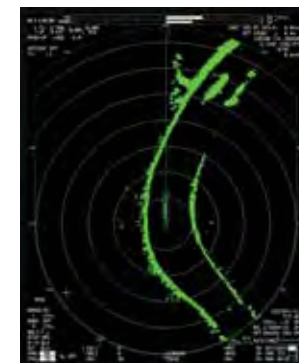
DESIGNED FOR INLAND WATERWAYS

10 preset tow configurations for fast creation & call-up of barge/vessel icons, and distances in inland units (statute mile, barge length/width in feet).



SEE MORE WHERE IT COUNTS

The portrait display of this River Radar produces a clear and contrast-strong image both day and night, and can be dimmed down to almost zero if necessary. Its ultra-short pulse length provides superior resolution and river bank, buoy & vessel detection.



- Dual video output for multiple monitors (1 DVI-I & 1 RGB) or for connection to a Voyage Data Recorder (VDR)
- Dual SD card slots allow automatic (timed) Radar screenshot archiving & configuration backup/restore
- Dual Radar combination possible - display two River Radar systems on one screen
- Network up to four antennas and processors
- Storage of up to 24 hours of Radar images on SD memory card
- Docking mode available (requires two GPS sensors)
- Displays up to 300 AIS targets, 2 EBL's and 2 VRM's
- Available in United States only



Photo: 15" Marine Display
MU150HD (Optional supply)

NEW

Model **FAR1513BB/1523BB**

►► Spec P103

Black Box Radar

KEY FEATURES:

- FAR1513/1523BB Marine Radar features advanced functionality in a small and easy to use package
- Accurately track other vessels to avoid collisions with Furuno's innovative Fast Target Tracking
- Use Target Analyzer™ to discern hazards simply by looking at the color of their echo
- Improved sea and rain clutter removal function.
 - Automatic Clutter Elimination (ACE) function provides clear echoes
- Instant speed vector display for tracked targets
 - A speed vector will be displayed after clicking on a select target
- AIS compatible out of the box (external AIS input required)
 - Targets are automatically acquired and information can easily be displayed on-screen

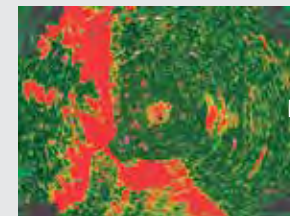
Antenna Selections:

Model	FAR1513BB		FAR1523BB	
Output Power (kW)	12		25	
Size	4' Open	6' Open	4' Open	6' Open
Range Scale (NM)	0.125-96			
Rotation Speed	24/48 rpm			

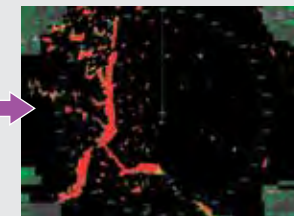


AUTOMATIC CLUTTER ELIMINATION (ACE) PROVIDES UNMATCHED ECHO CLARITY

Quickly adjust the Radar image with the push of a single button. With ACE activated, the system automatically adjusts clutter reduction filters and gain control according to sea and weather conditions selected by the user (calm/rough sea/hard rain).



ACE OFF



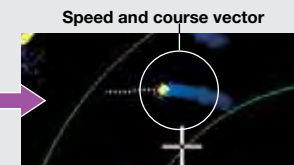
ACE ON

FAST TARGET TRACKING

After selecting a target, it only takes a few seconds for a speed and course vector to be displayed. With accurate tracking information, estimation of other vessels' course and speed is made easier.



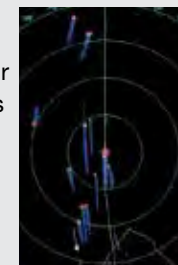
Before selecting a target



After selecting a target

TARGET ANALYZER™ FUNCTION

Target Analyzer™ function displays moving targets, stationary targets, rain, sea surface and targets closing in on your vessel in different colors. Spot hazardous targets immediately, simply by the color displayed.



Target Analyzer™ can increase safety, as well as improve situational awareness.



Photo: 15" Marine Display
MU150HD (Optional supply)

SIMPLIFIED OPERATION

Simple and efficient operation with individual knobs for gain/rain/sea clutter suppression, as well as a RotoKey™ and touchpad. An optional trackball, as well as a regular USB mouse, can also be used.



Antenna Selections:

Model	FAR1518BB		FAR1528BB	
Output Power (kW)	12		25	
Size	4' Open	6.5' Open	6.5' Open	8' Open
Range Scale (NM)	0.125-96			
Rotation Speed	26/48 rpm			

Model FAR1518BB/1528BB

►►► Spec P103

Black Box Radar

KEY FEATURES:

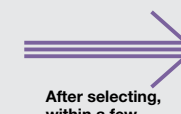
- FAR1518BB/1528BB Radar meets the criteria for IMO certification for vessels < 500 GT
- Accurately track other vessels to avoid collisions with Fast Target Tracking
- Instant speed vector display for tracked targets
- AIS compatible out of the box. Targets are automatically acquired and information is easily displayed (external AIS input required)
- Low noise, large dynamic range antenna unit
- FAR15x8BB can overlay Radar echoes on external ECDIS and GPS plotter screens
- Improved sea and rain clutter removal function. Automatic Clutter Elimination (ACE) function provides clear echoes

FAST TARGET TRACKING

After selecting a target, it only takes a few seconds for a speed and course vector to be displayed. With accurate tracking information, estimation of other vessels' course and speed is made easier.



Before selecting a target



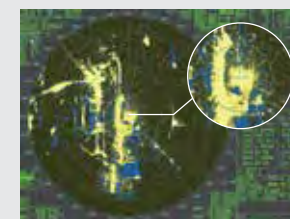
After selecting,
within a few
seconds



Speed and course vector

AUTOMATIC CLUTTER ELIMINATION (ACE) PROVIDES UNMATCHED ECHO CLARITY

Quickly adjust the Radar image with the push of a single button. With ACE activated, the system automatically adjusts clutter reduction filters and gain control according to sea and weather conditions selected by the user (calm/rough sea/hard rain).



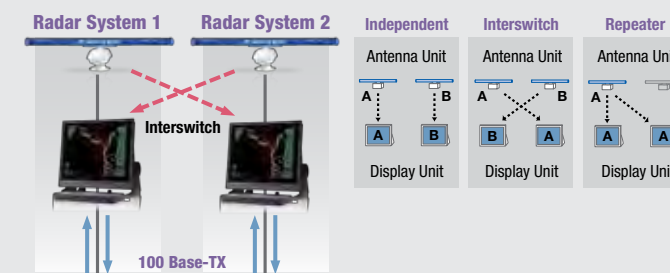
ACE OFF



ACE ON

SCALABLE ETHERNET NETWORK SYSTEM

FAR15x8BB Series utilizes a 100 Base-TX Ethernet connection to network two Radars together. This Ethernet data link gives high-speed and stable navigational data sharing for interswitching as well as sharing data between ECDIS and GPS plotters.



Winner of the 2019 NMEA
Commercial Product of Excellence Award

NEW

NEW



Photos: 19" Marine Display
MU190 (Optional supply)

Model FAR2218BB/2228BB/2238SBB

►►► Spec P105-106

Black Box Radar

KEY FEATURES:

- FAR2218BB/2228BB Marine Radar meets the criteria for IMO certification for category 2 (vessels below 10,000 GT)
- Use Target Analyzer™ to discern hazards simply by looking at the echo color
- Accurately track other vessels in order to avoid collisions with Furuno's innovative Fast Target Tracking functionality
- Improved sea and rain clutter removal function - Automatic Clutter Elimination (ACE) function provides clear echoes

Model FAR2238SNXTBB

►►► Spec P106

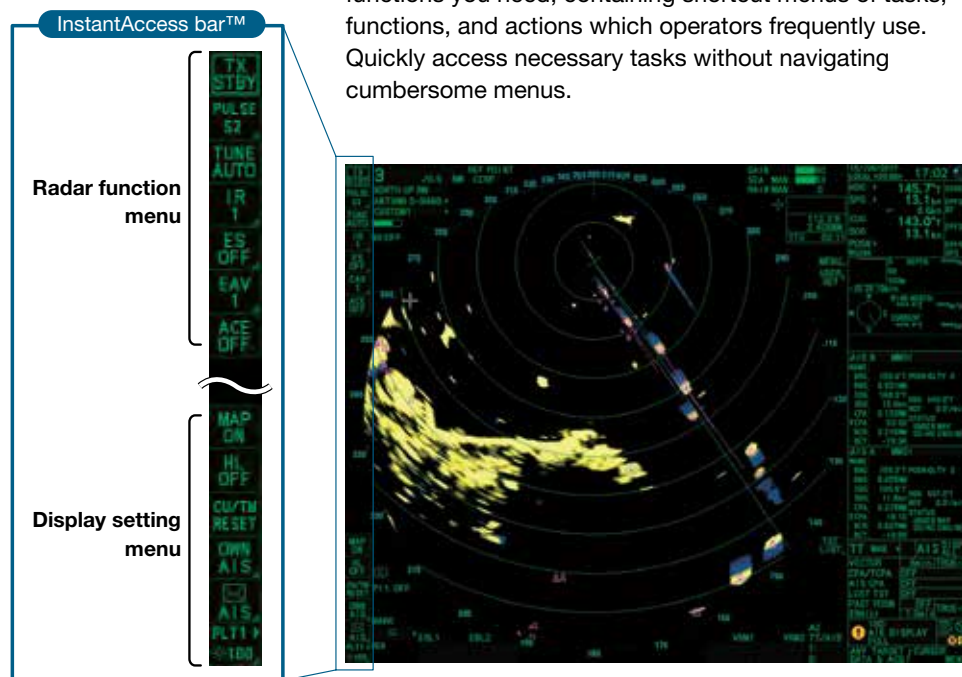
Black Box Solid-State Radar

- Instant speed vector display for tracked targets - a speed vector will be displayed shortly after clicking on a select target
- AIS compatible out of the box - targets are automatically acquired and information can be displayed on-screen easily
- Newly designed antenna with enhanced durability and reliability
- FAR22x8 Series can overlay Radar echoes on external ECDIS and GPS Plotter
- Model FAR2238SNXTBBSSD coming soon!



USER INTERFACE DESIGNED FOR INTUITIVE OPERATION

InstantAccess bar™ gives immediate access to the functions you need, containing shortcut menus of tasks, functions, and actions which operators frequently use. Quickly access necessary tasks without navigating cumbersome menus.



NXT SOLID-STATE RADAR SPECIALIZED IN TARGET DETECTION AND MAINTAINABILITY (S-BAND ONLY)

Furuno Solid-State Radar technology generates clear echo images, allowing the user to obtain a clear picture of the area around their vessel, including weaker echoes from small craft. Enjoy reduced maintenance and operating costs, as the Fan-less, Solid-State transceiver requires no magnetron.

Solid-State Radar provides nearly the same power capability as conventional magnetron Radars, emphasizing quality and reliability, while also meeting the rigorous demands of the marine environment.



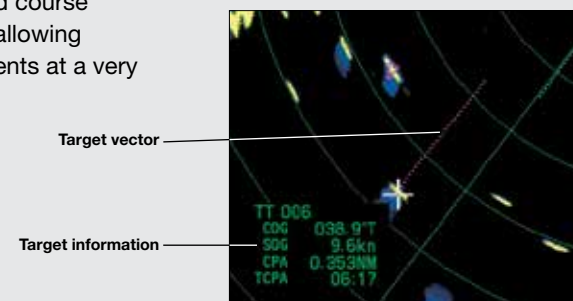
Power Amplifier Module of the Solid-State transceiver

Antenna Selections:

Open Array	X-Band Radar		S-Band Radar	Solid-State Radar
	FAR2218BB	FAR2228BB	FAR2238SBB	FAR2238SXTBB
Output Power	12 kw	25 kw	30 kw	Solid-State, 250 w
Size	4/6.5/8' Open			8/10/12' Open
Range Scale (NM)	0.125-96			
Rotation Speed	24/42 rpm			

FAST TARGET TRACKING FUNCTION FOR EARLY PREVENTION OF COLLISION

With Fast Target Tracking, the FAR22x8 series provides accurate tracking information; speed and course vectors are displayed in mere seconds, allowing operators to take action and avoid incidents at a very early stage.

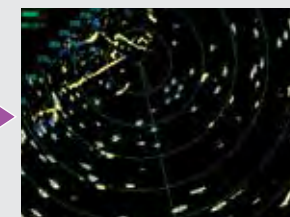


AUTOMATIC CLUTTER ELIMINATION (ACE) FOR UNPRECEDENTED ECHO CLARITY

Quickly adjusts the Radar image with of a single button press. When the ACE function is activated, the system automatically adjusts clutter reduction filters and gain control according to the sea and weather conditions.



(ACE) OFF



(ACE) ON

TARGET ANALYZER™ FUNCTION

Target Analyzer™ function displays moving target, stationary targets, rain, sea surface and targets closing in on your vessel in different colors. Spot hazardous targets immediately, simply by the color they are displayed in. Target Analyzer™ can increase safety, as well as improve situational awareness.



MULTIFUNCTION DISPLAY (MFD) CAPABILITY

Furuno offers workstations that combine flexibility and redundancy. Users may easily select ECDIS, Chart Radar, Conning display or Alert Management System at any multi-function display. Navigators will enjoy reduced workload and significant freedom to move about the bridge. All necessary information is available on a variety of displays and at locations that may be altered as required.



Model **FAR3210BB/FAR3220BB/FAR3230SBB/FAR3230SSSDBB**

►►► Spec P107-108

Black Box Chart Radar

KEY FEATURES:

- Available X-Band (12/25kW) or S-Band (30kW or 250W Solid-State)
- New Solid-State S-Band transceiver generates clear echo images, even from weak targets and small craft
- 4', 6.5' or 8' Open Array (X-Band) or 12' Open Array (S-Band)
- IMO Approved Chart Radar
- Newly designed, aerodynamic antennas with enhanced durability
- Less maintenance using brushless DC motor
- Ethernet link between scanner unit and BDU eliminates loss of signal between antenna and processor
- Advanced Furuno technology with new features, such as Automatic Clutter Elimination (ACE)
- Improved Target Tracking function requires only seconds and tracks even high-speed and rapidly maneuvering vessels

- Optional LAN Signal Converter allows users to extend the cable between the antenna unit and processor unit or to utilize the existing cables when retrofitting
- Advanced Interference Reduction (IR) function
- Common sensor adapter makes installation and maintenance simple
- Complies with EC62388 Ed. 2.0, IEC61174 Ed. 3.0, IEC62288, IEC61162-1 Ed. 4.0, IEC61162-2

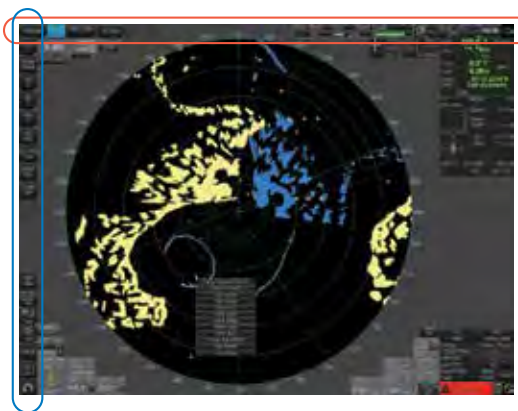


Antenna Selections:

Open Array	X-Band Radar		S-Band Radar	Solid-State Radar
	FAR3210BB	FAR3220BB	FAR3230SBB	FAR3230SSSDBB
Output Power	12 kw	25 kw	30 kw	Solid-State, 250W
Size	4/6.5/8' Open		8/10/12' Open	
Range Scale (NM)	0.125-96			
Rotation Speed	24 rpm (available 42 rpm option)			

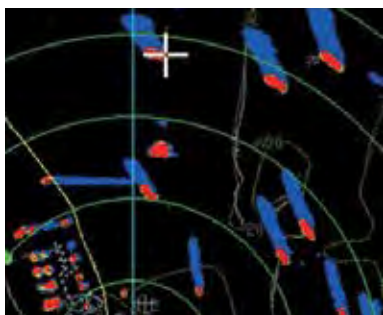
ADVANCED TOOLS FOR SIMPLIFIED NAVIGATION

The user interface of the Radar utilizes carefully organized operational tools: The **Status Bar** and The **InstantAccess Bar**. These operational tools deliver straightforward, task-based operation, allowing the operator to quickly perform tasks without having to navigate a complex menu tree.



FAST TARGET TRACKING

After selecting a target, it only takes a few seconds for a speed and course vector to be displayed. With accurate tracking information, estimation of other vessels' course and speed is made easier.



Before selecting a target



Speed and course vector

TARGET ANALYZER FUNCTION



Target Analyzer function displays moving targets, stationary targets, rain, sea surface and targets closing in on your vessel in different colors. Spot hazardous targets immediately, simply by the color they are displayed in. It can increase your safety as well as improve situational awareness.

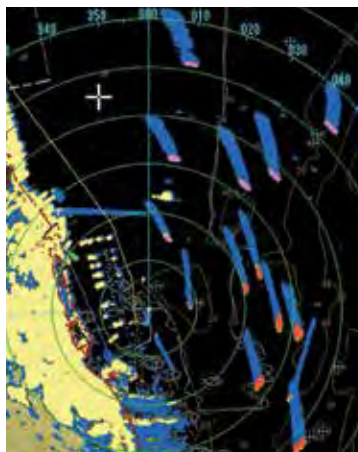


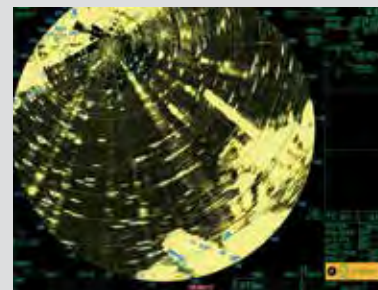
CHART OVERLAY ON RADAR PRESENTATION

By overlaying Radar presentation and chart map, you can easily recognize coastlines and buoys at a glance. Records of your vessel's track points and waypoints will help memorize fishing points. When the Chart Radar presentation and chart map are overlaid, North-Up, Course-Up, and Head-Up direction modes will be available.

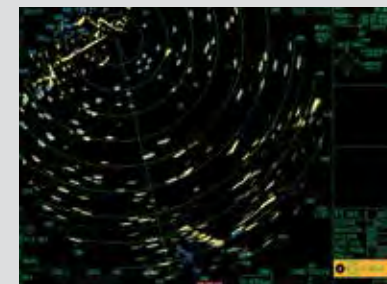


AUTOMATIC CLUTTER ELIMINATION (ACE) FOR UNPRECEDENTED ECHO CLARITY

Quickly adjust the Radar image with the push of a single button. With ACE activated, the system automatically adjusts clutter reduction filters and gain control according to sea and weather conditions selected by the user (calm/rough sea/hard rain).



Automatic Clutter Elimination (ACE) OFF



Automatic Clutter Elimination (ACE) ON

NEW, REFINED ANTENNAS WITH HIGH SIGNAL ACCURACY AND EXCELLENT RELIABILITY

High image quality is achieved by the signal processor inside the new antenna unit, directly converting signals from analog to digital before sending them to the main processor unit. The new antenna shape minimizes aerodynamic drag and lightens the burden on the gear box.

Installation and maintenance are now easier than ever. All components of the gear box are integrated into one block that can easily be removed from the gear box when maintenance is required.



X-Band Radar sensor



S-Band Radar sensor

GPS/Chart Plotters



Model GP33

►►► Spec P110

4.3" GPS Navigator

KEY FEATURES:

- 4.3" Sunlight Viewable color LCD
- Maximum visibility under various ambient conditions, both at night and under direct sunlight (brightness of the LCD is 700 cd/m²)
- Enhanced data legibility thanks to large characters & high-res display
- Stores up to 10,000 waypoints, 100 routes and 3,000 track points
- 7 display modes available, including 2 user-customized modes
- Supports both NMEA0183 and NMEA2000
- Contact closure capability available on the 10-pin connector
- Enhanced precision utilizing SBAS (Satellite-Based Augmentation System) for more accurate measurements, heading, position, etc.

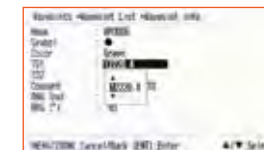


SEVEN DIFFERENT DISPLAY MODES

The GP33 provides navigation data and displays it in a wide variety of numerical and graphical formats.



Nav Data



Waypoint



Satellite Monitor



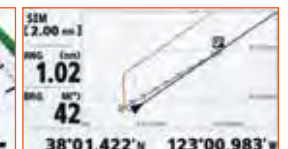
Highway



User Display



COG



Plotter



Model GP39

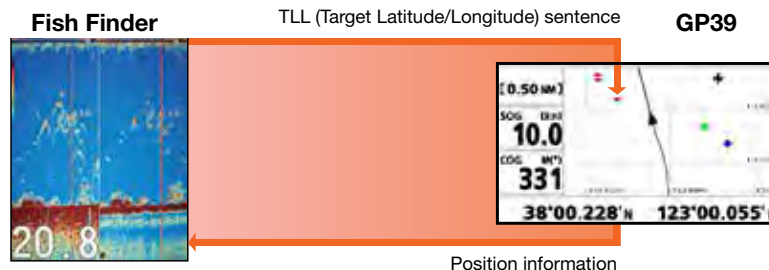
Spec P110

4.2" GPS Navigator

KEY FEATURES:

- Newly designed GPS core delivers enhanced position fixing accuracy
- Stores up to 10,000 waypoints, 100 routes and 3,000 track points
- Enhanced precision utilizing SBAS (Satellite-Based Augmentation System) for more accurate measurements, heading, position, etc.
- Share and display position information on networked equipment, such as a Fish Finder, Sonar, Radar etc.

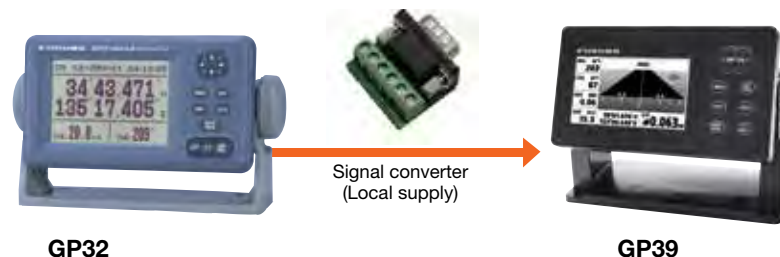
DISPLAY DATA ON NETWORKED DEVICES



Easy to mount on/off the bracket.

IMPORT/EXPORT WAYPOINTS AND ROUTES

Waypoint and route data can be exported/imported via a USB flash drive or signal converter.



Model GP170/170D

Spec P111

5.7" GPS/DGPS Navigator

KEY FEATURES:

- Full compliance with IMO MSC.112 (73) and IEC 61108-1: performance and testing standards for GPS receiver
- Newly designed GPS chip and antenna unit deliver enhanced stability and precision in position fixing
- Enhanced precision utilizing SBAS (Satellite-Based Augmentation System) and DGPS (DGPS available on GP170D only; requires a GPS radio beacon receiver and GPA021S antenna unit, available as options)
- Simplified menu operation
- Bridge Alert Management (BAM) compliant

BRIDGE ALERT MANAGEMENT READY

The GP170/170D is BAM (Bridge Alert Management) ready and boasts a variety of display modes, including Plotter, Course, Highway, Data and Integrity. The Integrity display mode delivers a highly-accurate Skyplot presentation of currently viewable satellites, status on GNSS/SBAS signal reception including strength and SNR, and elevation angles of available satellites, as well as detailed information about available beacon stations.



GPS/Chart Plotters



Model GP1871F

►►► Spec P112

**7" WIDE GPS/WAAS Chart Plotter
with built-in CHIRP Fish Finder**

KEY FEATURES:

- Easy and intuitive operation with multi-touch interface
- Daylight viewable multi-touch display with excellent readability, brightness of 1000 cd/m² (typical)
- Anti-reflective glass coating, strengthened glass filter
- Anti-fingerprint treatment on AR glass*
- Internal GPS/WAAS antenna for simple and easy installation
- Compatible with standard C-MAP 4D charts
- Internal memory: 30,000 waypoints, 1,000 routes
- Autopilot (NAVpilot 300 and NAVpilot 711C) controls available on the display (sold separately)
- Built-in TruEcho™ CHIRP Fish Finder (single-band)
- Fish Finder's Post-processing Gain Control applied to all echoes displayed on the screen
- Detects fish lying near the bottom with White Edge function
- Optional: Compatible with DRS4W 1st Watch Wireless Radar

* GP1971F only

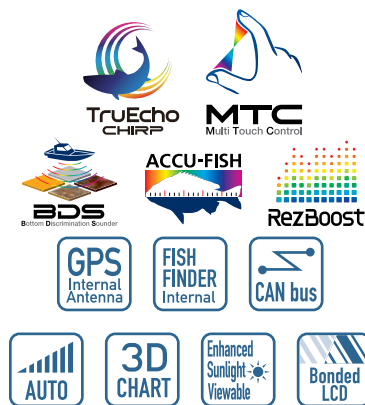
Model GP1971F

►►► Spec P112

**9" WIDE GPS/WAAS Chart Plotter
with built-in CHIRP Fish Finder**

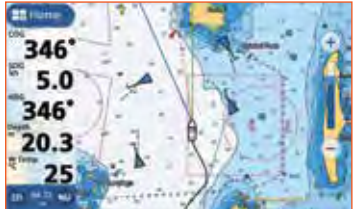
*"I have a pair of GP1971F's and they BOTH worked
flawlessly over the course of 2,000 nautical miles,
with one performing dedicated Fish Finder duties
and the other the Chart Plotter."*

- Capt. John Raguso, The Fisherman Magazine



VARIOUS SCREEN MODE OPTIONS AVAILABLE

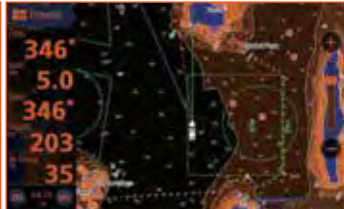
The Chart Plotter utilizes full-featured C-MAP 4D charts. C-MAP 4D provides powerful data that you can overlay onto a rich vector chart, such as relief vectors, tidal streams and marine plans, significantly boosting situational awareness. Creating routes and waypoints is as simple as touch-and-go. When connected to an AIS receiver, you can see valuable AIS data on the display. C-Weather, which provides downloadable wind, wave, weather, humidity and temperature information to add to your planning, is another standard feature.



Plotter with AIS symbols



Plotter + Fish Finder



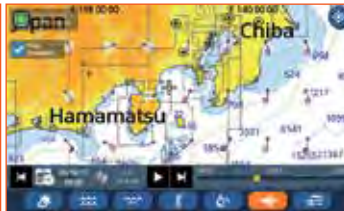
Night mode



Plotter + Instrument (Compass/Data)

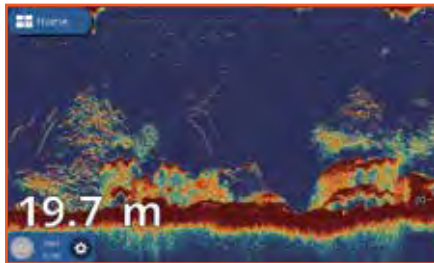


Plotter + Instrument (Autopilot/SOG)



C-Weather information

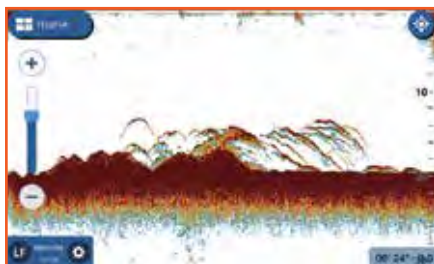
BUILT-IN TruEcho CHIRP™ DIGITAL FISH FINDER



TruEcho CHIRP™ Fish Finder*

Built-in TruEcho CHIRP™ Fish Finder capabilities. The high level of detail available with TruEcho CHIRP™ technology helps to distinguish fish schools, even when close to the seabed.

* TrueEcho CHIRP™ transducer required.



RezBoost™ Fish Finder*

Furuno RezBoost™ data processing provides a higher resolution picture of fish schools from a standard 50/200 kHz transducer.

* Must be connected to a compatible dual-frequency transducer.



OPTIONAL: WIRELESS RADAR CONNECTION TO DRS4W VIA iOS

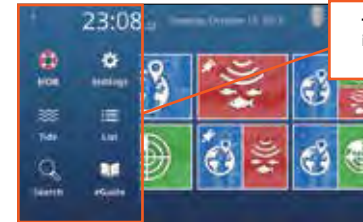
Radar can be overlayed onto the Chart Plotter display via wireless connection to the Furuno DRS4W 1st Watch Wireless Radar. The DRS4W's wireless configuration makes it a breeze to add the compact 19" Radar dome to any vessel. The DRS4W can also display the Radar presentation on one connected iOS smart phone or tablet, offering a major upgrade in safety and versatility.

1st Watch Wireless Radar Model **DRS4W***

*Refer to page 28 for details.



INTUITIVE GUI: INHERITED FROM NAVNET TZTOUCH2



Home Menu

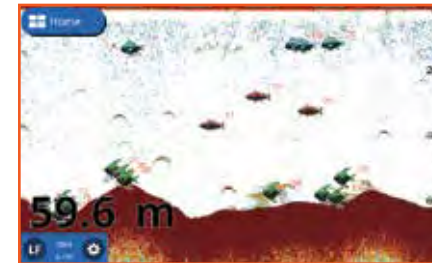
Tap the "Home Button" for instant access to the main menu and display modes.

Save your favorite display modes in the Quick Page list and easily switch between modes.



Shortcut Menu

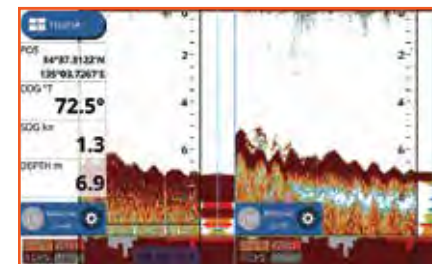
SPOT AND DIFFERENTIATE FISH FROM THE BOTTOM



ACCU-FISH™*

Individual fish size is calculated from echo strength. ACCU-FISH™ can detect fish sizes of 10cm to 199cm, at depths of 2m to 100 m.

* Must be connected to a compatible dual-frequency transducer.



Bottom Discrimination Function*

The Bottom Discrimination feature enables the Fish Finder to indicate if a major component of the seabed is mud, sand, gravel or rocks.

* Must be connected to a compatible dual-frequency transducer.



GPS/Chart Plotters



With a variety of innovative functions, shortcut control keys and a 12.1-inch IPS screen that provides clear visibility, the GP3700 series gives you immediate situational awareness. Large storage capacity for track points, buoy points and marks/lines makes it a perfect solution for long-term fishing operations.



Model GP3700

►►► Spec P113

12.1" GPS/WAAS Chart Plotter

Model GP3700F

►►► Spec P113

12.1" GPS/WAAS Chart Plotter with built-in Fish Finder

KEY FEATURES:

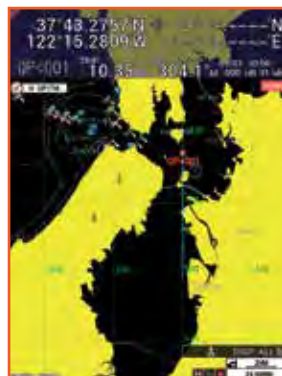
- Customizable keys allow you to create menu shortcuts before leaving the dock for a more intuitive operating experience
- Screenshot function allows you to look back at past data
- 12.1" large IPS LCD screen features a distinctively clearer and wider viewing angle with excellent readability
- Stores up to 30,000 own ship track points, 10,000 TT/AIS/GPS buoy points and 30,000 marks/lines
- Utilizes MapMedia Vector cartography
- Scroll Back function allows you to scroll backwards through the Fish Finder history to find fishing ground or fish targets again, so that you can drop a mark and plot a course back to that area
- A wide variety of display modes can be cycled through at the touch of a dedicated DISP key
- "UNDO" key lets you go back one operational step of deleting and drafting your marks and lines with a single press of a button
- Easy-access USB flash drive can be connected to the front panel

SMART FEATURES FOR EASE OF USE

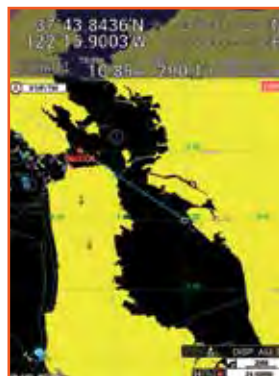
Both the GP3700/3700F incorporate an easy-to-use interface while adding new enhancements and features. With a variety of innovative functions, shortcut control keys and a 12.1" IPS screen that provides clear visibility, the GP3700 series gives you immediate situational awareness. Large storage capacity for track points, buoy points and marks/lines makes it a perfect solution for long term fishing operations.

VARIETY OF ORIENTATION MODES

The GP3700 Series features Head Up, North Up, Auto Course Up, Course Up, Go To Up, and Specified Direction Up display modes. Specified Direction Up mode is a target-oriented navigation map, allowing the chart to remain vertical in the direction of the target. Select the desired display mode to suit your operational needs.



Head Up Mode



Specified Direction Up Mode



Colorful keys allows mark lines and points on the display.

Trackball can be used to quickly move the cursor, while the arrow keys can be used for more precise cursor manipulation.

ACCU-FISH AND BOTTOM DISCRIMINATION*

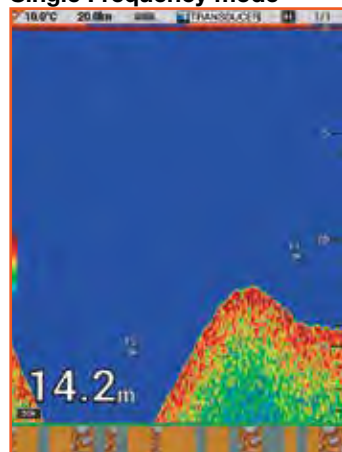


*SEE NOTES

*NOTES:

- Use at a depth of 5m – 100m
- Use transducer in transom mount or thru-hull mount
Requires use of compatible dual-frequency transducer
- To show a consistent display of the actual bottom, set the range display of the fish finder screen to "auto"
- Enter the ship's draft value
- Use a ship speed of ≤ 10 kn
- In some instances, bottom component indicated on the display may differ from its actual bottom structure

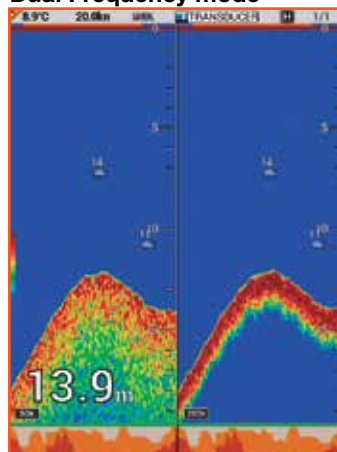
Single Frequency mode



Graphic Mode:

Rocks Gravel
Sand Mud

Dual Frequency mode



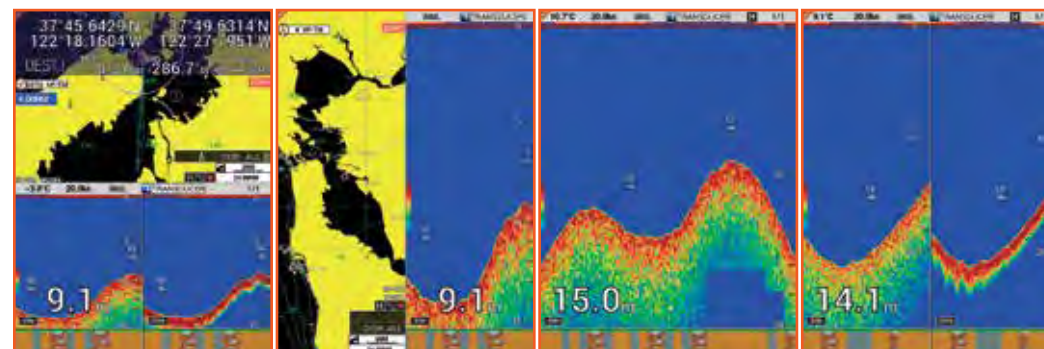
Probability Mode:

Rocks Gravel
Sand Mud

VERSATILE DISPLAY MODES

The GP3700 Series provides and displays navigation data in a variety of modes. All of the available display modes can be switched by pressing the DISP key. Plotter, Compass, Satellite information, and Fish Finder* can be selected and customized to match your preferences.

*GP3700F only



Plotter and Dual Frequency Plotter and Single Frequency Single Frequency Fish Finder Dual Frequency Fish Finder

Fish Finders



Model FCV588

▶▶▶ Spec P115

8.4" Fish Finder

Model FCV628

▶▶▶ Spec P115

5.7" Fish Finder

RezBoost is a revolutionary signal processing technology that improves resolution and target separation when using conventional narrowband transducers.



KEY FEATURES:

- Dual-frequency Fish Finder (50kHz to 200kHz) equipped with revolutionary RezBoost™ signal processing technology*
 - Improved clarity and resolution that was previously impossible with conventional narrow-band transducers has been made possible thanks to Furuno's RezBoost™ technology
- ACCU-FISH™- A unique fish size analyzer based on digital technology*
- Bottom Discrimination – Analyze bottom structure*
- White Line feature – Detect fish lying near the bottom
- Configurable Alarm function (depth, fish echoes, etc.)
- Post-processing Gain Control applied to all echoes displayed on the screen
- Share and display information with a connected Chart Plotter**
- Fast transmission rate of 3,000 PRR (Pulse Repetition Rate) per minute (at 5m depth range)

* Compatible thru-hull or transom mount transducer required

** Compatible Chart Plotter required

BOOST RESOLUTION WITH REZBOOST™

RezBoost™ is a revolutionary signal processing technology developed by Furuno that improves resolution and target separation when using conventional narrow-band transducers.

Spot individual game fish surrounding bait balls, as well as fish close to the seabed. With RezBoost™, not only can you expect higher resolution and crisper visuals, but also improvements in the ACCU-FISH™ function.

Compared to conventional signal processing techniques (FDF), a RezBoost™ Fish Finder produces an image that is up to 8 times^{*1} clearer. A TruEcho CHIRP™ Fish Finder (requires a special transducer) produces an image that is up to 10 times^{*1} clearer when compared with FDF. What can be done with a conventional narrow-band transducer, like the one you might have installed on your vessel, is truly impressive.^{*2}

^{*1} RezBoost™ performance may vary depending on depth, range and signal frequency used.

^{*2} The Enhanced mode of RezBoost™ requires a RezBoost™ capable thru-hull or transom mount transducer.



BOTTOM DISCRIMINATION FUNCTIONALITY

The Bottom Discrimination function enables the Fish Finder to indicate whether the bottom is composed mainly of rocks, gravel, sand or mud. This provides you with valuable information that helps you locate rich fishing grounds, and boost your catch of the day. The probability display mode shows the most probable bottom composition in graph form, while the graphic display mode shows the most probable bottom composition graphically or using four colors.

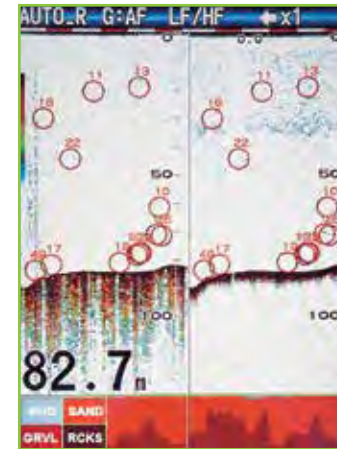


Probability Mode:

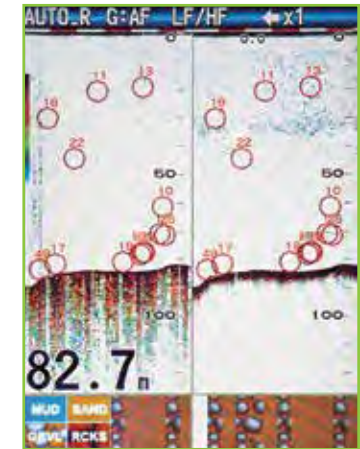
Rocks	Gravel
Sand	Mud

Graphic Mode:

Rocks	Gravel
Sand	Mud



Probability mode

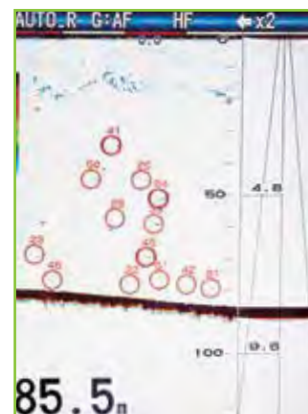


Graphic mode

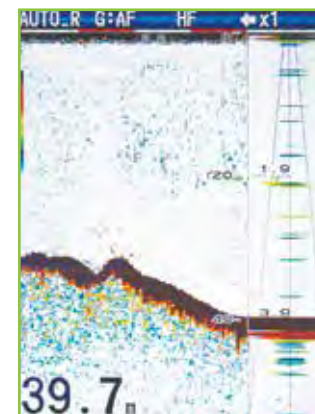
DIFFERENTIATE WITH ACCU-FISH™

ACCU-FISH™ is a fish size assessment function that is unique to Furuno. In order to assess individual fish size, echo returns are evaluated based on strength and turned into fish size display on screen. ACCU-FISH™ can detect fish size from 10 to 199 cm, in depths of 2 to 100 m. In some instances, fish size indicated may differ from actual size. Please read the operator's manual carefully before using this feature.

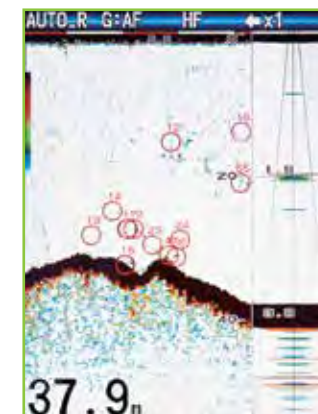
The fish mark can be utilized to display individual fish echoes when they are detected. It helps beginners to identify fish echoes for a more engaging fishing experience. Fish marks are selectable from either a circle, square, or two fish symbols. The fish symbols are displayed in two different sizes (Large: over 50 cm; Small: 10 to 49 cm), and are a great help for anglers when identifying individual fish. The circle and square symbols help identify individual fish without hiding the underlying echo.



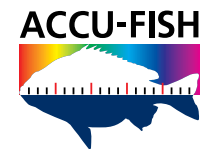
Display fish marks



ACCU-FISH™ OFF



ACCU-FISH™ ON



Fish Finders



Model FCV295

▶▶▶ Spec P115

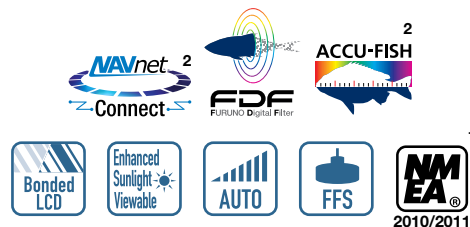
10.4" Color LCD Sounder

Model FCV1150

▶▶▶ Spec P115

12.1" Color LCD Sounder

With Quick Gain control, changes you make to the gain setting are applied not only to new echoes, but also to all past echoes on the screen.



KEY FEATURES:

- Post-processing gain control applies changes to gain setting for all existing returns on the display
- White Edge feature for enhanced bottom discrimination
- Furuno Digital Filter delivers crystal clear target presentation
- Furuno Free Synthesizer (FFS) allows for adjustable operating frequency
- Available Heaving Compensation provides stable echo presentation even in rough seas (FCV1150 only)*
- Unique fish size analyzing function ACCU-FISH™ mode (available when FCV1150 connected with CA50/200-1T transducer)
- Bottom Hardness output to TimeZero and PC Navigation suites for 3D mapping (Coming Soon!)

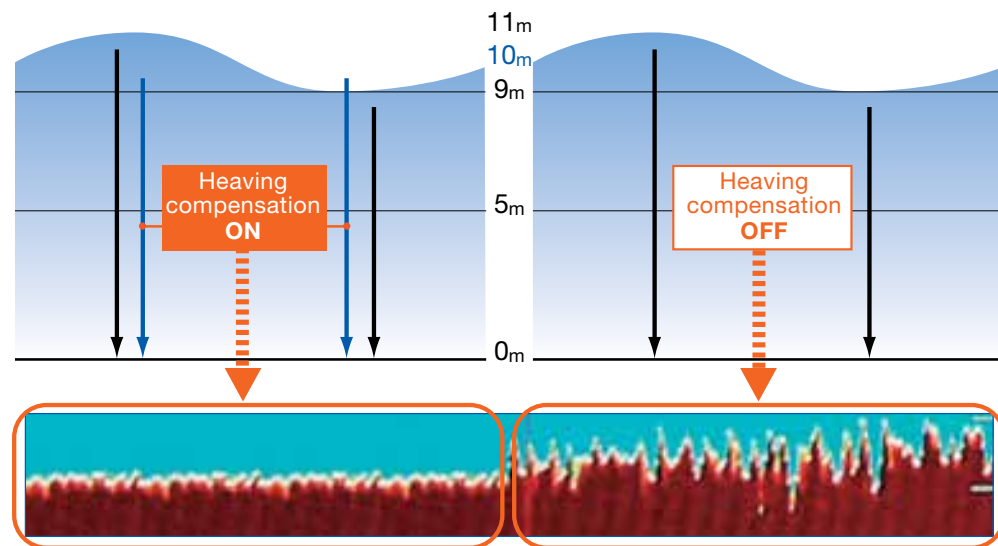
*Requires appropriate sensors

¹ FCV295 only

² FCV1150 only

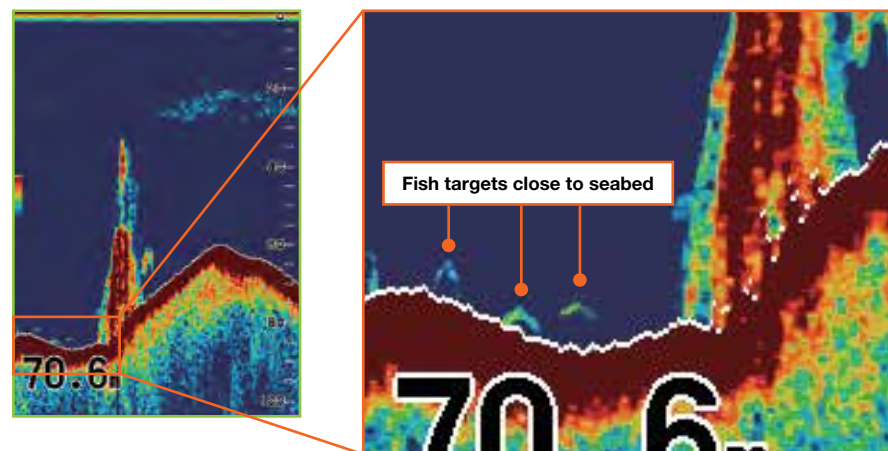
HEAVING COMPENSATION (FCV1150 ONLY)

Even in rough sea conditions the FCV1150 compensates for heaving, presenting a display without undulations caused by the sea conditions. Furuno SCX20/21, SC33, SC70 or SC130 Satellite Compass™ required.



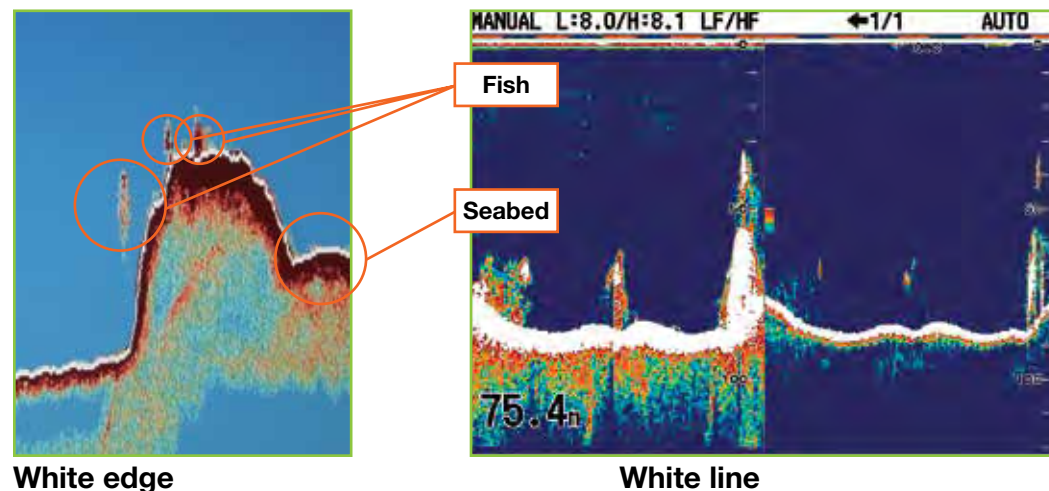
OPTIMIZED WITH FURUNO DIGITAL FILTER

Furuno digital filter optimizes the gain to obtain highly defined images of underwater conditions. The FCV295 can clearly show target fish close to the seabed. The digital filter also eliminates noise to deliver sharp and detailed echo presentation, achieving detection of fishing reef and even individual fish with absolute clarity.



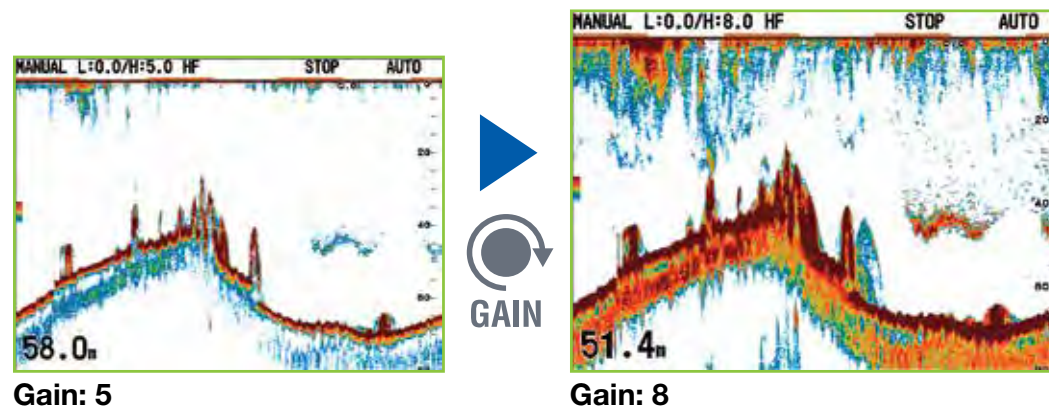
DISCERN BETWEEN STRUCTURE AND FISH RETURNS

The top of the seabed is displayed in white to easily discern seabed structure from bottom fish returns. While conventional bottom discrimination function (i.e.: White Line) is applied to the strongest echoes, the White Edge function enhances the discrimination between bottom fish and the seabed.



POST PROCESSING GAIN CONTROL

With Quick Gain control, changes you make to the gain setting are applied not only to new echoes, but also to all past echoes on the screen. This lets you compare past and current echoes under the same gain setting. Because the changes are applied to both new and existing returns, you can quickly and easily determine the right Gain setting for your conditions.

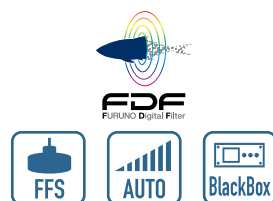


Fish Finders



Photo: 19" Marine Display
MU190HD (Optional supply)

With a transmission rate that has been increased by up to 1.4 times (200m range), the FCV1900 series ensures excellent target separation and clarity. You will be seeing individual targets and fish reefs like never before.



Model FCV1900

►►► Spec P117

Black Box Fish Finder

KEY FEATURES:

- Bottom Discrimination display provides estimate of seabed composition*
- Post-processing gain control applies changes to gain setting for all existing returns on the display
- Capture and review videos and screenshots
- Furuno Free Synthesizer (FFS) transceiver design allows use of user-selectable operating frequencies (15kHz to 200Khz)

Feature		Model		
		FCV1900	FCV1900B	FCV1900G
Fish Size Histogram		NA	NA	✓
Transmission Mode**	TruEcho CHIRP™ Mode	NA	✓	✓
	Standard Mode	✓	✓	✓

* TruEcho CHIRP™ compatible transducer required.

** The transmission mode is set by the installer.



Photo: 19" Marine Display
MU190HD (Optional supply)

Model FCV1900B

Spec P117

Black Box HI-REZ TruEcho CHIRP™ Fish Finder

KEY FEATURES:

- High resolution echoes from shallow to deep waters made possible with TruEcho CHIRP™ technology



Photo: 19" Marine Display
MU190HD (Optional supply)

Model FCV1900G

Spec P117

Black Box TruEcho Chirp™ w/ UNIQUE FISH FINDER INDICATOR

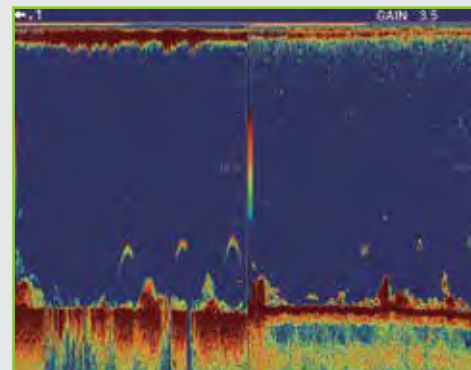
KEY FEATURES:

- High precision fish size feature provides approximate fish size in graph form, even in dense schools of fish
- TruEcho CHIRP™ technology delivers significant advancements in signal clarity and target definition
- Side Looking Mode, see targets and bottom structure below your vessel

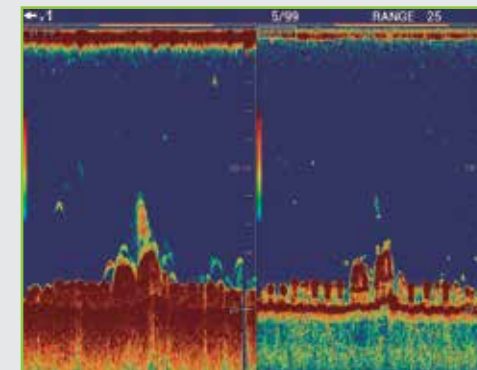


INCREASED TRANSMISSION RATE FOR MORE DETAIL

In low frequency, the fish is displayed in a distinct boomerang shape. In high frequency, you can clearly see the amount of detail displayed. Fish reefs can also be seen in much greater detail.



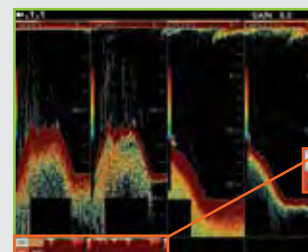
Individual fish



Fish reef

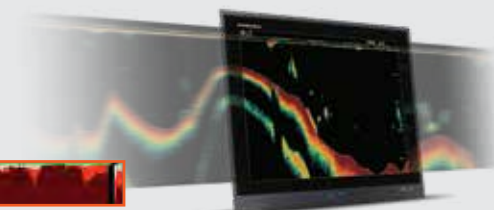
VARIOUS FUNCTIONS FOR IMPROVED EFFICIENCY

Display up to four different frequencies together in a compact and easy way by connecting a required network Fish Finder. Since there is no need to install additional displays, this function is especially useful for small vessels. Display two different gain settings simultaneously for increased visibility in changing water conditions and when changing vessel speed. With the press of a button you can activate the scroll back function to instantly review past echoes. Up to two previous screens can be viewed.

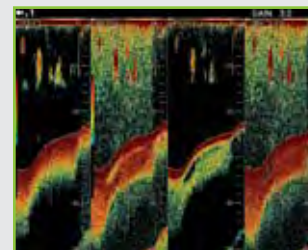


Display up to four different
frequencies

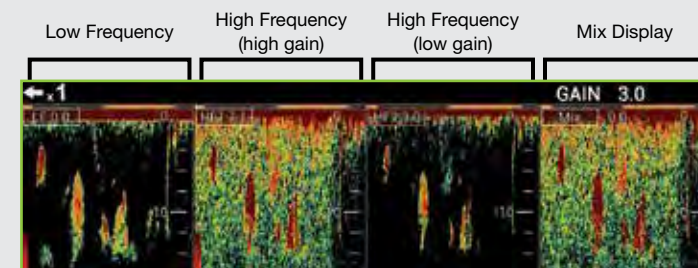
Connect a BBDS1 network fish
finder for bottom discrimination.



Scroll back function to see
where you've been



Simultaneous gain setting for
increased visibility





Model CH500

►►► Spec P119

12.1" Searchlight Sonar

KEY FEATURES:

- Incredibly fast training speed, your best ally for finding fish 360° around your boat in only 3.1 seconds when set on 24° scanning step and at 20m range
- 6 tilt angles for training speed adjustment according to user's needs
 - Lower tilt angles produce more precise scans, while higher tilt angles are faster
- 11 display modes selectable for every situation
- HD LCD with 1024 x 768 XGA* resolution for detailed echo images and clear view

* The display is optimized for this resolution.

- Quick Gain Control allows instantaneous gain adjustment
- Built-in motion sensor provides a stabilized target presentation in rough sea conditions
- Audible target detection freeing the user from continuous watch of the display (Requires Loudspeaker option)
- Frequency: 60/88/150/180/240 kHz

*Find fish all around
your vessel, not just
underneath it!*



AUDIBLE TARGET DETECTION*

The CH Series features fish and target audio signals depending on the nature and the size of the detected object. Whether there are air bubbles, big or small fish schools, and seabed, the emitted sound is different. This feature shows its usefulness during long sea trips, as it frees the user from continuously watching the screen.

* Requires Loudspeaker

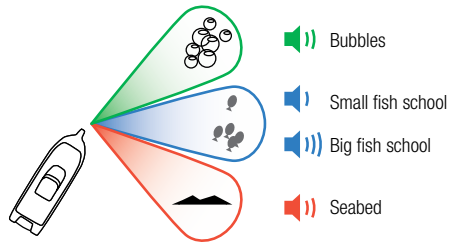
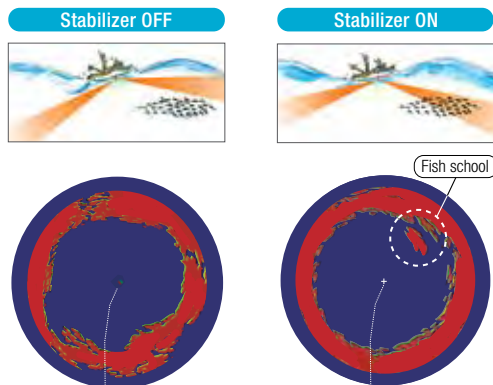


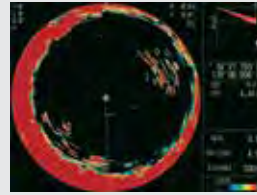
Figure out intuitively what is detected by differentiating their sound with the audible target detection

BUILT-IN MOTION SENSOR PROVIDES STABILIZED TARGET PRESENTATION IN ROUGH SEA CONDITIONS

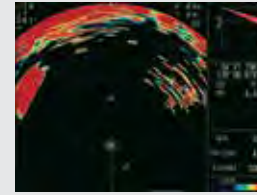
The CH Series is the first of its class to have in its core an integrated stabilizer. In rough seas, the ship tends to move in every direction and its inclination can change, creating echo distortions which cause inaccurate data display. The role of the stabilizer is precisely to compensate for those negative effects and provide accurate data to the user. Thanks to the built-in stabilizer's compensation, the CH Series is able to detect fish that didn't appear originally with the non-stabilized echo.



Horizontal

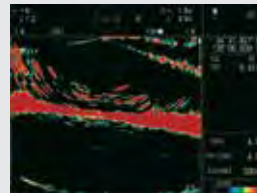


Horizontal



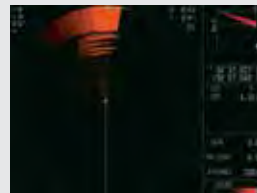
Horizontal (zoomed)

A full circle scan (360 degree), provided by a rotating transmitter, detects fish schools around the vessel. (Horizontal scan zoom mode also available)



Vertical

The Vertical scan paints the bottom profile within a user-specified vertical plane in any direction.



Full-circle A-Scope

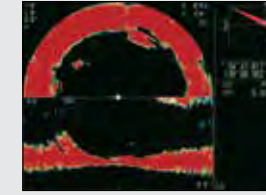
The A-Scope mode shows the last detected echoes with one single color. The more opaque the color, the stronger the echo.



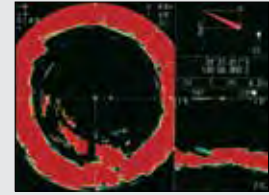
Echo sounder

When fully retracted, the transducer tilted to 90 degrees can locate fish schools and seabed straight down at high speeds.

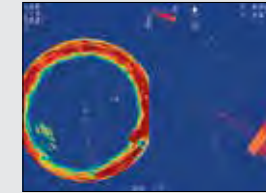
Combination displays



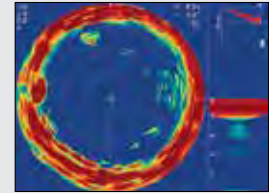
Half-Horizontal + Vertical



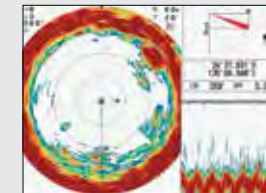
Horizontal + Vertical



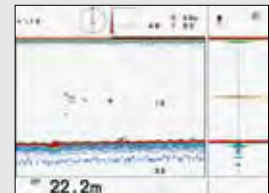
Horizontal + Full-circle A-Scope



Horizontal + A-Scope

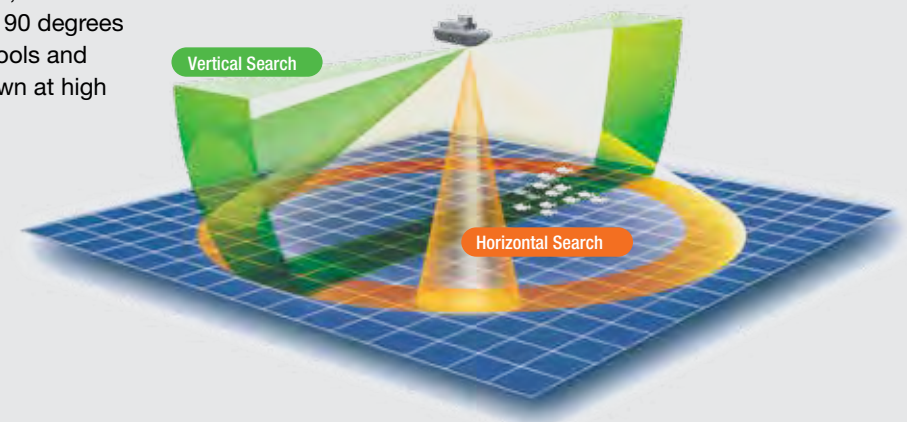


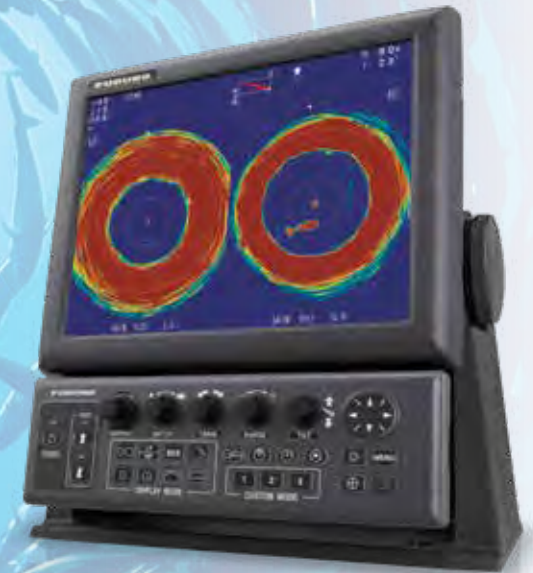
Horizontal + History



Echo sounder + A-Scope

Searchlight Sonar gives you the ability to search both horizontally and vertically. With horizontal search, you can specify the tilt angle to an area around your boat. With vertical search, you can obtain detailed underwater conditions at any bearing. Combine the two to make your cruising safer and your fishing operation more productive.





Model CH600

►►► Spec P119

12.1" Dual Frequency Searchlight Sonar

KEY FEATURES:

- Two frequencies combined to increase your chances of finding fish (60/153 kHz or 85/215 kHz)
- Incredibly fast training speed, your best ally for finding fish 360° around your boat in only 3.1 seconds when set on 24° scanning step and at 20 m range
- HD LCD with 1024 x 768 XGA* resolution for detailed echo images and clear view

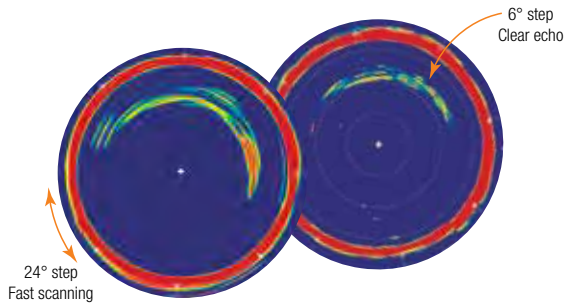
* The display is optimized for this resolution.

- Quick Gain Control allows instantaneous gain adjustment
- Frequency: 60/153, 85/215 kHz
- Audible target detection freeing the user from continuous watch of the display (available with optional Loudspeaker)

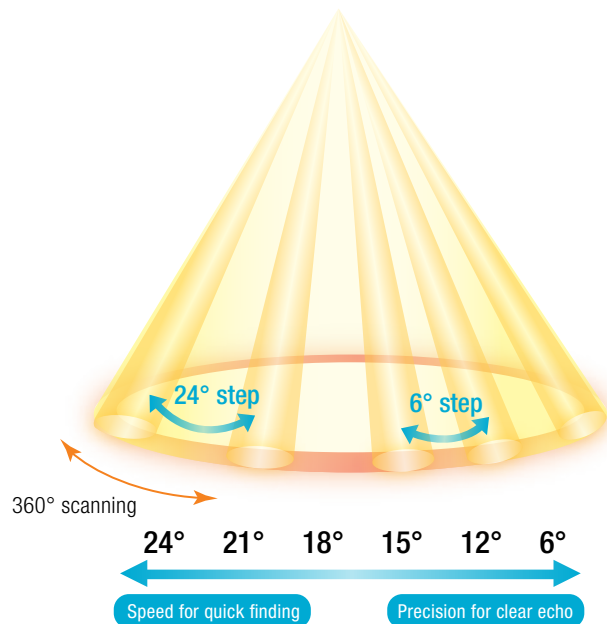
*Furuno Sonar technology
delivers a more productive
fishing operation.*



ULTRA-FAST TRAINING SPEED



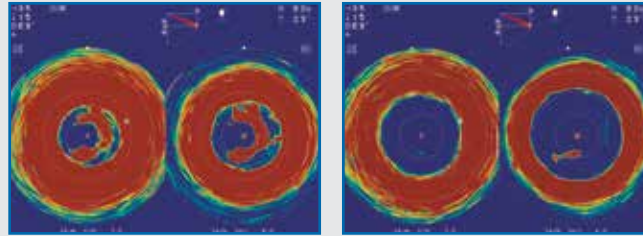
This searchlight sonar provides 6 scanning step variations (6, 12, 15, 18, 21, 24) easily switchable for high precision or high scanning speed that can cover 360° in a couple of seconds, depending on the distance of the echoes. Due to its scanning speed, the CH Series can be used at high speeds and still cover a large zone at the same time. While moving fast, use the 24° step scan to get a glimpse of the surroundings. If you are detecting something interesting that might look like what you are targeting, slow down and switch to the 6° step scanning to have a clear echo.



DUAL-FREQUENCY REVEALS THE PRESENCE OF SARDINES AND BAITFISH

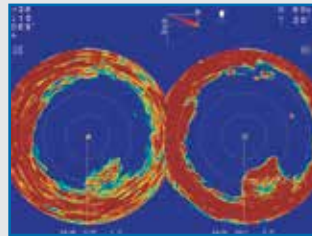
With the Horizontal Dual-Frequency mode, both low and high frequency are used and displayed at the same time in split view. By comparing echo shapes at low and high frequency, it becomes possible to ascertain the actual presence of the fish, even the small ones.

Horizontal Dual-Frequency mode



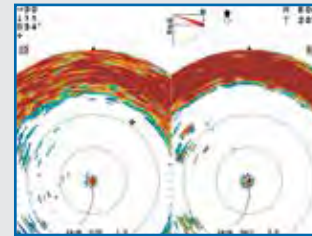
Echoes of Sardine schools

Horizontal Scan

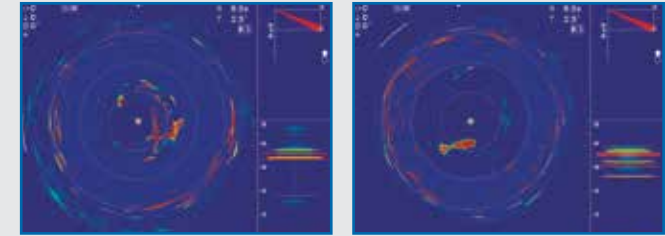


A full circle scan (360 degree), provided by a rotating transmitter, detects fish schools around the vessel. (Horizontal Scan Zoom mode also available)

Horizontal (Zoomed)

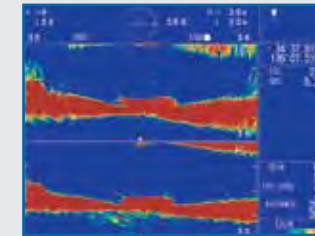


Horizontal Mix Display



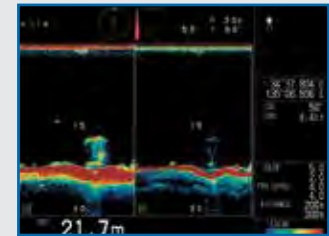
Echoes of baitfish

Vertical



The Vertical scan paints the bottom profile within a user-specified vertical plane in any direction.

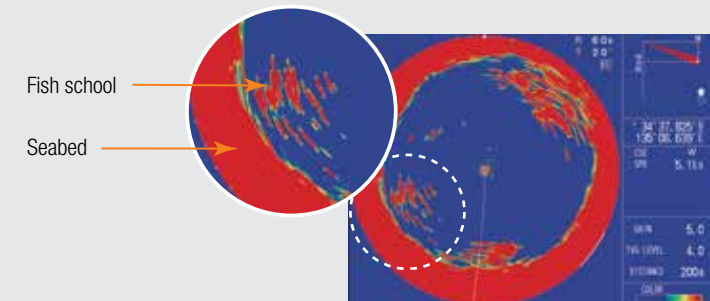
Echo Sounder



When fully retracted and with the transducer pointed straight down, the sonar can be used as a fish finder for seabed and fish schools

ADVANCED SIGNAL PROCESSING OFFERING HIGH-RESOLUTION OUTPUT

Powerful signal and image processing based on a unique interpolation technology provides images in high resolution. Even if the fish are located near the seabed, different echoes are clearly shown and easy to understand. Additionally, the high resolution echo display gives crisp, clear echoes, which reduces stress on the eyes.





Model CSH8L MARK 2

►►►Spec P120

Black Box Omni Sonar

Model CSH5L MARK 2

►►►Spec P120

Black Box Omni Sonar

KEY FEATURES:

- Full-Circle Omni Sonar detects and instantaneously displays schools of fish and underwater conditions
- Black Box configuration allows for a space-saving, flexible installation
- Variety of available monitors built to meet the needs of tournament vessels
- The vivid 16-color display assists in recognition of seabed structure, as well as concentration/distribution of fish schools
- CSH8L MARK 2 scans a full 360 degrees in half a second
- Various fishing and navigation data* keep the operator aware of fishing and navigation conditions

* Requires appropriate sensors

- Four user-programmable function keys for quick set up according to fishing conditions or specific functions
- Second display and control unit can be easily connected for a remote second station on the flybridge
- High-power transmitter ensures reliable operation under any conditions
- Narrow beamwidth and enhanced target identification capability
- Transducer frequency:
 - CSH5L MARK 2: 55 kHz or 68 kHz
 - CSH8L MARK 2: 85 kHz or 107 kHz

*Scan a full
360 degrees in
half of a second!*

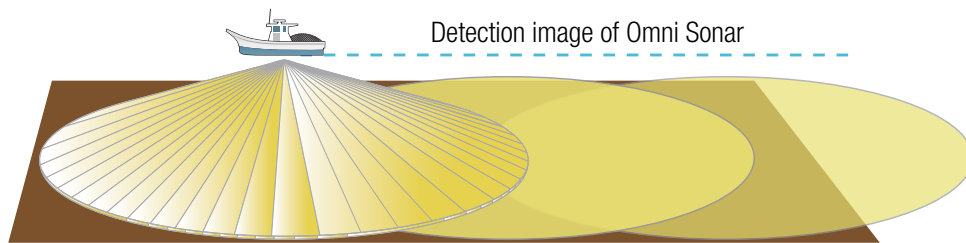


THE SUCCESSFUL FISHERMAN'S SECRET WEAPON!

The CSH5L/8L MARK 2 is a Full Circle Omni Sonar that rapidly detects and displays individual gamefish and schools of baitfish, showing your catch in real time before they're in the spread. A game changer for high-end tournament battlewagons, midwater trawlers, purse seiners, or anyone desiring more successful fishing expeditions. Operating at 85 KHz, the CSH8L MARK 2 is a mid-frequency Sonar. Its narrow beam width coupled with its enhanced target identification capabilities make it ideal for searching near the vessel or in shallow waters.

PURPOSE-BUILT TO INCREASE YOUR CATCH

Speed is essential when tracking fast swimming species. The CSH5L/8L MARK 2 scans a full 360 degrees around the vessel in only half a second, so you'll never miss a fishing opportunity. The transducer consists of fixed, phased-array elements that transmit the echo in all directions simultaneously. Displaying information from every direction around the vessel without having to mechanically rotate the transducer allows this Sonar to scan quickly, greatly improving your operation. The CSH5L/8L MARK 2's ultra-fast scanning speed and audible target alarm means far less risk of the skipper missing a crucial change in the action.



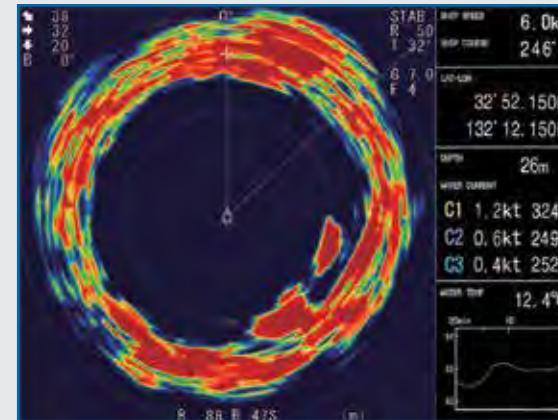
SIMPLIFIED INSTALLATION, SIMPLIFIED CONTROLS

The CSH5L/8L MARK 2's compact keyboard and Black Box configuration are designed to offer a flexible installation, and a variety of monitors are available to suit your installation and operational requirements. Furuno's MU-series Marine Monitors are specially designed to meet the requirements of marine professionals around the world. An additional display and a small remote controller can be simply plugged into the processor unit to add a fully functional second station.

ABOUT OMNI SONAR

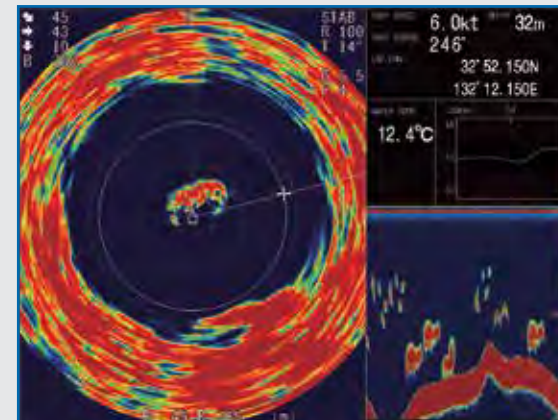
The transducer arrangement of an Omni Sonar consists of layers of elements, each pointed in a slightly different direction, which allows the Sonar to transmit 360 degrees instantaneously. There is no need to rotate the transducer. On a 1000ft range, the CSH8L MARK 2 Sonar updates the display 360 degrees every 0.54 seconds, while the conventional PPI sonar takes a full 32 seconds to train full circle under the same range/conditions. Because this Sonar scans so quickly, it greatly improves the fishing operation, especially when searching for or following fast swimming fish, and lessens the chance of missing important changes in underwater conditions.

SELECTABLE USER-FRIENDLY OPERATING MODES



Sonar Display

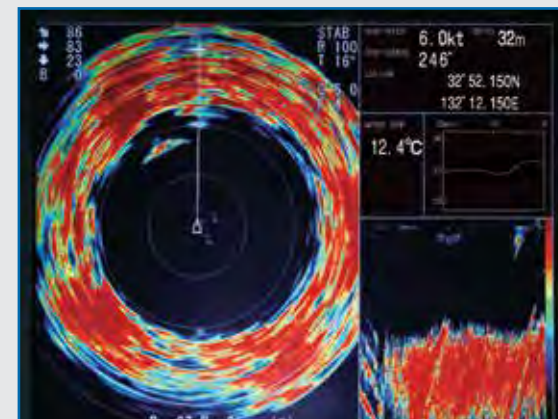
Navigation data can be displayed in the text window, with connection of appropriate sensors. This mode is useful for detecting and tracking schools of fish.



Sonar + Fish Finder*

The Sonar picture appears on the left and the signal fed from the Fish Finder at the lower right side of the screen. This mode is suitable for judging fishschool concentration.

* Interface with Fish Finder required.



Sonar + Audio

Sonar picture appears on the left and the audio display at the lower right side of the screen. This mode is useful for analyzing echoes in a desired area.

Multi Beam Sonars



Model DFF3D

Spec P94

Network Multi Beam Sonar

KEY FEATURES:

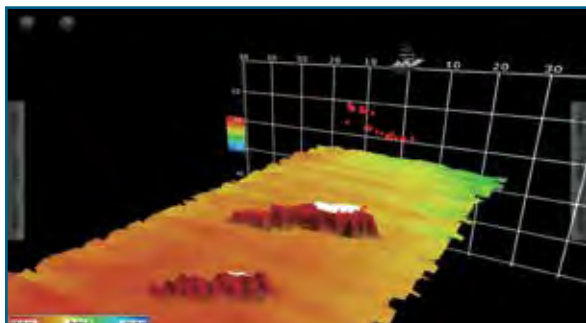
- Outer beam detection range is up to 200m in a 120-degree swath port and starboard direction*
- Deep water, main beam penetration directly under the boat is approx. 300m*
- Complete set of menus in each display mode
- The built-in motion sensor (standard supply) stabilizes the display to give clear and stable images, even under rough sea conditions
- Easy installation with a variety of transducer options
- Customize the display according to your needs
 - Depending on the situation and preference, a combination of screen modes can be displayed
- Full control of all features using TZ Professional (Windows OS for PC)

	DFF3D
Frequency	165 kHz
Range Scale	Up to 1,200m
Detection Range	200m* (Side beam best performance) 300m* (Main beam directly under boat)
ACCU-FISH	N/A
Bottom Discrimination	N/A
Transducer	800W

* Depending on bottom type and water conditions.

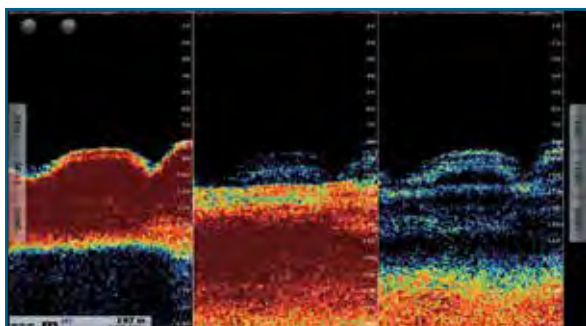


INNOVATIVE TOOL FOR EXPLORING THE WATER COLUMN AND SEABED



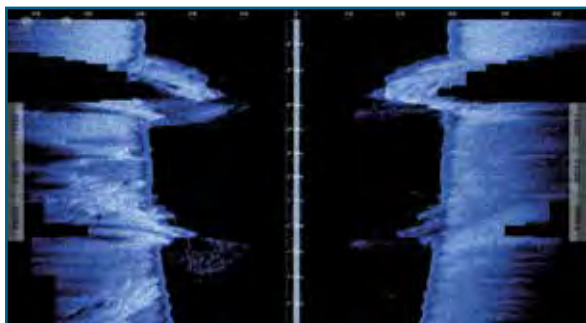
3D History

The 3D sounder history provides an intuitive and easy to understand 3D image of the seafloor, along with fish school icons. This mode is useful in a variety of situations, such as selecting a fishing hot spot and assessing the seabed condition.



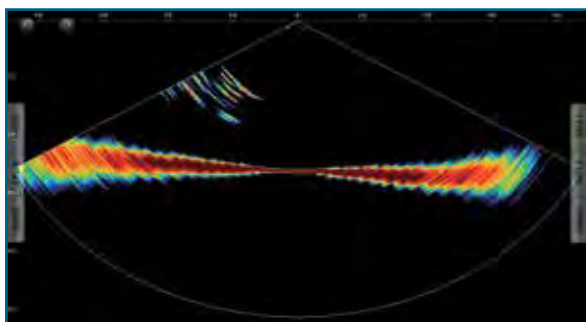
Triple/Single Beam Sounder

A single beam (middle) or triple beam (middle, left and right) Fish Finder image are displayed simultaneously. The Triple Beam display helps to understand the depth of fish targets and seabed condition under the boat and to port and starboard, as well as distribution of fish under the boat and to each side. Each beam angle and beam width are selectable.



Side Scan

Side scan clearly displays the shape of structure as a high-definition image to both port and starboard. It is suitable for searching the seabed and understanding the sea floor structure. Outer beam detection range is 200 meters (over 650 feet) in a 120-degree swath port to starboard, a distance you've never seen before!

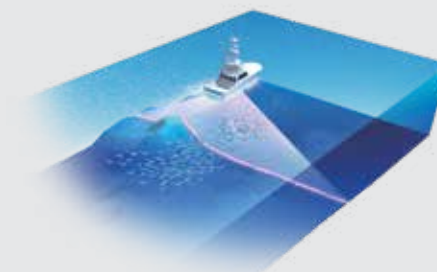


Cross Section

Cross section displays the real-time sea column echo in 120 degrees port to starboard. This mode aids in instantly understanding the distribution of bait fish and the water column condition, with a detection range of over 650 feet, depending on bottom, water and installation conditions.

UNDERSTAND FISH DISTRIBUTION EASILY, AT-A-GLANCE!

You may think you've seen 3D Multi Beam Sonar in action, but many of those images begin disappearing as you approach 60 meters (200 feet). Furuno's DFF3D takes 3D Fish Finding to new depths. We're talking depths of over 300 meters (980 feet), with Side Scanning over 200 meters (650 feet). See fish and bottom structure as you've never seen them before, at depths previously unfathomable. Now you can see fish schools and the underwater landscape at great depths in amazing detail. The DFF3D turns your NavNet TZtouch, TZtouch2, or TZtouch3 MFD into a Multi Beam Sonar that can see 120-degrees port to starboard, allowing you to view the depth and direction fish schools are moving, while displaying the seabed condition in real time.



A TRANSDUCER OPTION FOR EVERY VESSEL

With the DFF3D, there is a transducer to meet the needs of any installation. Thru-Hull, Transom Mount, and Pocket Mount transducer options are available, so the DFF3D can be utilized on virtually any vessel, with built-in motion sensors to compensate for pitch/roll/yaw. There are even combo transducers that combine DFF3D with either CHIRP or dual-frequency 50/200 kHz elements, so your Multi Beam Sonar can be used in conjunction with a TruEcho CHIRP™ Fish Finder or the built-in TZtouch Fish Finder, requiring only a single transducer!

Transducer* (with motion/temperature sensor)



B54 Thru-Hull Mount Transducer TM54 Transom Mount Transducer

* For a complete list of transducers, including combo transducers, see page 117.

Multi Beam Sonars



Model WMB1320F/1320S/4340/6340

►►► Spec P121

F3 and F3X Series Multi Beam Sonar

KEY FEATURES:

- The 3rd generation WASSP WMB1320F is designed for fishing and mapping operations, allowing you to maximize your catch while minimizing your time at sea
- The entry-level WASSP WMB1320S for mapping and survey is now more sensitive, with a higher dynamic range and lower noise level
- Built for fishing and mapping, the WASSP WMB4340 delivers mapping at over 500 meters, and sounding at over 550 meters depth
- Built for fishing operations, the WASSP WMB6340 shows fish targets at over 850 meters, with bottom detection at over 1,000 meters depth
- Save bathymetric recording data directly into standard CDX user interface software
- Cost-effective solution for multiple applications
- Choose your own functions with new license options
- TimeZero compatible with optional license

Visit www.wassp.com for complete details

wassp
MULTIBEAM

SEE IT ALL



MULTI
BEAM



TrueEcho
CHIRP

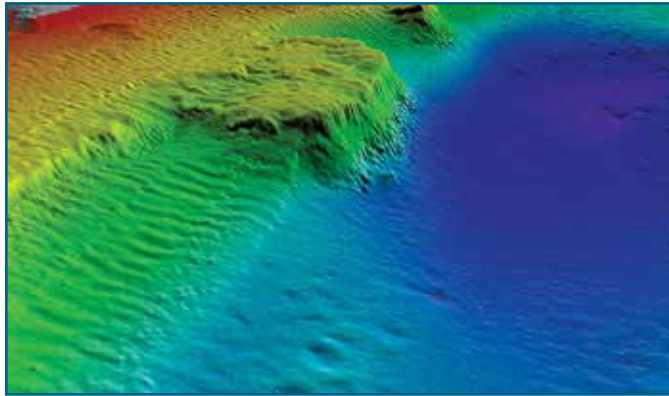


WASSP S/F3/F3X

Frequency	68-92 kHz (WASSP S) or 136-184 kHz (WASSP F)
Range Scale	Up to 1,000 meters
Fish Detection Range	Up to 850 meters

* Depending on bottom type and water conditions.

GENERATE YOUR OWN PERSONAL MULTI BEAM CHART



WASSP 3D

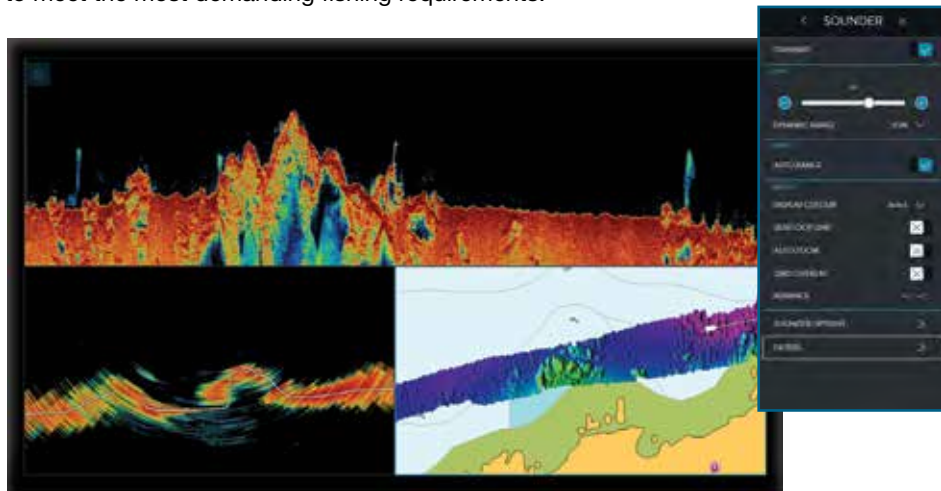
The WASSP F3/S3 and new F3X series is set to revolutionize inshore fisheries and survey/mapping operations. With Wideband CHIRP technology scanning a 120-degree swath port to starboard using either 112 or 224 beams, WASSP delivers even in the most demanding marine environments, each and every time.

CUSTOMIZE YOUR WASSP WITH LICENSING OPTIONS

Outstanding performance, versatility and value. That's what you expect and exactly what you get with the WASSP F3/S3/F3X Multi Beam Sonars. These next generation WASSP packages deliver on every front – accurate, versatile, user-friendly, and scalable to your exact needs. The system has a wide range of features and capabilities, optimized for all types of inshore and offshore fishing, and/or for generating a complete picture of seafloor bathymetry for mapping and survey, ensuring efficiency and increased productivity, whatever model you employ.

NEW EASY-TO-USE INTERFACE

The F3 Series introduced the new simplified software “WASSP CDX” for control, visualization and data management while still providing a comprehensive set of functions to meet the most demanding fishing requirements.



WIRELESS LINK TO TENDER PROVIDES SAFE PASSAGE IN POORLY CHARTED AREAS

WASSP's next generation DRX based Multi Beam Sonar has taken the important step of going wireless. This wireless link technology allows RHIB's or tenders to be deployed from larger surface vessels to map seafloor topography, assimilate sub-surface data, and provide a rapid area assessment that is wirelessly transmitted back to the “mothership” in a 3D animation. The result is real-time delivery of unparalleled underwater situational awareness to the ships bridge and its decision makers.

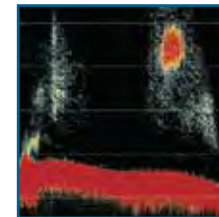
NEW SOFTWARE SEAMLESSLY BLENDS DATA

Through pulse compression and advanced signal processing, WASSP delivers accurate, high-quality data in even the most demanding marine environments. Utilizing the new Version 4 CDX software, all of the new data gathered is seamlessly blended with previously recorded seabed information, resulting in beautiful, accurate mapping with no missing details or misaligned edges from multiple passes. Using the new CDX software algorithm, old and new data can be used to create an enhanced picture of current conditions.

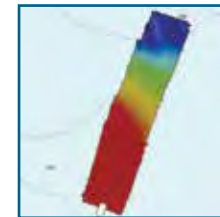
VARIOUS PRESENTATION MODES



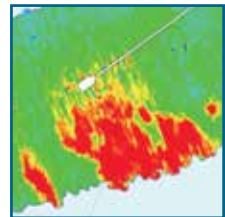
3D Fish Density Overlay



Fish Finder



2D Mapping to 500m



Backscatter
(Bottom Hardness) at 200m

ALL-IN-ONE DRX TRANSCIVER IS VERSATILE AND READY FOR THE NEXT ADVANCES IN TECHNOLOGY



This innovative all-in-one “Black Box” is not just a robust hardware platform but also introduces cutting-edge technical innovations and incredible versatility for finding your catch, opening up countless new possibilities for your fishing operations.

WASSP TRANSDUCER

The WASSP Sonar Transducer is available in 2 frequencies:

- 136-184 kHz Wideband (160 kHz center) for WMB1320F, WMB1320S, and WMB4340
- 68-92 kHz Wideband (80 kHz center) for WMB6340



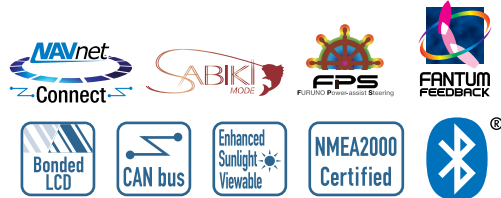
Autopilots



NAVpilot



NAVpilot remarkable self-learning, adaptive software is developed by collaborative works between FURUNO and FLSI.



*Kick back, relax, and let NAVpilot
steer you to your destination!*

Model NAVpilot 300

►►► Spec P123

**Self-Learning Autopilot
with Gesture Controller**

KEY FEATURES:

- Self-Learning and adaptive software; each time the boat goes to sea, the software learns about sea conditions and calculates the best adjustment for smooth steering
- Fantum Feedback™ offers simplified installation (no need for physical rudder feedback unit while delivering enhanced steering control)
- Volvo Penta IPS, Yamaha Helm Master™, Yanmar, and Seastar VCS compatible
- Easy installation and smart network-based system configuration
- Waterproof Processing Unit (IP55) and Control Unit (IP56)
- Optional revolutionary SAFE HELM and POWER ASSIST brings unrivaled steering control and comfort at the helm*
- Selectable “Economy” and “Precision” Navigation Modes combine adaptive technology providing fuel and power savings of 2.5% or more**
- “Precision” provides for tighter course keeping, within 0.01 NM of the set course
- Perfect for inboard or outboard power boats and sail boats (NAVpilot 711C only)
- Autopilot control available from NavNet TZtouch3/TZtouch2/TZtouch/GP1871F/1971F

* Required Options - HRP11 or HRP17 Pump and FPS8 Power Steering Module.

** Based on Furuno testing and “Scenarios for a Clean Energy Future 2000” - U.S. Department of Energy (www.ornl.gov/sci/eere/cef)

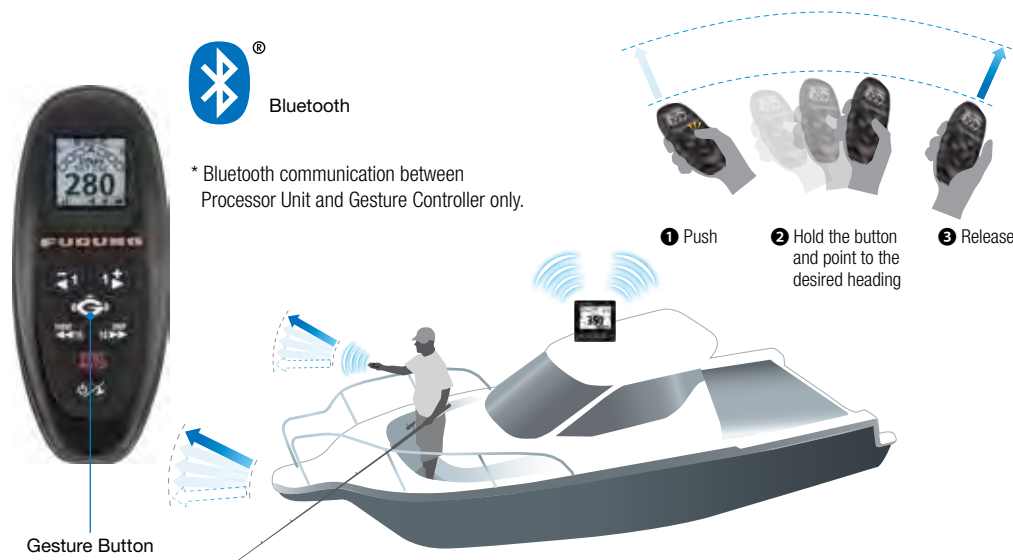
Model NAVpilot 711C

►►► Spec P124

Self-Learning Autopilot

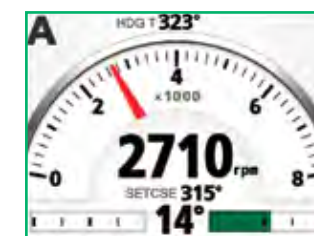
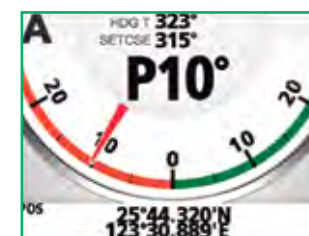
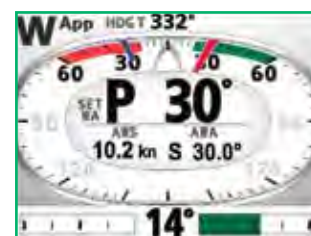
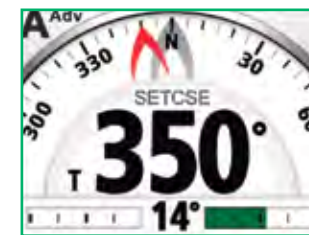
JUST PUSH, POINT AND SHOOT! (NAVPILOT 300 ONLY)

The Gesture Controller is a revolutionary and unique way to steer your boat remotely. By using bluetooth signals, it is possible to control the Autopilot from anywhere on the boat within 10 meters. Just push, hold the button, point to the desired heading and release to let the Autopilot redirect the boat!



GRAPHIC DISPLAYS

Several types of graphic displays are available, allowing you to customize the data to suit your own preferences with either digital or analog graphics. The NAVpilot 300 and NAVpilot 711C feature a color day/night graphic display, giving you much better sunlight visibility during the day, while not affecting your night vision when the sun goes down.



“SABIKI™ MODE” FOR NAVPILOT 300 OR NAVPILOT 711C

With SABIKI™ mode your NAVpilot 300 or NAVpilot 711C have become even more capable than before. And the best thing is, there is no need to install additional hardware or sensors. SABIKI™ mode is only available on vessels with outboard engines.

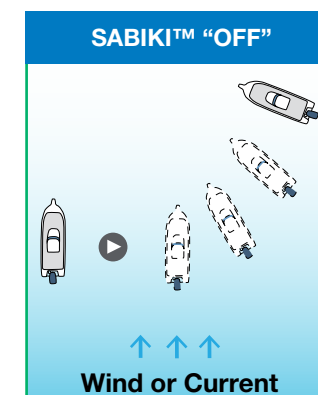
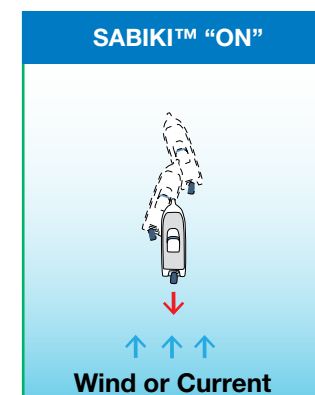


SABIKI™ mode



SABIKI™ mode lets the Autopilot take control while you are drifting astern, so you can focus on fishing instead of steering. Moving astern at a slow pace SABIKI™ mode is uniquely tailored for SABIKI fishing, jigging and bottom fishing. SABIKI fishing requires a bit of technique and whether you just started or have considerable experience, the SABIKI™ mode will help you catch the bait fish needed for the big catch.

SABIKI™ mode is only user selectable if the current speed is below 5 knots. Once SABIKI™ mode is selected, the course can be set with the course knob and the arrow keys.



Instrument/Data Organizers



Model FI70

►►► Spec P125

4.1" Color LCD Instrument/Data Organizer

KEY FEATURES:

- Designed to perfectly match NavNet TZtouch/TZtouch2/TZtouch3 and NAVpilot 300/NAVpilot 711C on your helm
- Clear 4.1" screen that is viewable even under direct sunlight
- Simple and intuitive interface allows full customization
- Bonded color LCD ensuring condensation free operation, as well as great visibility
- Use legacy wind sensors (FI5001/FI5001L) with the analog IF-NMEAUI Converter
- Low power consumption (0.15A max)
- Simple AIS display through connected CAN bus devices
- Share language and brilliance settings between FI70s when grouping them together



FOR POWERBOATS AND SAILBOATS ALIKE

The FI70 Instrument/Data Organizer sports a vibrant 4.1" bonded color display that is visible even in the harshest sunlight conditions. Utilizing NMEA2000, external sensors can easily be connected for simple and reliable operation. The FI70 features an easy to operate user interface. You can customize almost every display property, allowing you to choose the information you want to be displayed, in the way you want to see it!

Whether you own a powerboat or sailboat, the FI70 will be equally useful with the proper sensors connected. For maximum performance and simple setup, the FI70 automatically asks you which type of vessel you have, helping to customize operation of the unit.



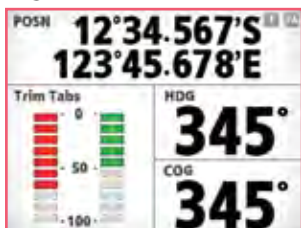
Heading



Wind (CH AWA/AH TWA)



Engine RPM (Single)



Data Box (Split)



Roll & Pitch



Graph



Data box (Single)



Highway



Timer



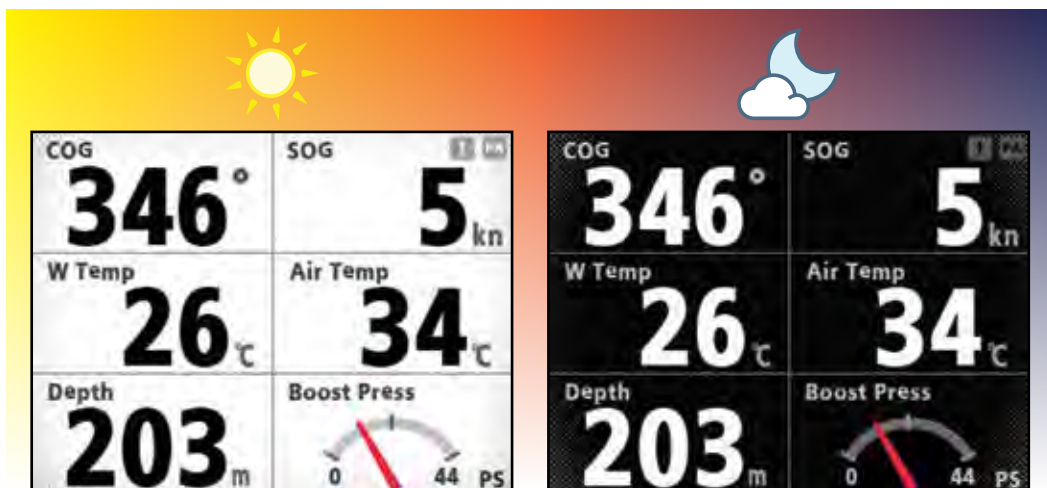
Rudder



Engine RPM (Triple)

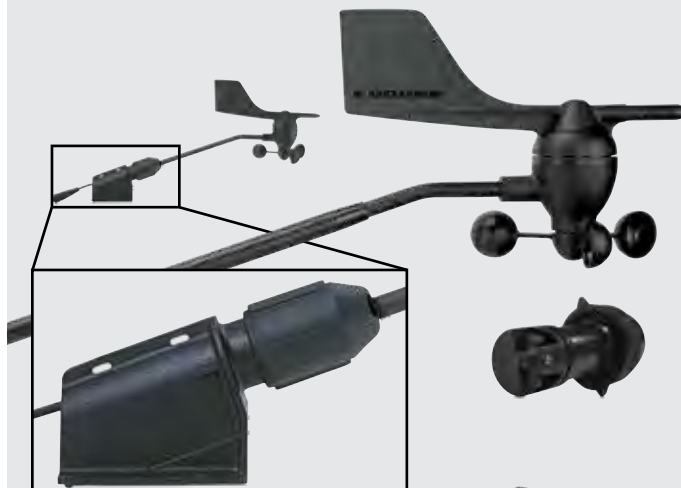
DAY AND NIGHT MODES AVAILABLE

Day and Night modes are available for less eye strain. With Day and Night mode, losing your night vision is no longer an issue. Simply change between the two modes with a menu setting.



SENSORS AND ACCESSORY OPTIONS

▶▶▶ Spec P125



Wind transducer comes with a snap-lock fitting that holds the shaft securely, preventing the sensor from being damaged from excessive vibrations aboard the craft.

Model FI5001/5001L

Wind Tranducer (L: Long Shaft)

Angle Accuracy: $> \pm 10^\circ$
Speed Accuracy: $> \pm 5\%$ (20 kt)
PSU: 12 VDC, $< 40\text{mA}$
Transducer cable (option): 30/50m
Short Shaft Length: 51.81cm
Long Shaft Length: 86.61cm

Model DST-800

Depth/Speed/Temp Sensor

Frequency: 235 kHz
Cable: 6m

Model FI5002

Junction Box

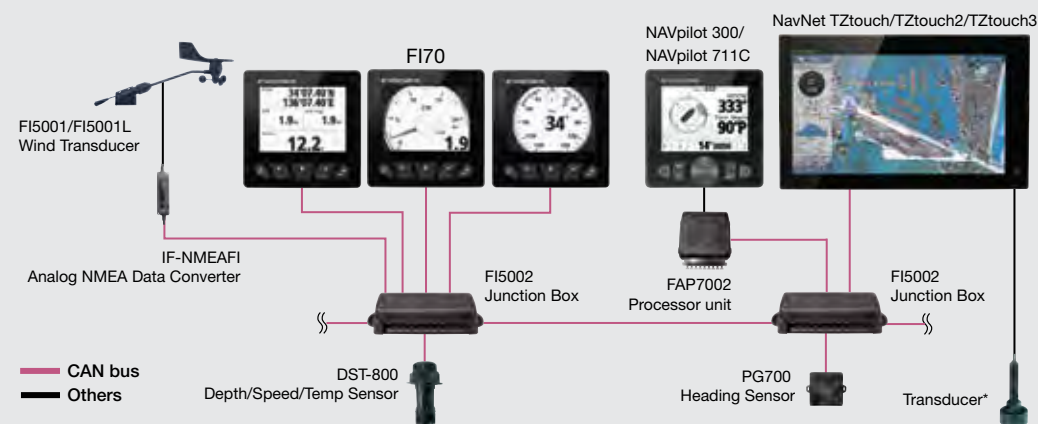
CAN bus backbone x 2 ports
CAN bus x 6 ports
PSU: 12 VDC, < 2A

Model IF-NMEAFl

Analog NMEA Data Converter

CAN bus x 1 port
PSU: 15 VDC, < 200mA

DIAGRAM SETUP EXAMPLE

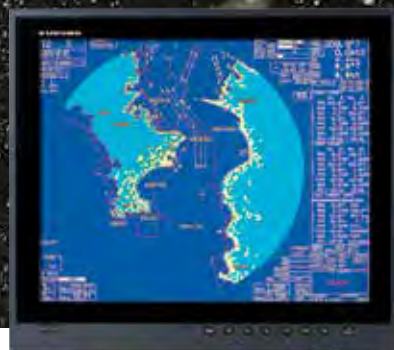


Monitors



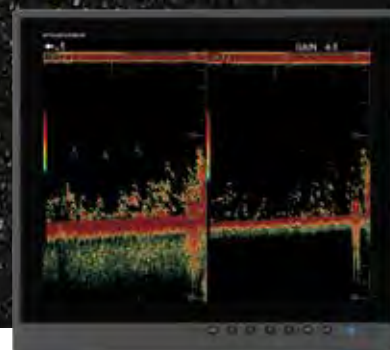
Model MU150HD - 15"

XGA (1024 x 768) Monitor



Model MU190 - 19"

SXGA (1280 x 1024) Monitor



Model MU190HD - 19"

SXGA (1280 x 1024) Monitor



Model MU231 - 23.1"

UXGA (1600 x 1200) Monitor



PICTURE IN PICTURE (PIP)

(MU150HD/152/190HD/190/231/270W)

Composite video (NTSC/PAL) input is available for displaying video images from an onboard TV/DVD player. For MU150HD/190HD with more than two composite video inputs, the images in the PIP window automatically switch alternately.



SLIM, LIGHTWEIGHT AND COMPACT

(MU150HD/190HD/190/231/270W)

The MUDisplay Series is slim in depth, light weight and is so compact that it fits right into virtually any console. Its space-saving design makes optimum use of your dashboard.



MU190HD



MU150HD

WATERPROOF

(MU150HD/190HD)

The MU150HD/190HD has a waterproof display and is built to stand up to tough marine conditions when mounted at fly bridge console. The display can be rinsed in water for easy, worry-free cleaning.

LOW POWER CONSUMPTION

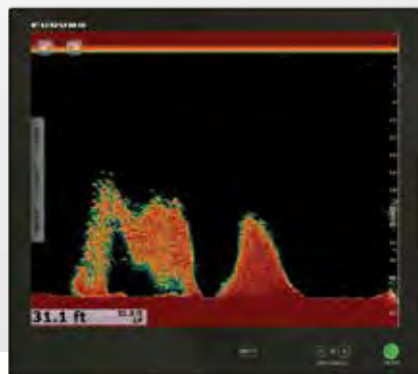
(MU150HD/190HD/190/231)

Utilizing the latest LED backlight, the MUDisplay Series delivers sharp, high quality images with bright colors and all at very low power consumption.

With the introduction of a variety of Black Box products, Marine Displays are becoming more of a necessity than a luxury.

►►► Spec P127-128

For crystal clear presentation for your Radar, Chart Plotter, NavNet or other electronics turn to the unmatched **Furuno** quality and reliability that you depend on.



Model MU175T - 17"

SXGA (1280 x 1024) Touch Monitor



Model MU195T - 19"

SXGA (1280 x 1024) Touch Monitor



Model MU245T- 24"

HD (1920 x 1080) Touch Monitor



Model MU270W - 27"

WUXGA (1920 x 1200) Monitor



	MU150HD	MU190HD	MU190	MU231	MU270W	MU175T	MU195T	MU245T
Crystal clear marine grade monitors for use as main or remote display	✓	✓	✓	✓	✓	✓	✓	✓
Bonded LCD provides clear view in any weather conditions, eliminating concerns such as dew condensation	✓	✓	—	—	—	✓	✓	✓
Available in table top or flush mount (Mounting bracket is optional)	✓	✓	✓	✓	✓	✓	✓	✓
Automatic dimmer sensor adjusts the display brightness as lighting conditions change	✓	✓	✓	✓	✓	✓	✓	✓
Customizable input names for easy on-the- fly identification and switching between onboard Radar, Sonar, Sounder, Camera, etc.	✓	✓	✓	✓	✓	✓	✓	✓
Any of the composite inputs are PIP (Picture-In-Picture) capable, with adjustable size and screen location	✓	✓	✓	✓	✓	✓	✓	✓
Power ON/OFF automatically by DVI signal	✓	✓	✓	✓	✓	✓	✓	✓
1,000 cd/m ² brightness provides superior visibility even in direct sunlight	✓	✓	—	—	—	✓	✓	✓
Built-in scaler allows various resolutions	VGA to SXGA	VGA to SXGA	VGA to SXGA	VGA to UXGA	SVGA to WUXGA	VGA to SXGA	VGA to SXGA	SVGA to HD
Selectable inputs include RGB analog, DVI (Digital Video Interface) and Composite	✓	✓	✓	✓	✓	✓	✓	✓
Multi-Touch Control - compatible with NavNet TZtouch/TZtouch2/TZtouch3	—	—	—	—	—	✓	✓	✓

Remote Displays



Model RD33

►►► Spec P129

4.3" Remote Display

KEY FEATURES:

- 4.3" Sunlight Viewable color LCD
- Maximum visibility under various ambient conditions, at night, and under direct sunlight (brightness of LCD is 700 cd/m2)
- Enhanced data legibility thanks to large characters and high-resolution visual aid
- Full-screen single box presentation down to six-way split screen presentation available
- Supports both CAN bus and NMEA0183 interface
- Two independent CAN bus input and output ports incorporated for daisy chain networking
- Internal NMEA0183/CAN bus conversion capability available
- Straightforward operation comparable to NavNet Series



SEE ALL YOUR DATA THE WAY YOU WANT IT

The RD33 is a navigational data organizer that allows the operator to select the perfect way to display data from interfaced equipment, such as GPS, Chart Plotter, Radar, Fish Finder, Autopilot, Instruments and other sensors, including engine information. The high-contrast, color 4.3" LCD may be installed in a compact space, remote from its data sources. The screen is impressively bright, remarkably crisp and easy to read. Various display modes are available, including Speedometer, Highway and Text. The Text mode presents up to six of the most necessary types of data. The display layout can be customized for your specific needs. This versatile product can also be added to a NavNet system, displaying a variety of navigation data from the CAN bus network.

NEW AND IMPROVED LOOK AND FEEL

The RD33 features a visually appealing fresh new look, combining easy access with user functionality. Thanks to the bright, high-resolution LCD, the RD33 provides an easy-to-read display to monitor information from remote equipment, through an intuitive graphical user interface.

DISPLAY OPTIONS IN TWO DIFFERENT STYLES



Wind A



Wind B



SOG A



SOG B



Model RD50

>>> Spec P129

8.4" Remote Display

KEY FEATURES:

- 8.4" Sunlight Viewable color LCD, viewable under direct sunlight at wing console
- Digital/graph/analog displays available
- Display orientation of up to 4-way split screen
- Adjustable display background color for use both day and night
- Up to 10 displays can be connected with a daisy chain cable, with display brilliance able to be tuned from one dimmer controller

CUSTOMIZABLE SPLIT-SCREEN PRESENTATION MODE

You can customize the view to display the information in the format that works best for you. The RD33 allows you to split the screen in up to six separate segments and provides graphical or numerical representations of environmental changes to facilitate navigation.



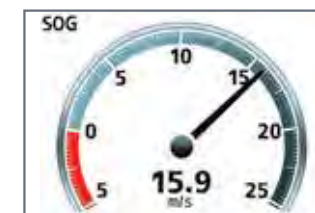
Full Screen



6-Way Split

VERSATILE AND BRIGHT DATA DISPLAY

The RD50 is an 8.4" Color LCD remote display unit that displays a wide variety of data from onboard sensors. The RD50 has 3 display modes: digital, analog and graph. Up to 10 displays can be connected with a daisy chain cable. The display brilliance of all units connected in this way can be centrally controlled from 1 dimmer controller.





The perfect heading solution for any vessel installations, even where the view of satellites may sometimes be obstructed!



Model SCX20

►►► Spec P131

NMEA2000 Satellite Compass™

Model SCX21

►►► Spec P131

NMEA0183 Satellite Compass™

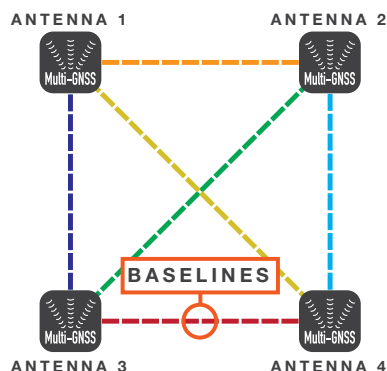
KEY FEATURES:

- Perfect for NavNet TZtouch/TZtouch2/TZtouch3, NAVpilot 300/711C, Sonar and WASSP installations
- Outputs accurate Time, Position, Heading, COG/SOG, ROT, Roll/Pitch/Heave, 3-Axis Speed, Air Temperature and Air Pressure data
- Unprecedented heading accuracy for Radars, Sonars, and Navigation
- Utilizes four Multi GNSS (GPS, QZSS, GLONASS, Galileo) antennas
- 1.0 degree heading accuracy, 0.02 knot speed accuracy
- Lightweight antenna - only 1 kg!

	SCX20	SCX21
Heading Accuracy	1.0° rms (static), 0.5° rms (dynamic)	
GPS Fix	5m approx. (2 drms, HDOP < 4)	
MSAS Fix	4m approx. (2drms, HDOP < 4)	
WAAS Fix	3m approx. (2drms, HDOP < 4)	
Follow-up Rate	45°/sec	
Setting Time	60 secs approx.	

REVOLUTIONARY BASELINE ARCHITECTURE

Utilizing four separate GNSS Antennas for the ultimate in responsiveness, the SCX20 and SCX21 set a new standard for reliable and accurate heading for all of your marine electronics. Traditionally, a Satellite Compass™ uses one baseline between two antennas to calculate heading, while the SCX20/21's four antennas can calculate heading information using any one of the six baselines drawn between the four antennas.



The unprecedented quad-antenna design of the SCX20 and SCX21 makes them capable of calculating extremely accurate heading, pitch, roll, and heave information. They are the perfect heading solution for complex vessel installations where the view of satellites may sometimes be obstructed.

RADAR ECHO TRAIL ZIG-ZAG DOMINATION

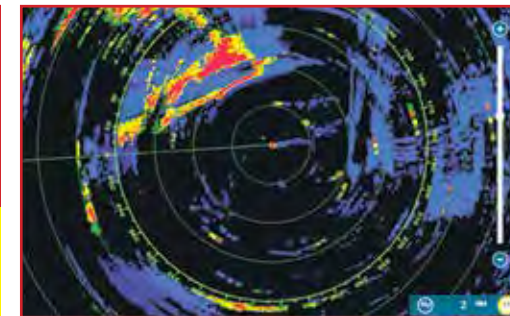
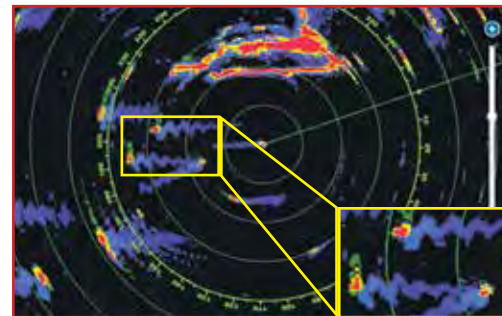
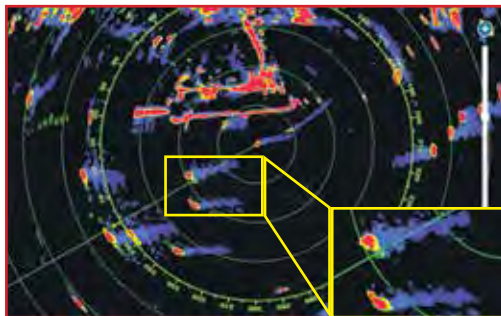
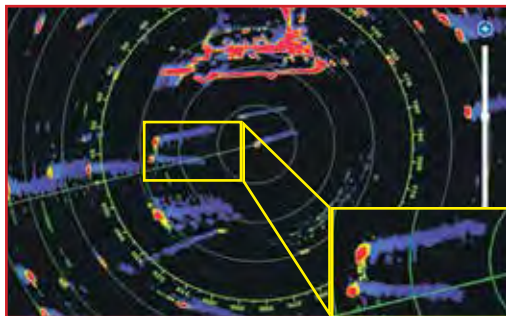
When connected to the SCX20/21, the Radar's echo trails hold steady and clearly depict an accurate echo trail thanks to the SCX20/21's amazing accuracy. Company A's Satellite Compass™ fails to uphold a steady heading, making echo trails virtually unintelligible. Company B's heading accuracy fluctuates by $\pm 3^\circ$ with a slower update, causing an echo trail that has a wide zig-zag pattern. Company C's heading accuracy fluctuates by $\pm 5^\circ$ with a faster update, causing an echo trail that is indistinguishable and confusing.

FURUNO SCX-20/21

Company B

Company C

Company A



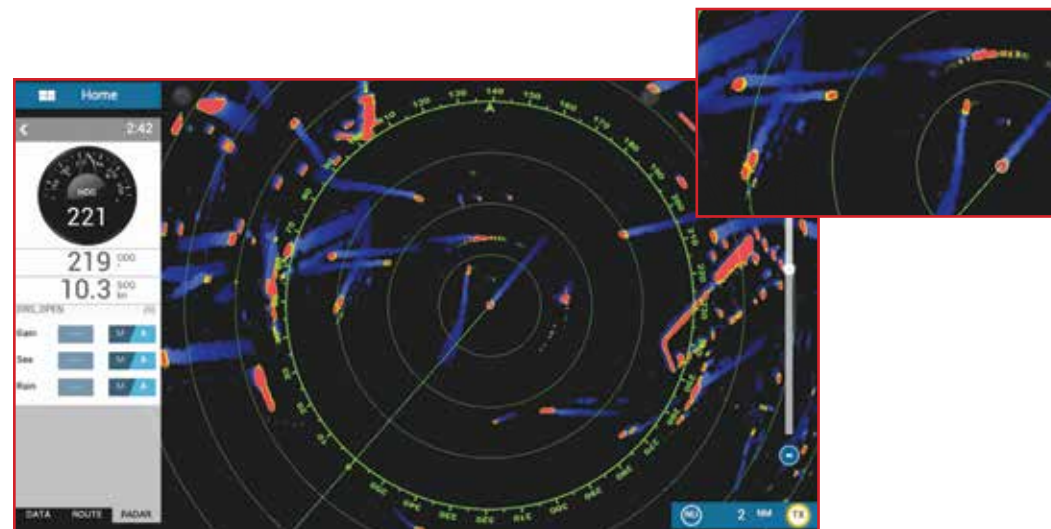
MORE ACCURATE

SCX20/21 < COMPANY B < COMPANY C < COMPANY A

LESS ACCURATE

TRUE MOTION ECHO TRAILS FOR RADAR/CHART PLOTTERS

True echo trails are available when the SCX20 or SCX21 is connected to your Furuno Radar, helping to determine own ship's movement as well as the movement of other vessels. Accurate speed and heading data ensures that target trails are displayed smoothly and accurately, without the jagged, zig-zag appearance common to a Satellite Compass™ with a higher degree of deviation.





Model SC33

►►► Spec P130

NMEA2000 Dome Satellite Compass™

KEY FEATURES:

- Heading accuracy of 0.4°
- 3-Axis speed monitoring
- NMEA2000 Certified
- NavNet TZtouch/TZtouch2/TZtouch3 Series compatibility
- Multi-GNSS with GPS, Galileo, GLONASS, QZSS satellite network
- Strong against multipath, high-reliability
- Works perfectly with TIMEZERO software
- Free from regular maintenance due to solid-state design



2009/10/11/19

BASIC SPECIFICATIONS OF SC33 (PAGE 130)

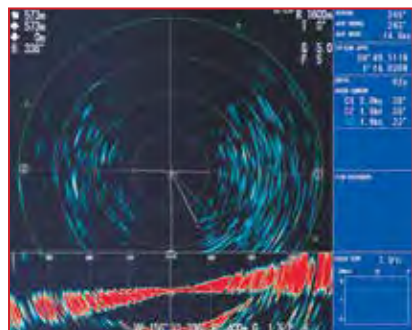
	SC33
Heading Accuracy	0.4° rms
GPS Fix	10m (95%)
GNSS Fix	3m (95%)
Follow-up Rate	45° per sec.
Setting Time	1 min
Antenna Unit	Radome

SLEEK, FAST, AND ACCURATE!

The SC33 Satellite Compass™ provides highly accurate heading information for navigation equipment such as Radar, Plotter, Autopilot, Fish Finder and Sonar. With its compact GNSS antenna and built-in processor, it can be used for a wide variety of applications on any type of vessel. This all-in-one system delivers incredibly accurate heading, roll/pitch/heave, GPS position, SOG (Speed Over Ground), COG (Course Over Ground), and ROT (Rate Of Turn) data.

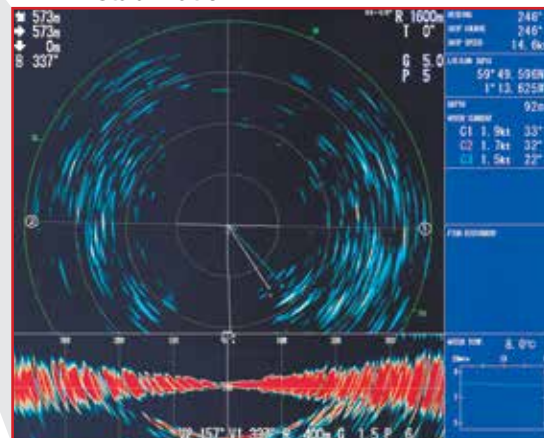
REVOLUTIONARY 2-ANTENNA AND RATE SENSOR SYSTEM

In order to calculate roll & pitch data, a Satellite Compass™ requires two vectors. The SC33 employs a dual GNSS antenna system that calculates a single vector while a 3-axis rate gyro and acceleration sensors add the second vector. This configuration enables the SC33 to calculate highly-accurate roll and pitch data without using a third sensor.



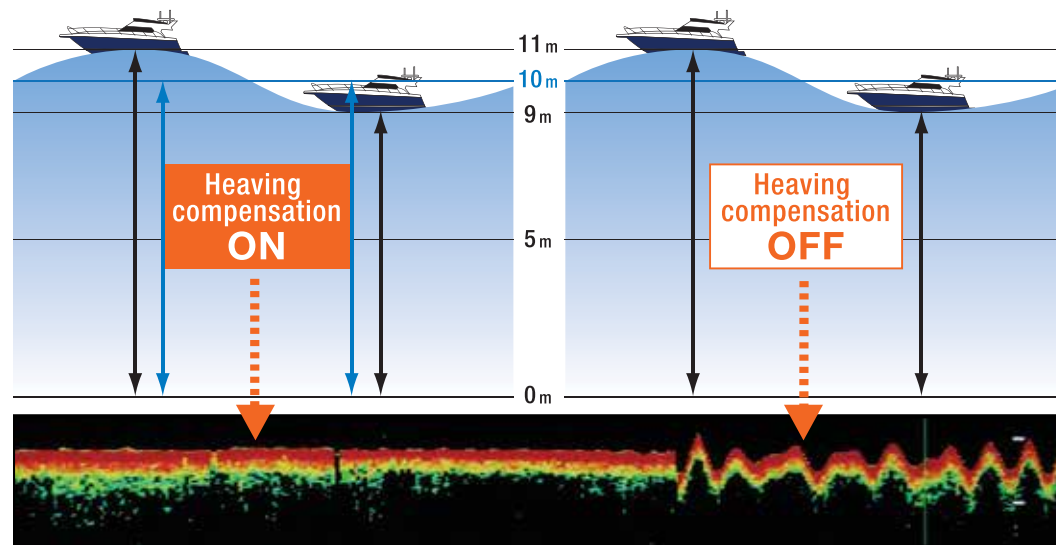
BEFORE stabilization

AFTER stabilization



HEAVING COMPENSATION FOR FISH FINDERS

Even in heavy seas, accurate heave compensation from the SC33 enables Fish Finders, such as the FCV1150 or NavNet TZtouch/TZtouch2/TZtouch3, to show you an unwavering presentation of the seabed, without the undulations caused by sea conditions.



Compasses



SC703 for SC70



SC1303 for SC130



Model SC70

►►► Spec P130

Satellite Compass™

Model SC130

►►► Spec P130

Satellite Compass™

KEY FEATURES:

- Tri-sensor antenna that provides highly-accurate heading for all your vessel's navigation electronics: Autopilot, Radar, ARPA, Scanning Sonar, Current Indicator, Chart Plotter, ECDIS, Autopilot, and more
- Utilizes GNSS such as GPS, Galileo and GLONASS for high precision
 - SBAS (Satellite Based Augmentation System) compatible (EGNOS, WAAS, MSAS)
- Provides precise data for SOG, COG, ROT and L/L
- Speed on 3-axis (bow, stern and longitudinal) for safe navigation and berthing
- IMO type-approved as THD, GPS and ROTI compliant with the IEC and ISO standards
- Rapid follow-up rate 40°/s (twice the IMO high speed craft requirement, 20°/s)
- Maintenance free and no recurring costs, as there are no mechanical parts
- Super short attitude fixing time - 90 sec (time will differ slightly depending on equipment location)
- Easy to retrofit when using existing antenna cabling* (For SC50/55/60/110/120)

*Requires the LAN_CNV kit, available as an optional extra.

- Precision Pitch/Roll data in Analog* and Digital formats for Vessel Stabilization, Sonar, etc.

*Requires the IF-NMEASC, available as an optional extra

BASIC SPECIFICATIONS OF SC70/SC130

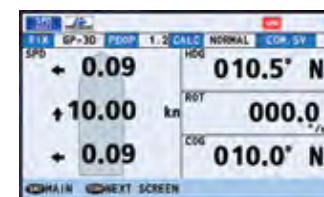
	SC70	SC130
Heading Accuracy	0.4° rms	0.25° rms
GPS Fix	10m approx.	
DGPS Fix	5m approx.	
WAAS Fix	3m approx.	
Follow-up Rate	0.1°/s, 0.01°/s or 0.001°/s rate-of-turn (select from menu)	
Setting Time	3 mins	4 mins
Antenna Unit	Radome type	Open type

BOW AND STERN MONITORING FOR SAFE BERTHING

The Satellite Compass™ provides a variety of data, including GPS Position, SOG (Speed Over Ground), COG (Course Over Ground), ROT (Rate Of Turn) and 3-axis speed (bow, stern and longitudinal). All of this data assists with critical maneuvers, such as berthing. The Satellite Compass™ is maintenance-free - a great asset for any vessel - and connects easily into the existing shipboard network via Ethernet connection.



GPS Integrity Mode



Navigational Data



Speed Mode



Model PG700

Integrated Heading Sensor

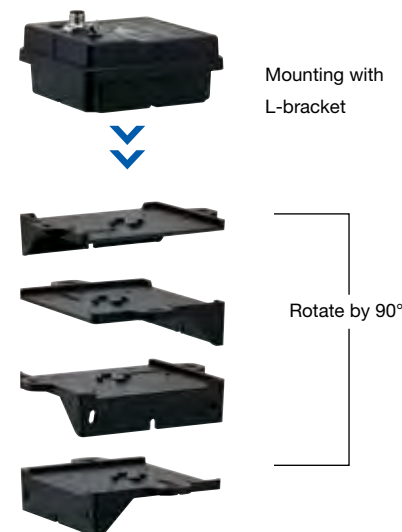
KEY FEATURES:

- Provides highly-accurate heading data
- Black Box type fluxgate magnetic sensor
- CAN bus interface incorporated
- Can be mounted on either the bulkhead or the floor, thanks to the standard L-bracket



EASY MOUNTING WITH L-BRACKET

PG700 can be mounted on either a bulkhead or the deck using the standard L-bracket. Thanks to the versatility in design, facing the PG700 towards the bow is a breeze.



Model PG500R

Integrated Heading Sensor

KEY FEATURES:

- Inexpensive heading sensor with the highest accuracy and stability in this class of equipment
- Automatic correction for local magnetic variation with an appropriate GPS Navigator or manual correction with an optional Remote Display RD33
- High stability for a solid-state rate gyroscope
- Compact waterproof housing with visible status indicators for simple installation
- Three heading data output ports: two IEC/NMEA0183 ports, one AD-10 port incorporated



MAINTENANCE FREE HEADING SOLUTION

Furuno's PG500R is a rate compensated heading sensor that incorporates innovative electromagnetic compass technology for highly-accurate and stable readouts of your ship's heading. The sensor detects terrestrial magnetism and produces compass data that can be utilized in NMEA0183 and Furuno AD-10 formats. Typical applications include true Radar echo trail and true motion, Autopilots, Chart Plotters, scanning Sonars and more. These sophisticated components are contained within a rugged, compact case. Unique design elements make the PG500R virtually maintenance-free and easy to install.

Model FA40

►►► Spec P132

AIS Receiver

KEY FEATURES:

- Enhances safe navigation by receiving critical navigation information from local AIS-equipped vessels
- Serial output to NavNet and PCs for added redundancy and installation flexibility
- Serial output for integration with various Radar and Chart Plotter systems
- Compatible with NavNet TZTouch/TZtouch2/TZtouch3



NEW

COMING
SOON

ALL CONDITION COLLISION AVOIDANCE

The FA40 Automatic Identification System (AIS) Receiver provides real-time information about AIS-equipped vessels to your NavNet, AIS-ready Chart Plotter, navigation software or Radar. The information is graphically presented allowing you to monitor and avoid AIS equipped vessels in your area. The information that the FA40 receives includes the vessel name and call sign, position, course, speed over ground, and other useful information. Since AIS targets can be received even if they are not within line of sight, the FA40 enhances situational awareness in congested waterways, limited visibility or heavy sea conditions, and gives the navigator much more information about AIS equipped vessels.

The FA40 has a serial port. This provides simple and easy connection to NavNet systems. AIS capable radar, Chart Plotters and TimeZero are interfaced through the FA40 serial port. The FA40 will work with virtually any marine VHF antenna. An optional VHF signal splitter is offered to allow the FA40 to work with an existing VHF radio antenna installation.

Model FA70

►►► Spec P132

Class B+ AIS Transceiver

KEY FEATURES:

- Fully satisfies the technical standards for Class-B AIS, IEC 62287-1
- Receives both Class-A and Class-B AIS information
- Outputs data to NavNet TZtouch/TZtouch2/TZtouch3
- Flexible integration with various AIS compatible Radar and Chart Plotters
- Switchable, high-speed SO-TDMA and CS-TDMA
- Internal VHF Splitter



NEW

COMING
SOON

ACCURATE INFORMATION EXCHANGE

The FA70 is a Class-B+ AIS that transmits your vessel information at higher power & faster rates than typical Class B units for added awareness. SO-TDMA and CS-TDMA guarantees an AIS time slot allocation, making you visible in congested waters. It complies with IMO MSC.140(76) Annex 3, A.694, ITU-R M.1371-2 and DSC ITU-R M.825-3. It also complies with IEC 60945 (EMC and environmental conditions). The FA70 consists of a transponder unit with GPS antenna. A VHF antenna is required and should be supplied separately. The transponder contains a VHF transmitter, two TDMA receivers on two parallel VHF channels, interface, communication processor, and internal GPS receiver. The internal GPS is a 12-channel all-in-view receiver with differential capability. It also gives position, COG and SOG.



Model FA30/50

►►► Spec P132

AIS Receiver/Class-B AIS Transponder

KEY FEATURES:

- Enhances safe navigation by receiving critical navigation information from local AIS-equipped vessels
- Network output to NavNet and PCs for added redundancy and installation flexibility
- Serial output for integration with various Radar and Chart Plotter systems
- Fully satisfies the technical standards for Class-B AIS, IEC 62287-1 (FA50 only)
- Receives both Class-A and Class-B AIS information
- Outputs data to NavNet TZtouch2/TZtouch, through Ethernet
- Flexible integration with various AIS compatible Radar and Chart Plotters



INFORMATION TO BE RECEIVED

Dynamic Data

- Ship's position
- Course over ground (COG)
- Speed over ground (SOG)
- Rate of turn (ROT)*
- Heading
- Navigation status*

Static Data

- MMSI (Maritime Mobile Service Identity)
- IMO number*
- Ship's name
- Type of ship
- Call sign
- Length and beam
- Location of position-fixing antenna on the ship

Voyage Related Data

- Ship's draft*
- Hazardous cargo
- Destination and ETA*

Safety-related message

*Class-A AIS Only



Model FA170

►►► Spec P132

Class A AIS Transponder

KEY FEATURES:

- Complies with IMO MSC.74(69) Annex 3, IMO MSC.302(87), A694, ITU-R M. 1371-5 and DSC ITU-R M.825. It also complies with, IEC 61993-2 (Type testing standard) and IEC 60945 Ed. 4 (EMC and environmental conditions).
- Displays information about AIS-equipped ships, as well as coastal stations and Aids to Navigations within VHF coverage
- Outputs AIS data to NavNet TZtouch/TZtouch2/TZtouch3, Radar and other navigational equipment for collision avoidance support



COLLISION AVOIDANCE MADE EASY

Displays symbols for AIS-equipped ships, base stations, AIS-SART's, and so on. When you select a specific target, the information about the ship (MMSI [or name, when available], heading, SOG, COG, etc.) is displayed.



- ✓ Own ship symbol
- △ Target
- △ Selected target
- ⊞ Aid to Navigation (physical)
- ◇ Aid to Navigation (physical)
- ⊞ Aid to Navigation (virtual)
- ⊗ AIS-SART/AIS MOB/EPIRB-AIS
- ✈ SAR aircraft
- ⊞ SAR vessel



Model FM4800

►►► Spec P133

**Marine VHF Radiotelephone
with built-in AIS Receiver**

KEY FEATURES:

- Built-in AIS Receiver for situational awareness and collision avoidance
- Built-in 72 channels GPS Receiver (FM4800)
- 25W/1W output power
- Class D DSC with Distress, Individual and All Ship calls
- 30W PA/Loud Hailer with automatic fog signals and listen back
- NMEA2000 and NMEA0183 networking
- ATIS mode available for inland waterway
- Pre-programmed frequency band for USA, Canadian and International marine channels, plus 10 weather channels where available
- Initiate DSC calls directly from NavNet TZtouch2/TZtouch3 Series when connected via NMEA2000
- Dual Station with optional handset
- Up to 3 Handsets/Speakers connectable (FM4850)
- Fully waterproof (Transceiver, Microphone and Handset all IP67)

Model FM4850

►►► Spec P133

**Black Box Marine VHF Radiotelephone
with built-in AIS Receiver**

BUILT-IN GPS (FM4800)

Built-in Hi-Sensitivity 72 channels GPS with internal antenna which eliminates external GPS antenna and its wiring requirements.

BUILT-IN AIS RECEIVER

When connected to a MFD or chart plotter that can read and display AIS data, the built-in AIS Receiver will enhance your safety at sea by providing all the data you need for situational awareness and collision avoidance.

LOUD HAILER/FOG HORN

15W/30W max. PA/Loud Hailer having 8 automatic fog/warning signals and a listen-back capability allowing for two-way communication.

DUAL STATION

The optional Handset HS-4800 supports all the functionality of the FM4800 and works as a second station. Intercom function is also supported.



Optional Handset
HS-4800



Optional Speaker
SP-4800



Model FM8900S

►►► Spec P134

VHF Radiotelephone (simplex/semi-duplex)

KEY FEATURES:

- Semi-duplex 25W VHF radiotelephone with built-in Class A DSC and CH70 watchkeeping receiver
- Fully meets GMDSS carriage requirements for SOLAS ships
- Meets the ITU recommendation on digital selective calling system for use in the Maritime Mobile Service, ITU-R M.493-14 or later
- Easy to read, high-contrast 4.3" bright color LCD
- Improved noise reduction and speaker for superb voice quality
- Quick access to CH16:
 - Press the CH16 key on the keypad to switch to Radiotelephone display and select CH16 instantly
- Easy channel selection with rotary control or direct keypad input
- Automatic entry of own ship position and time through the interfaced GPS receiver
- ATIS signal transmission available for inland waterways
- Replay of the latest received voice call, which is automatically recorded, for 120 seconds



Model FS1575/2575

►►► Spec P135

MF/HF Radiotelephone

KEY FEATURES:

- FS1575 150W MF/HF Radio
- FS2575 250W MF/HF Radio
- MF/HF Radiotelephone with DSC facility
- Fully meets GMDSS carriage requirements for SOLAS ships operating in A3 and A4 sea areas
- Meets the new ITU recommendation on digital selective calling system for use in the Maritime Mobile Service, ITU-R M.493-14
- High-contrast 4.3" bright color LCD (480x272 pixels)
- Capable of distress, safety and routine communication
- Instant selection of 256 user-specified channels with a rotary knob or direct keypad input
- Quick access to DSC message composition using dedicated keys on the control unit
- Quick access to dedicated functions in the menu operation using numeric keypad



Pictured: FM4800 with optional handset.



Optional Intercom

Model LH5000

▶▶▶ Spec P136

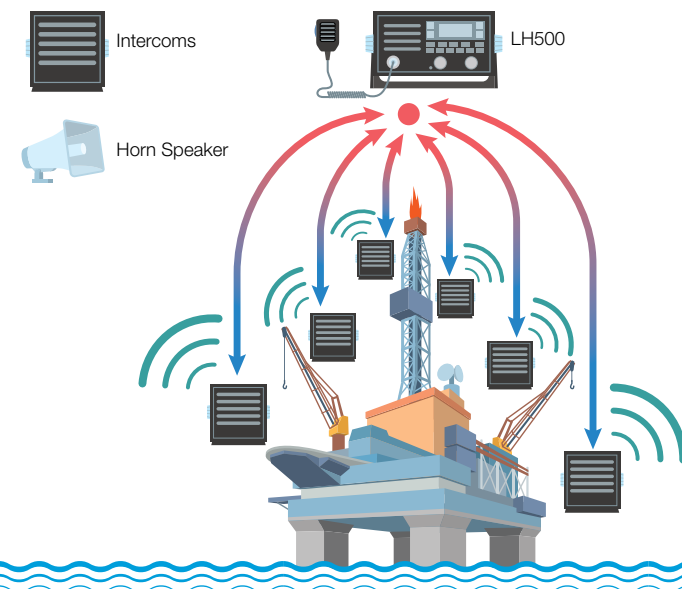
Loud Hailer

KEY FEATURES:

- Two powerful 30W hailer outputs (1 forward/1 aft)
- Listen Back feature for two-way communication
- Eight automatic fog/warning signals
- Up to 6 intercoms for onboard communication and PA (5W each)
- Built-in high quality speaker
- Bright LCD for easy operation
- Flush mount capability
- Fully waterproof main unit, microphone and intercoms speakers

8 CHANNEL PUBLIC ANNOUNCEMENT

With 2 hailers and 6 intercoms providing a total of 8 possible channels, you can now coordinate any action even on a big ship or facility.





Model NX300

►►► Spec P136

NAVTEX Receiver

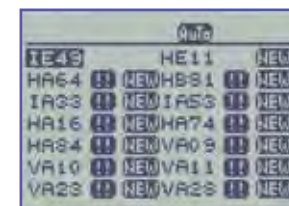
KEY FEATURES:

- Paper-free Navtex Receiver
- Selectable frequency for both international and domestic/local Navtex messages
- Uninterrupted reception of Navtex messages
- Memory for up to 28,000 characters
- High contrast 4.5" Silver Bright LCD
- Nav data display when connected to external GPS
- Automatic selection of the Navtex station according to position when connected to external GPS
- Low power consumption
- Memory backup with long-life lithium battery

MAINTAIN SITUATIONAL AWARENESS

Monitor navigational warnings, meteorological warnings, search and rescue information and other data for ships sailing within 200-400 n.m. of shore.

A	Navigation warning	I	Reserved - presently not used
B	Meteorological warning	J	Differential omega message
C	Ice report	K	Other electronic navigational aid and system message
D	Search and rescue information/piracy and armed robbery	L	Navigational warning (additional)
E	Meteorological forecast	M-Y	Reserved – presently not used
F	Pilot message	V	Notice to Fishermen (US only)
G	AIS service message	Z	QRU (no message on hand)
H	Loran-C message		



Message List



Nav Data



Model FAX30

►►► Spec P137

Black Box Weather Facsimile Receiver

KEY FEATURES:

- Cost effective paperless weather fax and Navtex Receiver
- Connect directly to a NavNet display or through an Ethernet hub
- Connect to a PC equipped with Ethernet
- Selectable display colors: 8 gray tones, monochrome, blue shades, pink and black, red and blue
- Web browser navigation on PC, no proprietary software required
- Print images and messages from PC and printer
- Store a maximum of 12 weather fax images (depending on file size)
- Navtex messages can be retrieved in a table listing of up to 130 stored files
- Stored images/messages can be shown at any time
- 320 user programmed channels
- Noise rejection for clear image
- Thumbnail view for easy selection of stored images



CONNECT VIA PC OR NAVNET DISPLAY

Furuno's FAX30 is a waterproof "Black Box" unit that connects directly to a NavNet display or an Ethernet hub with a single Ethernet cable. If it is connected to an Ethernet hub that has multiple NavNet displays attached, each of those displays will have access to the FAX30. On a PC, the images and information are displayed by simply using your Web Browser. There is no complicated proprietary software to install or learn. Combine the new FAX30 with NavNet's true color Radar and you have the ultimate in weather tracking.



PC not supplied



Model FELCOM501

►►► Spec P138

INMARSAT FleetBroadband

Model FELCOM251

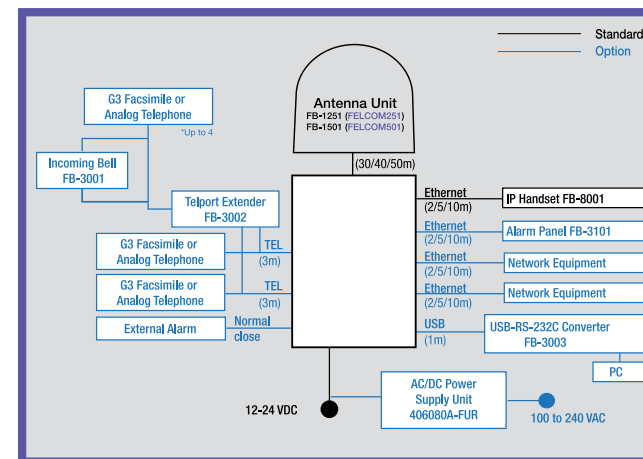
►►► Spec P138

INMARSAT FleetBroadband

KEY FEATURES:

- IP handsets and Incoming Bell (FB-3001 option) can be integrated through Ethernet
 - Multiple IP handsets can be incorporated into the network using the switching hub
- IP-PBX incorporated
 - Comprehensive selection of telephone exchange functions available, i.e., internal communication lines, incoming call routing, etc.
 - Wide range of incoming call settings available, i.e., group call function, etc.
- Built-in NAT router facilitates smooth network integration to the Internet
- Wide variety of security settings available, i.e., firewall, IP filter, etc.
- No dedicated software required for configuration setup (web server function incorporated)
 - Configuration setup can be done using a web browser
- Supports PPPoE to facilitate automatic dial-up connection/disconnection via applications

FLEETBROADBAND SYSTEM CONFIGURATION



Equipment list:

Model	FELCOM251	FELCOM501
Standard		
1. Antenna Unit	FB-1251	FB-1501
2. Communication Unit	FB-2001	
3. IP Handset	FB-8001	
Option		
Incoming Bell	FB-3001	
Analog Telephone	GEMINI 9333B4	
G3 FAX	FAX2840JP/2840	
AC/DC Power Supply Unit	406080A-FUR-001	

*A vessel needs to notify Inmarsat Satellite of which spot beam area the vessel is located in. This way, the Inmarsat Satellite can transmit the spot beam to the vessel's location.



Technical Specifications

NavNet Series	88
Radar	99
GPS/Chart Plotter	110
Fish Finder	115
Sonar	119
Multi Beam Sonar	121
Autopilot	123
Instrument	125
Monitors	127
Remote Display	129
Compass	130
Communications	132

NavNet TZtouch3

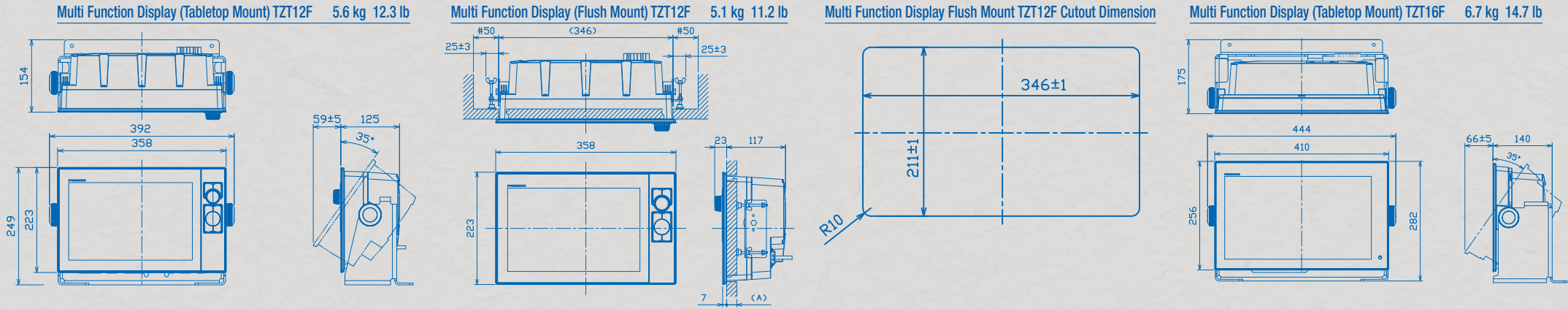
NavNet TZtouch3 MFDs				
	TZT12F		TZT16F	TZT19F
DISPLAY UNIT				
Type	Color TFT multi touch IPS LCD			
Screen Size	12.1" Wide	15.6" Wide	18.5" Wide	
Screen Resolution	WXGA 1280 x 800	FHD 1920 x 1080	FHD 1920 x 1080	
Screen Brightness	900 cd/m2 (typical)	1000 cd/m2 (typical)	900 cd/m2 (typical)	
Display Colors	16,770,000 colors (Chart Plotter), 64 colors (Radar/Fish Finder)			
Language	Bulgarian, Chinese, Danish, English (USA/UK), Finnish, French, German, Greek, Italian, Japanese, Norwegian, Portuguese, Russian, Spanish, Swedish			
GPS/WAAS				
Receiver Type	GPS: 72 channels, SBAS: 1 channel (C/A mode, WAAS)		-	
Receiving Frequency	L1 (1575.42 MHz)		-	
Time to First Fix	100 s (cold start)		-	
Accuracy	10 m (GPS), 7 m (MSAS), 3 m (WAAS)		-	
Position Update Interval	100ms or 10Hz		-	
CHART PLOTTER				
Cartography	MapMedia mm3d chart (C-MAP/Navionics/NOAA) and CMOR			
Memory Capacity	30,000 user points, 30,000 points for ship's tracks, 200 planned routes (500 points per route)			
Alarms	Anchor Watch, XTE, Depth*, Speed, Sea Surface Temperature*, Trip Distance, Fuel Gauge* (*external data required)			
RADAR				
Display Modes	Head-up*, North-up *Heading input required.			
Echo Trails	Interval: 15 s, 30 s, 1 min, 3 mins, 6 mins, 15 mins, 30 mins and continuous (Heading input required)			
Target Tracking	30 ARPA Targets with fully automatic target aquisition (Heading input required)			
Radar Alarms	Guard Zone, CPA/TCPA, Trigger, Video, Azimuth, Heading Line			
FISH FINDER				
Transmit Frequency	CW: 50/200 kHz, CHIRP: 40 kHz to 225 kHz			
Transducer	300/600 W or 1 kW* *Matching box MB1100 required for some transducers.			
Display Range	2 to 1,200 m; shift 0 to 1,200 m			
Extension Mode	ACCU-FISH™, A-Scope, Auto (Fishing/Cruising), RezBoost™, Bottom Discrimination, TruEcho CHIRP™ with compatible transducer			
Picture Advance	8 steps: x4, x2, x1, 1/2, 1/4, 1/8, 1/16, stop			
Fish Finder Alarms	School of fish, School of fish for bottom lock			
INTERFACE				
NMEA2000	1 Port			
Input	065280, 126992/993/996, 127237/245/251/257/488/489/505, 128259/267, 129025/026/029/330/038/039/040/041/291/538/540, 129793/794/798/801/802/808/809/810, 130306/310/311/312/313/314/316/577/578, 130817/818/820/822/823/826/827/828/880			
Output	126992/993/996, 127250/251/257/258, 128259/267/275, 129025/026/029/033/283/284/285, 130306/310/311/312/313/314/316			
NMEA0183	1 Serial Output Port			
Output	AAM, APB, BOD, DBT, DPT, GGA, GLL, GNS, GSA, GSV, RMB, RMC, RTE, TTM, VDM, VTG, WPL, XTE, ZDA			
LAN	2 Ports (100 BASE-TX)			
USB	1 Port (USB2.0) for touch monitor and control unit or chart/user data	2 Ports (USB2.0) for touch monitor and control unit or chart/user data		
Video I/O	Input: 2 Ports (NTSC/PAL) Output: 1 Port (HDMI 720p)	Input: 2 Ports (NTSC/PAL) and 1 Port HDMI 1080p (FHD) or less Output: 1 Port (HDMI 1080p)		
AUX I/O	2 Ports (Event Switch and External Power Switch)			
SD Card Slot	1 Slot (Micro SDXC, rear), 2 Slots Card Unit: Model SDU-001 (option)			
Wireless LAN	IEEE802.11b/g/n, Transmit frequency: 2.412 to 2,462 GHz, 11dBm max			
Transducer Connection	1 Port Transducer, 1 Port DI-FFAMP			
ENVIRONMENT				
Temperature (IEC60945)	-15°C to +55°C			
Relative Humidity	93% or less at +40° C			
Waterproofing	IP56			
POWER				
	12-24 VDC			
	2.3 - 1.2 A	4.3 - 2.2 A	4.7 - 2.3 A	

NavNet TZtouch2	NavNet TZtouch2 MFDs		
	TZTL12F	TZTL15F	TZT2BB
DISPLAY UNIT			
Type	Color TFT multi touch LCD		Requires optional color LCD, recommended color LCD with touch panel control
Screen Size	12.1" Wide	15.6" Wide	Dependent upon display selected
Screen Resolution	WXGA 1280 x 800	FWXGA 1366 x 768	FHD 1920 x 1080 (recommended), XGA 1024 x 768, SXGA 1280 x 1024
Screen Brightness	1300 cd/m2 (typical)	1000 cd/m2 (typical)	Dependent upon display selected
Signal Interface			Picture: HDMI, Extended HDCP Touch Panel: USB 2.0, Windows® 7 multi-touch
Language	Chinese, Danish, English (USA/UK), Finnish, French, German, Greek, Italian, Japanese, Norwegian, Portuguese, Russian, Spanish, Swedish		
GPS/WAAS			
Receiver Type	GPS: 56 channels, SBAS: 1 channel (C/A mode, WAAS)		-
Receiving Frequency	L1 (1575.42 MHz)		-
Time to First Fix	100 s (cold start)		-
Tracking Velocity	999 kn		-
SBAS	WAAS, EGNOS, MSAS		-
ACCURACY			
Internal Antenna	GPS: 10 m Max, WAAS: 3 m Max, MSAS: 7 m Max		-
CHART PLOTTER			
Cartography	MapMedia mm3d chart (C-MAP/Navionics/NOAA) and CMOR		
Memory Capacity	30,000 user points, 30,000 points for ship's tracks, 200 planned routes (500 points per route)		
Alarms	Anchor Watch, XTE, Proximity, Depth, Temperature, Speed, etc.		
RADAR			
Display Modes	Head-up*, North-up *Heading input required.		
Echo Trail	Interval: 15 s, 30 s, 1 min, 3 mins, 6 mins, 15 mins, 30 mins and continuous (heading input required)		
Target Tracking	30 Targets*, 100 Targets* (with DRSNXT series) *Heading input required.		
FISH FINDER			
Transmit Frequency	50/200 kHz		
Transducer	600 W or 1 kW* *Matching box MB1100 required for some FURUNO transducers.		
Display Range	2-1, 200 m, shift: 0-500 m		
Extension Mode	RezBoost™*, ACCU-FISH™*, Bottom Discrimination*, A-Scope, Auto (Fishing/Cruising), Bottom Zoom, Bottom Lock *Compatible transducer required		
Picture Advance	8 steps: x4, x2, x1, 1/2, 1/4, 1/8, 1/16, stop		
INTERFACE			
NMEA2000	1 Port		
Input	059392, 059904, 061184, 060928, 065280, 126208, 126720, 126992, 126996, 127237, 127245, 127250, 127251, 127257, 127258, 127488, 127489, 127505, 128259, 127267, 129025, 129026, 126029, 126033, 126038, 126039, 126040, 126041, 126291, 126538, 126540, 129793, 129794, 129798, 129801, 129802, 129808, 129809, 129810, 130306, 130310, 130311, 130312, 130313, 130314, 130316, 130577, 130578, 130817, 130818, 130820, 130822, 130823, 130826, 130827, 130828, 130880		
Output	059392, 059904, 061184, 060928, 126208, 126464, 126720, 126992, 126993, 126996, 127250, 127251, 127257, 127258, 128259, 128267, 128275, 129025, 129026, 129029, 129033, 129283, 129284, 129285, 130306, 130310, 130312, 130313, 130314, 130316, 130821, 130822, 130823, 130827		
NMEA0183	1 Integrated Output Port		
Output	AAM, APB, BOD, DPT, DBT, GGA, GLL, GNS, GSA, GSV, RMB, RMC, RTE, TTM, VTG, WPL, XTE, ZDA	CUR, DPT, GGA, GSV, HDG, HDT, MDA, MTW, MWV, RSA, ROT, VDM, VHW, VTG, XDR, ZDA	
LAN	1 Port (100 BASE-TX)		3 Ports (100 BASE-TX)
USB	1 Port (USB2.0)		5 Ports (USB2.0)
Video I/O	Input: 2 Ports (NTSC/PAL), Output: 1 Port (HDMI 1280 x 720p)		Input: 2 Ports (NTSC/PAL), 1 Port (HDMI, FHD 1920 x 1080p, SXGA 1280 x 1024p, XGA 1024 x 768p) Output: 2 Ports (HDMI, FHD 1920 x 1080p, SXGA 1280 x 1024p, XGA 1024 x 768p)
AUX I/O	1 Port (External Event/MOB Input/Operator Fitness/Alarm Output)		1 Port (External Event/MOB Input/Power switch/Alarm Output)
SD Card Slot	1 Slot (Micro SDXC, rear), 2 Slots Card Unit: Model SDU-001 (option)		2 Internal Slots (SXDC card - supports up to 256 GB)
Wireless LAN	IEEE802.11b/g/n, Transmit frequency: 2.4 GHz band		
Transducer Connection	1 Port		
ENVIRONMENT			
Temperature (IEC60945)	-15°C to +55°C		
Waterproofing	IP56		Processor: IP22, Switch Box: IP56, Control Unit (optional): IP56
POWER			
	12-24 VDC		
	3.0-1.5 A	3.6-1.8 A	2.6-1.3 A

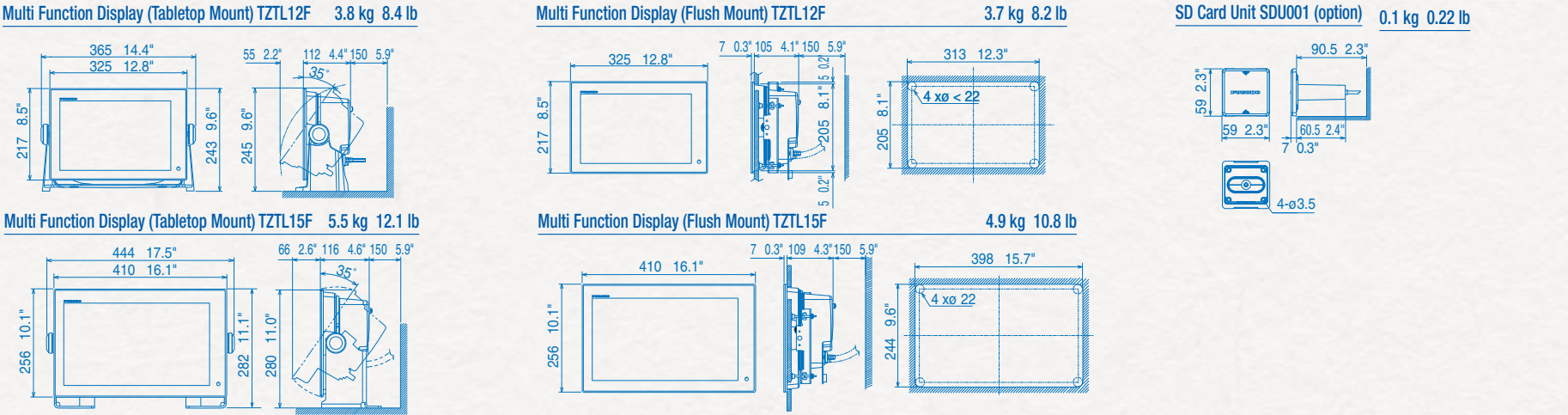
NavNet TZtouch

NavNet TZtouch MFD's			
	TZT9	TZT14	TZTBB
DISPLAY UNIT			
Type	Color TFT multi touch LCD		Requires optional color LCD with touch panel control, supports both
Screen Size	9" Wide	14.1" Wide	Dependent upon display selected
Screen Resolution	WVGA 800 x 480	WXGA 1280 x 800	Support both wide and non-wide resolutions 1280 x 720 (16:9), 1280 x 600 (16:10), 1280 x 960 (4:3), 1280 x 1024 (5:4)
Screen Brightness	900 cd/m2 (typical)		Dependent upon display selected
Language	Chinese, Danish, English (USA/UK), Finnish, French, German, Greek, Italian, Japanese, Norwegian, Portuguese, Spanish, Swedish		
CHART PLOTTER			
Cartography	MapMedia mm3d chart (C-MAP/Navionics/NOAA)		
Memory Capacity	30,000 user points, 30,000 points for ship's tracks, 200 planned routes (500 points per route)		
Alarms	Anchor Watch, XTE, Proximity, Depth, Temperature, Speed, etc.		
RADAR			
Display Modes	Head-up*, North-up *Heading input required.		
Echo Trail	Interval: 15 s, 30 s, 1 min, 3 mins, 6 mins, 15 mins, 30 mins and continuous		
Target Tracking	30 Targets*, 100 Targets* (with DRSNXT series) *Heading input required		
INTERFACE			
NMEA2000	1 Port		
Input	059392, 059904, 060928, 061184, 065280, 126208, 126720, 126992, 126996, 127237, 127245, 127250, 127251, 127257, 127258, 127488, 127489, 127505, 128259, 128267, 129025, 129026, 129029, 129033, 129038, 129039, 129040, 129041, 129538, 129540, 129793, 129794, 129798, 129808, 129809, 129810, 130306, 130310, 130311, 130312, 130313, 130314, 130577, 130578		
Output	059392, 059904, 061184, 060928, 126208, 126464, 126720, 126992, 126996, 127250, 127251, 127257, 127258, 128259, 128267, 129025, 129026, 129029, 129033, 129283, 129284, 129285, 130306, 130310, 130312, 130313, 130314, 130316, 130821, 130822, 130823, 130827		
LAN	1 Port (100 BASE-TX)	3 Ports (100 BASE-TX)	
USB	1 Port (USB2.0)		6 Ports (USB2.0)
Video I/O	Input: 2 Ports (NTSC/PAL), Output: 1 Port (DVI-D)		Input: 2 Ports (NTSC/PAL), Output: 2 Ports (DVI-D)
Line Out	1 Port		
SD Card Slot	2 Slots (SXDC card - supports up to 128 GB)		
ENVIRONMENT			
Temperature (IEC60945)	-15°C to +55°C		
Waterproofing	IP56		Processor: IP22, Switch Box: IP56 (front panel)
POWER			
	12-24 VDC		
	3.5-1.8A	5.0-2.5A	2.6-1.3A (includes switch box)

NavNet TZtouch3

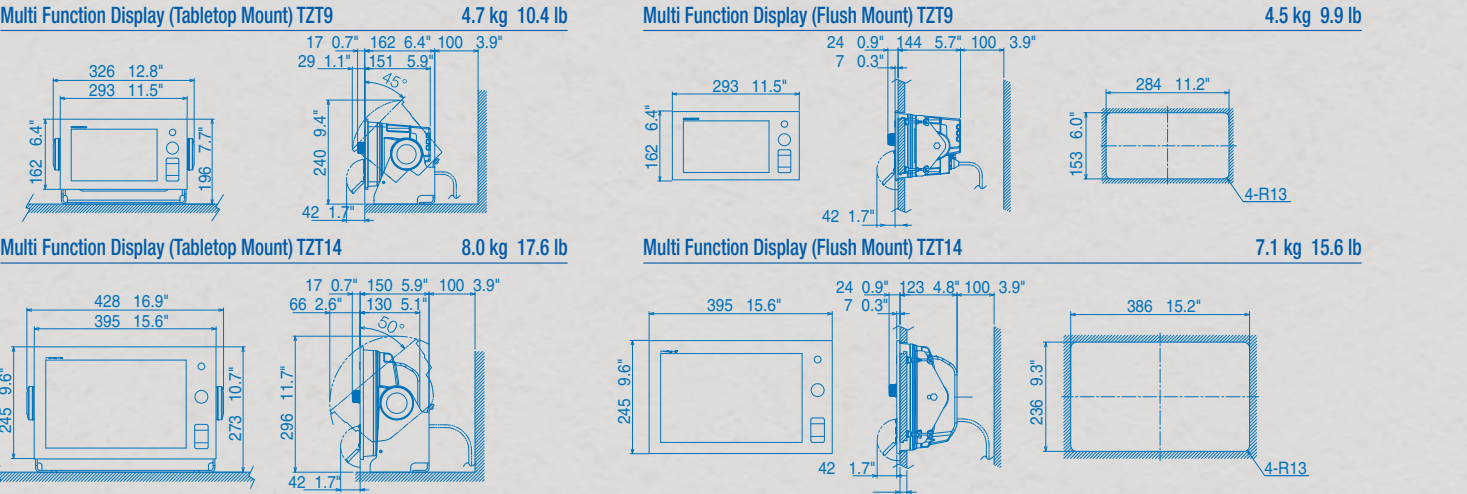
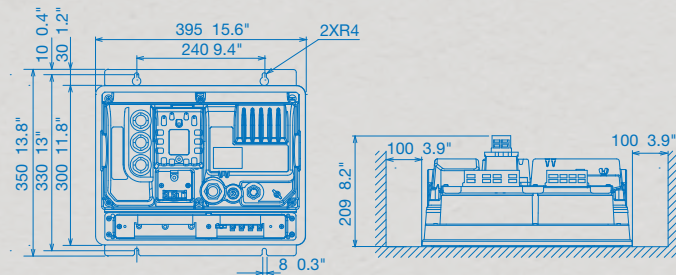


NavNet TZtouch2

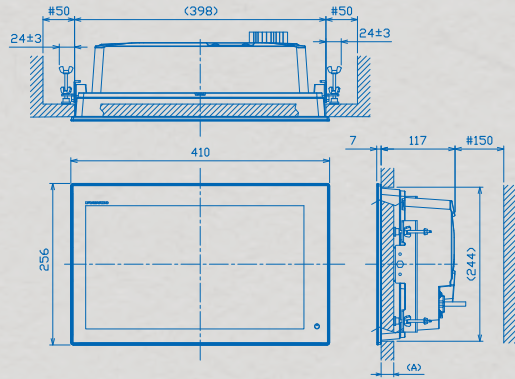


NavNet TZtouch

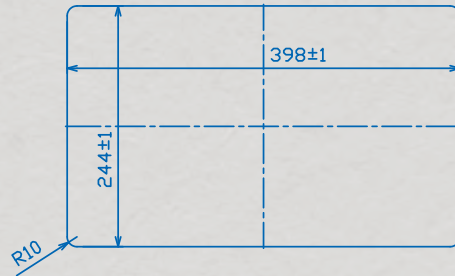
Multi Function Display Black Box TZTBB MPU-002 8 kg 17.6 lb



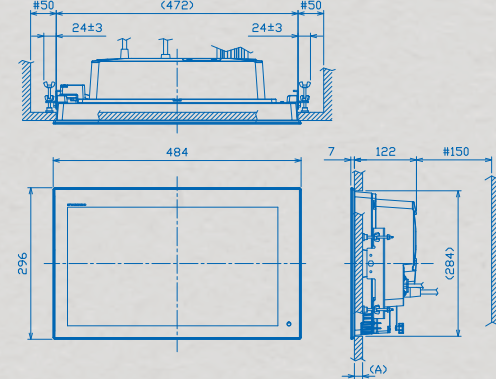
Multi Function Display (Flush Mount) TZT16F 5.9 kg 13.0 lb



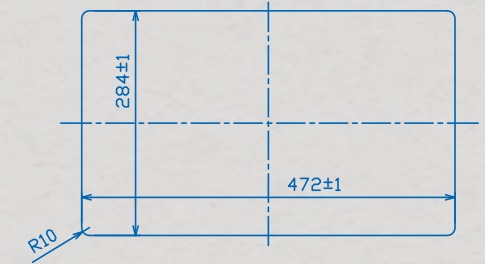
Multi Function Display Flush Mount TZT16F Cutout Dimension



Multi Function Display (Flush Mount) TZT19F 7.8 kg 17.2 lb



Multi Function Display Flush Mount TZT19F Cutout Dimension



Multi Function Display Black Box TZT2BB Switch Box PSD003

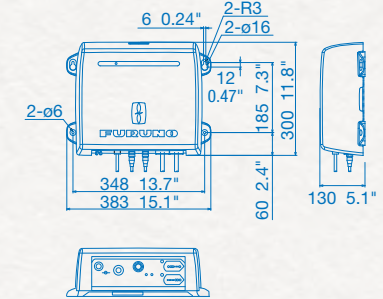
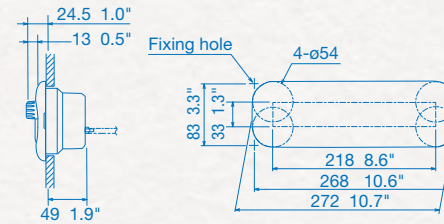
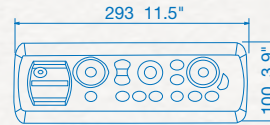
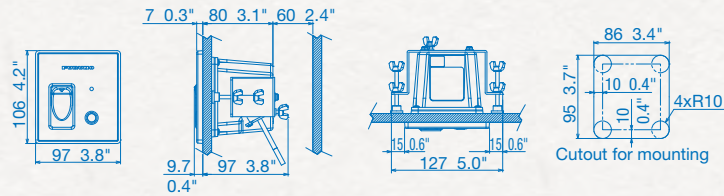
0.75 kg 1.7 lb

Multi Function Display TZT2 Control Unit MCU005 (option)

1.0 kg 2.2 lb

Multi Function Display Black Box TZT2BB MPU004

3.9 kg 8.6 lb



Remote Control Unit MCU002 (option)

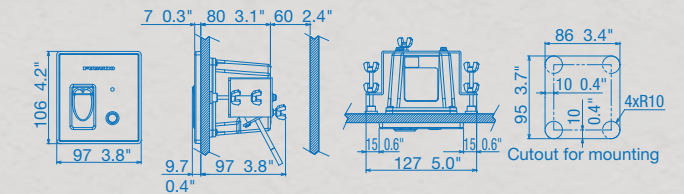
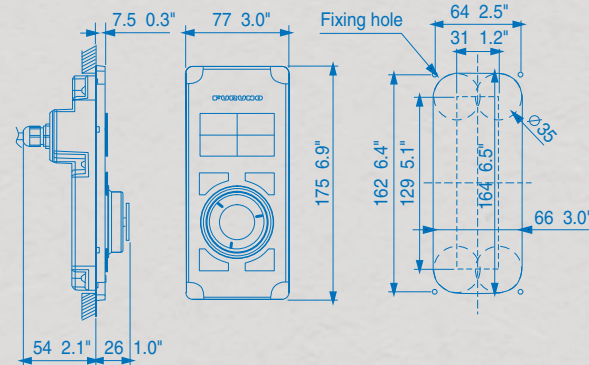
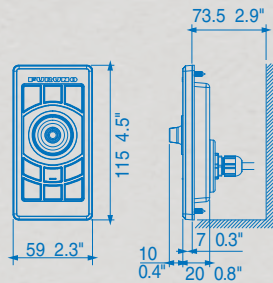
0.14 kg 0.3 lb

Remote Control Unit MCU004 (option)

0.4 kg 0.9 lb

Multi Function Display Black Box TZTBB Switch Box PSD-002

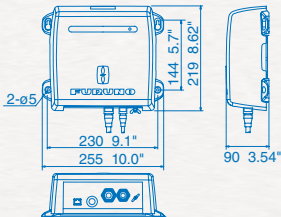
0.75 kg 1.7 lb



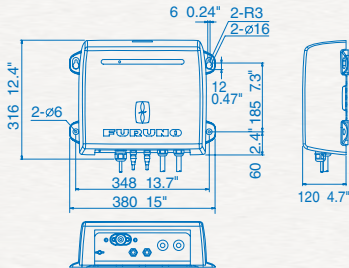
NavNet Series Fish Finders

	NETWORK BOTTOM DISCRIMINATION SOUNDERS		
	BBDS1	DFF1-UHD	DFF3
TRANSCEIVER & DISPLAY			
Display Modes	Single (50 or 200 kHz), Dual (50 and 200 kHz), Bottom-lock, Bottom-Zoom, ACCU-FISH™*, Bottom Discrimination*, Marker Zoom, A-scope *Compatible transducer required	Single (High or Low frequency), Dual (Both High and Low frequencies), Bottom-lock, Bottom-Zoom, ACCU-FISH™*, Bottom Discrimination*, Marker Zoom, A-Scope *Compatible transducer required	Single (high or low), Dual (high and low), Bottom-lock, Bottom-Zoom, ACCU-FISH™*, Marker Zoom, A-scope *Compatible transducer required
Frequency	Dual frequency 50 and 200kHz	Dual frequency CHIRP 50 ±20 & 200 ±25 kHz	The synthesized transducer works with dual frequencies between 28 and 200 kHz
Broadband (CHIRP)	N/A	Yes	N/A
Range Scale	Max. 1,200 m	Max. 1,200 m	Max. 3,000 m
ENVIRONMENT			
Temperature	-15°C to +55°C		
Waterproofing	IP20	IP55	IP20
POWER SUPPLY			
	12-24 VDC		
	12W, 1.1-0.4A	30W, 2.8-1.4A	30W, 2.8-1.4A
TRANSDUCERS (Specify when ordering)			
	600 W 50/200 kHz: 520-5PSD (Plastic, thru-hull), 520-5MSD (Bronze, thru-hull), 525-5PWD (Plastic, transom), 525STID-MSD (Bronze, thru-hull with speed/temp sensor), 525STID-PWD (Plastic, transom with speed/temp sensor) 1 kW (Optional Matching Box, MB1100 may be required) 50/200 kHz: CA50/200-1T, CA50/200-12M More Transducer options are available. Contact your Furuno dealer.	1 kW Broadband transducers by AIRMAR® 42-65 kHz (low), 130-210 kHz (high) CM265LH, B265LH (with temperature sensor) CM275LHW, B275LHW More Transducer options are available. Contact your Furuno dealer.	1/2/3 kW 28 kHz: CA28F-8, CA28BL-6HR, CA28BL-12HR 38 kHz: CA38BL-9HR, CA38BL-15HR 50 kHz: CA50B-6/6B, CA50B-9B, CA50BL-12HR, CA50BL-24HR 68 kHz: CA68F-8H, CA68F-30H 82 kHz: CA82B-35R 88 kHz: CA88B-8, CA88B-10, CA88F-126H 107 kHz: CA100B-10R 150 kHz: CA150B-12H 200 kHz: CA200B-5S, CA200B-8/8B, CA200B-12H 50/200 kHz: CA50/200-1T More Transducer options are available. Contact your Furuno dealer.

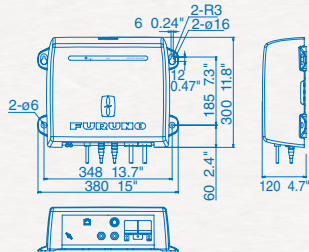
Network Fish Finder/Bottom Discrimination Sounder BBDS1 1.3 kg 2.9 lb



Network Fish Finder DFF1-UHD 3.1 kg 6.8 lb



Network Fish Finder DFF3 3.8 kg 8.4 lb

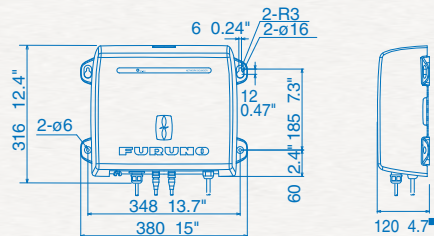


	NETWORK MULTI BEAM SONAR
	DFF3D
TRANSCIVER & DISPLAY	
Display Mode	Cross Section, Triple/Single Beam Sounder, Side Scan, 3D Sounder History
Frequency	165 kHz
Beam Angle	60° Port/Stbd, 20°-50° from right under for Triple Beam Sounder
Detection Range	200 m* (Side beam best performance) 300 m* (Main beam directly under boat) * Depending on bottom type and water conditions.
Range Scale	5-1,200 m
INTERFACE	
LAN	1 port, Ethernet 10/100Base-TX
External KP	1 port (optional external KP kit required)
ENVIRONMENT	
Temperature	-15°C to +55°C
Waterproofing	IP55
POWER SUPPLY	
	12-24 VDC, 1.4-0.7 A
TRANSDUCER	
	165T-B54 or 165T-SS54 (thru-hull mount), or 165T-TM54 (transom mount) Combo Transducers: 165T-50/200-SS260 (thru-hull mount), 165T-265LHPM488 (pocket mount), or 165T-50/200-TM260 (transom mount)

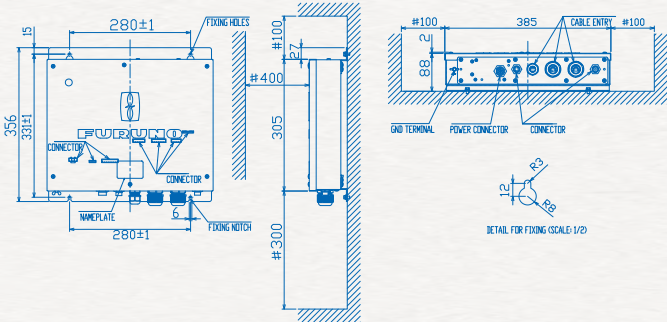
	NETWORK SOUNDER POWER AMPLIFIER
	DI-FFAMP
Display Modes	Single (High or Low frequency), Dual (Both High and Low frequencies), Bottom-lock, Bottom-Zoom, A-Scope
Frequency	26.6 to 242 kHz
Broadband (CHIRP)	Avaiable 2 ch
Range Scale	Max. 3,000 m
Output Power	2 kW/3 kW
ENVIRONMENT	
Temperature	-15°C to +55°C
Waterproofing	IP22
POWER SUPPLY	
	12-24 VDC, 43.1W, 3.2-1.9A
Transducer (specify when ordering)	
2 kW Dual-Band CHIRP PM111LH, PM111LHW, R109LH, R109LHW, R111LH 2/3 kW Dual-Band CHIRP CM599LH, CM599LHW, CM599LM, R509LH, R509LHW, R509LM, R599LH, R599LM 2 kW Single-Band CW 28BL-6HR, 38BL-9HR, 50BL-12HR, 82B-35R, 88B-10, 200B-8/8B 3 kW Single-Band CW 28BL-12HR, 38BL-15HR, 50BL-24HR, 68F-30H, 100B-10R, 150B-12H 5 kW Single-Band CW* 28F-38M**, 50F-38**, 88F-126H, 200B-12H 10 kW Single-Band CW* 28F-72**, 50F-70** *Rated power of these transducer is 5/10 kW, but actual output power from DI-FFAMP is 3 kW. **Booster Box BT-5 is needed for these transducers.	

NOTE: DI-FFAMP Requires connection to the TZX3 Internal Fish Finder.
*5kW & 10kW are CW and require BT-5 booster box.

Network Multi Beam Sonar DFF3D 3.0 kg 6.6 lb



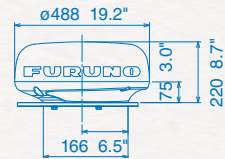
Network Sounder Power Amplifier DI-FFAMP 7.0 kg 15.4 lb



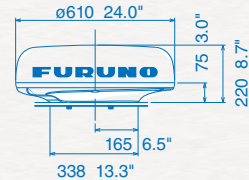
NavNet Series Radar

		NavNet SERIES RADAR SENSOR				
		DRS4DL+	DRS4DNXT	DRS6ANXT	DRS12ANXT	DRS25ANXT
ANTENNA						
Type		ø480 mm Radome (19")	ø610 mm Radome (24")	ø1036 mm Open (3.5') 1255 mm Open (4') 1795 mm Open (6')	1036 mm Open (3.5') 1255 mm Open (4') 1795 mm Open (6')	1036 mm Open (3.5') 1255 mm Open (4') 1795 mm Open (6')
Beam Width	Horizontal	5.2°	3.9° typical (-3 dB) Adjustable between 2° and 3.9° (effective with RezBoost™ control)	2.3°/1.9°/1.35° (effective with RezBoost™ control)	2.3°/1.9°/1.35° (effective with RezBoost™ control)	2.3°/1.9°/1.35° (effective with RezBoost™ control)
	Vertical	25°	25°	22°/22°/22°		
Antenna Rotation Speed		24 rpm	24*/36/48 rpm range coupled or 24 rpm fixed * In dual range mode, speed is limited to 24 rpm			
RF TRANSCEIVER						
Frequency		9410 ± 30 MHz	CH1: 9380 MHz (P0N), 9400 MHz (Q0N) CH2: 9400 MHz (P0N), 9420 MHz (Q0N) CH3: 9420 MHz (P0N), 9440 MHz (Q0N)			
Pulselength & PRR		S: 0.08 µs/360 Hz (0.0625 to 0.5 NM) M: 0.3 µs/360 Hz (0.75 to 2 NM) L: 0.8 µs/360 Hz (3 to 36 NM)	P0N: 0.08 µs to 1.2 µs/1100 Hz Q0N: 5 µs to 18 µs/1100 Hz	P0N: 0.04µs to1.2µs/ 700Hz to 2000Hz Q0N: 5µs to 48µs/ 700Hz to 2000Hz	P0N: 0.04µs to1.2µs/ 700Hz to 2000Hz Q0N: 5µs to 48µs/ 700Hz to 2000Hz	P0N: 0.04µs to1.2µs/ 700Hz to 2000Hz Q0N: 5µs to 48µs/ 700Hz to 2000Hz
Peak Output Power		4 kW	Solid-State, 25 W		Solid-State, 100 W	Solid-State, 200 W
Range Scales		0.0625 to 36* NM	0.0625 to 48* NM * In dual range mode, range is limited to 12 NM	0.0625 to 72* NM * In dual range mode, range is limited to 12 NM	0.0625 to 96* NM * In dual range mode, range is limited to 12 NM	0.0625 to 96* NM * In dual range mode, range is limited to 12 NM
ENVIRONMENT						
		Temperature: -25°C to +55°C, Waterproofing: IPX6	Temperature: -25°C to +55°C, Waterproofing: IP26	Temperature: -25°C to +55°C, Waterproofing: IP56		
POWER SUPPLY						
		12-24 VDC, 2.1-1.0 A	12-24 VDC, 2.5-1.3 A	12/24 VDC, 9.5/5.0 A		

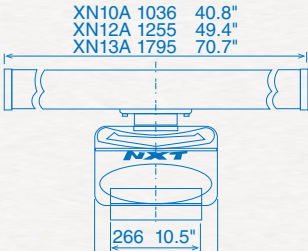
19" Radome Radar Sensor DRS4DL+ 5.7kg 12.7 lb



24" Radome Radar Sensor DRS4DNXT 7.3kg 16.1 lb

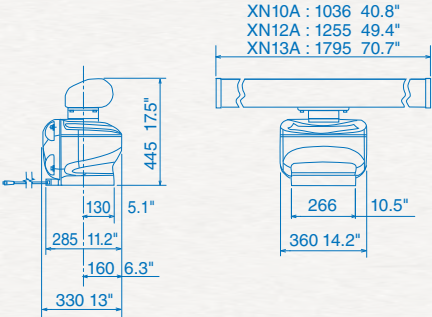
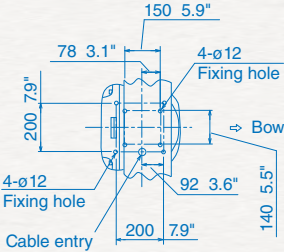


3.5 ft Open Antenna 22 kg 48.5 lb
4 ft Open Antenna 25 kg 55.1 lb
6 ft Open Antenna 27kg 59.5 lb



NavNet SERIES RADAR SENSOR		
DRS6AX	DRS12AX	DRS25AX
1036 mm Open (3.5') 1255 mm Open (4') 1795 mm Open (6')	1255 mm Open (4') 1795 mm Open (6')	
2.3°/1.9°/1.35°	1.9°/1.35°	
22°/22°/22°		
24/36/48 rpm range coupled or 24 rpm fixed		
9410 ±30 MHz		
0.08 µs/3000 Hz (0.0625 to 0.75 NM) 0.15 µs/3000 Hz (1 to 1.5 NM) 0.3 µs/1500 Hz (2 NM) 0.5 µs/1000 Hz (3 to 4 NM) 0.8 µs/600 Hz (6 to 9 NM) 1.2 µs/600 Hz (12 to 64 NM) 1.2 µs/550 Hz (72 to 96 NM)		
6 kW	12 kW	25 kW
0.0625 to 96 NM		
Temperature: -25°C to +55°C, Waterproofing: IP56		
24 VDC, 4 A	24 VDC, 4.5 A	24 VDC, 5.6 A

3.5 ft Open Radar Sensor DRS6AX	20.0 kg 44.1 lb
4 ft Open Radar Sensor DRS6AX	21.0 kg 46.3 lb
6 ft Open Radar Sensor DRS6AX	23.0 kg 50.7 lb
4 ft Open Radar Sensor DRS12AX	21.0 kg 46.3 lb
6 ft Open Radar Sensor DRS12AX	23.0 kg 50.7 lb
4 ft Open Radar Sensor DRS25AX	22.0 kg 48.5 lb
6 ft Open Radar Sensor DRS25AX	24.0 kg 53.0 lb



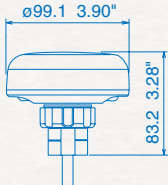
GPS/WAAS Receiver Antennas

	GPS/WAAS RECEIVER ANTENNAS
	GP330B and GP330B/0183
RECEIVER CHARACTERISTICS	
Receiver Type	Twelve discrete channels, C/A code, all-in-view, WAAS, 10Hz
Receiving Frequency	L1 (1575.42 MHz)
Time to First Fix	90 s (cold start)
Tracking Velocity	999.9 kn
Geodetic Systems	WGS-84, NAD-27 and others
Accuracy	10 m (GPS) 7 m (MSAS) 3 m (WAAS)
ENVIRONMENT (IEC 60945 test method)	
Temperature	-25°C to +55°C
Waterproofing	IEC 60529 IP56
POWER SUPPLY	
	12-24 VDC, LEN2
	1.4 W, 90-45 mA max

TIMEZERO Marine Software

	TimeZero PC Marine Software	
	TZ NAVIGATOR v4	TZ PROFESSIONAL v4
Processor	CPU 1.5 GHz	CPU 2 GHz
Operating System	Windows 7 SP1 or Windows 8.1 or Windows 10	Windows 7 SP1, Windows 8.1 or Windows 10
RAM Memory	4 GB of RAM	4 GB of RAM
Graphics Card	Minimum: integrated Intel Graphic Chipset Recommended:Dedicated Video Board with 1 GB VRAM or Intel HD 4th generation or above	Minimum: integrated Intel Graphic Chipset (i5 4th generation with HD4400 or above) Recommended: (for PBG and Multi monitor) Dedicated Video Board with 1 GB VRAM
Screen Resolution	1024 x 600 (1280 x 800 or above recommended)	1024 x 600 or higher
HDD	30 GB of free memory	20 GB of free memory
Serial or USB port	For connecting instruments or 100 Base-T Network adapter for FURUNO ethernet sensors	For connecting instruments or 100 Base-T Network adapter for FURUNO ethernet sensors

GPS/WAAS Receiver Antenna GP330B and GP330B/0183 0.22 kg 0.49 lb

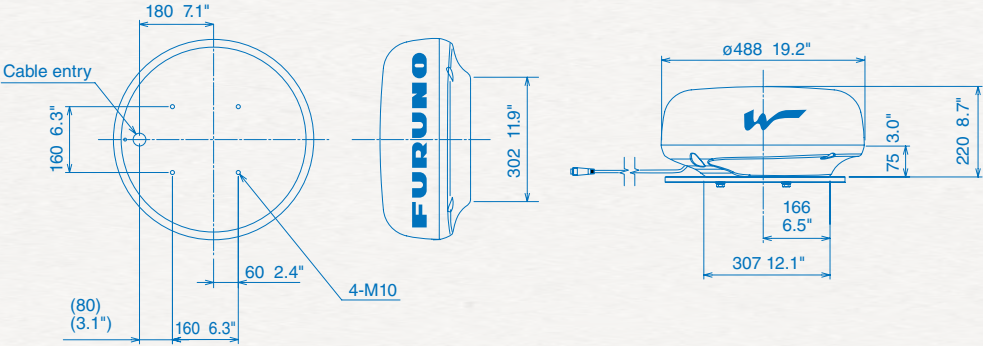


1st Watch Wireless Radar

		1st WATCH WIRELESS RADAR	
		DRS4W	
ANTENNA			
Type		ø488 mm Radome (19")	
Beam Width	Horizontal	7.2°	
	Vertical	25°	
Antenna Rotation Speed		24 rpm	
RF TRANSCEIVER			
Frequency		9410 ±30 MHz	
Pulselength & PRR		0.125 to 0.5: 0.08 µs/360 Hz 0.75 to 2: 0.3 µs/360 Hz 3 to 24: 0.8 µs/360 Hz	
Peak Output Power		4 kW	
Range Scales		0.125 to 24 NM	
WIRELESS LAN			
Number of connectable devices		2 units	
Transmit frequency		2.4 GHz band	
APPLICATION			
Name		"Marine Radar" from Apple App Store (Free of charge)	
Display (customer supply)		iPad/iPad mini/iPhone, iOS 6.1 or later	
Screen Orientation		Portrait/Landscape (iPad, iPad mini only)	
Language		English	
Mode		Full screen, Day/Night, Gain (auto), STC (auto), Rain, Auto Noise rejector, Guard Zone Off center, Cursor position* * iPad, iPad mini	
ENVIRONMENT			
		Temperature: -25°C to +55°C, Waterproofing: IP26	
POWER SUPPLY			
		12-24 VDC, 2.1-1.0 A MAX	

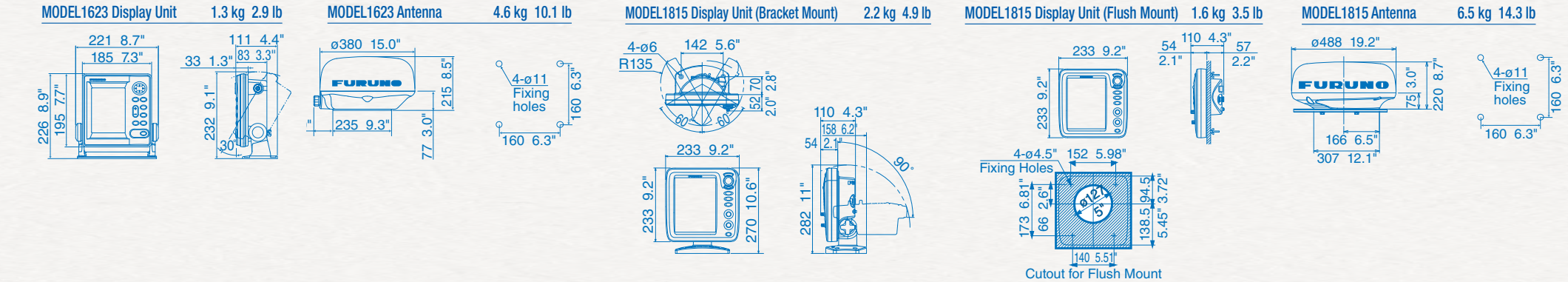
1st Watch Wireless Radar DRS4W

5.7 kg 12.5 lb



Radar

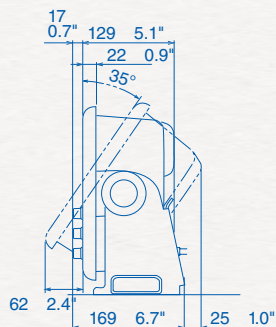
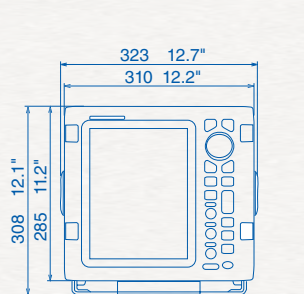
		6" SILVER LCD RADAR	"8.4 COLOR LCD RADAR
		MODEL1623	MODEL1815
ANTENNA			
Type		ø380 mm radome (15.0")	ø488 mm radome (19")
Beamwidth	Horizontal	6.2°	5.2°
	Vertical	25°	
Rotation speed		24/31/41 rpm (auto-select according to pulselength)	24 rpm
RF TRANSCEIVER			
Frequency		9410 ±30 MHz (X-band)	
Pulselength & PRR		0.125-0.75 NM: 0.08µs/3000 Hz 1-2 NM: 0.15µs/1200 Hz 3-16 NM: 0.8µs/600 Hz	0.0625-0.5 NM: 0.08 µs/360 Hz 0.75-2 NM:0.3 µs/360 Hz 3-36 NM:0.8 µs/360 Hz
Output power		2.2 kW	4 kW
IF frequency		60 MHz	
DISPLAY			
Display unit		6" monochrome LCD	8.4" color LCD
Effective Display Area		90 (W) x120 (H) mm	128.2 (W) x 170.9 (H) mm
Screen Resolution		240 x 320	640 x 480, VGA
Accuracy	Range	1.0% of range in use or 8 m, which is greater	1.0% of range in use or 0.01 NM, which is greater
	Bearing	±1°	
Range and range ring interval	Range	0.0625, 0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, 24*, 36* NM * MODEL1815 only	
	Ring	0.03125, 0.0625, 0.125, 0.125, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 3, 4, 6*, 12* NM * MODEL1815 only	
Echo trail		interval: 30 s, 1, 3, 6 min. or continuous	Interval: 15 s, 30 s, 1 min, 3 min, 6 min, 15 min, 30 min, or continuous
TT targets		-	Up to 10
AIS targets		-	Up to 100 (Data input from AIS is required.)
Interface (IEC61162, NMEA0183)	Input	GGA, RMC, RMA, RMB, GLL, VTG, VBW, VHW, HDT, HDG, HDM, BWR, BWC, GLC, GTD, DPT, DBK, DBS, DBT, MTW, ZDA, MWV, XTE	ALR, BWC, BWR, DBT, DPT, DTM, GGA, GLL, GNS, GSA, GSV, HDG, HDT, HDM, MTW, MWV, RMB, RMC, THS, TTM, VDM, VHW, VTG, VWR, VWT, XTE, ZDA
	Output	TLL* *external data required	ACK, RSD, TLL*, TTM* *external data required
ENVIRONMENT			
Temperature	Display unit	-15°C to +55°C	-15°C to +55°C
	Antenna unit	-25°C to +70°C	-25°C to +55°C
Waterproofing	Display unit	IPX5	IP56
	Antenna unit	IPX6	IPX6
POWER SUPPLY			
Display unit		12-24 VDC: 3.5-1.6 A	12-24 VDC: 3.2-1.6 A



		10.4" COLOR LCD RADAR			
		MODEL1835		MODEL1935	MODEL1945
ANTENNA					
Type		ø602 mm Radome (24")		1000 mm Open (3.5')	1200 mm Open (4.0')
Beamwidth	Horizontal	4.0°		2.4°	1.9°
	Vertical	20°		22°	
Rotation speed		24 rpm		24 rpm 48 rpm (option)	
RF TRANSCEIVER					
Frequency		9410 ±30 MHz (X-band)			
Pulselength & PRR		0.0625-1.6 NM: 0.08µs/2100 Hz 1.5-3.2 NM: 0.3µs/1200 Hz 3-64 NM: 0.8µs/600 Hz			
Output power		4 kW			6 kW
IF frequency		60 MHz			
DISPLAY					
Display unit		10.4" color LCD			
Effective Display Area		158 (W) x 211 (H) mm			
Screen Resolution		640 x 480, VGA			
Accuracy	Range	1.0% of range in use or 8 m, which is greater			
	Bearing	±1°			
Range and range ring interval	Range	0.0625, 0.125, 0.25, 0.5, 0.75, 1, 1.5, 1.6, 2, 3, 3.2, 4, 6, 8, 12, 16, 24, 32, 36, 48*, 64* (*range max. MODEL 1935/1937: 48 NM, MODEL 1945: 64 NM)			
	Ring	0.03125, 0.0625, 0.125, 0.125, 0.25, 0.25, 0.5, 0.4, 0.5, 1, 0.8, 1, 2, 2, 3, 4, 6, 8, 12, 12*, 16* (*ring max. MODEL 1935/1937: 12 NM, MODEL 1945: 16 NM)			
Echo trail		Interval: 15 s, 30 s, 1 min, 3 min, 6 min, 15 min, 30 min, or continuous			
TT targets		Up to 10 (required optional board ARP-11)			
AIS targets		Up to 100 (Data input from AIS is required.)			
Interface	Input	GNS, GGA, RMC, GLL, VTG, VHW, BWR, BWC, RMB, HDT, HDG, HDM, XTE, DPT, DBT, MTW, MWV, VWT, VWR, ZDA			
	Output	RSD, TLL*, TTM* (ARP-11 and external data required for TLL/TTM)			
ENVIRONMENT					
Temperature	Display unit	-15°C to +55°C			
	Antenna unit	-25°C to +55°C			
Waterproofing	Display unit	IPX5			
	Antenna unit	IPX6			
POWER SUPPLY					
	Display unit	12-24 VDC: 4.1-2.0 A	12-24 VDC: 6.8-3.3 A (24 rpm) 8.2-3.8 A (48 rpm)		12-24 VDC: 7.3-3.5 A (24 rpm) 8.8-4.1 A (48 rpm)

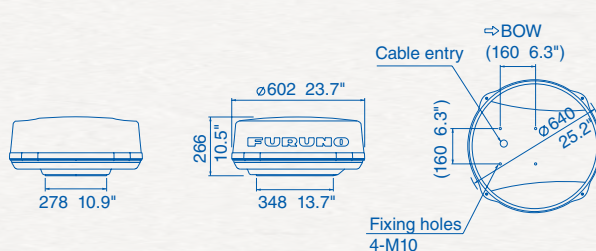
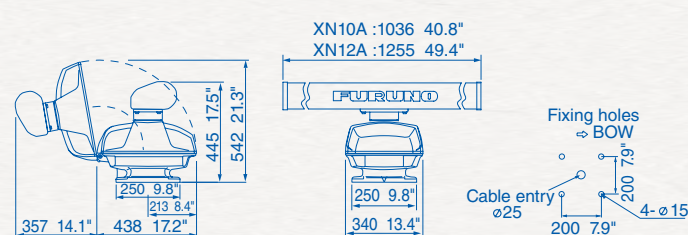
MODEL1835/1935/1945/1937 Display Unit

5.4 kg 11.9 lb



24" Radome Antenna

8 kg 17.6 lb

3.5 ft Open Antenna
4 ft Open Antenna22 kg 48.5 lb
25 kg 55.1 lb

Radar		12.1" LCD RADAR		
		FR8065	FR8125	FR8255
ANTENNA				
Type		1255 mm Open (4') or 1795 mm Open (6')		
Beamwidth	Horizontal	1.9° (4' Open: XN12A) or 1.35° (6' Open: XN13A)		
	Vertical	22°		
Rotation speed		24 rpm/48 rpm (option)		
RF TRANSCEIVER				
Frequency		9410 ±30 MHz (X-band)		
Pulselength & PRR		0.125-1.5 NM: 0.08µs/2100 Hz 1.5, 2, 3 NM: 0.3µs/1200 Hz 3-36 NM: 0.8µs/600 Hz 48, 64 NM: 0.8µs/550 Hz 72, 96* NM: 0.8µs/500 Hz * FR8255 only		
Output power		6 kW	12 kW	25 kW
IF frequency		60 MHz		
DISPLAY				
Display unit		12.1" color LCD		
Effective Display Area		184 (H) x 246 (V) mm		
Screen Resolution		600 (H) x 800 (V)		
Accuracy	Range	0.9% of range in use or 8 m, which is greater		
	Bearing	±1°		
Range and range ring interval	Range	0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, 24, 36, 48, 64, 72, 96* NM (range max. FR8065/8125: 72 NM, FR8255: 96 NM)		
	Ring	0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 6, 8, 8, 12, 16* NM * FR8255 only		
Echo trail		interval: 15 s, 30 s, 1, 3, 6, 15, 30 min., or continuous		
TT targets		Up to 10 (Required optional board ARP-11)		
AIS targets		Up to 100 (Data input from AIS is required)		
Interface (IEC61162, NMEA0183)	Input	BWC, BWR, DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWV, RMB, RMC, THS, TTM (for radiotelephone only), VHW, VTG, VWR, VWT, XTE, ZDA		
	Output	RSD, TLL*, TTM* (*ARP-11 and external data required for TLL/TTM)		
ENVIRONMENT				
Temperature	Display unit	-15°C to +55°C		
	Antenna unit	-25°C to +55°C		
Waterproofing	Display unit	IPX5 (front), IPX2 (rear)		
	Antenna unit	IPX6		
POWER SUPPLY				
	Display unit	24 VDC 24 rpm: 3.6 A 48 rpm: 3.9 A	24 VDC 24 rpm: 3.9 A 48 rpm: 4.5 A	24 VDC: 3.0 A
	Power supply unit	—	—	24 VDC 24 rpm: 2.3 A 48 rpm: 2.7 A

FR8065/8125/8255 Display Unit (Tabletop Mount)

5.8 kg 12.8 lb

4 ft Open Antenna

25 kg 55.1 lb

FR8065/8125/8255 Display Unit (Flush Mount)

5.3 kg 11.7 lb

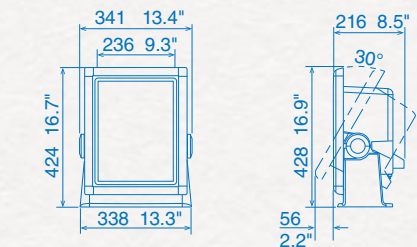
101 | Specifications

		15" MULTI-COLOR LCD RADAR		BLACK BOX RIVER RADAR	
		FAR1416	FAR1426	FR1908VBB	FR1918VBB
ANTENNA					
Type		1255 mm Open (4'')/1795 mm Open (6')		6.5' (XN20AF) or 8'(XN24AF) Open Array	
Beamwidth	Horizontal	1.9° (XN12A), 1.35° (XN13A)		1.23° (XN20AF), 0.95° (XN24AF)	
	Vertical	22°		20°	
Rotation speed		24/48 rpm		26 rpm	
RF TRANSCEIVER					
Frequency		9410 ±30 MHz, P0N			
Pulselength & PRR		S: 2100 Hz (0.125 to 1.5 NM), M: 1200 Hz (1.5 to 3 NM), L: 600 Hz (3 to 72 NM)	S: 2100 Hz (0.125 to 1.5 NM), M: 1200 Hz (1.5 to 3	S: 0.04 μS / 4000Hz (0.125 to 2 or 0.15 to 4 NM) M: 0.12 μS / 2000 Hz (1.6 to 4 or 1.5 to 4 or 3 to 8 NM) M2: 0.28 μS / 2000 Hz (4 to 16 or 3 to 16 or 6 to 32 NM) L: 0.6 μS / 1000 Hz (8 to 64 or 6 to 64 or 12 to 64 NM)	
Output power		12 kW	25 kW	4 kW	12 kW
IF frequency	IF	60 MHz			
DISPLAY UNIT					
Type		15" Color LCD		-	
Screen Size		304 (W) x 228 (H) mm, Portrait or landscape settings are available.		-	
Screen Resolution		1024 x 768 (XGA)		-	
Screen Brightness		400 cd/m2		-	
Language		English, Thai, Japanese		-	
Display Modes		Radar, Radar+Plotter, Plotter		-	
CHART PLOTTER					
Cartography		Mapmedia mm3d chart		-	
Memory Capacity		30,000 points for ship's tracks, 10,000 points (50 ships) for TT, 10,000 points (100 ships) for AIS, 10,000 points (40 ships) for consortships, 10,000 points (100 pcs) for GPS buoy, 200 planned routes (100 points per route)		-	
Mark/Line		30,000 pts		-	
RADAR					
Accuracy	Range	1% of range in use or 10 m whichever is the greater		1.5% of range in use or 5 m whichever is the greater	
	Bearing	±1°		±0.5°	
Range and range ring interval	Range	0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 72, 96* NM * FAR1426 only		0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96 NM	
	Bearing	0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 8, 8, 12, 16* NM * FAR1426 only		0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 8, 8, 16 NM	
Echo trail		Interval: 15 s, 30 s, 1-30 min. (30 s steps) or continuous		Interval: off/1.25/2.5/5 seconds (river) or off/5/15/30 seconds or 1/3/6 minutes (sea)	
TT targets		Up to 50 (manually) - Time of vector: OFF/30 s/1 to 60 min. (external data required)		100 Targets	
AIS targets		Up to 300 - Time of vector: OFF/30 s/1 to 60 min. (AIS, GPS and heading required)		300 Targets	
Radar Map		-		5,000 pts	
INTERFACE					
Heading		1 Port: AD-10 format or IEC61162-1		2 Ports: AD-10 format or IEC61162-2	
Serial		3 Ports: IEC61162-1		IEC61162-2: 2 Ports (AIS/HDG), IEC61162-1: 4 Ports (GPS/LOG/AMS/ECDIS)	
Interface (IEC61162, NMEA0183)	Input	ALR, BWR, CUR, DBK, DBS, DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWV, RMB, RMC, RTE, THS, TLL, TTM, VBW, VDM, VDO, VDR, VHW, VSD, VTG, VWR, VWT, WPL, ZDA		ALR, DBS, DBT, DPT, DTM, GBS, GGA, GLL, GNS, HDT, HTD, MWV, RMC, ROT, RSA, THS, VDM, VDO, VHW, VTG, VWR, VWT, ZDA	
	Output	Serial port: TLL, TTM: LAN port: BWC, BWR, CUR, DBK, DBS, DBT, DPT, DTM, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWV, RMC, THS, VBW, VTG, VWR, VWT, ZDA		TTM	
Interface (NMEA2000)	Input	059392/904, 060928, 061184, 126208/720/992/996, 127250/258/259, 128259/267, 129025/026/029/033/291, 130306/310/311/312/316/577/578		-	
	Output	129038/039/040/041/044/284/285/538/794/795/797/798, 12980/802/809/810		-	
Contact closure		3 ch: Alert output (Normal open: 2 ch, Normal close: 1 ch)		Alert output: 4 ch, Remote ACK input, System fail, power fail	
Sub display		2 Ports (Signal: HD, BP, Trigger and Video)		1 Port (Signal: HD, BP, Trigger and Video)	
LAN				1 Port (100 BASE-TX)	
DVI-D				1 Port for main display	
RGB				1 Port	
ENVIRONMENT					
Temperature	Display unit	-15°C to +55°C			
	Antenna unit	-25°C to +55°C (storage: +70°C or less)			
Waterproofing	Display unit	IP20		Processor Unit: IP20	
	Antenna unit	IP26		IP46	
	Control unit	IP22		IP22	
POWER SUPPLY					
		24 VDC, 5 A	24 VDC, 5.6 A	24 VDC: 3.9 A max.	

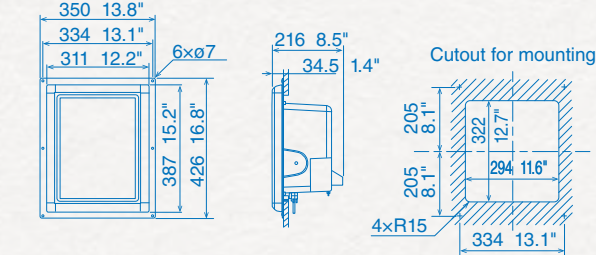
Radar

		MARINE RADAR			
		FAR1513	FAR1523	FAR1518	FAR1528
ANTENNA					
Type		1255 mm Open (4') or 1795 mm Open (6')		1260 mm Open (4') or 2040 mm Open (6.5')	2040 mm Open (6.5') or 2550 mm Open (8')
Beamwidth	Horizontal	1.9° (XN12A), 1.35° (XN13A)		1.9° (XN12AF), 1.23° (XN20AF)	1.23° (XN20AF), 0.95° (XN24AF)
	Vertical	20°			
Rotation speed		24 rpm or 48 rpm			
RF TRANSCEIVER					
Frequency		9410 MHz ±30 MHz, P0N			
Pulselength & PRR		S: 2100 Hz (0.125 to 1.5 NM) M: 1200 Hz (1.5 to 3 NM) L: 600 Hz (3 to 96 NM)		3000 Hz (0.125 to 3 NM), 0.08 µs 2760 Hz (0.125 to 6 NM), 0.12 µs 1500 Hz (0.75 to 24 NM), 0.22 µs 1000 Hz (0.75 to 24 NM), 0.38 µs 1000 Hz (3 to 24 NM), 0.68 µs 600 Hz (6 to 96° NM), 1.2 µs * 500 Hz on 96 NM range.	
Output power		12 kW	25 kW	12 kW	25 kW
IF frequency	IF	60 MHz			
DISPLAY					
Accuracy	Range	1% of range in use or 10 m whichever is the greater			
	Bearing	±1°			
Range and range	Range	0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96 NM		0.125, 0.25, 0.5, 0.75, 1.5, 3, 6, 12, 24, 48, 96 NM	
ring interval	Ring	0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 8, 8, 16 NM		0.025, 0.05, 0.1, 0.25, 0.25, 0.5, 1, 2, 4, 8, 16 NM	
Echo trail		Interval: 15 s, 30 s, 1-30min. (30 s steps) or continuous			
TT targets		Up to 50 in 0.2-32 NM (external data required) Tracking: 5/10 pts on all target Time of vector: 0 to 60 minutes			
AIS targets		Up to 300 (AIS, GPS and heading required) Tracking: 5/10 pts on all target Time of vector: 0 to 60 minutes			
Radar map		5,000 pts			
INTERFACE (Processor unit)					
Heading		1 Port: AD-10 format or IEC61162-2			
Serial		IEC61162-2: 2 Ports (AIS/HDG), IEC61162-1: 4 Ports (GPS/LOG/AMS/ECDIS)			
Interface (IEC61162, NMEA0183)	Input	ABK, ACK, ACN, ALR, BWC, BWR, CUR, DBK, DBS, DBT, DPT, DTM, GBS, GGA, GLL, GNS, HBT, HDG, HDM, HDT, MTW, MWV, RMB, RMC, RTE, THS, VBW, VDM, VDO, VDR, VHW, VTG, VWR, VWT, WPL, ZDA		ABK, ACK, ACN, ALR, BWC, BWR, CUR, DBK, DBS, DBT, DPT, DTM, GBS, GGA, GLL, GNS, HBT, HDG, HDM, HDT, MTW, MWV, RMB, RMC, RTE, THS, VBW, VDM, VDO, VDR, VHW, VTG, VWR, VWT, WPL, ZDA	
	Output	ABM, ACK, ALC, ALF, ALR, ARC, BBM, EVE, HBT, OSD, RSD, TLB, TLL, TTD, TTM, VSD			
Contact closure		Alert output: 4 ch, Remote ACK input, System fail, power fail			
Remote display		2 Ports (Signal: HD, BP, Trigger and Video)			
LAN		1 Port (100 BASE-TX)			
DVI-D		1 Port for main display			
RGB		1 Port for VDR or RGB monitor			
ENVIRONMENT					
Temperature	Processor unit	-15°C to +55°C			
	Antenna unit	-25°C to +55°C (storage: +70°C or less)			
Waterproofing	Processor unit	IP20 (IP22: option)			
	Antenna unit	IP26		IP56	
	Control unit	IP22			
POWER SUPPLY					
Processor unit		24 VDC: 5.0 A max. (24 rpm), 5.6 A max. (48 rpm)	24 VDC: 6.4 A max. (24 rpm), 7.0 A max. (48 rpm)	100-115/220-230 VAC: 1.8/0.8 A (26 rpm), 2,2/1.0 A (48 rpm) or 24 VDC: 6.1 A max. (26 rpm), 7.2 A max. (48 rpm)	100-115/220-230 VAC: 2.3/1.0 A (26 rpm), 2.6/1.2 A (48 rpm) or 24 VDC: 7.5 A max. (26 rpm), 8.6 A max. (48 rpm)

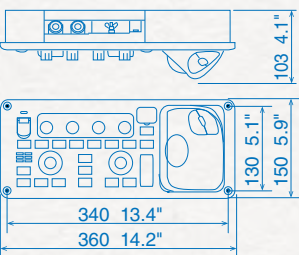
Display Unit (Portrait/Tabletop Mount) 8.5 kg 18.7 lb



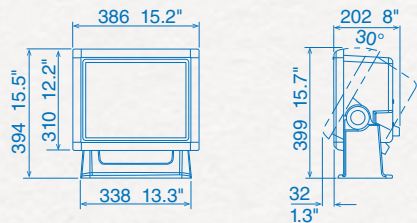
Display Unit (Portrait/Flush Mount) 8.1 kg 17.8 lb



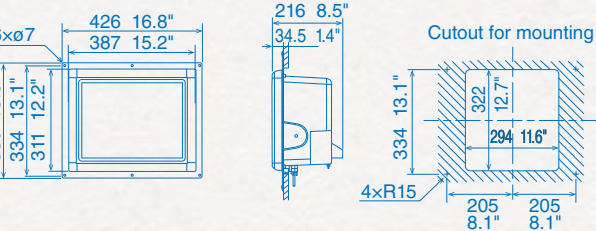
Control Unit 3.5 kg 7.7 lb



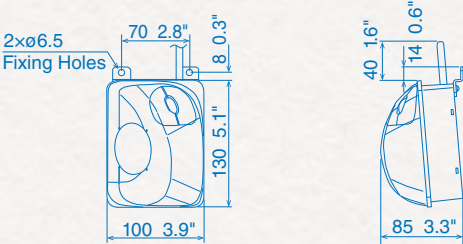
Display Unit (Horizontal/Tabletop Mount) 8.5 kg 18.7 lb



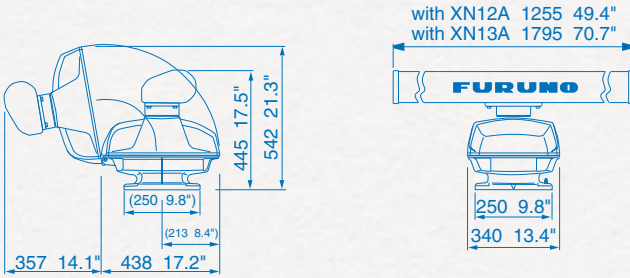
Display Unit (Horizontal/Flush Mount) 8.1 kg 17.8 lb



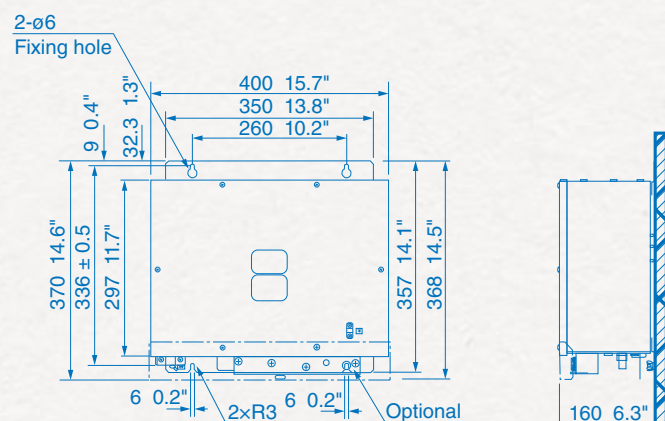
Trackball Control Unit 0.4 kg 0.9 lb



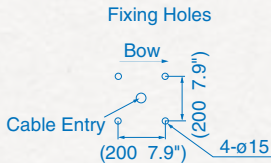
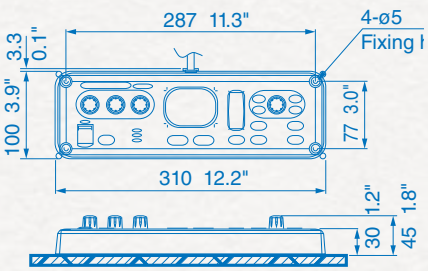
4 ft Open Antenna 25 kg 55.1 lb
6 ft Open Antenna 27 kg 59.5 lb



FAR1513/1523/1518/1528 Processor Unit DC: 6.2 kg 13.7 lb
AC: 6.8 kg 15 lb



FAR1513/1523/1518/1528 Control Unit 1.2 kg 2.6 lb



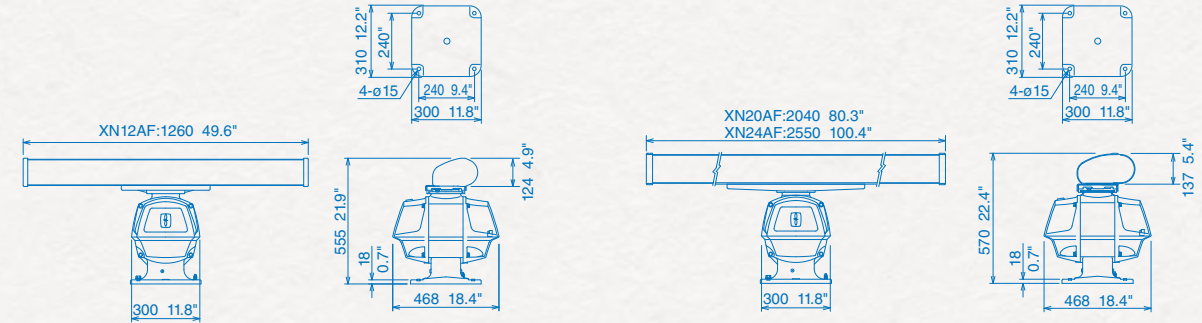
Radar

		BLACK BOX MARINE RADAR	
		FAR2218BB	FAR2228BB
ANTENNA			
Type		1297 mm Open (4') or 2097 mm Open (6.5') or 2597 mm Open (8')	
Beamwidth	Horizontal	1.9° (4' Open: XN12CF), 1.23° (6.5' Open: XN20CF) or 0.95 (8' Open: XN24CF)	
	Vertical	20°	
Rotation speed		24 rpm or 42 rpm	
RF TRANSCEIVER			
Frequency		9410 MHz ±30 MHz, P0N	
Pulselength & PRR		S1: 3000 Hz (0.125 to 2 NM), 0.07 µs S2: 3000 Hz (0.5 to 4 NM), 0.15 µs M1: 1500 Hz (0.75 to 12 NM), 0.3 µs M2: 1200 Hz (1.5 to 24 NM), 0.5 µs M3: 1000 Hz (3 to 24 NM), 0.7 µs L: 600 Hz (6 to 96 NM), 1.2 µs	
Output power		12 kW	25 kW
IF frequency	IF	60 MHz	
DISPLAY			
Accuracy	Range	1 % of the maximum range of the scale in use or 10 m, whichever is the greater	
	Bearing	±1°	
Range and range ring interval	Range	0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96 NM	
	Ring	0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 8, 8, 12, 16 NM	
Echo trail		Interval: 15 s, 30 s, 1, 3, 6, 15, 30 m or continuous	
TT targets		100 targets in 24/32 NM (external data required)	
AIS targets		350 targets (external data required)	
Rader Map		20,000 pts	
INTERFACE (Processor unit)			
Serial		8 ports (IEC61162-1/2: 2 ports, IEC61162-1: 4 ports, AD-10: 1 port) (1 port for sub-display unit from antenna sensor)	
Interface (IEC61162, NMEA0183)	Input	ABK, ACK, ACN, ALR, BWC, BWR, CUR, DBK* ¹ , DBS* ¹ , DBT, DDC, DPT, DTM, GGA, GLL, GNS, HBT, HDT* ¹ , MTW, MWV, OSD, RQA, RMB, RMC, ROT, RTE, THS, VBW, VDM, VDO, VDR, VHW, VSD, VTG, VWR* ¹ , VWT* ¹ , WPL, ZDA	
	Output	ABM, ACK, AIQ, ALC, ALF, ALR, ARC, BBM, DDC, EVE, HBT, OSD, RSD, TLB, TLL* ² , TTD, TTM, VSD	
Contact closure		Alert output: 6 ports: contact signal, load current 250 mA (Normal close/ open: 4, system fail: 1, Power fail: 1)	
LAN		2 ports (100 BASE-TX)	
DVI		2 ports: DVI-D, DVI-I or RGB picture data (VDR)	
RS-232C		1 port: brilliance control	
Sub display (for ECDIS)		2 ports (HD, BP, Trigger and Video signal)	
ENVIRONMENT			
Temperature	Processor unit	-15°C to +55°C (storage: -20°C to +70°C or less)	
	Antenna unit	-25°C to +55°C (storage: -25°C to +70°C or less)	
Waterproofing	Processor unit	IP22	
	Antenna unit	IP56	
POWER SUPPLY			
	Processor unit	100-230 VAC: 2.2-1.1 A (24 rpm), 2.8-1.4 A (42 rpm)	100-230 VAC: 2.6-1.3 A (24 rpm), 3.9-1.7 A (42 rpm)

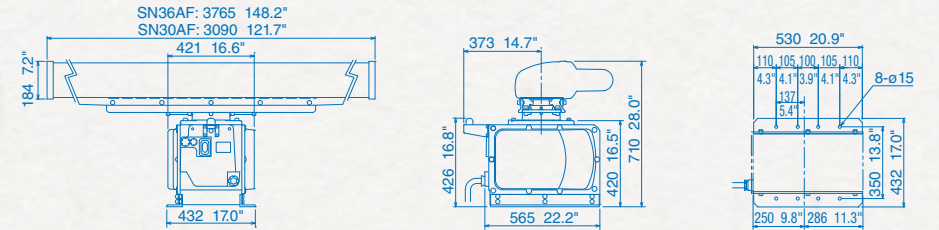
		BLACK BOX MARINE RADAR	
		FAR2238SBB	FAR2238SNXTBB
ANTENNA			
Type		3822 mm Open (12')	
Beamwidth	Horizontal	2.6° (8' open: SN24CF) or 2.3° (10' open: SN30CF) or 1.8° (12' open: SN36CF)	
	Vertical	25°	
Rotation speed		24 rpm or 42 rpm	
RF TRANSCEIVER			
Frequency		3050 MHz ±30 MHz, P0N	CH1 P0N: 3043.75 MHz, Q0N: 3063.75 MHz +5 MHz or CH2 P0N: 3053.75 MHz, Q0N: 3073.75 MHz +5 MHz
Pulselength & PRR		S1: 3000 Hz (0.125 to 2 NM), 0.07 µs S2: 3000 Hz (0.5 to 4 NM), 0.15 µs M1: 1500 Hz (0.75 to 12 NM), 0.3 µs M2: 1200 Hz (1.5 to 24 NM), 0.5 µs M3: 1000 Hz (3 to 24 NM), 0.7 µs L: 600 Hz (6 to 96 NM), 1.2 µs	P0N: 0.07µs to 1.2µs/ 600Hz to 2400Hz Q0N: 5.0µs to 18.3µs/ 600Hz to 2400Hz
Output power		30 kW	Solid-state, 250 W
IF frequency	IF	60 MHz	
DISPLAY			
Accuracy	Range	1 % of the maximum range of the scale in use or 10 m, whichever is the greater	
	Bearing	±1°	
Range and range ring interval	Range	0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 72, 96 NM	
	Ring	0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 8, 8, 12, 16 NM	
Echo trail		Interval: 15 s, 30 s, 1, 3, 6, 15, 30 m or continuous	
TT targets		100 targets in 24/32 NM (external data required)	
AIS targets		350 targets (external data required)	
Rader Map		20,000 pts	
INTERFACE			
Serial		7 ports (IEC61162-1/2: 2 ports, IEC61162-1: 4 ports, AD-10: 1 port)	
Interface (IEC61162, NMEA0183)	Input	ABK, ACK, ACN, ALR, BWC, BWR, CUR, DBK*1, DBS*1, DBT, DDC, DPT, DTM, GGA, GLL, GNS, HBT, HDT*1, MTW, MWV, OSD, RQA, RMB, RMC, ROT, RTE, THS, VBW, VDM, VDO, VDR, VHW, VSD, VTG, VWR*1, VWT*1, WPL, ZDA *1 for retrofit	
	Output	ABM, ACK, AIQ, ALC, ALF, ALR, ARC, BBM, DDC, EVE, HBT, OSD, RSD, TLB, TLL*, TTD, TTM**, VSD *for B-type radar **external data required	
Contact closure		Alert output: 6 ports: contact signal, load current 250 mA (Normal close/ open: 4, system fail: 1, Power fail: 1)	
LAN		2 ports (100 BASE-TX)	
DVI		2 ports: DVI-D, DVI-I or RGB picture data (VDR)	
RS-232C		1 port: brilliance control	
Sub display (for ECDIS)		2 ports (HD, BP, Trigger and Video signal)	
ENVIRONMENT			
Temperature	Processor unit	-15°C to +55°C (storage: -20°C to +70°C or less)	
	Antenna unit	-25°C to +55°C (storage: -25°C to +70°C or less)	
Waterproofing	Processor unit	IP22	
	Antenna unit	IP56	
POWER SUPPLY			
	Processor unit	100-230 VAC: 2.2-1.1 A (24 rpm), 2.8-1.4 A (42 rpm)	100-230 VAC:3.0-1.5 A (24 rpm), 5.8-2.6 A (42 rpm)

Radar - FAR2218BB/2228BB/2238SBB/2238SNXTBB

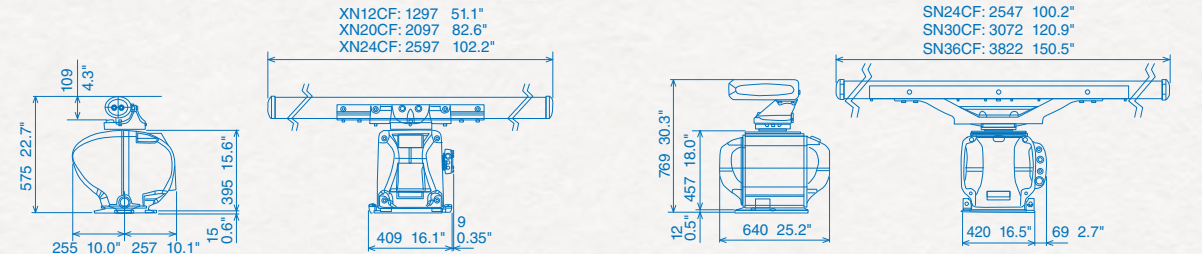
4 ft Open Antenna XN12AF	33 kg 73 lb	6.5 ft Open Antenna XN20AF	39 kg 86 lb
		8 ft Open Antenna XN24AF	42 kg 92.6 lb



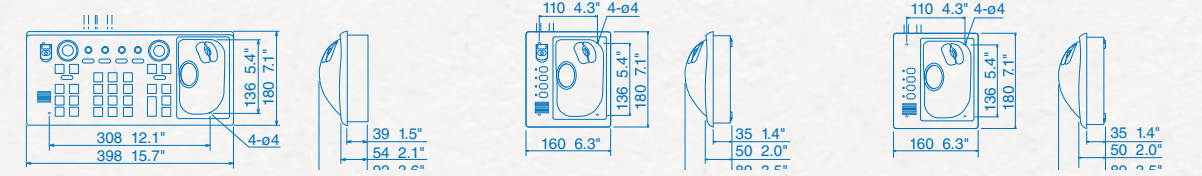
10 ft S-band Antenna SN30AF	135 kg 297.6 lb
12 ft S-band Antenna SN36AF	142 kg 313.1 lb



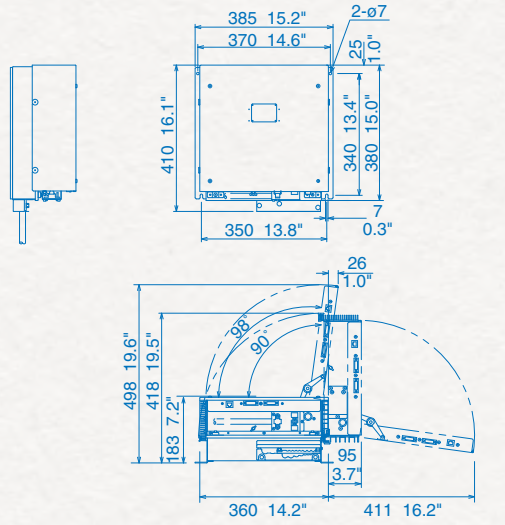
4 ft Open Antenna XN12CF	46.2 kg 101.9 lb	8 ft S-band Antenna SN24CF	129 kg 284 lb
6.5 ft Open Antenna XN20CF	48.1 kg 106.1 lb	10 ft S-band Antenna SN30CF	135 kg 297.6 lb
8 ft Open Antenna XN24CF	49.3 kg 108.7 lb	12 ft S-band Antenna SN36CF	140 kg 308.6 lb



Full-keyboard Control Unit RCU014	3.7 kg 8.2 lb	Trackball Control Unit RCU015	2.4 kg 5.3 lb
		Trackball Control Unit RCU016	2.4 kg 5.3 lb



Processor Unit RPU013	10 kg 22 lb
-----------------------	-------------



Processor Unit RPU025 for X-band/S-band (24 rpm)	9.6 kg 21.2 lb (w/Fan)
Processor Unit RPU025 for S-band (42 rpm)	11.5 kg 25.4 lb (w/2 Fans)

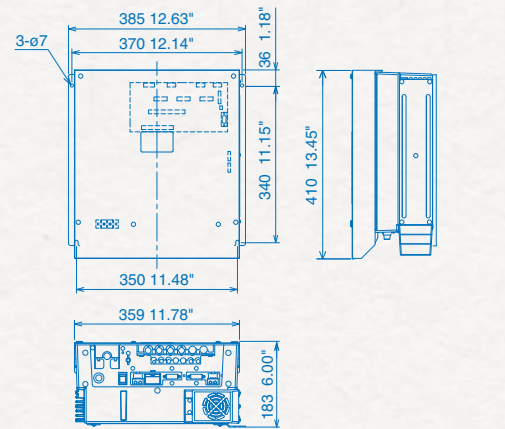


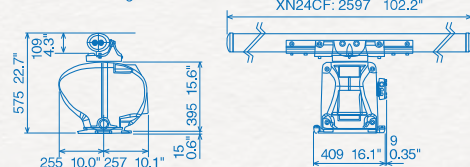
Chart Radar

		CHART RADAR			
		FAR3000BB (X-band)		FAR3000BB (S-band Magnetron or Solid State)	
ANTENNA					
Type		1260 mm Open (4'), 2040 mm Open (6.5') or 2550 mm Open (8')		3765 mm S-band (12')	
Beamwidth	Horizontal	1.9° (4' Open: XN-12CF), 1.23° (6.5' Open: XN-20CF) or 0.95° (8' Open: XN-24CF)		1.8° (12' S-band: SN-36CF)	
	Vertical	20°		25°	
Rotation speed		24 rpm or 42 rpm			
RF TRANSCEIVER					
Frequency		9410 ±30 MHz		3050 ±30 MHz	
Pulselength & PRR		0.125, 0.25 NM: 0.07 µs/3000 Hz 0.5 NM: 0.07, 0.15 µs/3000 Hz 0.75 NM: 0.07, 0.15, 0.3 µs/3000, 1500 Hz 1 NM: 0.07, 0.15, 0.3 µs/3000, 1500 Hz 1.5, 2 NM: 0.07, 0.15, 0.3, 0.5 µs/3000, 1500, 1200 Hz 3, 4 NM: 0.15, 0.3, 0.5, 0.7 µs/3000, 1500, ,200, 1000 Hz 6, 8, 12 NM: 0.3, 0.5, 0.7, 1.2 µs/1500, 1200, 1000, 600 Hz 16, 24 NM: 0.5, 0.7, 1.2 µs/1200, 1000, 600 Hz 32, 48, 96 NM: 1.2 µs/600 Hz		0.125, 0.25 NM: 0.07 Q0N/5.0, 2400 Hz 0.5 NM: P0N 0.07, 0.18, Q0N/5.0 7.5, 2400 2000 Hz 0.75, 1 NM: P0N 0.07 0.18 0.3, Q0N/5.0 7.5 12.5, 2400 2000 1500 Hz 1.5, 2 NM: P0N 0.07 0.18 0.3, Q0N/5.0 7.5 12.5, 2400 2000 1500 Hz 3, 4 NM: P0N 0.07 0.18 0.3, Q0N/5.0 7.5 12.5, 2400 2000 1500 Hz 6, 8 NM: P0N 0.3 0.5 0.7 1.2, Q0N/12.5 17.5 18.3, 1500 1060 1000 600 Hz 12, 16, 24 NM: P0N 0.5 0.7 1.2, Q0N/17.5 18.3,1060 1000 600 Hz 32, 48, 96 NM: P0N 1.2, Q0N/18.3,600 Hz	
Output power		12 kW	25 kW	30 kW Magnetron	
DISPLAY					
Accuracy	Range	1% of the maximum range of the scale in use or 10 m, whichever is the greater			
	Bearing	±1°			
Range and range ring interval	Range	0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 12,16, 24, 32, 48, 72, 96 NM		0.125, 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8,12, 16, 24, 32, 48, 72, 96 NM	
	Ring	0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 8, 8, 12, 16 NM		0.025, 0.05, 0.1, 0.25, 0.25, 0.25, 0.5, 0.5, 1, 1, 2, 2, 4, 4, 8, 8, 12,16 NM	
Echo trail		interval: 15, 30 s, 30 m or continuous			
TT targets		Up to 200			
AIS targets		Up to 1000 (Data input from AIS, GPS and heading is required)			
Interface (IEC61162, NMEA0183)	Input	ABK, ACK, ACN, ALR, CUR, DBT, DPT, DTM, GGA, GLL, GNS, HBT, HDT, MTW, MWV, RMC, THS, VBW, VDM, VDO, VDR, VHW, VTG, ZDA			
	Output	ABM, ACK, ALC, ALF, ALR, ARC, BBM, EVE, HBT, OSD, RSD, TLB*, TTD*, TTM*, VSD (*external data required)			
ENVIRONMENT					
Temperature	Processor unit	-15°C to +55°C			
	Antenna unit	-25°C to +55°C			
Waterproofing	Processor unit	IP20			
	Antenna unit	IP56			
POWER SUPPLY					
	Processor unit	100-230 VAC, 1 phase, 50/60 Hz PSU014: 3.7 A PSU015: 6.4 A PSU016: 2.8 A PSU017: 5.6 A			
	Monitor unit	MU190: 100-230 VAC, 0.7-0.4 A	MU231: 100-230 VAC, 1.0-0.6 A	MU270W: 100-230 VAC, 0.7-0.4 A	

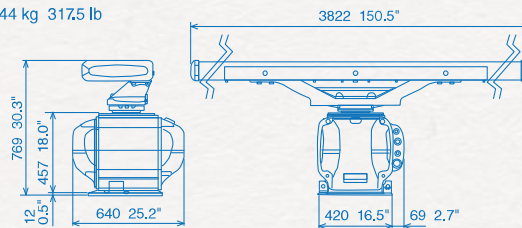
Chart Radar - FAR3000BB (S- or X-Band, Solid State or Magnetron)

Radiator XN12CF 46.2 kg 101.9 lb
XN20CF 48.1 kg 106.1 lb
XN24CF 49.3 kg 108.7 lb

XN12CF: 1297 51.1"
 XN20CF: 2097 82.6"
 XN24CF: 2597 102.2"

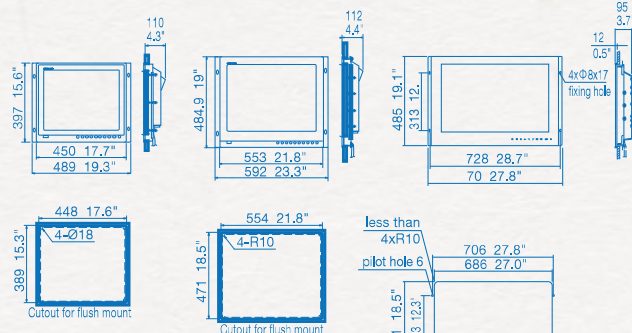


Radiator SN36CF 144 kg 317.5 lb



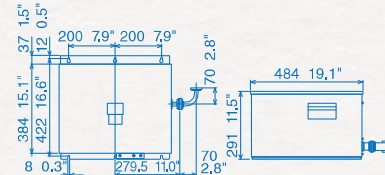
Monitor Unit

MU190 8.8 kg 19.4 lb
MU231 12.8 kg 28.2 lb
MU270W 13 kg 28.7 lb



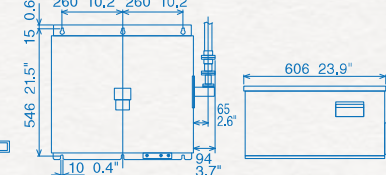
Transceiver Unit for FAR3320W

RTR108 17 kg 37.5 lb



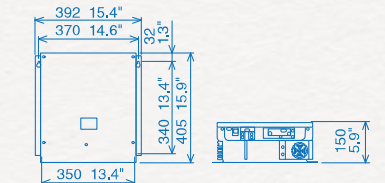
Transceiver Unit for FAR3330SW

RTR109 22 kg 48.5 lb

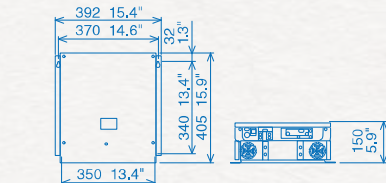


Power Supply Unit

PSU014/016 8.5 kg 18.7 lb

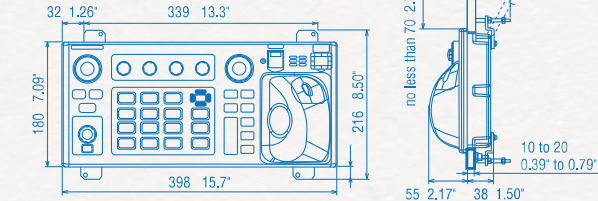


PSU015/018 10 kg 22.0 lb



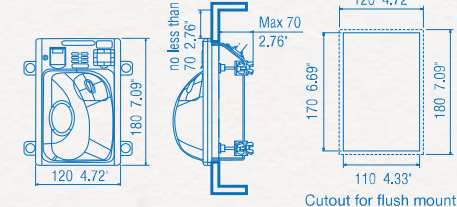
Control Unit

RCU025 3.1 kg 6.84 lb



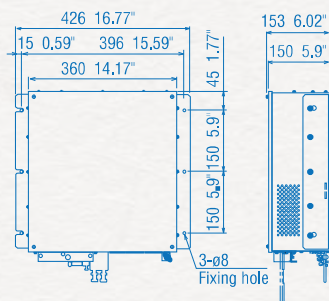
Trackball Control Unit

RCU026 1.5 kg 3.31 lb



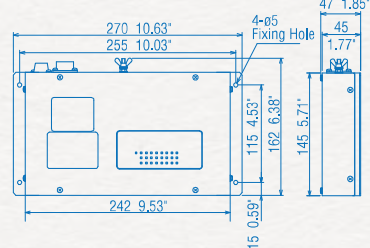
Processor Unit

EC3000 14 kg 30.9 lb



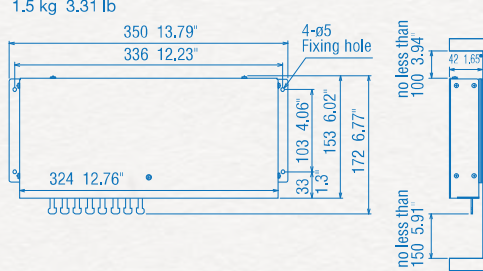
Switching Hub

HUB100 1.5 kg 3.31 lb



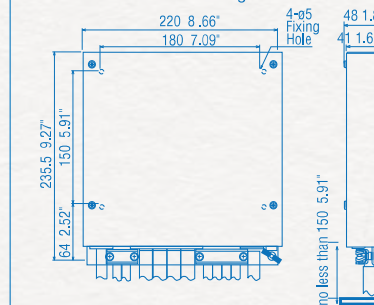
Intelligent Hub

HUB3000 1.5 kg 3.31 lb

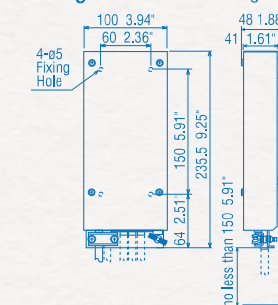


Sensor Adapter

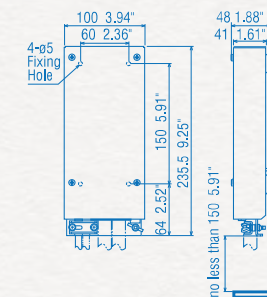
Serial : MC3000S 1.5 kg 3.3 lb



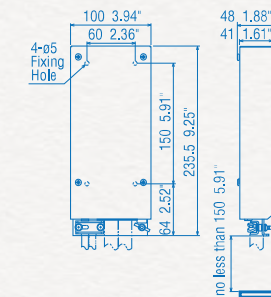
Analog : MC3010A 0.8 kg 1.8 lb



Digital In : MC3020D 0.8 kg 1.76 lb

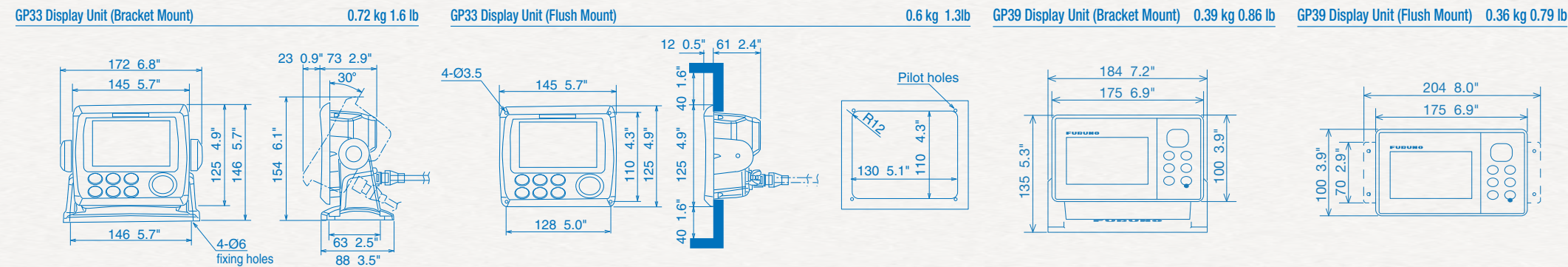


Digital Out : MC3030D 0.8 kg 1.76 lb



GPS/DGPS Navigator

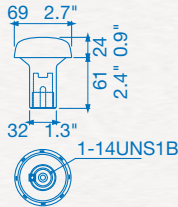
		4.3" GPS NAVIGATOR	4.2" GPS NAVIGATOR	
		GP33	GP39	
GPS/WAAS				
Receive Type	GPS	Twelve discrete channels, C/A code, all-in-view		
	WAAS/ SBAS	Two channels		
Receive Frequency		L1 (1575.42 MHz)		
Time to First FIX		Within 90 s (cold start)	90 s approx. (cold start)	
Tracking Velocity		999 kn	1,000 kn	
Geodetic Systems		WGS-84 (and others)		
ACCURACY				
	GPS	10 m (2 drms)		
	WAAS	3 m (2 drms)		
	MSAS	7 m (2 drms)		
DISPLAY				
Type		4.3" Color LCD	4.2" Color LCD	
Effective Display Area		95.04 (W) x 53.85 (H) mm	92 (W) x 52 (H) mm	
Screen Resolution		480 x 272		
Display Modes		Plotter, Steering, Highway, NAV data,User display1, User display2, Satellite monitor	Plotter, Steering, Highway, NAV data, User display, Satellite monitor (Digital, Speedometer, COG)	
Memory Capacity		3,000 ship's track points; 10,000 waypoints with comments; 100 routes, 30 waypoints/route		
Alarms		Arrival, Anchor watch, XTE, Speed, WAAS, Time, Trip, Odometer	Arrival, Anchor watch, Cross track error, Speed, WAAS (SBAS), Time, Trip	
INTERFACE				
Ports		NMEA0183: 1, NMEA2000: 1	NMEA0183: 1, USB: 1	
Interface	Output	(NMEA0183) AAM, APB, BOD, BWC, BWR, DTM, GGA, GLL, GSA, GSV, RMB, RMC, VTG, XTE, ZDA (NMEA2000) 059392, 060928, 061184, 126208, 126464, 126720, 126992, 126996, 127258, 129026, 129029, 129033, 129044, 129283, 129284, 129285, 129538, 129539, 129540, 130822, 130823	(NMEA0183) AAM, APB, BOD, BWC, BWR, DTM, GGA, GLL, GSA, GSV, RMB, RMC, VTG, XTE, ZDA	
	Input	(NMEA2000) 059904, 065286, 060928, 061184,126208, 126720	(NMEA0183) RTE, TLL	
ENVIRONMENT				
Temperature	Display Unit	-15°C to +55°C		
	Antenna Unit	-25°C to +70°C		
Waterproofing	Display Unit	IP56	IP55	
	Antenna Unit	IPX6	IP56	
POWER SUPPLY				
	Non NMEA2000	12-24 VDC: 0.24-0.12 A	12-24 VDC: 0.7-0.3 A	
	NMEA2000	15 VDC, LEN7	—	



GPS/DGPS Navigator

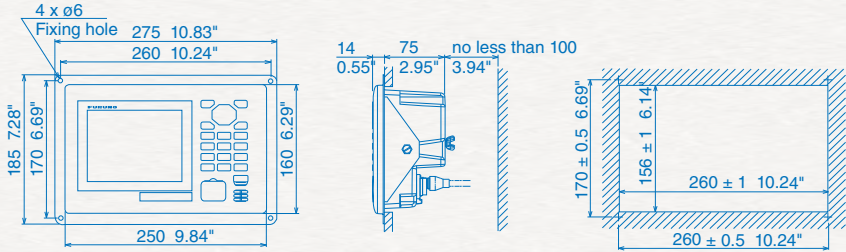
5.7" GPS DGPS NAVIGATOR		
GP170		
GPS/WAAS		
Receive Type	GPS	Twelve discrete channels, C/A code, all-in-view
	WAAS	Two channels
Receive Frequency		L1 (1575.42 MHz)
Time to First FIX		90 s approx. (cold start)
Tracking Velocity		1,000 kn
Geodetic Systems		WGS-84 (and others)
ACCURACY		
	GPS	10 m (2 drms, HDOP<4)
	DGPS	5 m (2 drms, HDOP<4)
	WAAS	3 m (2 drms, HDOP<4)
	MSAS	7 m (2 drms, HDOP<4)
DISPLAY		
Type		5.7" color LCD
Effective Display Area		116.2 (W) x 87.1 (H) mm
Screen Resolution		640 x 480
Display Modes		Plotter, Highway, Course, Data, Integrity
Memory Capacity		Track: 1,000 points, Mark: 2,000 points; Waypoints: 1,000 points with 20 characters comment each; Route: 100 routes (containing 1,000 waypoints each)
Alarms		Notice: Arrival, Anchor watch, XTE, Speed, Trip
INTERFACE		
Serial (IEC 61162-1, -2)		4 ports (1 port IEC 61162-2 In/Out; 2 ports IEC 61162-1 In/Out; 1 port IEC 61162-1 Out)
Data port 1, 2	Input	ACK, ACN, CRQ, DBT, DPT, HBT, HDG, HDM**, HDT**, MSK, MSS, MTW, THS, TLL, VBW, VHW ** not used for SOLAS ships
	Output	AAM, ALC, ALF, ALR, APB, ARC, BOD, BWC, BWR, BWV, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, HBT, POS, RMB, RMC, RTE, VDR, VTG, WCV, WNC, WNR, WPL, XTE, ZDA
Data port 3	Input	MOB from external device (contact closure)
	Output	AAM, ALC, ALF, ALR, APA, APB, ARC, BOD, BWC, BWR, BWV, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, HBT, MSK*, MSS**, POS, RMB, RMC, Rnn, RTE, VDR, VTG, WCV, WNC, WNR, WPL, XTE, ZDA, RTCM sc104 *when either internal/external beacon receiver is used ** when internal beacon receiver is used
Data port 4, IEC/NMEA Mode		Same as Data port 1, 2
Ethernet (IEC 61162-450)		1 port
	Input	ACK, ACN, DBT, DPT, HBT, HDG, HDM**, HDT**, MTW, THS, TLL, VBW, VHW ** not used for SOLAS ships
	Output	AAM, ALC, ALF, ALR, APB, ARC, BOD, BWC, BWR, BWV, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, HBT, POS, RMB, RMC, RTE, VDR, VTG, WCV, WNC, WPL XTE, ZDA *when either internal/external beacon receiver is used ** when internal beacon receiver is used
ENVIRONMENT		
Temperature	Display Unit	-15°C to +55°C
	Antenna Unit	-25°C to +70°C
Waterproofing	Display Unit	IP25
	Antenna Unit	IP56
POWER SUPPLY		
12-24 VDC		
0.8 - 0.4 A (w/internal beacon reciever)		

GPS Antenna GPA017S 0.6 kg 1.3 lb



GP170 Display Unit (with an optional flush mount kit)

2.2 kg 4.9 lb (without DGPS beacon receiver)
2.4 kg 5.29 lb (with DGPS beacon receiver)



GPS/Chart Plotter

		7" WIDE CHART PLOTTER/FISH FINDER	9" WIDE CHART PLOTTER/FISH FINDER
		GP1871F	GP1971F
GPS/WAAS			
Receive Type	GPS	72 channels	
	WAAS	1 channel	
Receiving Frequency		L1 (1575.42 MHz)	
Time to First FIX		80 s approx. (cold start)	
Tracking Velocity		999 kn	
SBAS (Satellite-Based Augmentation System)		WAAS, EGNOS, MSAS	
Electronic Chart		C-MAP 4D (optional)	
ACCURACY			
Internal Antenna		GPS:10 m Max, WAAS: 5 m Max, MSAS: 7.5 m Max	
DISPLAY			
Type		7" Wide Color TFT LCD	9" Wide Color TFT LCD
Screen Size		154 x 85 mm	199 x 113 mm
Screen Resolution		WVGA 800 x 480 pixels	WVGA 800 x 480 pixels
Screen Brightness		1000 cd/m2 (typical)	1000 cd/m2 (typical)
Language		English (US & UK), French, Spanish, German, Italian, Portuguese, Danish, Swedish, Norwegian, Finnish, Greek, Japanese, Chinese	
Display Modes		Chart Plotter, Fish Finder, Radar*1, AIS*2, Instruments*3 (Nav Data, Engine, Wind, Fuel tank, Autopilot*4, etc.), GPS status *1: Connected to the 1st Watch Wireless Radar DRS4W required; *2: Connected to AIS sensor required; *3: Connected to external sensors required; *4: Connected to the FURUNO NAVpilot 300 or 700 series require	
Memory Capacity		30,000 points for ship's track and waypoints, 1,000 planned routes (Max. 50 points per route) 5,000 quickpoints	
Fish Finder			
Transmit Frequency		CW: 50/200 kHz, CHIRP: 40 to 225 kHz	
Transducer		300 W or 600 W or 1 kW* (Transducer depend) * Matching box MB-1100 required for some FURUNO transducers.	
Display Range		5-1,200 m, shift: 0-500 m	
Extension Mode		CHIRP*, RezBoost™**, ACCU-FISH™**, Bottom Discrimination**, Auto gain (Fishing/Cruising), Manual gain, A-Scope, Marker Zoom, Bottom Zoom, Bottom Lock *: Chirp dedicated transducer required; **: Dual frequency compatible transducer required	
Picture Advance		8 steps: x4, x2, 1/1, 1/2, 1/4, 1/8, 1/16, stop	
WIRELESS LAN			
Transmit Frequency		2.4 to 2.472 GHz (1 o 13 channels), IEEE802.11b/g/n	
Security		WAPI, IEEE802.11i advanced security	
INTERFACE			
NMEA0183		1 Port	
Interface (NMEA0183)	Input	DBT, DPT, DSC, DSE, GGA, GLL, GNS, HDG, HDT, MTW, MWV, RMA, RMC, ROT, RSA, THS, TLL, VHW, VTG, ZDA, PFEC (GPatt/SDmrk/SDtbd/SDtfl/pireq)	
	Output	AAM, APB, BOD, BWR, DBT, DPT, GGA, GLL, GNS, GSA, GSV, GTD, HDG, HDT, MTW, MWV, RMA, RMB, RMC, RTE, THS, TLL, VHW, VTG, WPL, XTE, ZDA, PFEC (SDmrk/SDtbd/SDtfl/pidat)	
NMEA2000		1 Port	
Interface (NMEA2000)	Input	126992, 127245, 127250, 127251, 127258, 127488, 127489, 127493, 127497, 127505, 128259, 128267, 128275, 129025, 129026, 129029, 129038, 129039, 129040, 129041, 129284, 129285, 129538, 129540, 129793, 129794, 129798, 129808, 129809, 129810, 130306, 130310, 130311, 130312, 130313, 130314, 130316, 130577, 130830, 130831, 130832, 130880	
	Output	126992, 127245, 127250, 127251, 127257, 127258, 127505, 128259, 128267, 128275, 129025, 129026, 129029, 129033, 129283, 129284, 129285, 130306, 130310, 130312, 130316, 130830, 130831, 130832	
Micro SD Cart Slot		2 Slots (SD, SDHC Acceptable)	
ENVIRONMENT			
Temperature		-15°C to +55°C (Storage -20°C to +70deg°)	
Waterproofing		IP56	
POWER SUPPLY			
		12-24 VDC, 1.0-0.5 A	12-24 VDC, 1.0-0.5 A

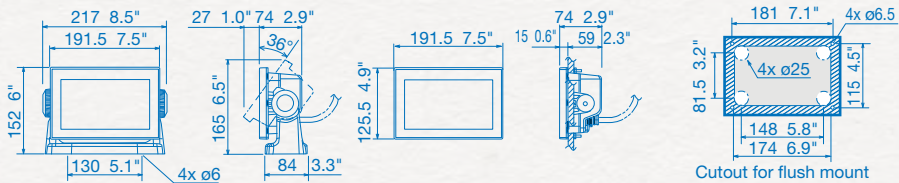
GPS/Chart Plotter

		12.1" CHART PLOTTER	12.1" CHART PLOTTER/FISH FINDER
		GP3700	GP3700F
GPS/WAAS			
Receive Type	GPS	12 channels	
	WAAS/ SBAS	2 channels	
Receiving Frequency		L1 (1575.42 MHz)	
Time to First Fix		90 s approx. (cold start)	
Tracking Velocity		999 kn	
SBAS (Satellite-Based Augmentation System)		WAAS, EGNOS, MSAS	
Electronic Chart		MAPMEDIA VECTOR	
ACCURACY			
Internal Antenna		GPS:10 m Max, DGPS: 5 m Max, SBAS: 7 m Max	
DISPLAY			
Type		12.1" Color IPS LCD	12.1" Color IPS LCD
Screen Size		246 x 184.5 mm	246 x 184.5 mm
Screen Resolution		600 x 800 pixels	600 x 800 pixels
Language		English, Chinese, Thai	
Display Modes		GP3700: Head Up, North Up, Auto Course Up, Course Up, Go To Up, Specified Direction Up. GP3700F: As GP3700, plus Plotter+Dual Frequency, Plotter+Single Frequency, Dual Frequency, Single Frequency	
Memory Capacity		30,000 points for ship's track, 3,500 waypoints with comments (35 QP), 200 planned routes (Max. 100 points per route),	
Fish Finder			
Transmit Frequency		50/200 kHz	
Transducer		600 W or 1 kW* (Transducer dependent) * Matching box MB-1100 required for some FURUNO transducers.	
Display Range		5-1,200 m, shift: 0-1,200 m	
Extension Mode		ACCU-FISH™*, Marker Zoom, Bottom Zoom, Bottom Lock, Bottom Discrimination* *Dual frequency compatible transducer required.	
Picture Advance		6 steps: x2, 1/1, 1/2, 1/4, 1/8, 1/16	
INTERFACE			
NMEA0183		3 Ports	
Interface (NMEA0183)	Input	ALR, BLV, CRQ, CUR, DBK, DBS, DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MSK, MTW, MWV, RMA, RMB, RMC, TLL, TTM, VDM, VDR, VHW, VTG, VWR, VWT, THS, ZDA	
	Output	AAM, APB, BOD, BWC, BWR, DBT, DPT, DTM, GGA, GLL, GNS, GSA, GSV, GTD, HDG, HDT, MSK, MSS, MTW, MWV, RMA, RMB, RMC, RTE, THS, TLL, TTM, VHW, VTG, WPL, XTE, ZDA	
NMEA2000/NMEA		1 Port	
Interface (NMEA2000)	Input	059392/904, 060928, 126208/464/996, 127237/250, 129538, 130577	
	Output	059392/904, 060928, 126208/464/992/993/996, 127258, 128267/275, 129025/026/029/033/283/284/285/538/539	
USB Port		1 Port	
ENVIRONMENT			
Temperature		-15°C to +55°C	
Waterproofing	Display	IPX2	
	Antenna	IP56	
POWER SUPPLY			
		12-24 VDC, 2.5-1.3 A	12-24 VDC, 2.8-1.5 A

GPS/Chart Plotter - GP1871F/1971F/3700/3700F

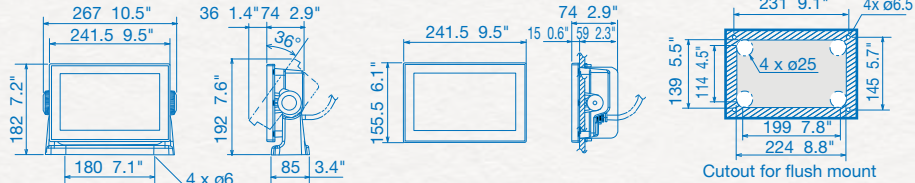
GP1871F Display Unit (Bracket Mount)
GP1871F Display Unit (Flush Mount)

1.1 kg 2.4 lb
0.9 kg 2.0 lb



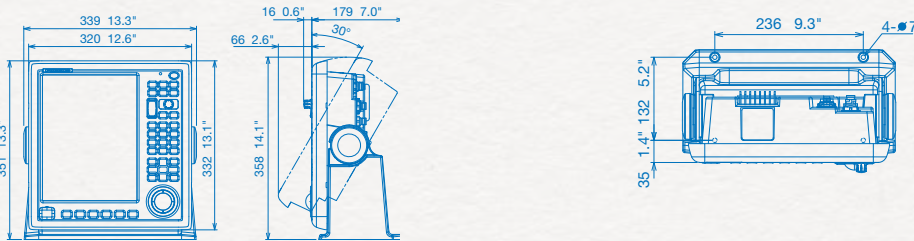
GP1971F Display Unit (Bracket Mount)
GP1971F Display Unit (Flush Mount)

1.5 kg 3.3 lb
1.3 kg 2.9 lb



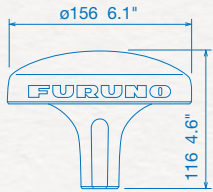
GP3700/ Display Unit (Bracket Mount)
GP3700F Display Unit (Bracket Mount)

4.8 kg 10.1 lb
4.8 kg 10.6 lb



GPA021S (For DGPS)

0.52 kg 1.15 lb

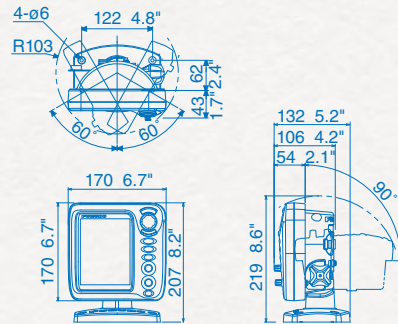


Fish Finder

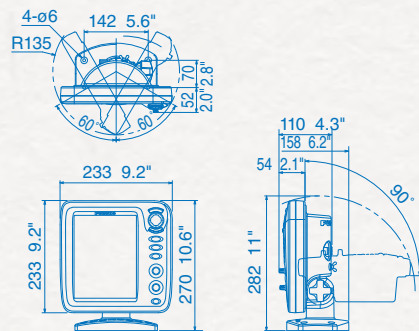
		5.7" FISH FINDER		8.4" FISH FINDER		10.4" LCD SOUNDER		12.1" LCD SOUNDER	
		FCV628		FCV588		FCV295		FCV1150	
General									
Frequency		50 and 200 kHz				The synthesized transreceiver works with frequencies in 28 to 200 kHz			
Transducer		600 W		600 W/1 kW*		1, 2 or 3 kW			
DISPLAY									
Type		5.7" TFT color LCD		8.4" TFT color LCD		10.4" TFT color LCD		12.1" TFT color LCD	
Screen Resolution		VGA 480 x 640 pixels				640 x 480		800 × 600	
Display Mode		Single frequency (50 or 200 kHz), Dual-frequency, Zoom, Nav data, A-scope, Marker zoom, Bottom zoom, Bottom-lock, Bottom Discrimination, ACCU-FISH™, RezBoost™				Single mode (high/low frequency), Dual-frequency, Zoom, Mix, A-scope, Marker zoom, Bottom zoom, Bottom-lock expansion			
Display Range *m, ft, fa, p/b can be selectable in the menu		2-1200 m				5-3000 m			
Range Shift		up to 1200 m				0-2000 m			
Zoom Range	Bottom-lock expansion	2-10 m				5-200 m			
	Bottom & Marker Zoom	2-1200 m							
Picture Advance Speed		8 steps: stop, 1/16, 1/8, 1/4, 1/2, x1, x2, x4				6 steps: stop, 1/16, 1/8, 1/4, 1/2, x1, x2, x4			
Pulselength & TX rate		0.04-3.0 ms, Max 3,000 pulse/min				0.1-5.0 ms, 20-3000 pulse/min			
Interface (IEC61162-1, NMEA 0183 Ver 1.0/2.0/3.0)	Input	BWC, GGA, GLL, GNS, HDG, HDT, MDA, MTW, MWV, RMA, RMB, RMC, VHW, VTG, XTE, ZDA				BWC, GGA, GLC, GLL, GNS, GTD, HDG, HDT, MDA, MTW, MWW, RMA, RMB, RMC, VHW, VTG, XTE		BWC, GGA, GLC, GLL, GNS, GTD, HDG, HDT, MDA, MTW, MWW, RMA, RMB, RMC, VHW, VTG, XTE, HVE, att, hve, req	
	Output	DBS, DBT, DPT, MTW*, RMB*, VHW*, TLL* by key operation * External data required.				DBS, DBT, DPT, MTW*, TLL**, SDmrk, VHW, RMB, dat *Optional sensor required **External data required			
ENVIRONMENT									
Temperature		-15°C to +55°C							
Waterproofing		IP56				IP55 (When flush mounted)			
POWER SUPPLY									
		12-24 VDC: 1.1-0.5 A		12-24 VDC: 1.3-0.6 A		12-24 VDC: 2.6-1.3 A, 100/110/220/230 VAC, optional rectifier required		12-24 VDC: 3.3-1.7 A, 100/110/220/230 VAC, optional rectifier required	

* The FCV588 can be connected with the transducers of 1 kW output power, when interfaced with the Matching Box MB-1100 for some Furuno transducers.

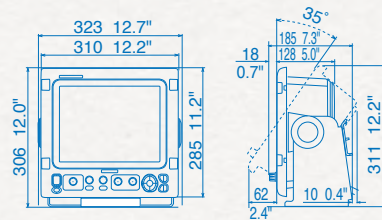
1.3 kg 2.9 lb



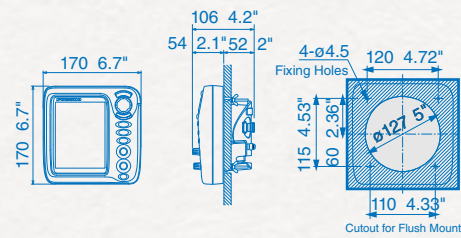
2.3 kg 5.1 lb



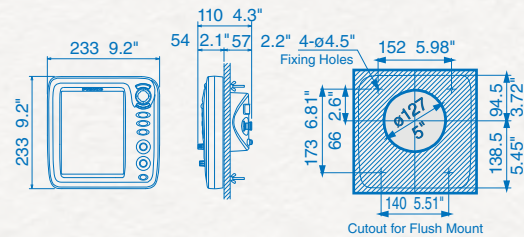
7.0 kg 15.4 lb



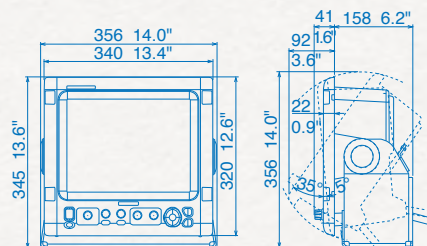
0.9 kg 2.0 lb



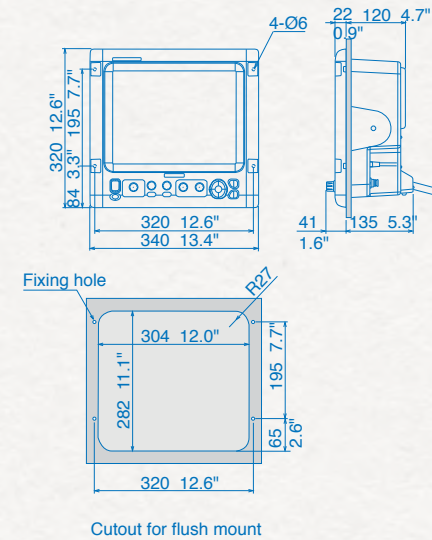
1.6 kg 3.5 lb



8.2 kg 18.1 lb



6.8 kg 15.0 lb

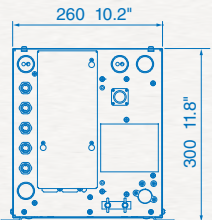
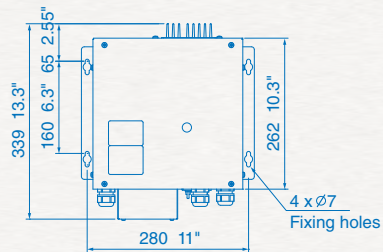


Fish Finder

		FISH FINDER	HI-REZ TruEcho CHIRP FISH FINDER	TruEcho CHIRP WITH UNIQUE FISH SIZE INDICATOR
		FCV1900	FCV1900B	FCV1900G
General				
Frequency	15 to 200 kHz, Free-synthesize			
Transducer	1, 2 or 3 kW			
DISPLAY (Processor unit)				
Display mode	Single frequency high/low), Dual-frequency, Zoom, User 1/2 (available to use mixture, multi-gain, telesounder and external sounder display), Bottom-lock expansion, Bottom zoom, Marker zoom, Discrimination zoom			
Display Range *m, ft, fa, p/b can be selectable in the menu	5 to 3000 m			
Range Shift	up to 2000 m			
Zoom Range	2 to 200 m			
Fish size histogram	—	—	2 m depth or more, specified transducer required	
Picture Advance Speed	6 steps: stop, 1/4, 1/2, 1/1, 2/1, 4/1			
Data recording	Echo display and measured data can be recorded to internal memory			
Language	English, Danish, French, Spanish, Norwegian, Russian, Chinese, Korean, Japanese			
INTERFACE				
NMEA0183		3 Ports for Input/Output		
Interface	Input	GGA, GLL, GNS, MTW, VHW, VTG, ZDA		
(NMEA 0183 Ver 1.5/2.0/3.0)		DBS, DBT, DPT, MTW, TLL		
LAN		1 port*, Ethernet 100Base-TX	*Hub required	
CIF		1 port		
Net sonde		1 port (sonde marker/sonde KP)		
Video		1 port, HDMI type-D		
External KP		1 port		
Temperature sensor		1 port		
USB		1 port (USB2.0)		
ENVIRONMENT				
Temperature		-15°C to +55°C		
Waterproofing		IP22		
POWER SUPPLY				
		12-24 VDC: 8.3-3.9 A		

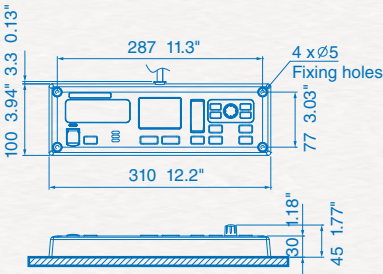
Processor Unit FCV1901

10.2 kg 22.5 lb



Contro Unit FCV1902

1.1 kg 2.4 lb



TRANSDUCERS for FCV295/FCV1150/FCV1900/DFF3			
	1 kW	2 kW	3 kW
28 kHz	CA28F-8	CA28BL-6HR	CA28BL-12HR
38 kHz	—	CA38BL-9HR	CA38BL-15HR
50 kHz	CA50B-6/6B, CA50B-9B	CA50B-12, CA50BL-12HR	CA50BL-24H, CA50BL-24HR
68 kHz	CA68F-8H	—	CA68F-30H
82 kHz	—	CA82B-35R	—
88 kHz	CA88B-8	CA88B-10	CA88F-126H
107 kHz	—	—	CA100B-10R
150 kHz	—	—	CA150B-12H
200 kHz	CA200B-5S	CA200B-8/8B	CA200B-12H
50/200 kHz	CA50/200-1T*, CA50/200-1ST**	—	—

* ACCU-FISH™ compatible for FCV1900/DFF3 ** Except for FCV1900

TRANSDUCERS for FCV1900B/1900G (CHIRP)			
	1 kW	2 kW	2 kW/3 kW
42 to 65 kHz (low)/130 to 210 kHz (high)	CM265LH *	—	—
42 to 65 kHz (low)/85 to 135 kHz (high)	CM265LM	—	—
42 to 65 kHz (low)/150 to 250 kHz (high)	CM275LHW **	—	—
38 to 75 kHz (low)/130 to 210 kHz (high)	—	PM111LH *	—
38 to 75 kHz (low)/80 to 130 kHz (high)	—	PM111LM	—
28 to 60 kHz (low)/130 to 210 kHz (high)	—	—	CM599LH *
28 to 60 kHz (low)/80 to 130 kHz (high)	—	—	CM599LM

* ACCU-FISH™ and fish size histogram compatible.

** Wide beam type transducer with high frequency beam width of 25°

TRANSDUCERS for DFF1-UHD (CHIRP)	
	1 kW
42 to 65 kHz (low)/130 to 210 kHz (high)	CM265LH, CM275LHW, B265LH, B275LHW (Airmar®)

TRANSDUCER for DFF3D (MULTI BEAM)	
	800 W
165 kHz	B54 (Thru-hull)/TM54 (Transom)/SS54 (Stainless)

TRANSDUCERS for DFF3D & BBDS1/DFF3D & DFF1-UHD (COMBINATION)	
	1kW
165 kHz and 50/200 kHz Multi Beam and Conventional	165T-50/200-SS260 (Thru-hull) 165T-50/200-TM260 (Transom)
165 kHz and 42 to 65 kHz (low)/130 to 210 kHz (high) Multi Beam and CHIRP	165T/265LHPM488 (Pocket)

TRANSDUCERS for GP1871F/1971F (CHIRP)			
	300 W	600 W	1 kW
40 to 60 kHz (Low)	—	—	B175L
40 to 75 kHz (Low)	B75L/SS75L	—	—
80 to 130 kHz (Medium)	—	B75M/SS75M	—
95 to 155 kHz (Medium)	B150M/TM150M	—	—
130 to 210 kHz (High)	—	B75H/SS75H	B175H
150 to 250 kHz (High)	—	—	B175HW

TRANSDUCER LIST

						Stand Alone			
						FCV628	FCV588	GP1871F/1971F	BBDS1
	Frequency	Type	Matching Box required	Mount	Power Rating				
TRANSDUCER	50/200 kHz	520-5PSD		Thru-hull	600 W	● ◎	● ◎	● ◎	● ◎
		525-5PWD		Transom		● ◎	● ◎	● ◎	● ◎
		520-5MSD		Thru-hull		● ◎	● ◎	● ◎	● ◎
		520-PLD (P319*)		Thru-hull		● ◎	● ◎	● ◎	—
		525T-BSD (B45*)		Thru-hull		● ◎	● ◎	● ◎	● ◎
		525T-PWD (P66* without speed sensor)		Transom		● ◎	● ◎	● ◎	● ◎
		525T-LTD/12 (B60-12*)		Thru-hull		● ◎	● ◎	● ◎	—
		525T-LTD/20 (B60-20*)		Thru-hull		● ◎	● ◎	● ◎	—
		SS60-SLTD/12 (SS60-12*)		Thru-hull		● ◎	● ◎	● ◎	—
		SS60-SLTD/20 (SS6-20*)		Thru-hull		● ◎	● ◎	● ◎	—
		CA50/200-1T	○	Thru-hull	1 kW	—	● ◎	● ◎	● ◎
		526T(ID)-HDD(B260*)		Thru-hull		—	● ◎	● ◎	● ◎
	50 kHz	CA50B-6	○	Thru-hull	1 kW	—	○	○	—
		CA50B-6B	○	Thru-hull		—	○	○	—
		CA50B-9B	○	Thru-hull		—	—	—	—
	200 kHz	CA200B-5	○	Thru-hull	1 kW	—	—	—	—
		CA200B-5S	○	Thru-hull		—	○	○	—
TRIDUCER	50/200 kHz	525ST(ID)-MSD (B744V*)		Thru-hull	600 W	● ◎	● ◎	● ◎	● ◎
		525ST(ID)-PWD (P66*)		Transom		● ◎	● ◎	● ◎	● ◎

* Airmar® Model name

○ Matching Box required

● ACCU-FISH mode available

◎ Bottom discrimination display mode available

Searchlight Sonar

		12.1" SEARCHLIGHT SONAR	12.1" DUAL FREQUENCY SEARCHLIGHT SONAR
		CH500	CH600
GENERAL			
Frequency		60/88/150/180/240 kHz, 1 frequency selectable	60/153 kHz or 85/215 kHz (dual frequency) selectable
Output Power		0.8-1.5 kW (depending on frequency), power reduction function available	1 kW
DISPLAY			
Type		12.1" color LCD	
Screen Resolution		XGA 1024 x 768	
Brightness		0.5 to 950 cd/m2 selectable	
Display Mode		Horizontal (Normal/Zoomed/Vertical or History combined/ Split horizontal + Vertical/A-Scope combined), Vertical Scan, Echo Sounder (Normal/A-Scope combined), Full-circle A-Scope (Normal/Horizontal dual)	Horizontal (Normal/Zoomed/Vertical or History combined/ Split horizontal + Vertical/A-Scope combined), Vertical Scan, Echo Sounder (Normal/A-Scope combined), Full-circle A-Scope (Normal/Horizontal dual), Dual horizontal (Normal/Zoomed)/Vertical/Echo sounder, High low or mixed frequency mode selected from control unit
Display Range	Horizontal mode	10 to 2400 m, 15 steps selectable	
	Vertical mode	10 to 600 m, 15 steps selectable	
Pulselength		0.2 to 20 ms (depending on range scale)	
Audio Monitor	Output	2 W (8 ohms)	
	Frequency	Frequency 0.9 to 1.2 kHz (external speaker required)	
Language		English, Thai, Vietnamese, Chinese, Spanish, Indonesian, Malay, Burmese, French, Norwegian, Italian, Japanese	
INTERFACE			
NMEA0183		2 Ports, v1.5/2.0/3.0/4.0/4.1, 4800/9600/19200/38400 bps	
Interface	Input	CUR, DBS, DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MDA, MTW, RMC, VHW, VTG, ZDA	
	Output	TLL	
NMEA2000		1 Port	
Interface	Input	059392/904, 060160/416/928, 061184, 065240, 126208/720/992/996, 127250, 128259/267, 129025/026/029/033/291, 130310/311/312/316/577/821	
	Output	059392/904, 060928, 061184, 126208/464/720, 126993/996/998, 130822/823/828	
Video Signal Output		1 port, HDMI, XGA	
EXternal KP		1 port, I/O	
Output proprietary sentence		PFEC: pidat	
HULL UNIT			
Transducer travel		400 mm or 250 mm	
Raising/Lowering Time		400 mm: 30 s, 250 mm: 20 s	
Allowable Ship's Speed		20 kn or less (15 kn during raise/lower operation)	
Horizontal Mode Control	Scanning Angle	6° to 360°, 24° step (6°, 12°, 15°, 18°, 21°, 24°)	
	Tilt Angle	5° to +90° (vertical), 1° step	
Vertical Fan Mode Control	Scanning Angle	6° to 180°, 12° step (Normal: 3°, High speed: 6°)	
Transceiver Beam Width	Horizontal (-3 dB/-6 dB)	60 kHz: 15°/20°, 88 kHz: 12°/16°, 150 kHz: 7°/9° 180 kHz: 7°/9°, 240 kHz: 6°/8°	60 kHz: 16°/22°, 153 kHz: 7°/9° 85 kHz: 11°/15°, 215 kHz: 5°/6°
	Vertical (-3 dB/-6 dB)	60 kHz: 12°/17°, 88 kHz: 10°/13°, 150 kHz: 7°/9° 180 kHz: 8°/10°, 240 kHz: 6°/8°	60 kHz: 14°/20°, 153 kHz: 5°/8° 85 kHz: 10°/14°, 215 kHz: 4°/6°
Stabilizer		Built-in motion sensor	
ENVIRONMENT			
Temperature	Display/Control/Transceiver unit	-15°C to +55°C	
	Hull unit	0°C to +55°C (Transducer: 0°C to +35°C)	
Waterproofing	Display/Control unit	IP55	
	Transceiver/Hull unit	IP22 (Raise/lower control unit: IP55)	
POWER SUPPLY			
Display/Control/Transceiver Unit		12-24 VDC: 4.5-2.2 A	
Hull Unit		12/24 VDC: 2.2/1.1 A (7.2/3.6 A: during raising)	

Scanning Sonar

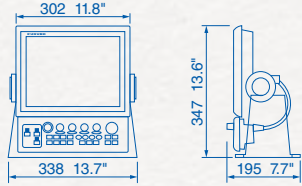
		FULL-CIRCLE SCANNING SONAR	
		CSH5LMK2	CSH8LMK2
GENERAL			
Frequency		55 kHz or 68 kHz	85 kHz or 107 kHz
DISPLAY			
Display Mode		Single scan, Fish Finder combination* (single and Fish Finder), Audio combination (single and audio pictures) * Fish Finder or Echo sounder required	
Colors		Scan/Echo: 16 colors, Mark: 1 color	
Mark		Own ship's track, Heading line, Direction/distance, Fish school, Event, Target lock	
Range Scale		50, 85, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 800, 1000, 1200, 1600 m	
Pulse length		0.5 to 20 ms (depending on range scales)	
Ship Speed		18 kn max (raise/lower operation up to 16 kn)	
Tilt		Manual control: 0° to 55° in 1° steps Automatic tilt scan: 4° to 52°	
Audio Search	Frequency	800 Hz	1 kHz
(By external loudspeaker)	Sector	20° , 40° , 80° and 120° selectable	
Language		English, Spanish, Danish, Dutch, French, Italian, Norwegian, Thai, Vietnamese, Burmese, Indonesian, Japanese	
INTERFACE			
NMEA0183 (Ver1.5/2.0/2.2)		2 ports	
Interface	Input	CUR, DBS, DBT, DPT, GGA*, GLC, GLL*, GTD, HDG, HDM, HDT, MTW, RMA, RMC, VDR, VHW, VTG * disabled for NMEA0183 Ver.1.5	
	Output	TLL (external data required)	
Log, E/S, KP		Speed log pulse (contact signal): 200/400 pulse/NM Sonde, E/S signal: VI-1100A applicable External KP: Current loop, 0 to 12 V	
Video Signal Output	Method	RGB analog, separated synchronization, XGA (VESA)	
	Resolution	1024 x 768 pixels, 65 MHz clock	
CIF data input		Location, Ship's speed, Bearing, Current data (1 layer), Water depth, Water temperature, Multiple layer current data	
HULL UNIT			
Transducer travel		400 mm or 600 mm	
Raising/lowering Time		400 mm: 14 s, 600 mm: 20 s	
Allowable Ship's Speed		18 kn max. (16 kn during raise/lower operation)	
Driving system		Remote electric control	
ENVIRONMENT			
Temperature		0°C to +55°C	
Waterproofing		IPX2 (w/o connector panel of processor unit)	
POWER SUPPLY			
Processor unit		100-240 VAC: 4.0-2.0 A, 1 phase, 50-60 Hz	100-240 VAC: 4.5-2.2 A, 1 phase, 50-60 Hz

Multi Beam Sonar

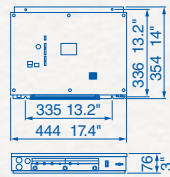
MULTI BEAM SONAR	
F3/F3i/F3L/F3Li (WMB1320F/1320Fi/1320FL/1320FLi/4340/6340)	
GENERAL	
Transmission Frequency	Wide band;F3/ F3i: 160 kHz, F3L/F3Li: 80 kHz
Effective Beam Width	F3/F3i: 200 m, F3L/F3Li: 450 m
Beam Spacing	FA: 3.2°
Beam Width	120° x 4° (Athwartships x Fore-aft), PS: 4.4°
Maximum Depth* (best performance)	F3/F3i: 200 m (Side Beam), 400 m (Main Beam directly under boat) F3L/F3Li: 450 m (Side Beam), 900 m (Main Beam directly under boat) * Depth capability subject to a variety of external factors
Max Range Resolution	2 cm
Tide Correction	Fully Geo Referenced
DISPLAY	
Display Mode	Bathymetry, Sonar polar view, Sounder (single, triple & quint beam) (Licensing options) Backscatter, Open Client Support, Water Column Targets, Uncorrected Data, XYZ export, Sidescan, RTK tides, other export formats
MINIMUM PC SPECS	
OS	Windows 8.1, 10
CPU	2 Ghz, 4 Cores/4 Threads
Memory	8 GB (Min. 4 GB)
Graphics	Direct X11
Screen Resolution	Full HD 1920 x 1080 (Min. XGA 1024 x 768)
SSD	2 TB (Min. 250 GB)
Network	Ethernet - GbE, WiFi802.11ac
Dual Screen Support	YES
INTERFACE (Transceiver Unit)	
NMEA0183/RS422/RS232	GGA, GGK, GLL, HDG, HDM, HDT, HVE, PASHR, PTNL PFEC, RMC, RCD, TSS1, ZDA
Ethernet	GbE
Other Interfaces	PPS, KP, Remote Power
ENVIRONMENT	
Temperature	0°C to +50°C (storage: -200°C to +85°C)
Waterproofing	IP56, Bulkhead mounted (IP67 option available)
POWER SUPPLY	
	9-32 VDC

Searchlight Sonar

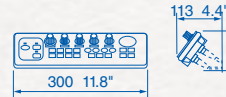
CH500/600 Display Unit and Control Unit 4.0 kg 9.0 lb



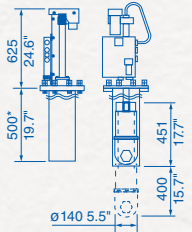
CH503 Transceiver Unit 3.3 kg 7.2 lb



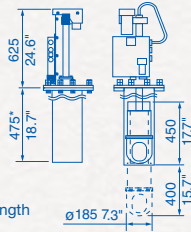
CH502/602 Control Unit 1.0 kg 2.2 lb



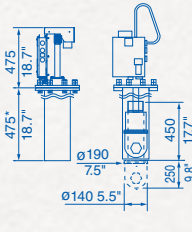
CH504 6" Type Hull Unit (400 mm travel) 34 kg 75 lb



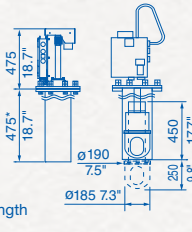
CH504 8" Type Hull Unit (400mm travel) 41 kg 90 lb



CH505 6" Type Hull Unit (250mm travel) 33 kg 73 lb

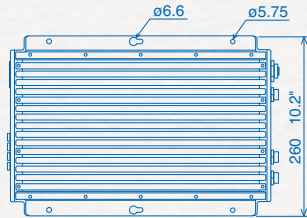


CH505 8" Type Hull Unit (250mm travel) 40 kg 88 lb

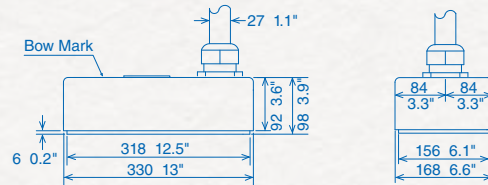


Scanning Sonar

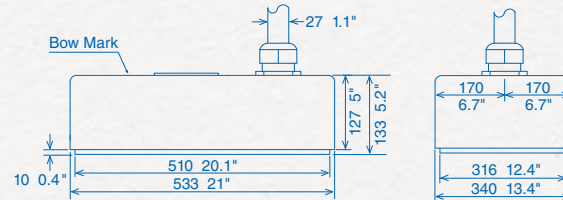
DRS (F3 DRX) Transceiver Unit 8.3 kg 18.3 lb



WMB160 (G3: 160 kHz) Transducer 15 kg 33.1 lb (Cable dependent)

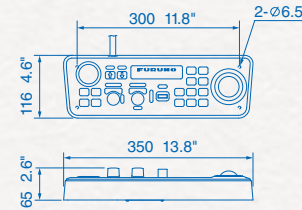


WMB80 (G3: 80 kHz) Transducer 39 kg 86.0 lb (Cable dependent)

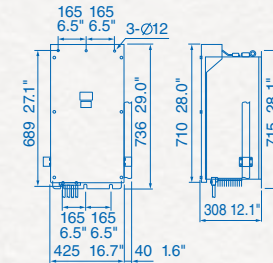


Multi Beam Sonar

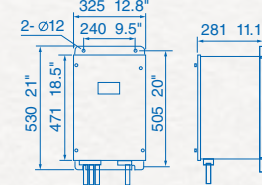
CSH5211A Control Unit 3.5 kg 7.7 lb



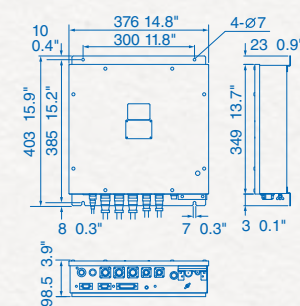
CSH8030A-8L Transceiver Unit 37 kg 81.6 lb



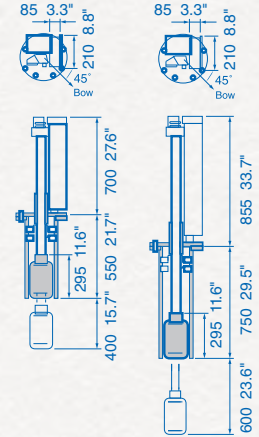
CSH5130A-5L Transceiver Unit 20 kg 44.1 lb



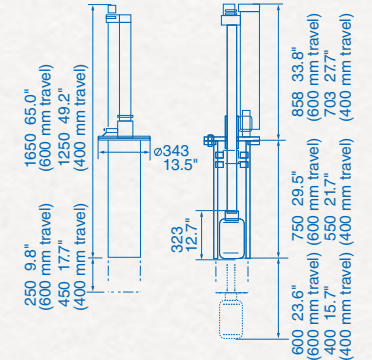
CSH5210A Processor Unit 3.4 kg 7.5 lb



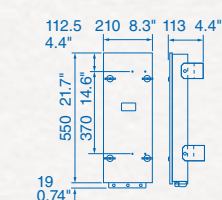
CSH5040A (600 mm travel) Hull Unit 75 kg 165.0 lb
CSH5041A (400 mm travel) Hull Unit 70 kg 154.0 lb



CSH8040A (600 mm travel) Hull Unit 82 kg 180.8 lb
CSH8041A (400 mm travel) Hull Unit 81 kg 178.6 lb



CSH5020A Preamplifier 6.5 kg 14.3 lb

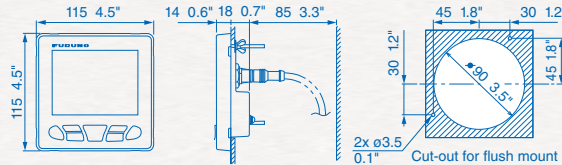


Autopilots

		AUTOPILOT
		NAVpilot 300
CONTROL UNIT		
Type		Color LCD
Screen Size		4.1"
Effective Display Area		82.6 (W) x 61.9 (H) mm
Screen Resolution		320 x 240 dots (QVGA)
Screen Brightness		700 cd/m2 typical
Screen Contrast		8 steps
PROCESSOR UNIT		
Steering Mode		STBY, Auto, Dodge, NFU (Non-follow up), Turn, Advanced auto*, SABIKI™, Navigation*, FishHunter™, Override * external data required
Rudder Gain/Counter Rudder Settings		Auto / 1-20 (Manual)
Trim Adjustment		-5°(port) to +5°(stbd)
Course Change Speed		1 to 20 deg/s
Alarm		Deviation alarm, Watch alarm
Motor		10 A continuous, 20 A for 5 seconds
GESTURE CONTROLLER		
Screen Type		1.28" monochrome TFT LCD, 128 x 128
Communication Distance		10 m wide view (depending on environmental conditions) - Bluetooth
Source		3 VDC, Dry cell battery (AAA, 2 pcs)
INTERFACE		
NMEA2000		1 Port
Input		059392, 059904, 060160, 060416, 060928, 061184, 065240, 065283, 065284, 126208, 126464, 126720, 126992, 126996, 127250, 127258, 128259, 129025, 129026, 129029, 129283, 129284, 129285, 129538, 130577, 130818, 130821, 130827, 130841
Output		059392, 059904, 060928, 061184, 126208, 126464, 126720, 126993, 126996, 126998, 127237, 127245, 130816, 130821, 130822, 130823, 130827, 130841
NMEA2000		1 Port, DBW control
Contact Signal		3 Ports
ENVIRONMENT		
Temperature		-15°C to +55°C
Waterproofing	Processor Unit	IP55
	Control Unit	IP56
	Gesture Controller	IP67
POWER SUPPLY		
	Processor Unit	12-24 VDC, 0.22 A max. (LEN 2)
	Control Unit	15 VDC, 0.29 A max. (LEN 6)

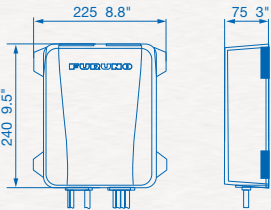
NAVpilot 300 Control Unit FAP3011 (Flush Mount)

0.22 kg 0.48 lb



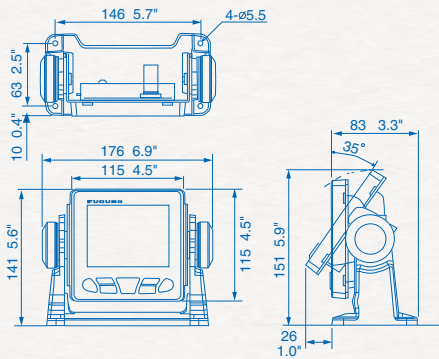
NAVpilot 300 Processor Unit FAP7002

1.5 kg 3.3 lb



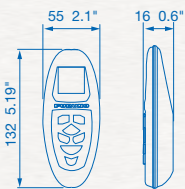
NAVpilot 300 Control Unit FAP3011 (Bracket Mount)

0.43 kg 0.95 lb

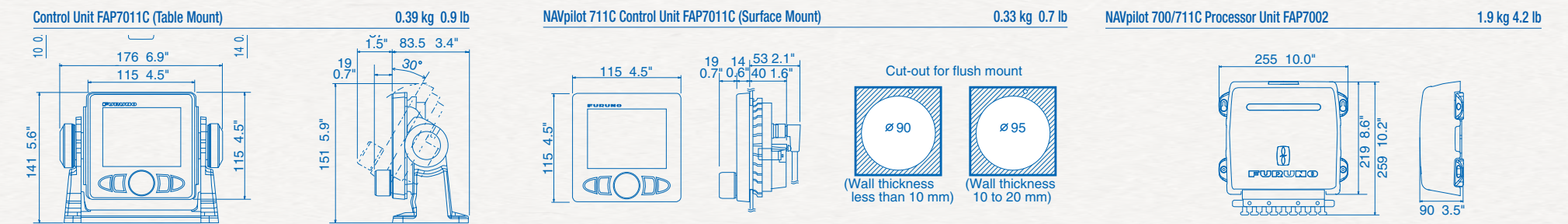


NAVpilot 300 Gesture Controller GC001

0.12 kg 0.26 lb



		AUTOPILOT	
		NAVpilot 711C	
CONTROL UNIT			
Type		Color LCD	
Screen Size		4.1"	
Effective Display Area		82.6 (W) x 61.9 (H) mm	
Screen Resolution		320 x 240 dots	
Screen Backlight		8 steps	
PROCESSOR UNIT			
Steering mode		STBY, Auto, Dodge (FU, NFU, Course), Turn, Remote, Advanced auto*, SABIKI™**, Navigation*, Wind*, Fish Hunter™* * external data required. ** NAVpilot 711C only.	
Sea Condition Adjustment		Auto/Manual-Calm/Moderate/Rough	
Rudder Angle Settings		10 - 45 deg	
Alarm		Heading deviation, Cross-track error*, Ship's speed*, Depth*, Water temperature*, Wind*, Watch, Log trip* * external data required	
INTERFACE			
Ports		NMEA2000 (NMEA2000): 1, NMEA0183: 2	
Input		NMEA0183: AAM, APB, BOD, BWC, BWR, DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWV, ROT, RMB, RMC, THS, TLL, VHW, VTG, VWR, VWT, XTE, ZDA NMEA2000 (NMEA2000): 059392/904, 060928, 061184, 126208/720/992/996, 127250/251/258/488/489, 128259/267, 129025/026/029/033/283/284/285, 130306/310/311/312/313/314/577/818/821/827/8 80	
Output		NMEA0183: DBT, DPT, GGA, GLL, GNS, HDG, HDM, HDT, MTW, MWV, RMB, RMC, ROT, RSA, VHW, VTG, VWR, VWT, ZDA NMEA2000 (NMEA2000): 059392/904, 060928, 061184, 126208/464/720/992/996, 127237/245/250/251/258, 128259/267, 129025/026/029/033/283/284/285, 130306/310/311/312/822/823/827	
ENVIRONMENT			
Temperature		-15°C to +55°C	
Waterproofing	Processor unit	IP20	
	Other unit	IP56	
POWER SUPPLY			
		12-24 VDC: 4.0 - 2.0 A (excluding pump)	

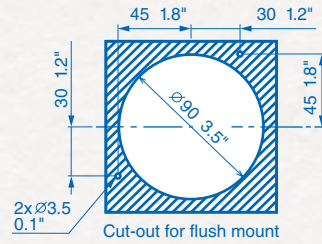
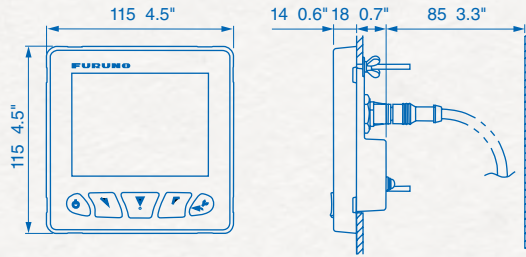


Instrument/Data Organizers

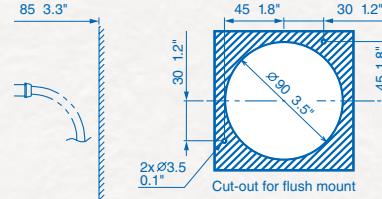
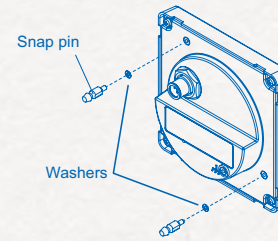
	INSTRUMENT/DATA ORGANIZER				
	FI70				
GENERAL					
Type	4.1" Color LCD				
Screen Resolution	QVGA (320 x 240)				
Brightness	Typical 700 cd/m2				
Display Mode	Analog meter, Graph, Highway, Race timer, Simple AIS, Data box				
Language	English, French, Spanish, German, Italian, Portuguese, Swedish, Danish, Norwegian, Finnish				
DISPLAY DATA					
Speed	STW, Max STW, Average STW, SOG, Max SOG, Average SOG, Velocity made good (VMG)				
Wind	AWS, TWS, Max TWS, AWA, TWA, Beaufort wind GWD				
Heading	HDG, Average HDG, Heading on next tack, ROT				
Course	COG				
Timer	Count down timer 1, Count down timer 2, Count up timer				
Navigation	Bearing, RNG, WPT, XTE, Position, ETA time, ETA date, Trip, Odometer				
Boat	Rudder angle, Trim tabs, Roll/Pitch				
Engine	Engine RPM, Trip fuel used, Fuel rate, Engine trim/tilt, Boost pressure, Engine temperature, Engine hour, Oil pressure, Oil temperature, Coolant pressure, Engine load, Transmission oil temperature, Transmission oil pressure				
Tank	Tank level 1-6				
Depth	Depth				
AIS	AIS				
Voltage	Supply voltage				
Environment	Date, Time, Water temperature, Air temperature, Atmospheric pressure, Humidity, Wind chill temperatuere, Dew point				
INTERFACE					
NMEA2000	1 port				
Input	059904, 165280, 060928, 061184, 126208/720/992/996, 127237/245/250/251/257/258/488/489/493/497/505, 128259/267, 129025/026/029/033/038/039/040/283/284/285/538/794/809/810, 130306/310/311/312/313/314/316/576/577, 130816/818/821/822/825/880/841				
Output	059392/904, 060928, 061184, 126208/464/720/993/996, 816/821/8 22/823/825/841				
ENVIRONMENT					
Temperature	-15°C to +55°C				
Waterproofing	IP56				
POWER SUPPLY					
	15 VDC through NMEA2000 0.15 A max, LEN4				
	ELECTRONIC NAVIGATION INSTRUMENTS				
	FI5001 Wind Transducer	FI5001L (Long Shaft) Wind Transducer	DST-800 Depth/Speed/Temp sensor	FI5002 Junction Box	IF-NMEA FI Analog NMEA Data Converter
GENERAL					
	Power supply: 12 VDC, less than 40 mA Transducer cable: 30/50 m		Frequency: 235 kHz Cable: 6 m	NMEA2000 backbone x 2 ports NMEA2000 x 6 ports Power supply: 12 VDC, less than 2 A	NMEA2000: 1 port Extrernal Sensor: Tank gauge, Wind transducer (FI5001or FI5001L) Speed/Temperature sensor (ST-02PSB or ST-02MSB) Power supply: 15 VDC, less than 200 mA

Instrument FI70

0.22 kg 0.5 lb

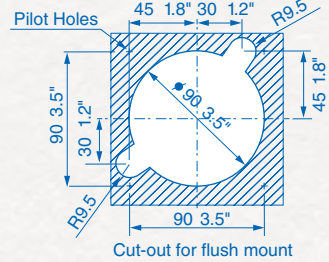
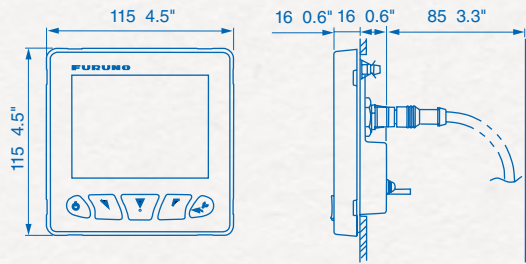


Frontmount Installation (optional kit required)



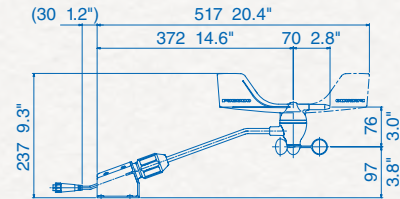
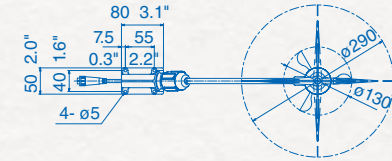
Instrument (Front Mount) FI70

0.24 kg 0.5 lb



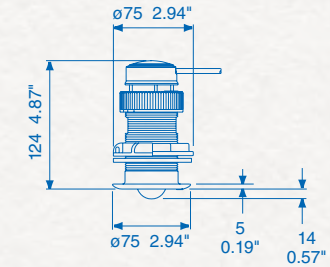
Wind Transducer FI5001 (option)

0.3 kg 0.7 lb



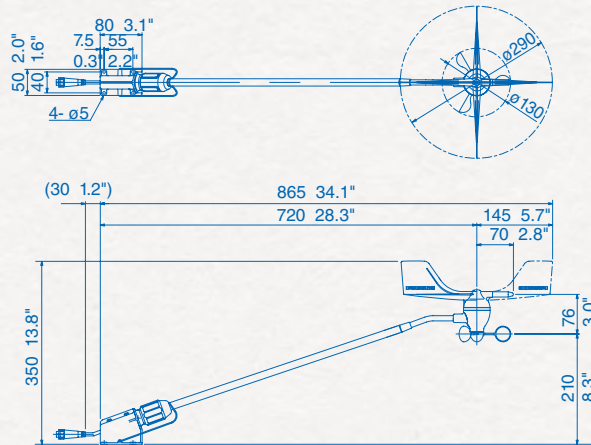
Depth/Speed/Temp Sensor DST-800 (option)

0.9 kg 2.0 lb



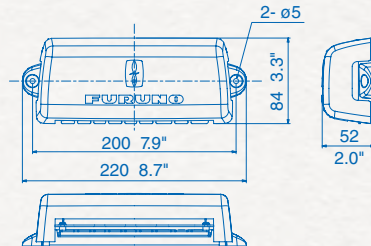
Wind Transducer FI5001L (Long Shaft) (option)

0.4 kg 0.9 lb



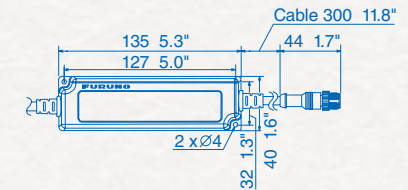
Junction Box FI5002 (option)

0.3 kg 0.7 lb



Analog NMEA Data Converter IF-NMEAFl (option)

0.35 kg 0.77 lb

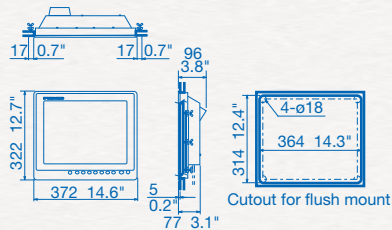


Monitors

	15" MARINE DISPLAY	19" MARINE DISPLAY	17" MULTI TOUCH MARINE DISPLAY	19" MULTI TOUCH MARINE DISPLAY	24" MULTI TOUCH MARINE DISPLAY
	MU150HD	MU190HD	MU175T	MU195T	MU245T
DISPLAY CHARACTERISTICS					
Type	15 inches, landscape	19 inches, landscape	17 inches, 5:4 Aspect Ratio	19 inches, 5:4 Aspect Ratio	24 inches, 16:9 Wide Aspect Ratio
Screen Resolution	XGA (1024 x 768)	SXGA (1280 x 1024)	SXGA (1280 x 1024)	SXGA (1280 x 1024)	WUXGA (1920 x 1080)
Contrast Ratio (typical)	600: 1	900: 1	1,000: 1	1,000: 1	1,000: 1
Viewing Angle (typical)	left/right and up/down: 80° or more		left/right and up/down: 80° or more	left/right and up/down: 89° or more	
Max Brightness (typical)	1000 cd/m2	1000 cd/m2	1000 cd/m2	1000 cd/m2	1000 cd/m2
Min Brightness (typical)	0.2 cd/m2 or less		0.2 cd/m2 or less		
INTERFACE					
Analog RGB (D-SUB/15 pins)	1 port		1 port		
DVI (DVI-D)	2 ports		2 ports		
Composite Video (NTSC/PAL)	3 ports		2 ports (BNC)		
Built-in Scaler	VGA to SXGA		MU175T & MU195T: VGA to SXGA MU245T VGS to WUXGA		
POWER SUPPLY					
	12-24 VDC 2.8-1.4 A	12-24 VDC 8.4-3.9 A	115 & 230 VAC, 50/60Hz + 24 VDC Note: You may connect either AC or DC power or both. When both sources are connected, power will be sourced from the AC input. If AC input is lost, there will be an uninterrupted switch-over to DC input.		
ENVIRONMENT (IEC 60945 test method)					
Temperature	-15°C to +55°C				
Waterproofing	IP56 (CFR46, front panel), IP22 (rear panel)		IP66 (front panel), IP22 (rear panel)		
EQUIPMENT LIST					
	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Cable Assembly 2. Bracket Assembly (w/knobs) 3. Hood Assembly 4. Flush Mount Kit (for fixing at front)	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Cable Assembly 2. Bracket Assembly (w/knobs for MU190) 3. Hood Assembly 4. Dust Cover 5. Flush Mount Kit (for fixing at rear)	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Bracket Assembly 2. Hood Assembly	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Bracket Assembly 2. Hood Assembly	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Bracket Assembly 2. Hood Assembly

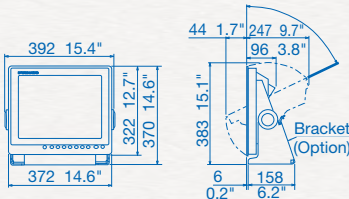
MU150HD Flush Mount

5.4 kg 11.9 lb



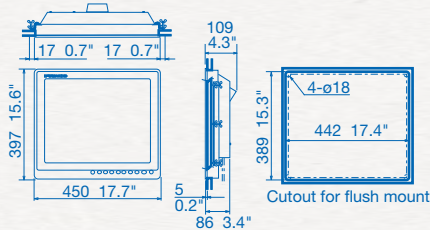
MU150HD Bracket Mount

7.4 kg 16.3 lb



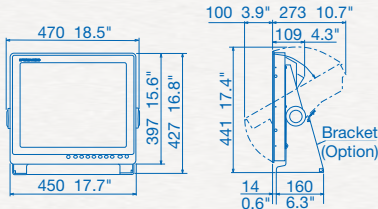
MU190HD Flush Mount

8.2 kg 18.1 lb



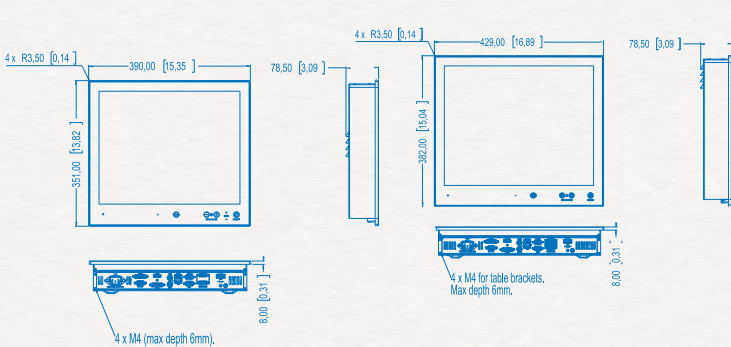
MU190HD Bracket Mount

11.0 kg 24.3 lb



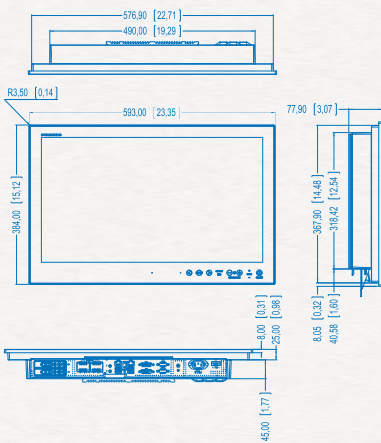
MU175T Flush Mount

6.2 kg 13.6 lb



MU195T Flush Mount

8.2 kg 18 lb

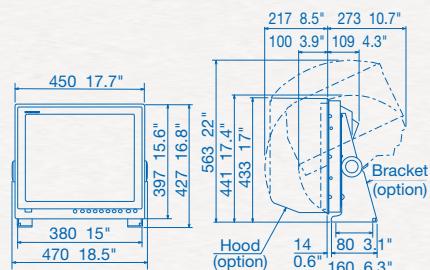


MU245T Flush Mount

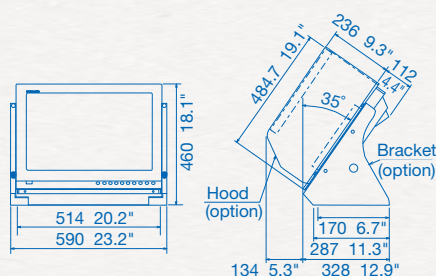
11 kg 24.2 lb

	19" MARINE DISPLAY	23.1" MARINE DISPLAY	27" MARINE DISPLAY
	MU190	MU231	MU270W
DISPLAY CHARACTERISTICS			
Type	19 inches, landscape	23.1 inches, landscape	27 inches, landscape
Screen Resolution	SXGA (1280 x 1024)	UXGA (1600 x 1200)	WUXGA (1920 x 1200)
Contrast Ratio (typical)	900: 1	600: 1	1500: 1
Viewing Angle (typical)	left/right and up/down: 80° or more		left/right and up/down: 85°
Max Brightness (typical)	450 cd/m2	400 cd/m2	
Min Brightness (typical)	0.2 cd/m2 or less		
INTERFACE			
Analog RGB (D-SUB/15 pins)	1 port		
DVI (DVI-D)	2 ports		
Composite Video (NTSC/PAL)	1 port		
Built-in Scaler	VGA to SXGA	SVGA to WUXGA	
POWER SUPPLY			
	100-230 VAC 0.7-0.4 A	100-230 VAC 1.0-0.6 A	100-230 VAC 0.7-0.4 A
ENVIRONMENT (IEC 60945 test method)			
Temperature	-15°C to +55°C		
Waterproofing	IP22		
EQUIPMENT LIST			
	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Cable Assembly 2. Bracket Assembly (w/knobs for MU190) 3. Hood Assembly 4. Dust Cover 5. Flush Mount Kit (for fixing at rear)	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Cable Assembly 2. Bracket Assembly 3. Hood Assembly 4. Dust Cover 5. Flush Mount Kit (for fixing at rear)	Standard 1. Display Unit 2. Installation Materials, Accessories and Spare Parts Option 1. Cable Assembly 2. Bracket Assembly 3. Flush Mount Assembly (Rear) 4. Hood Assembly (Front/Rear) 5. Dust Cover 6. Handgrip Assembly 7. Crimping Tool

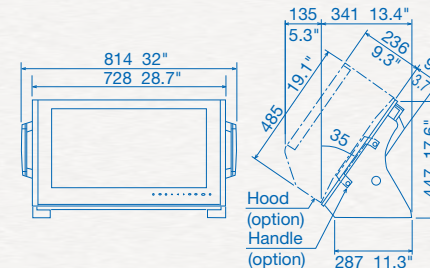
MU190 Bracket Mount 11.0 kg 24.3 l



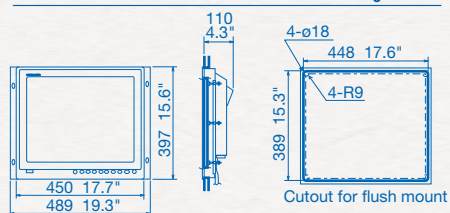
MU231 Bracket Mount 18.9 kg 41.7 lb



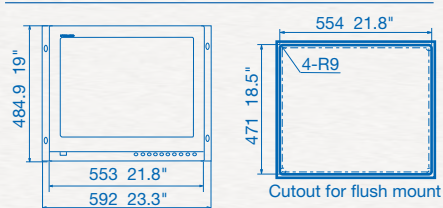
MU270W Bracket Mount 21.0 kg 46.3 lb



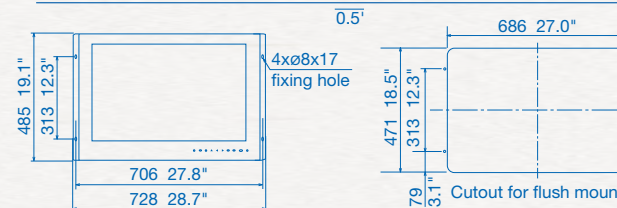
MU190 Flush Mount 8.8 kg 19.4 lb



MU231 Flush Mount 12.8 kg 28.2 lb



MU270W Flush Mount 13.0 kg 28.7 lb

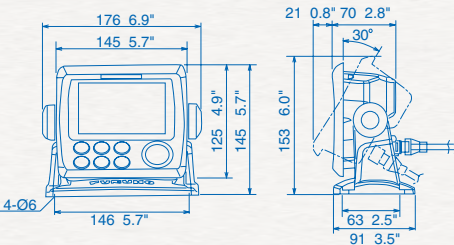


Remote Displays	REMOTE DISPLAY	
	RD33	
GENERAL		
Type	4.3" color LCD	
Effective Display Area	95.04 (W) x 53.85 (H) mm	
Screen Resolution	480 x 272	
Display style	1/2/3/4 data, Highway, Graph, Alphanumeric, 6-way split	
Display mode	Nav data, Highway, Heading, Speed, Depth Graph, Graph, Layline, STW, SOG, RPM, Rudder, Wind angle, Airtemp, Humidity, Roll pitch, ROT, Battery, Engine temp, Oil pressure, Oil temperature, Coolant pressure, Trim, Watch	
INTERFACE		
Ports	NMEA0183 (ver. 2.0, 3.0): 1, NMEA2000: 2 (male/female)	
Input	(NMEA0183): APB, BWR, BWC, CUR, DBT, DPT, DBS, DBK, GLL, GGA, GNS, GTD, GLC, HDT, HDG, HDM, MTW, MDA, MWV, RSA, RMA, RMB, RMC, ROT, VHW, VBW, VTG, VWT, VWR, VDR, XTE, ZTG, ZDA, PFEC, Gpatt (Pitch & Roll) (NMEA2000): 059904, 060928, 126208, 126992, 127245, 127250, 127257, 127258, 127488, 127489, 127497, 128259, 128267, 128275, 129025, 129029, 129033, 130306, 130310, 130311, 130577	
Output	(NMEA0183): DPT, VHW, RMC, MWV, HDT, HDG, XTE, MTW, RSA, VTG (NMEA2000): 059392, 059904, 060928, 126208, 126464, 126996, 126992, 127245, 127250, 128259, 128267, 129026, 129029, 129283, 129284, 130306, 130311	
ENVIRONMENT		
Temperature	-15°C to +55°C	
Waterproofing	IP56	
Power Supply		
	15 VDC: LEN6 (NMEA2000)	
	12-24 VDC: 0.2-0.1 A (Non NMEA2000)	

Compass		INTEGRATED HEADING SENSOR	
		PG500R	PG700
GENERAL			
Heading Accuracy		±1.0° (horizontal)	
Heading Resolution		0.1°	
Follow-up		25°/s rate-of-turn	45°/s rate-of-turn
Correction	Deviation	Automatic by swinging the boat	
	Variation		
		Automatic through GPS navigator or manually with RD30.	Automatic by swinging the boat
INTERFACE			
I/O Port	Input	1 port	NMEA2000: 1
	Output	2 ports (one port drives 3 outputs)	NMEA2000: 1
Output		FURUNO AD-10 format, IEC 61162-1 (NMEA0183 Ver2.0) HDG, HDT, HDM	065284, 127250
Input		IEC 61162-1 (NMEA0183 Ver1.5/2.0) RMC, VTG	059904, 060928, 061184, 126720, 126208, 130818, 165283
Data Update	AD-10 formatted	25 ms	----
	IEC 61162-1 (NMEA0183)	100 ms, 200 ms or 1 s selected	----
ENVIRONMENT			
Temperature		-15°C to 55°C	
Waterproofing		IPX5 (IEC 60529), CFR46 (USCG standard)	IP55
Power Supply			
		12-24 VDC: 120-30 mA	12 VDC: 0.1 A (LEN: 3)

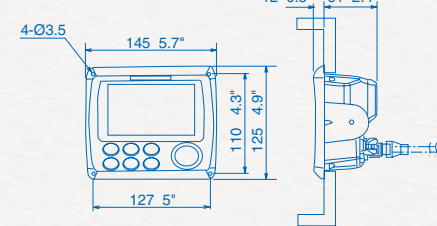
RD33 Display Unit (Bracket Mount)

0.7 kg 1.54 lb



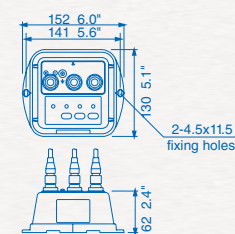
RD33 Display Unit (Flush Mount)

0.59 kg 1.3 lb



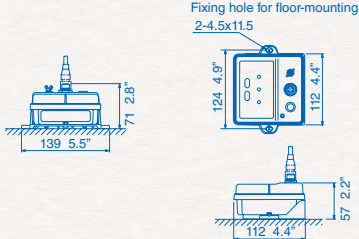
PG500R

0.3 kg 0.7 lb



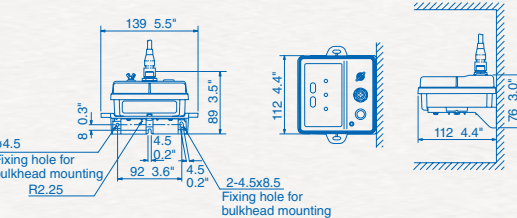
PG700 (floor mounting) Main Unit

0.31 kg 0.7 lb



PG700 (bulkhead mounting) Main Unit

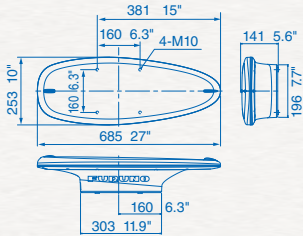
0.35 kg 0.77 lb



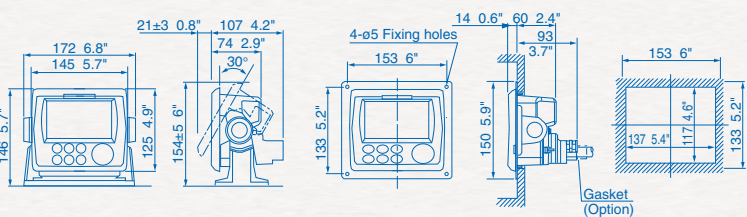
Compass

		SATELLITE COMPASS™	
		SC33	SC70SC130
GENERAL			
Heading Accuracy		0.4° rms	0.4° rms0.25° rms
Heading Resolution		0.1°	0.1°, 0.01° or 0.001° (select from menu)
Follow-up		45°/s rate-of-turn	40°/s rate-of-turn
Position fixing time		60 sec typical	60 sec typical
Position Accuracy		GNSS: 5 m approx., SBAS: 4 m approx., WAAS: 3 m approx. (2 drms, HDOP<4)	GPS: 10 m approx., DGPS: 5 m approx., WAAS: 3 m approx., MSAS: 7 m approx. (2 drms, HDOP<4)
INTERFACE (Junction box)			
NMEA2000		1 Port	1 Port
Interface (NMEA2000)	Input	059392/904, 060160/416/928, 061184, 065240, 126208	059392, 059904, 060928, 061184, 126208, 126720, 126996
	Output	059392, 060928, 061184, 065280, 126208/464/992/993/996/998, 127250/251/252/257/258, 129025/026/029/033/538/539/540/547, 130310/312/314/316/577/578/816/817/818/819/820/822/823/826, 130833/834/842/843/845/846/847	059392, 059904, 060928, 061184, 065280, 126208, 126464, 126720, 126992, 126996, 127250, 127251, 127252, 127257, 127258, 129025, 129026, 129029, 129033, 129044, 129291, 129539, 129540, 129545, 129547, 130310, 130312, 130314, 130316, 130577, 130578, 130822, 130823, 130842, 130843, 130845, 130846
NMEA0183		---	8 Ports (I/O: 4, O: 4)
Interface (NMEA0183)	Input	----	ACK, ACM, ACN, HBT, HDT*1, MSK, MSS, THS, VBW*2, VDR*2, ACK, ACM, ACN, HBT
	Output	----	ALC, ALF, ALR, ARC, DTM, GBS, GGA, GLL, GNS, GRS, GSA, GST, GSV, HBT, HDG*2, HDM*2, HDT*1, HRM*2, MSK, POS, RMC, ROT, THS, VBW*2, VDR*2, VHW*2, VLW*2, VTG, XDR*2, ZDA, PFEC (GPatt, GPheve, GPimu, llaIr, pidat)
LAN		----	2 Ports (100 BASE-TX), RJ45 connector (for IEC61162-450 and maintenance)
Analog		----	----
AD-10		----	4 Ports (for heading output)
USB		----	1 Port (for maintenance)
DISPLAY UNIT			
Type		----	4.3" Color LCD
Effective Display Area		----	95.04 (W) x 87.12 (H) mm
Screen Reolution		----	WQVGA 480 x 272
Brilliance		----	600 cd/m2 typical
Contrast		----	17 levels
Display Mode		----	Heading, Nav data, Rate of turn and Speed (Non-IMO mode only)
Visible Distance		----	0.65 m nominal
ENVIRONMENT			
Temperature	Display/Junction Box	----	-15°C to +55°C
	Antenna Unit	-25°C to +55°C (storage: -25°C to +70°C)	-25°C to +55°C (storage: -25°C to +70°C)
Waterproofing	Junction Box	----	IP20 (IP22: bulkhead mount)
	Display Unit	----	IP22 (IP35: option)
	Antenna Unit	IP56	IP56
POWER SUPPLY			
		12-24 VDC: 0.4-0.2 A (* LEN: 11 @9 VDC)	Junction Box: 12-24 VDC, 2.1-1.1 A (included Antenna Unit and Display Unit)

SC33 Sensor Unit2.5 kg 5.5 lb

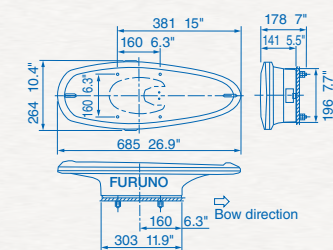


SC70/130 Display Unit

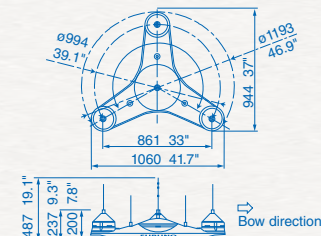


0.7 kg 1.5 lb

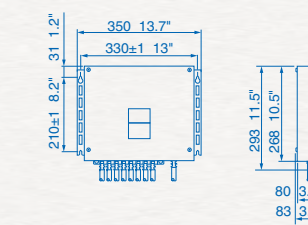
SC70 Sensor Unit2.8 kg 6.17 lb



SC130 Sensor Unit7.1 kg 15.6 lb

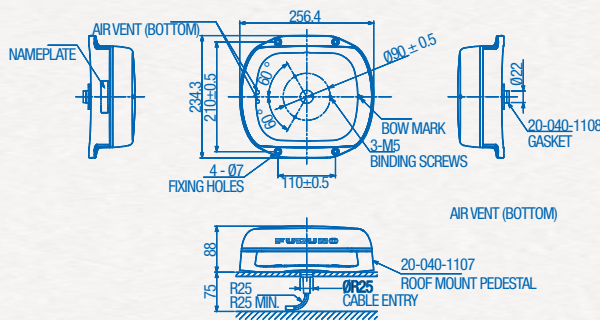


SC70/130 Junction Box2.9 kg 6.39 lb

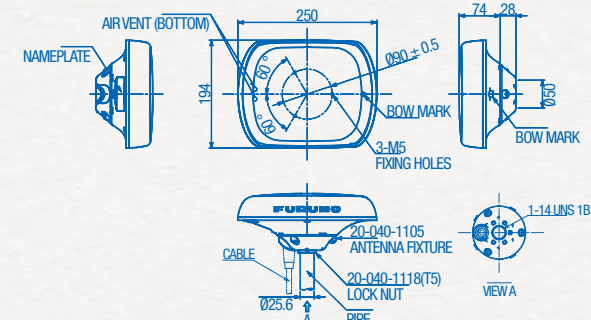


Compass		SATELLITE COMPASS™	
		SCX20	SCX21
GENERAL			
Frequency		1575.42 MHz (GPS/Galileo/QZSS/SBAS), 1602.5625 MHz (GLONASS)	
Tracking Code		C/A (GPS/QZSS/SBAS), E1B (Galileo), 1OF (GLONASS)	
Heading/Roll/Pitch Accuracy		1.0° static, 0.5° dynamic	
Heave Accuracy		5 cm	
Follow-up		45°/s rate-of-turn	
Position fixing time		50 sec typical	
Position Accuracy		GPS: 5 m approx. (2 drms, HDOP<4), MSAS: 4 m approx. (2 drms, HDOP<4), WAAS 3 m approx. (2 drms, HDOP<4)	
INTERFACE			
NMEA2000		1 Port	
Interface (NMEA2000)	Input	059362/904,060160/416/928, 061184, 065240, 126208	-
	Output	059932,060928, 061184, 065280,126208/464/992/993/996/998,127250/251/252/257/258,129025/026/029/033/538/539/540/547,130310/312/314/316/577/578/816/817/818/819/820/822/823/826,130833/834/842/843/845/846/847	-
NMEA0183		-	3 Ports NMEA0183, Tx 3 Ch, Rx 2 Ch, PPS 1 Ch RS-485: 1 channel, PPS, rising edge detecting
Interface (NMEA0183)	Input	-	AAM*, APB*, BOD*, BWC*, BWR*, RMB*, TLL*, XTE* (*GP39 required)
	Output	-	AAM*, APB*, BOD*, BWC*, BWR*, DTM, GGA, GLL, GNS, GSA, GSV, HDG, HDT, HRM, POS, RMB*, RMC, ROT, THS, TLL*, VBW, VTG, XTE*, ZDA (*GP39 required) P Sentences: GPatt, GPhve, GPimu, pidat, SDmrk, GPmsv, hdcom
ENVIRONMENT			
Temperature		-20°C to +55°C	
Waterproofing		IP56	
POWER SUPPLY			
		12-24 VDC: 0.2-0.1 A (4 LEN @ 9 VDC)	

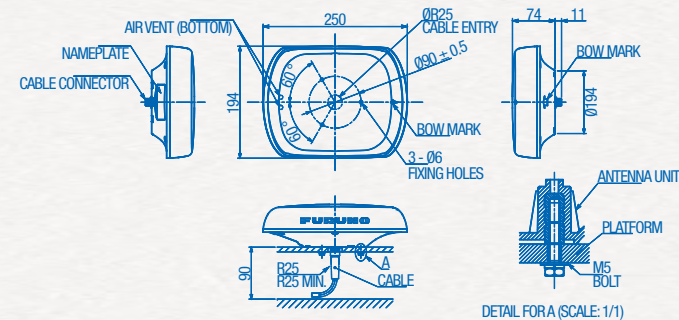
2.2 kg 4.9 lbs



1.2 kg 2.64 lbs



1 kg 2.2 lbs

[illegible][illegible]

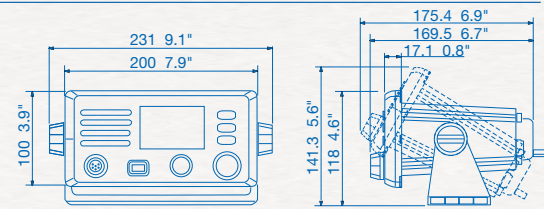
Technical drawing of the antenna assembly. The side view shows a vertical antenna with a diameter of $\varnothing 155$ and a total height of 1245.46. The base has a diameter of 168.67. The top view shows a circular base with a diameter of 196.77 and a mounting bracket with a width of 95.38. The antenna is mounted on a base with a height of 127.50. The antenna is labeled "antenna stanchion (400-500)".

Communications		AIS RECEIVER		AIS RECEIVER	CLASS-B+ AIS TRANSCEIVER	U-AIS TRANSPONDER
		FA30	FA40	FA50	FA70	FA170
STANDARDS						
		IMO MSC.74 (69) ANNEX 3, ITU-R Rec. M.1371-2, IEC 60945 Ed.4, IMO Res. A.917 (22)	IEC 60945 Ed.4 IMO MSC.140 (76) ITU-R M.1371-5, EN 303 413 V1.1.1 EN 301 843-1 V2.2.1 IEC 60945 Ed.4+CORR.1, IEC 62368-1 Ed.3	IMO MSC.140 (76) ITU-R M.1371-5, EN 303 413 V1.1.1 EN 301 843-1 V2.2.1 IEC 60945 Ed.4+CORR.1, IEC 62368-1 Ed.3	IMO MSC.140 (76) ITU-R M.1371-5, DSC: ITU-R M.825-3 IEC 62287-1 Ed.3.0, IEC 62287-2 Ed.2.0, EN 303 413 V1.1.1 EN 301 843-1 V2.2.1 IEC 60945 Ed.4+CORR.1, IEC 62368-1 Ed.3, IEC 62311 Ed.1+Ed.2	IMO MSC.74(69) ANNEX 3, IMO MSC.302(87), IMO A.694(17), IMO MSC.191(79), ITU-R M.1371-5, DSC ITU-R M.825-3, IEC61993-2 Ed. 2, IEC60945 Ed. 4 CORRIGENDUM 1, IEC 62288 Ed. 2, IEC 61162-1 Ed. 4, IEC 61162-2 Ed. 1, IEC61162-450 Ed. 1
TRANSPONDER UNIT						
TX/RX Frequency (FA30/40: RX Frequency)		156.025 to 162.025 MHz				
Output Power		----	----	----	5W or 1W(SOTDMA), 2W(CSTDMA)	1 W / 12.5 W
Channel Spacing		25 kHz/12.5 kHz	25 kHz	25 kHz	25 kHz	25 kHz
MONITOR UNIT						
Type		----	----	----	----	4.3" Color LCD
Effective Viewing Area		----	----	----	----	95.04 (W) x 53.8 (H) mm
Screen Resolution		----	----	----	----	480 x 272 dots
GPS RECEIVER						
Receiving Channels		----	----	12 channels, SBAS 2 channels, 14 satellites tracking	12 channels, SBAS 2 channels, 14 satellites tracking	12 channels parallel, 12 satellites tracking
Rx Frequency		----	----	1575.42 MHz		
Rx Code		----	----	C/A code		
Position Accuracy		----	----	13 m (2 drms, HDOP <= 4)		GPS: less than 13 m (2 drms, HDOP < 4) DGPS: less than 5 m (2 drms, HDOP < 4)
INTERFACE						
NMEA0183	Input	ACK, ACA, AIQ, DTM, GBS, GGA, GLL, GNS, HDT, OSD, RMC, VBW, VTG, DSC, DSE, ZDA	ACA, ACK, AIQ, DTM, GBS, GGA, GLL, GNS, HDT, OSD, RMC, SSD, THS, VBW, VSD, VTG	ACK, ABM, DTM, GBS, GGA, GLL, GNS, HDT, OSD, RMC, THS, SSD, VBW, VSD, VTG, AIQ, DSC, DSE	ACK, AIQ, BBM, HDT, SSD, THS, VSD (ABM, BBM: SOTDMA only)	ABM, ACA, ACK, ACM, ACN, AIQ, AIR, BBM, DTM, EPV, GBS, GGA, GLL, GNS, HBT, HDT, LRF, LRI, OSD, PIWWIVD, PIWWSPW, PIWWSSD, PIWWVSD, RMC, ROT, SPW, SSD, THS, VBW, VSD, VTG
	Output	VDM, VDO, ACA, ACS, ALR, TXT	ABK, ACA, ACS, ALR, GGA, GLL, RMC, SSD, TXT, VDM, VDO, VER, VSD, VTG	ABK, ACA, ACS, ALR, TXT, VDM, VDO	ABK, ACA, ACS, ALR, GGA, GLL, RMC, SSD, TXT, VDM, VDO, VER, VSD, VTG	ABK, ACA, ACS, ALC, ALF, ALR, ARC, EPV, HBT, LR1, LR2, LR3, LRF, LRI, NAK, PIWWIVD, PIWWSPR, PIWWSSD, PIWWVSD, SSD, TRL, TXT, VER, VDM, VDO, VSD
NMEA2000	Input	----	059392, 059904, 060160, 060416, 060928, 065240, 126208, 127250	----	059392, 059904, 060160, 060416, 060928, 065240, 126208, 127250	----
	Output	----	059392, 059904, 060928, 126208, 126464, 126992, 126993, 126996, 126998, 127258, 129025, 129026,129029, 129038, 129039, 129040, 129041, 129540, 129792, 129793, 129794, 129795, 129796, 129797, 129798, 129800, 129801, 129802, 129803, 129804, 129805, 129806, 129807, 129809, 129810, 129811, 129812, 129813	----	059392, 059904, 060928, 126208, 126464, 126992, 126993, 126996, 126998, 127258, 129025, 129026,129029, 129038, 129039, 129040, 129041, 129540, 129792, 129793, 129794, 129795*, 129796, 129797, 129798, 129800, 129801, 129802, 129803, 129804*, 129805, 129806, 129807, 129809, 129810, 129811, 129812*, 129813* (*SOTDMA mode only)	----
Ethernet		10/100BASE-T	----	10/100BASE-T	----	100Base-TX, RJ45 connector, Auto MDI/MDIX
ENVIRONMENT						
Temperature	Antenna Unit	----	----	-30°C to +70°C	-25°C to +70°C	-30°C to +70°C
	Other Units	-15°C to +55°C				
Waterproofing	Antenna Unit	----	----	IPx6	IP56	IP56
	Other Units	IP20	IP55	IP20	IP55	Transponder unit: IP22 at bulkhead mount, IP20 at floor Monitor unit: IP22, IP35 with optional waterproofing kit Pilot plug unit (front panel)/Power supply unit: IP22
POWER SUPPLY						
Transponder Unit (FA30: Receiver Unit)		12-24 VDC, 1.2-0.6 A	12-24 VDC, 0.3-0.2 A	12-24 VDC, 2.0-1.0 A	12-24 VDC, 1.8-0.9 A	12-24 VDC, 6-3 A
Display Unit:		----	----	----	----	12 VDC, 0.3 A max.

Communications

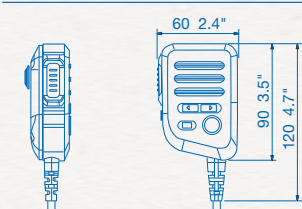
MARINE VHF RADIOTELEPHONE		
FM4800/4850		
GENERAL CHARACTERISTICS		
Frequency Range		TX: 156.025 to 162.000 MHz, RX: 155.500 to 163.275 MHz
Communication System		Simplex/Semi-duplex
Modulation		16K0G3E (F3E) Voice, 16K0G2B (F2B) DSC
TRANSMITTER		
Output Power		25 W max, 1 W at power reduction
Max. Frequency Deviation		±5 kHz max
Spurious Emission	Standby	less than 2 nW
	Transmit	less than 0.25 uW
RECEIVER		
Sensitivity		+6 dBuV (e.m.f) or less (SINAD 20 dB)
Adjacent Channel Selectivity		70 dB or more
Spurious Response		70 dB or more
DSC RECEIVER		
Protocol		Class D DSC
Sensitivity		0 dBuV (e.m.f) or less (BER < 1%)
Adjacent Channel Selectivity		70 dB or more
Spurious Response		70 dB or more
AIS RECEIVER		
Receiving Frequency (CH)		161.975 MHZ (AIS1), 162.025 MHZ (AIS2)
Sensitivity		-107 dBm or less (PER < 20%)
Adjacent Channel Selectivity		70 dB or more
Spurious Response		70 dB or more
GPS RECEIVER (FM4800 only)		
Receiving Frequency		1575.42 MHz
Number of Channel		72 channels
Horizontal Accuracy		10 m
Position Fixing Time		Cold start: 120 sec typical
Position Update Interval		1 sec
LOUD HAILER/FOG HORN		
Output Power		30 W Max. (4 ohm)
INTERFACE		
NMEA2000		1 port, LEN: 3
Interface	Input	059392, 059904, 060160, 060416, 060928, 065240, 126208, 127258, 129026, 129029, 129044
	Output	059392, 060928, 126208, 126464, 126993, 126996, 126998, 129025, 129026, 129029, 129038, 129039, 129040, 129041, 129540, 129793, 129794, 129795, 129797, 129798, 129801, 129802, 129808, 129809, 129810
NMEA0183		1 port
NMEA0183	Input	DTM, GGA, GLL, GNS, RMA, RMC
	Output	DSC, DSE, GLL, RMC, VDM
ENVIRONMENT		
Temperature		-15°C to +55°C
Waterproofing		IP67
POWER SUPPLY		
		12 VDC (-10% to +30%), 5.0 A Max.

FM4800 Transceiver Unit



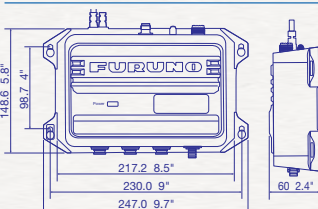
1.7 kg 3.8 lb

Microphone MIC-4800 (FM4800 only)



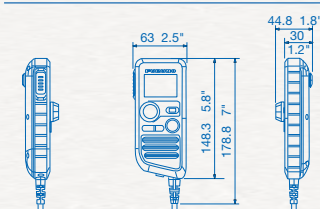
0.25 kg 0.56 lb

FM4850 Transceiver Unit



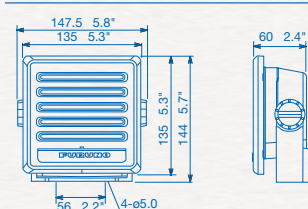
1.75 kg, 3.85 lb

Handset HS-4800 (option)



0.3 kg 0.66 lb

Speaker SP-4800 (option)

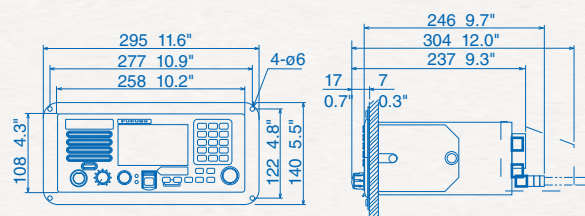


0.76 kg 1.69 lb

		VHF RADIOTELEPHONE	
		FM8900S	
GENERAL CHARACTERISTICS			
Class of Emission		G3E (Radiotelephone), G2B (DSC)	
Communication System		Simplex/Semi-duplex	
Channels		All VHF channels according to ITU-R Radio Regulations Appendix 18, All channels in FCC Part 80, Max 20 Private channels where permitted by Administrations (preset by the service agent), 10 weather channels (USA and Canada, receive only)	
Rules and Regulations		VHF Radiotelephone: EN 301 925 V1.4.1 (2013.5) VHF ATIS: EN 300 698-1 V1.4.1 (2009.12), EN 301 925 V1.5.1(2017) DSC: ITU-R Rec M.493-14 (2015-09), ITU-R M.541-10 (2015-10), ITU-R Rec M.689-3 (2012.03), EN 300 338-1/-2 V1.4.1 (2017.02)	
Display		4.3 inches WQVGA (480 x 272 dots), color dot matrix LCD	
TRANSMITTER			
Frequency Range		155.00 - 161.600 MHz	
RF Output Power		High: Max 25 W, Low: Not exceed 1 W US version: Manual override for 25 W available on CH13, CH67 and CH77 (usually not exceed 1 W)	
Frequency Stability		less than ±1.5 kHz	
RECEIVER			
Frequency Range	Simplex	155.000 - 161.600 MHz	
	Semi-duplex	159.600 - 164.200 MHz	
Receiving System		Double-conversion super-heterodyne 1st IF : 51.1375 MHz, 2nd IF: 62.5 kHz	
AF Output Power		3 W (4 Ω loud speaker), 2 mW (150 Ω handset)	
Audio Response		De-emphasis of 6 dB/oct +1/-3 dB	
Sensitivity		less than 6 dBμV at SINAD 20 dB	
Adjacent Channel Selectivity		70 dB or more	
DSC Section			
Message Log	Receive	50 distress messages plus 50 non-distress messages	
	Transmit	50 messages	
Interface	Nav data	IEC61162-1 Ed.4	
	Printer	Centronics-compatible	
Alarm		Audible and visual on receipt of a DSC call	
Receiver	DSC frequency	156.525 MHz (CH70)	
Characteristics	Calling sensitivity	Symbol error rate: less than 1% (at 0 dBμV)	
ENVIRONMENT			
Temperature		-15°C to +55°C	
Waterproofing		FM8900S: IP20 (IP22 with option), HS-2003: IP24, RB-8900: IP22	
POWER SUPPLY			
		24 VDC	
	RX	2.3 A (MAX), 1.3 A (standby)	
	TX	4.7 A (MAX)	

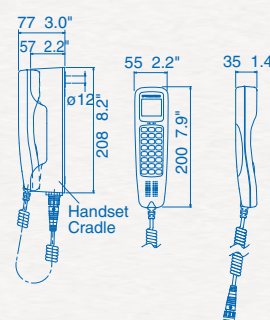
Transceiver Unit (Flushmount) FM8900S

4.2 kg 9.3 lb



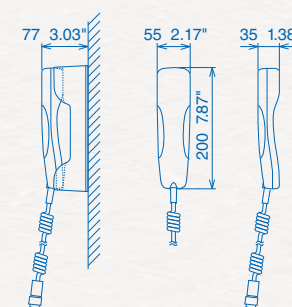
Remote Station RB8900

0.7 kg 1.5 lb



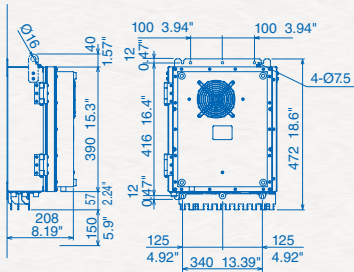
Handset HS2003

0.2 kg 0.4 lb

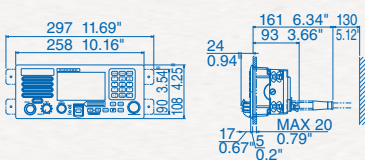


Communications		MF/HF RADIOTELEPHONE	
		FS1575	FS2575
GENERAL			
Frequency Range	TX	1.6 to 27.5 MHz (100Hz Steps)	
	RX	0.1 to 29.9 MHz (10Hz Steps)	
Channels		256 user-specified channels plus ITU, SSB/TELEX channels	
Rules and Regulations		ITU-R M. 1082-1, ITU-R M. 1173-1, ITU-R M. 476-5, ITU-R M. 490, ITU-R M. 491-1, ITU-R M. 492-6, ITU-R M. 493-14, ITU-R M. 541-10, ITU-R M.625-4, ITU-R M.821-1, IMO Res. A. 694 (17), IMO Res. A. 806 (19), IMO Res. MSC36 (63), IMO Res. MSC68 (68), IMO Res. MSC302 (87), MSC/Circ. 862, IEC 61162-1 Ed. 5, IEC 60945 Ed. 4, ETS 300 067 ed. 1, EN 300 338-1 V1.4.2, EN 300 338-2 V1.4.1, EN 301 033 V1.3.1, EN 300 033 V1.41 EN 300 373-1 V1.41	
Communication System		Simplex/semi-duplex	
Class of Emission		J3E, H3E, A1A, J2B	
TRANSCEIVER			
RF Output Power		150 W pep	250 W pep
Antenna		10-18 m whip or wire	
Tuning Speed		within 15 sec.	
Receiver Sensitivity		less than +7 dBµV (4.0-29.99999 MHz, J3E) / less than +13 dBµV (1.6-4 MHz, J3E)	
DSC			
Receiving	General	All DSC frequencies in MF/HF	
Frequency	Distress and safety	DSC distress/safety frequencies: 2187.5 kHz, 4207.5 kHz, 6312.0 kHz, 8414.5 kHz, 12577 kHz, 16804.5 kHz	
Message Storage	TX:	50 distress messages, plus 50 non-distress messages	
	RX:	50 messages, telephone no., frequencies, etc.	
POWER SUPPLY			
		24 VDC, 20 A (TX), 5.0 A (RX)	24 VDC, 40 A (TX), 5.0 A (RX)
		100/110/200/220 VAC Power Supply PR-300	100/110/120/200/220/240 VAC with optional AC/DC Power Supply PR-850A

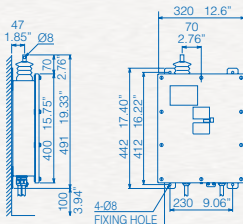
Transceiver Unit FS1575T 16 kg 35.2 lb



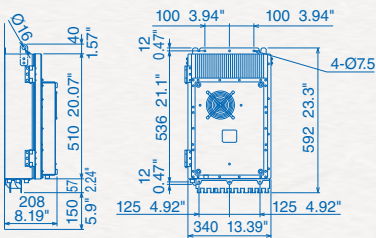
Controller Unit FS2575C 1.8 kg 4.0 lb



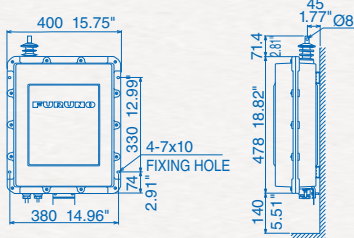
Antenna Coupler AT1575-SUS 8.8 kg 19.4 lb



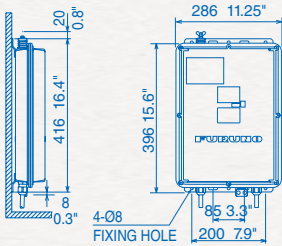
Transceiver Unit FS2575T 20 kg 44.1 lb



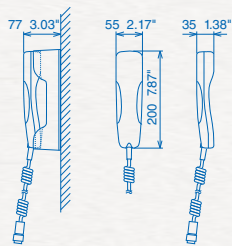
Antenna Coupler AT5075 9.2 kg 20.1 lb



Antenna Coupler AT1575-AES 2.6 kg 5.7 lb



Handset HS2003 0.5 kg 1.2 lb

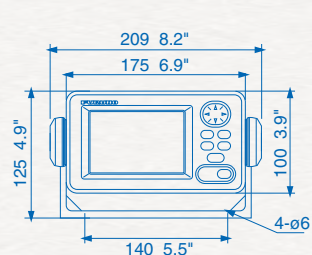


NAVTEX RECEIVER	
NX300	
NAVTEX RECEIVER	
Receiving Frequency	518 kHz or 490 kHz
Mode of Reception	F1B
Sensitivity	2μ V e.m.f. (50 ohms), 4% error rate
Message Category	A: Navigational warning B: Meteorological warning C: Ice report D: Search and rescue information/piracy and armed robbery E: Meteorological forecast F: Pilot message G: AIS Service message H: Loran-C message I: Reserve-presently not used J: Differential omega message K: Other electronic navigational aid and system message L: Navigational warning (additional) M to Y: Reserve _ presently not used V: Notice to Fishermen (US only) Z: QRU (no message on hand)
DISPLAY	
Display	4.5" Monochrome LCD
Effective display area	95 (W) X 60 (H) mm
Pixel number	120 x 64
Display Modes	Message Selection, NAV Data, Message Display
Message Storage	28,000 Characters
Languages	English, Spanish, German, French, Italian, Danish, Dutch, Portuguese
INTERFACE	
Input	0183 Ver.1.5/2.0, RS-232C, 4800 bps GGA, GLL, RMB, ZDA, RMC
Output	Message data for personal computer, RS-232C, 4800 bps
ENVIRONMENT	
Temperature	Antenna unit -25°C to +70°C
	Display unit -15°C to +55°C
Waterproofing	Antenna unit IPX6
	Display unit IPX5
POWER SUPPLY	
12-24 VDC: 180-90 mA	

LOUD Hailer with INTERCOM	
LH5000	
AUDIO OUTPUT	
Hail	30 W, 8 Ω (at 1 kHz, 10 % distortion)
Intercom speaker	5.0 W, 8 Ω (at 1 kHz, 10 % distortion)
Internal speaker	2.5 W, 8 Ω (at 1 kHz, 10 % distortion)
External speaker	5.0 W, 8 Ω
INPUT IMPEDANCE	
Microphone	600 Ω
Auxiliary Input	5 kΩ
ENVIRONMENT	
Temperature	-15°C to +55°C (IEC60945)
Waterproofing	IP67 (IEC60529)
POWER SUPPLY	
Full Load	12 VDC, 11 A
Standard	12 VDC, 5 A
Standby	12 VDC, 280 mA

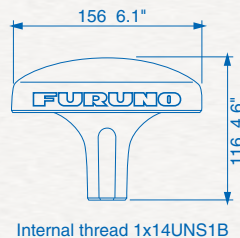
NX300 Display Unit

0.68 kg 1.5 lb



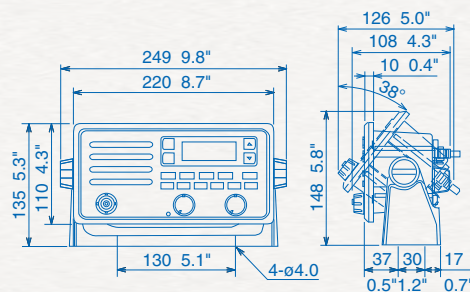
NX3H-D Antenna Unit

0.9 kg 2.0 lb



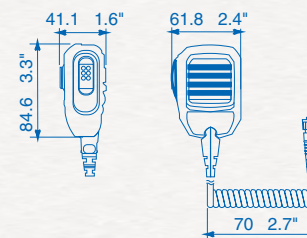
LH5000 Loud Hailer

1.61 kg 3.5 lb



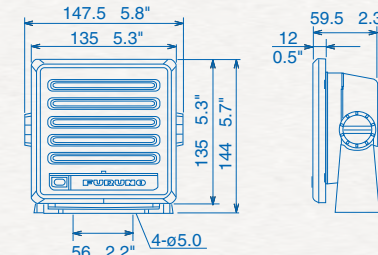
LH5000 Microphone MIC-5000

0.22 kg 0.5 lb



LH5000 Intercom speaker (option)

0.76 kg 1.7 lb

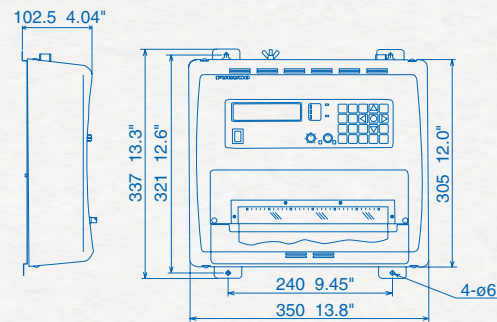


Communications		FACSIMILE RECEIVER FAX408
RECEIVER CHARACTERISTICS		
Frequency Range		2 MHz to 25 MHz in 100 Hz steps
Number of Channels	User programmed	164
	Pre-programmed	150
Receiving System		Synthesized double super heterodyne
Mode of Reception		F3C
Sensitivity		MF/HF: 2µV at 20 dB SINAD
RECORDER CHARACTERISTICS		
Recording System		Thermal head printing
Recording Paper		216 mm x 20 m with effective width of 212 mm
Scanning Speed		60, 90, 120 rpm
Gradation		9 levels
Phase Control		Automatic or manual
Operation		Automatic* or manual *By APSS signal Schedule Timer 16 programs/week
ENVIRONMENT		
Temperature		-10°C to +50°C
POWER SUPPLY		
		12-24 VDC:2.3-1.15A

		FACSIMILE RECEIVER FAX30
GENERAL		
Frequency Range		80 kHz to 160 kHz, 2 MHz to 25 MHz, 490 kHz, 518 kHz (NAVTEX)
Class of Emission		F3C, J3C, F1B (NAVTEX)
Receiving System		Double superheterodyne
Number of Channel		1000 channels
Storage	Fax	12 pictures
	NAVTEX	130 messages
Scanning Speed		60, 90, 120, 180 or 240 rpm, automatic or manual selection
I.O.C.		576 or 288, automatic or manual selection
Display Color		Monochrome, 8 shades of gray, Blue shades, Pink and black, Red and blue
Networking Standard		Ethernet 10Base-T TCP/IP
ENVIRONMENT		
Temperature		-15°C to +55°C
Waterproofing		IPX2
POWER SUPPLY		
		12-24 VDC: 1.0-0.5 A
MINIMUM SYSTEM REQUIREMENTS FOR PC		
OS		Windows 98, 2000, ME, XP, Vista, 7, 8(32 bit/64 bit)
CPU		600 MHz or faster
RAM		128 MB or more
Resolution		1024 x 768 pixels
Browser		Internet Explorer Ver.5.01 5.5 6.0 7.0 8.0 10.0 11.0 Netscape Communicator Ver. 4.78/6.2/7.0

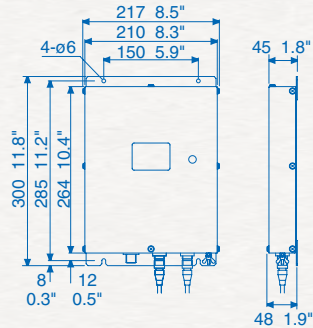
FAX08 Receiver Unit

5.6 kg 12.3 lb



FAX30 Receiver Unit

2.0 kg 4.4 lb



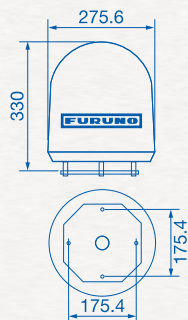
Preamp Unit FAX5

1.3 kg 2.9 lb

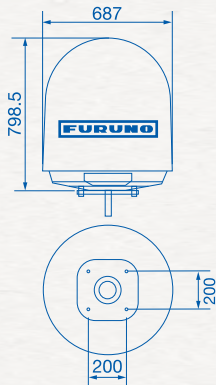


		INMARSAT FLEETBROADBAND	
		FELCOM 251	FELCOM 501
GENERAL			
Transmitting Frequency		1626.5 - 1660.5, 1668.0 - 1675.0 MHz	
Receiving Frequency		1518.0 - 1559.0 MHz	
INTERFACE			
Ethernet	RJ45	4 ports	
2-wire analog telephone	RJ11	2 ports (4 ports with optional adaptor)	
USB		1 port USB 2.0 (RS-232C with optional adaptor)	
Alarm output		1 port Contact Closure (normal close), external relay	
SIM Card		1 slot	
COMMUNICATION SERVICES			
Voice		4 kbps AMBE+2 or ISDN 3.1 kHz Audio	
Data	ISDN UDI/RDI	-	64 kbps
	Standard IP(Best Effort Delivery)	Up to 284 kbps	Up to 432 kbps
	Streaming IP(Guaranteed Service Rate)	32, 64, 128 kbps	32, 64, 128, 256 kbps
SMS (Short Message Service)		Up to 1,120 characters	
FAX		G3 Fax through 3.1 kHz audio	
ENVIRONMENT			
Temperature	Antenna Unit (operative temperature)	-25°C to +55°C	
	Antenna Unit (storage temperature)	-40°C to +70°C	
	Below Deck Unit (operative temperature)	-25°C to +55°C	
Waterproofing		Antenna: IPX6, Below Deck Unit: IP31, Handset: IP56 (Cradle: IP22)	
POWER SUPPLY			
Communication Unit		12-24 VDC: 14/5.5 A	
Power Supply Unit		100-240 VDC, 1 Phase, 50-60 Hz	

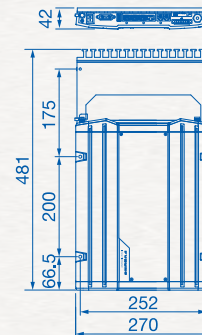
FELCOM 251 Antenna 3.9 kg 8.6 lb



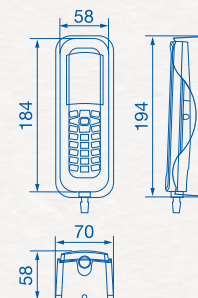
FELCOM 501 23 kg 50.7 lb



FELCOM 251/501 Communication Unit FB-2001 2.5 kg 5.5 lb



Handset FB-8001 0.63 kg 1.4 lb



System Recommendations

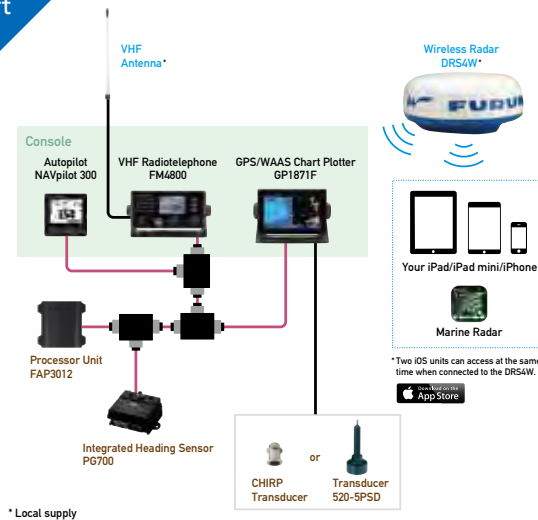


Common Runabout Product Recommendations

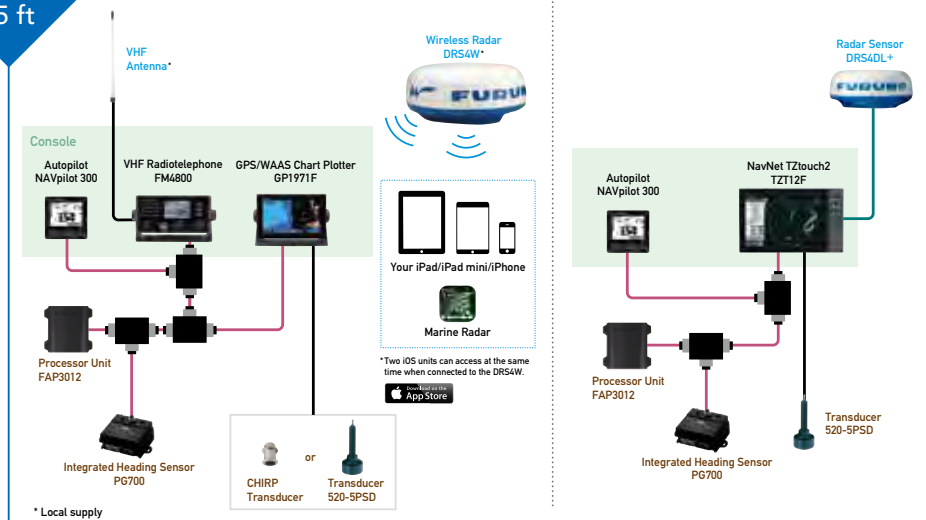
- NMEA2000
- Ethernet
- Other
- NMEA2000 T Connector

Product suggestions only -
not an installation diagram

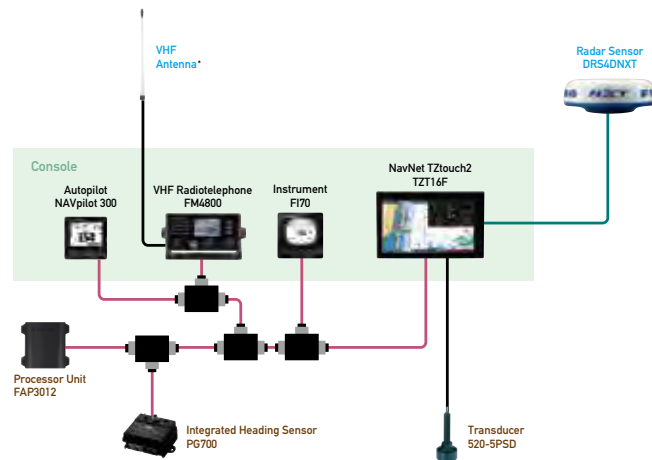
Under
20 ft



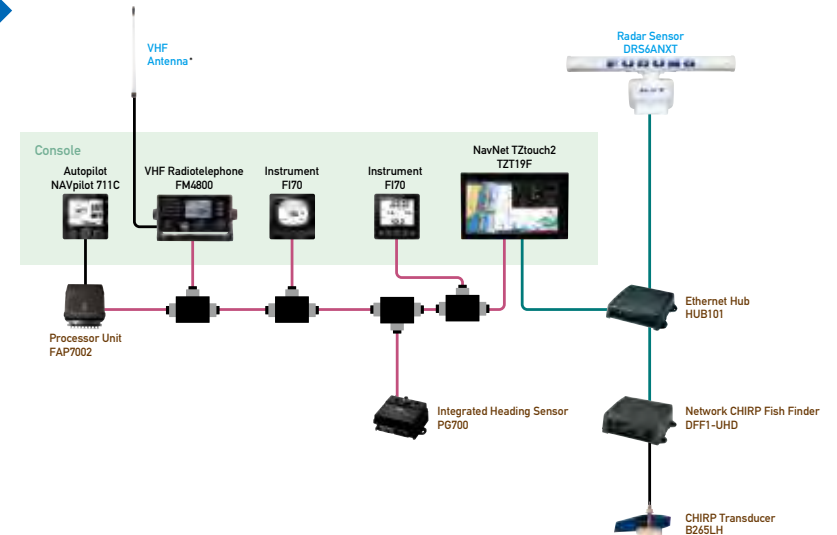
20 ft
to
25 ft




25 ft
to
30 ft



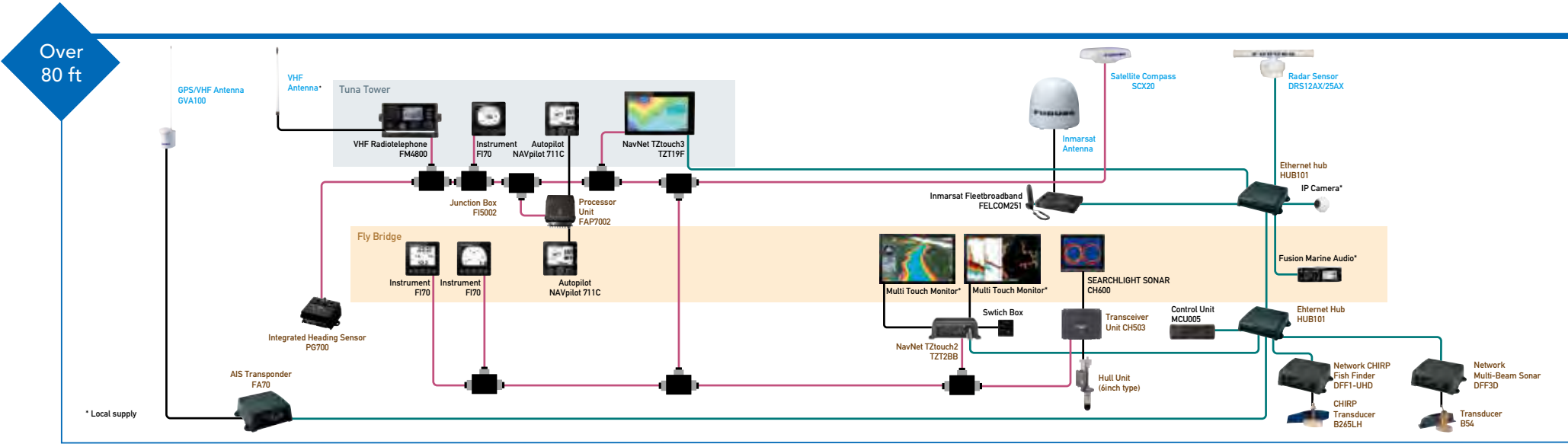
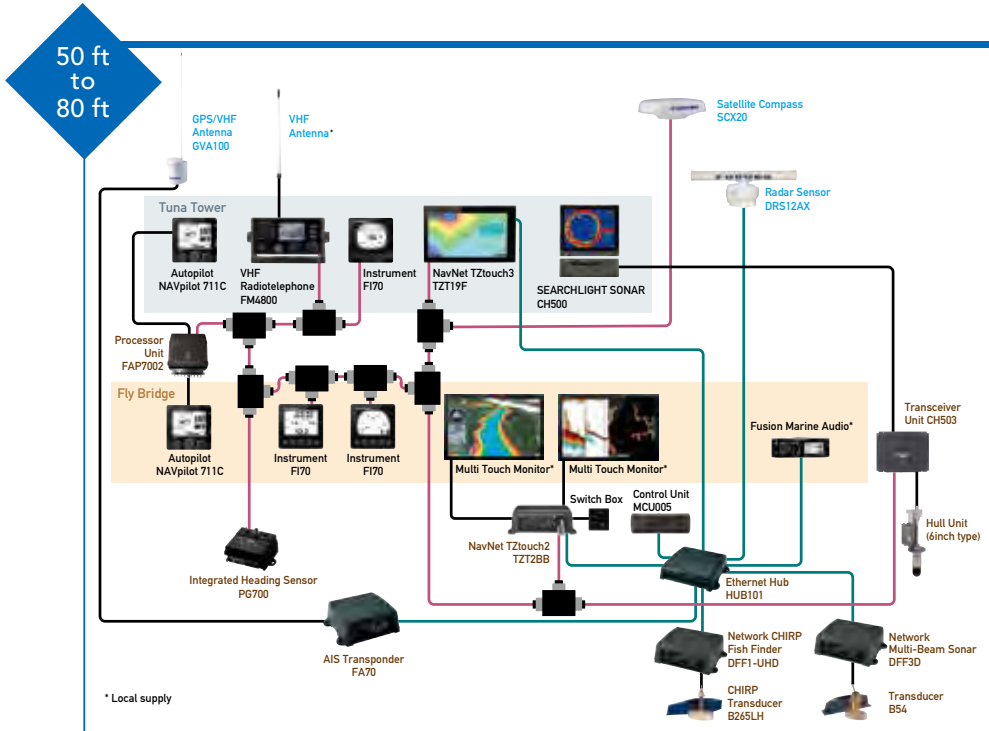
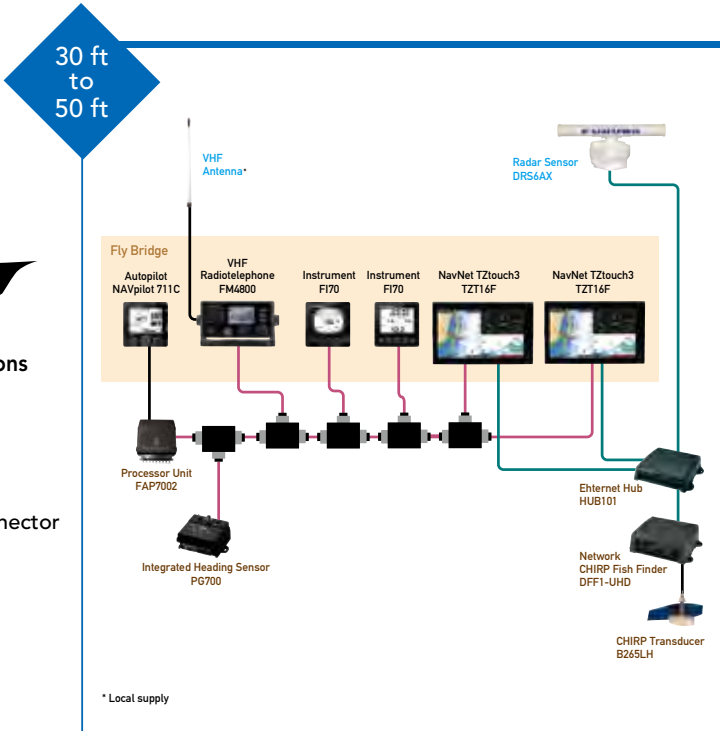
Over
30 ft





 NMEA2000
 Ethernet
 Other
 NMEA2000 T Connector

Product suggestions only -
not an installation diagram



System Recommendations

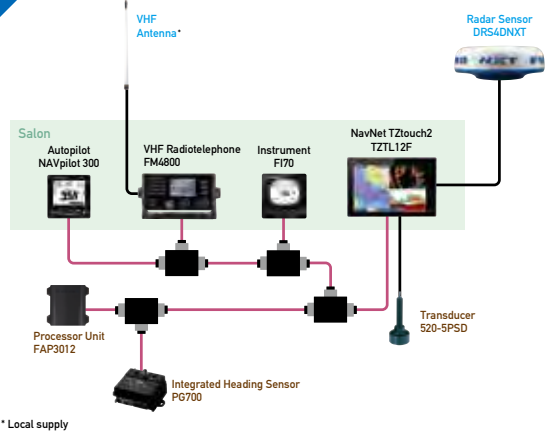


Common Sport Cruiser Product Recommendations

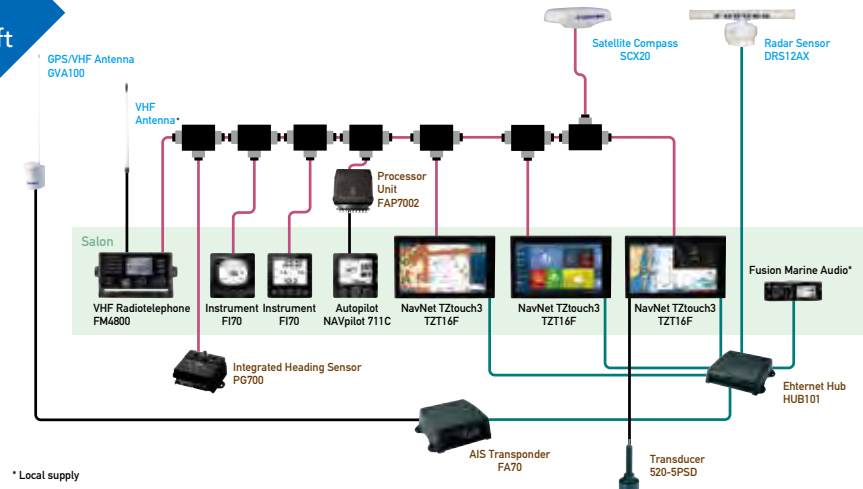
- NMEA2000
- Ethernet
- Other
- NMEA2000 T Connector

Product suggestions only - not an installation diagram

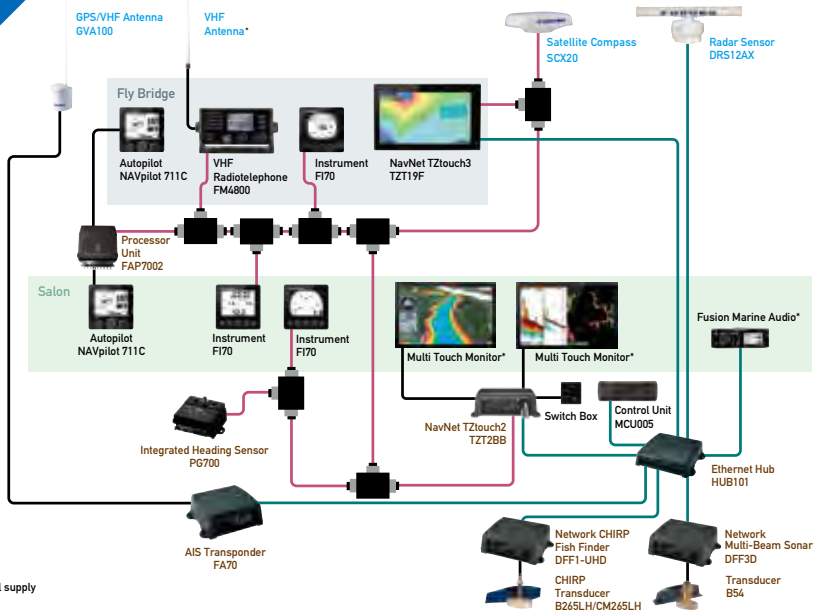
Under 30 ft



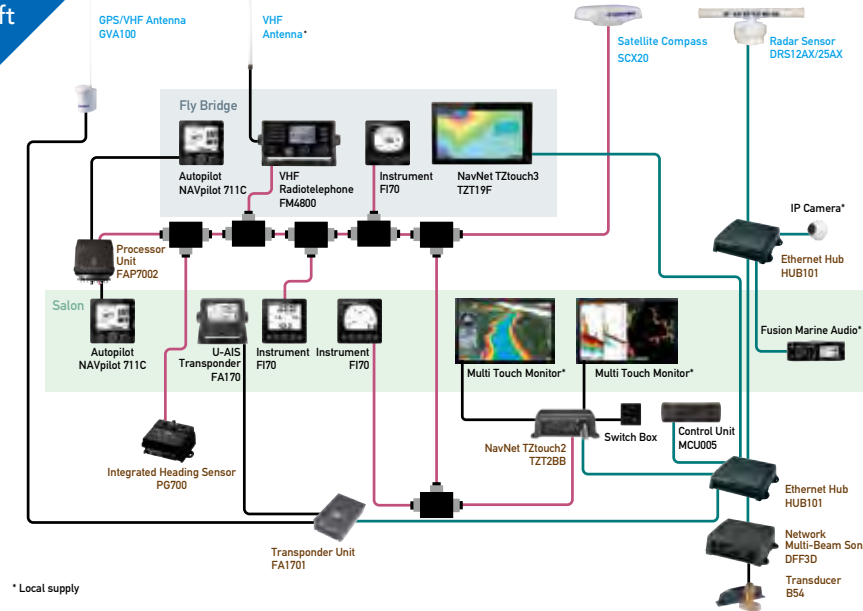
30 ft to 50 ft

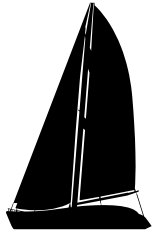


50 ft to 80 ft



Over 80 ft



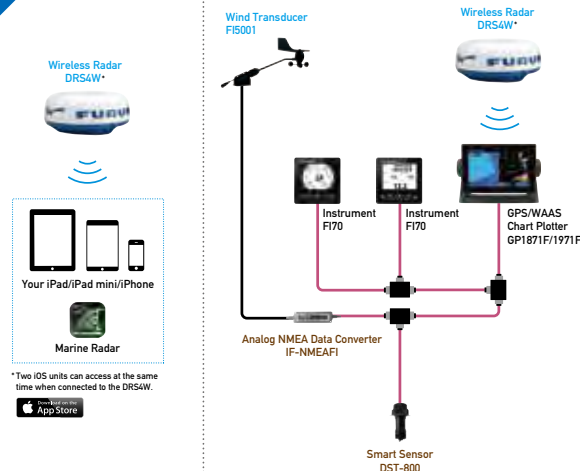


Common Sailboat Product Recommendations

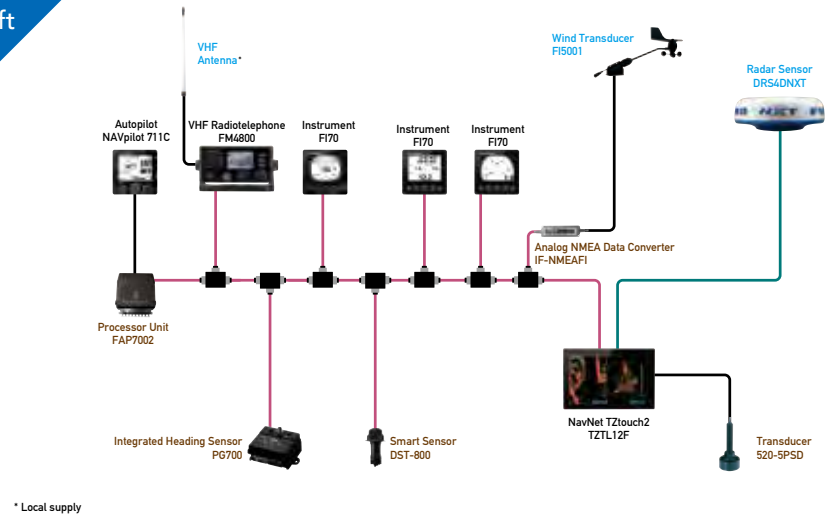
- NMEA2000
- Ethernet
- Other
- NMEA2000 T Connector

Product suggestions only -
not an installation diagram

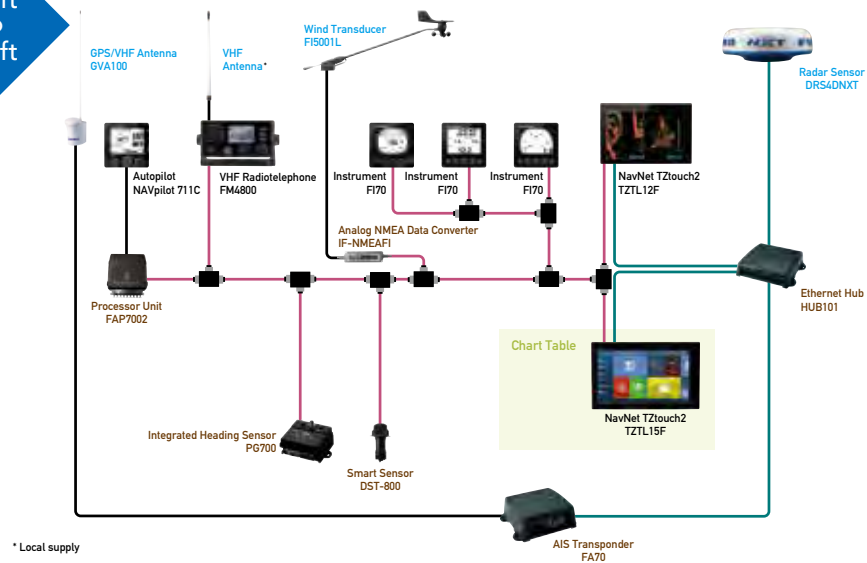
Under
30 ft



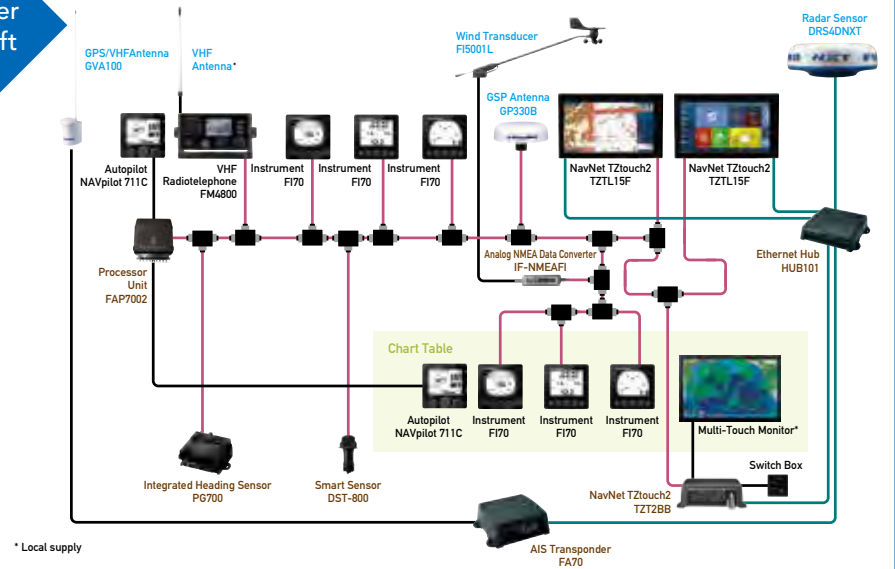
30 ft
to
50 ft



50 ft
to
80 ft



Over
80 ft






FURUNO'S GLOBAL NETWORK



FURUNO ELECTRIC CO., LTD.

9-52 Ashihara-cho, Nishinomiya City, Hyogo. 662-8580, Japan
Phone: +81-798-65-2111
Fax: +81-798-63-1020
URL: <http://www.furuno.com>

-  Subsidiaries and representative offices
-  Service centers
-  National distributors

Founded in 1938 as FURUNO ELECTRIC SHOKAI LTD., FURUNO ELECTRIC CO., LTD. is recognized as the world leader in Marine Electronics. Our founder's principle goal of modernizing fisheries led to the world's first practical commercial Fish Finder in 1948.

In 1972, Furuno was awarded the NMEA (National Marine Electronics Association) Best Product Award in the Fish Finder category in the US. Since then, Furuno has won 230 NMEA Awards, more than any other two manufacturers combined.

Furuno established its first overseas subsidiary in Norway in 1974, which was followed by the establishment of subsidiaries in the US (1978) and the UK (1979), foreshadowing its full-scale entry into the international business arena.

FURUNO U.S.A., INC.

4400 N.W. Pacific Rim Boulevard Camas
Washington 98607-9408, U.S.A.
Phone: +1 360-834-9300
Fax: +1 360-834-9400
URL: <http://www.furunousa.com/>



FURUNO U.S.A., INC. East Coast Office

70 Engerman Ave. Denton Maryland 21629,
U.S.A.
Phone: +1 410-479-4420
Fax: +1 410-479-4429



FURUNO PANAMA, S.A.

Zona Procesadora de Corozal, Edificio
354B, Panama, Republica de Panama
Phone: + 507 317 6556/6557/6558
Fax: + 507 317 6559
URL: <http://furuno.com.pa/>



FURUNO NORGE A/S

Sjømannsveien 19 6008 Ålesund,
Norway
Phone: +47 70-10-29-50
Fax: +47 70-10-29-51
URL: <http://www.furuno.no/>



FURUNO (UK) LTD.

West Building Penner Road Havant
Hampshire PO9 1QY, U.K.
Phone: +44 23-9244-1000
Fax: +44 23-9248-4316
URL: <http://www.furuno.co.uk/>

**FURUNO DANMARK A/S**

Hammerholmen 44-48 DK-2650
Hvidovre, Denmark
Phone: +45 36-77-45-00
Fax: +45 36-77-45-01
URL: <http://www.furuno.dk/>

**FURUNO SVERIGE AB**

S-421 30 Västra Frölunda, Sweden
Phone: +46 31-709-89-40
Fax: +46 31-49-70-93
URL: <http://www.furuno.se/>

**FURUNO FRANCE S.A.S.**

Espace Phare 12, rue Laplace
33700 Mérignac, France
Phone: +33 5-56-13-48-00
Fax: +33 5-56-13-48-01
URL: <http://www.furuno.fr/>

**FURUNO ITALIA S.R.L.**

Via Ottorino Respighi
29-47043 Gatteo Mare (FC)
Italy
Phone: +39 0541 1849411
URL: <http://www.furuno.it/>

**FURUNO ESPAÑA S.A.**

Francisco Remiro, 2-B 28028 Madrid,
Spain
Phone: +34 91-725-90-88
Fax: +34 91-725-98-97
URL: <http://www.furuno.es/>

**FURUNO FINLAND OY**

Niittyrinne 7 02270 Espoo, Finland
Phone: +358 9-4355-670
Fax: +358 9-4355-6710
URL: <http://www.furuno.fi/>

**FURUNO POLSKA Sp. z o.o.**

Ul. Wolności 20 81-327 Gdynia, Poland
Phone: +48 58-669-02-20
Fax: +48 58-669-02-21
URL: <http://www.furuno.pl/>

**FURUNO EURUS LLC**

4-th Sovetskaya str. house 16/10
Liter A, 191036, Saint-Petersburg
Russian Federation
Phone: +7 812-647-70-25
Fax: +7 812-767-15-92
URL: <http://www.furuno.ru/>

**FURUNO DEUTSCHLAND GmbH**

Siemensstraße 33 25462 Rellingen,
Germany
Phone: +49 4101-838-0
Fax: +49 4101-838-111
URL: <http://www.furuno.de/>

**FURUNO HELLAS S.A.**

10 Thetidos str.
16675 Glyfada, Greece
Phone: +30 210 4004426
Fax: +30 210 4004570
URL: <http://www.furuno.gr/>

**FURUNO (CYPRUS) LTD**

82 Nicou Pattichi str. "MARITANIA COURT",
shop 3&4, 3070
P.O.Box: 51342, Postal Code: 3504, Limassol
Phone: +357 25 734466
Fax: +357 25 734460
URL: <http://www.furuno.com.cy/>

**FURUNO CHINA CO., LTD.**

Unit C on 7th Floor, KC100
100 Kwai Cheong Road,
Kwai Chung, NT.,
Hong Kong
Phone: +852 2165 3700
Fax: +852 2362 0738

**FURUNO SHANGHAI CO., LTD.**

6F, Yuanhai Science and Research Building,
738 Shen Jia Long Road, Pudong,
Shanghai, China
Phone: +86 21 6596 9098
URL: <http://www.furuno.com/cn/>

**FURUNO KOREA CO., LTD.**

1st-2nd F., Cheong-hae Bldg.,
Choryang-dong 16-14, Jungang-daero
180beon-gil, Dong-gu
Busan, 601-839, Korea
Phone: +82 51 440 8900
Fax: +82 51 440 8901

**FURUNO SINGAPORE PTE LTD**

No.17 Loyang Lane, Singapore 508917
Phone: +65 6745 8472
Fax: +65 6747 1151
URL: <http://www.furuno.sg/>

**PT FURUNO ELECTRIC INDONESIA**

Cowell Tower, 8th floor,
Jl. Senen Raya No. 135 Jakarta 10410,
Indonesia
Phone: +62 (0)213511282
Fax: +62 (0)213511283
E-mail: fid@furuno.id
URL: <http://www.furuno.id/>

**FURUNO ELECTRIC (MALAYSIA) SDN. BHD.**

K03-03-13, Level 3, Tower 3, UOA Business
Park No.1, Jalan Pengaturcara U1/51A,
Seksyen U1, 40150 Shah Alam, Selangor,
Malaysia
Phone +60 (0)3 5569 3613
Fax +60 (0)3 5569 3919
URL <http://www.furuno.my/>





NORTH AMERICA

U.S.A. / CANADA
FURUNO U. S. A., INC.
4400 N.W. Pacific Rim Boulevard
Camas
Washington 98607-9408
Phone: +1 360-834-9300
Fax: +1 360-834-9400
E-mail: info@furuno.com

East Coast Office:
FURUNO U. S. A., INC.
70 Engerman Ave.
Denton
Maryland 21629
Phone: +1 410-479-4420
Fax: +1 410-479-4429

CENTRAL/SOUTH AMERICA

ARGENTINA
Refer to **FURUNO U. S. A., INC., U.S.A.**

Authorized service providers:
NAVAL STAR S.A.
9 de julio 817 - Puerto Madryn
(9120) Provincia del Chubut
Phone: +54-280-4472525/
4451929/4451236
Fax: +54 280 4451377
E-mail: service@navalstar.com

Ministro Brin 982
(1159) - Buenos Aires
Phone: +54 11 4362-6874
+54 11 4300-8616
Fax: +54 280 44513377
E-mail: service@navalstar.com

BRAZIL
Refer to **FURUNO U. S. A., INC., U.S.A.**

Authorized service provider:
RADIOMAR ELECTRONICA Naval Ltda.
Rua Conde de Lages, 44 gr. 1201
Gloria - Rio de Janeiro - RJ.
CEP 20.241-080
Phone: +55 21 2187-2400
E-mail: radiomar@radiomar.com.br

CHILE
Refer to **FURUNO U. S. A., INC., U.S.A.**

Authorized service providers:
MARCO INDUSTRIAL SpA.
Los Gobelinos 2584,
Renca - Santiago
Phone: +56 2-7824400
Fax: +56 2-6464623
E-mail: cespinoza@marco.cl

Electrónica Marina ITECH Ltd
Blanco Encalada AV. # 444 Office 703 Talcahuano,
Concepción – Chile 4260000
Tel: +56 41 2697819
Fax: +56 41 2697819
E-mail: info@itechmarine.cl

COLOMBIA
Refer to **FURUNO U. S. A., INC., U.S.A.**

Authorized service provider:
ITEC ELECTRONICA MARITIMA LTDA
CC Santa Lucia locales 5 y 6
Cartagena-Colombia
Phone: +57 5 663-3909/663-3789
Fax: +57 5 663-3643
E-mail: mosoriov@iteccolombia.com

CURACAO
Refer to **FURUNO U. S. A., INC., U.S.A.**

ECUADOR
Refer to **FURUNO U. S. A., INC., U.S.A.**

Authorized service provider:
ELECTROMARINA CIA. LTDA.
Ave. Juan Tanca
Marengo 200
Piso 1 of #1
Guayaquil
Phone: +593 4-2395701/2290486
Fax: +593 4-2286780
E-mail: elemar@electromarina.com.ec

MEXICO
Refer to **FURUNO U. S. A., INC., U.S.A.**

PERU
Refer to **FURUNO U. S. A., INC., U.S.A.**

Authorized service provider:
MARCO PERUANA, S. A.
Avda. Saenz Pena 1439
Callao, 1
Phone: +51 14-294978
Fax: +51 14-659497
E-mail: raul@marco.com.pe

PANAMA
FURUNO PANAMA, S.A.
Zona Procesadora de Corozal, Edificio 354B, Panama, Republica de Panama
Phone: +507 317 6556/6557/6558
Fax: +507 317 6559
E-mail: info@furuno.com.pa (Sales)
service@furuno.com.pa (Service)

TRINIDAD AND TOBAGO
Refer to **FURUNO U. S. A., INC., U.S.A.**

URUGUAY
Refer to **FURUNO U. S. A., INC., U.S.A.**

Authorized service provider:
AEROMARINE S.A.
Rambla 25 de Agosto 326
11000 - Montevideo
Phone: +598 2 916 64 56
+598 94 444 652
Fax: +598 2 916 64 56
E-mail: service@aeromarine.com.uy
VENEZUELA
Refer to **FURUNO U. S. A., INC., U.S.A.**

EUROPE

BELGIUM
Refer to **FURUNO FRANCE S.A.S., FRANCE**

BULGARIA
Refer to **OZSAY, TURKEY**

CROATIA / SLOVENIA
Refer to **FURUNO ITALIA S.R.L., ITALY**

Authorized service provider:
HORA ELEKTRONIK d.o.o.
A.B.Simica 65, 51000 Rijeka
Phone: +385 51-612 000
Fax: +385 51-612 001
E-mail: info@hora-elektronik.hr

CYPRUS
FURUNO (CYPRUS) LTD
82 Nicou Pattichi str. "MARITANIA COURT",
shop 3&4, 3070
P.O.Box: 51342, Postal Code: 3504, Limassol
Phone: +357 25 734466
Fax: +357 25 734460
Email: info@furuno.com.cy,
sales@furuno.com.cy,
tech@furuno.com.cy

DENMARK
FURUNO DANMARK AS
Hammerholmen 44-48
DK-2650 Hvidovre
Phone: +45 36 77 45 00
Fax: +45 36 77 45 01
Telex: 27289 FURUNO DK
E-mail: furuno@furuno.dk

ESTONIA
Refer to **FURUNO DANMARK AS, DENMARK**

FAROE ISLANDS
Refer to **FURUNO DANMARK AS, DENMARK**

FINLAND
FURUNO FINLAND OY
Niittyrinne 7 02270 Espoo
P.O.Box 74 FI-02271 Espoo
Phone: +358 9 4355670
Fax: +358 9 43556710
E-mail: info@furuno.fi

FRANCE
FURUNO FRANCE S.A.S.
Espace Phare 12, rue Laplace
33700 Mérignac
Phone: +33 5 56 13 48 00
Fax: +33 5 56 13 48 01
E-mail: info@furuno.fr

GERMANY
FURUNO DEUTSCHLAND GmbH
Siemensstrasse 33
25462 Rellingen
Phone: +49 4101 838 0
Fax: +49 4101 838 111
E-mail: furuno@furuno.de

GREECE
FURUNO HELLAS S.A.
10 Thetidos str.
16675 Glyfada
Phone: +30 210 4004426
Fax: +30 210 4004570
E-mail: sales@furuno.gr (Sales)
salesgr@furuno.com.cy (Sales)
tech@furuno.gr (Service)
techgr@furuno.com.cy (Service)

GREENLAND
Refer to **FURUNO DANMARK AS, DENMARK**

ICELAND
Refer to **FURUNO DANMARK AS, DENMARK**

IRELAND
Refer to **FURUNO (UK) LIMITED, UK**

ITALY
FURUNO ITALIA S.R.L.
Via Ottorino Respighi
47043 Gatteo Mare (FC)
Phone: +39 0541 1849400
E-mail: sales@furuno.it (Sales)
service@furuno.it (Service)

LATVIA
Refer to **FURUNO DANMARK AS, DENMARK**

LITHUANIA
Refer to **FURUNO DANMARK AS, DENMARK**

MALTA G.C.
Refer to **FURUNO ITALIA S.R.L., ITALY**

MONACO
Refer to **FURUNO FRANCE S.A.S., FRANCE**

NETHERLANDS
Refer to **FURUNO DEUTSCHLAND GmbH**

NORWAY
FURUNO NORGE A/S
Sjømannsveien 19 6008 Ålesund
Service box 11, N-6025 Ålesund
Phone: +47 70 10 29 50
Fax: +47 70 10 29 51
E-mail: furuno@furuno.no

POLAND
FURUNO POLSKA Sp. z O.O.
Ul. Wolności 20
81-327 Gdynia
Phone: +48 58 669 02 20
Fax: +48 58 669 02 21
E-mail: furuno@furuno.pl

PORTUGAL
Refer to **FURUNO ESPAÑA S.A., SPAIN**

ROMANIA
Refer to **FURUNO (UK) LIMITED, UK**

SPAIN

FURUNO ESPAÑA S.A.

Francisco Remiro, 2-B
28028 Madrid
Phone: +34 91-725-90-88
Fax: +34 91-725-98-97
E-mail: furuno@furuno.es

SWEDEN

FURUNO SVERIGE AB

Gruvgatan 23
S-421 30 Västra Frölunda
Phone: +46 31-709 89 40
Fax: +46 31-49 70 93
E-mail: info@furuno.se (Sales)
service@furuno.se (Service)

U.K.

FURUNO (UK) LIMITED

West Building Penner Road Havant
Hampshire PO9 1QY
Phone: +44 2392-441000
Fax: +44 2392-484316
E-mail: sales@furuno.co.uk

UKRAINE

Refer to **FURUNO DANMARK AS**, DENMARK
and **OZSAY**, TURKEY

MIDDLE EAST

BAHRAIN

UCO ENGINEERING W.L.L.

P.O.Box 5169
Phone: +973 17 700266
Fax: +973 17 702077
E-mail: ucogroup@batelco.com.bh

EGYPT

RADIO HOLLAND EGYPT S.A.E.

24 Syria St., Roushdy, Alexandria
P.O.Box 2026 Alexandria
Phone: +20 35233454
Fax: +20 35233238
E-mail: info@rhegypt.com

KUWAIT / OMAN / QATAR

Refer to **FURUNO ELECTRIC CO., LTD.**

LEBANON

Refer to **FURUNO (CYPRUS) LTD**, CYPRUS

Authorized service provider:

SELCOM MARINE SARL

P.O.Box 55541
Dekwaneh Street, Beirut
Phone: +961 1 491489 / 498154
Fax: +961 1 495325
E-mail: info@selcom-marine.com

SAUDI ARABIA

YUSUF BIN AHMED KANOO MARINE SERVICES GROUP

P.O.Box 37
Dammam 31411
Phone: +966 1 3 8571265
Fax: +966 1 3 8592433
E-mail: msgdmm@kanoo.com

TURKEY

OZSAY DENIZ ELEKTRONIGI A.S.

Guzelyali, E-5 Uzeri,
No.18 Pendik, 34903, Istanbul
Phone: +90 216-4933610
Fax: +90 216-4930306
E-mail: ozsay@trnn.net

UNITED ARAB EMIRATES

RADIO HOLLAND MIDDLE EAST LLC

W-116 Dubai Maritime City
P.O.Box 333764 Dubai
Phone: +971 4 4377550
Fax: +971 4 4377558
E-mail: dubai@serviceradioholland.com

AFRICA

ALGERIA

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

IVORY COAST

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

S.I.E.C.M.I.

SOCIETE NOIRIENN D'ELECTRONIQUE MARITIME ET INDUSTRIELLE

Port de Peche
10 B.P.347,
ABIDJAN18 (R.C.I.), CÔTE D'IVOIRE
Phone: +225 21 21-63-45
Fax: +225 21 25-08-23
E-mail: abidjan@siecmi.com

KENYA

MARAJANI-COMMUNICATIONS, TOURS & ASSISTANCES LTD.,

Old CDO Block, Port Kilindini,
P.O.Box 84295-80100, Mombasa-Kenya.
Phone: +254 733954949
E-mail: marajani@marajani.com

LIBYA

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

MAURITANIA

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

MOROCCO

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

NIGERIA

Refer to **FURUNO HELLAS S.A.**, GREECE

NAMIBIA

Refer to **RADIO HOLLAND SOUTH AFRICA (PTY) LTD.**
SOUTH AFRICA

REPUBLIC OF CONGO

Refer to **RADIO HOLLAND SOUTH AFRICA (PTY) LTD.**
SOUTH AFRICA

SENEGAL

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

SEYCHELLES

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

SOUTH AFRICA

RADIO HOLLAND SOUTH AFRICA (PTY) LTD.

P.O.Box 527
PAARDEN EILAND 7420
Phone: +27 21 50-84-700
Fax: +27 21 50-84-888
E-mail: info@radioholland.co.za

TUNISIA

Refer to **FURUNO FRANCE S.A.**, FRANCE

RUSSIAN FEDERATION

RUSSIAN FEDERATION

FURUNO EURUS LLC

4-th Sovetskaya str. house 16/10,
Liter A, 191036, Saint-Petersburg
Phone: +7 812 647-70-25
Fax: +7 812 647-70-25
E-mail: sales@furuno.ru (Sales)
service@furuno.ru (Service)

Refer to **FURUNO NORGE A/S**, NORWAY

MORIKAWA SHOJI KAISHA.LTD

KS Bldg. No.4-5 Kojimachi
Chiyoda-ku
Tokyo 102-0083, JAPAN
Phone: +81 3 5226 6411
Fax: +81 3 5226 6417
E-mail: furuno@mkskaisha.co.jp

ASIA

JAPAN

Headquarters:

FURUNO ELECTRIC CO., LTD.

9-52, Ashihara-cho
Nishinomiya 662-8580
Phone: +81 798-65-2111
Fax: +81 798-65-4200
+81 798-66-4622

Tokyo office:

FURUNO ELECTRIC CO., LTD.

Kandaizumi-cho Asia Building
2-6 Kandaizumi-cho
Chiyoda-ku
Tokyo 101-0024
Phone: +81 3-5687-0411
Fax: +81 3-5687-0380/0381
+81 3-5687-0382/0383

BANGLADESH

Refer to **FURUNO SINGAPORE PTE LTD**, SINGAPORE

BRUNEI

Refer to **FURUNO SINGAPORE PTE LTD**, SINGAPORE

CHINA/HONG KONG

FURUNO CHINA CO., LTD.

Unit C on 7th Floor, KC100
100 Kwai Cheong Road,
Kwai Chung, NT.,
Hong Kong
Phone: +852 2165 3700
Fax: +852 2362 0738

FURUNO SHANGHAI CO., LTD.

Unit 1201-1207, 12F
647 Long Hua east road, The Riverfront
Huangpu Shanghai, China
Phone: +86 21 3393 3260
E-mail: inquiry@furuno.cn

INDIA

A.S.MOLOOBHOY Private Limited

Marathon Futurex, B-501, 5th Floor, Mafatlal
Mills Compound, N.M. Joshi Marg, Lower Parel,
Mumbai-400013
Phone: +91 22 23737590
Fax: +91 22 23742678
E-mail: electronicsales@asmoloobhoy.com
service@asmoloobhoy.com

INDONESIA

PT FURUNO ELECTRIC INDONESIA

Cowell Tower, 8th floor Jl. Senen Raya No. 135,
Jakarta 10410
Phone: +62-(0)213511282
Fax: +62-(0)213511283
E-mail: fid@furuno.id

KOREA

SHIN-A CORPORATION

645-3, Nambumin-Dong, Seo-Gu,
Pusan
Phone: +82 51-241-6151
Fax: +82 51-244-2878
E-mail: shina@shinacorp.co.kr

MALAYSIA

FURUNO ELECTRIC (MALAYSIA) SDN. BHD.

K03-03-13, Level 3, Tower 3, UOA Business
Park No.1, Jalan Pengaturcara U1/51A,
Seksyen U1, 40150 Shah Alam, Selangor
Phone +60 (0)3 5569 3613
Fax +60 (0)3 5569 3919
E-mail: fmy@furuno.my (General)
sales@furuno.my (Sales)
service@furuno.my (Service)

MALDIVES

Refer to **FURUNO SINGAPORE PTE LTD** SINGAPORE

MAYANMAR

A-MARINE UNDER WEALTH OCEAN INTERNATIONAL CO. LTD.

No.2-A, Minmandar Housing Estate, Ayarwon Road, Thaketa Township, Yangon
Phone +95-9-778664050
E-mail: sales@amarine.com.mm (Sales)
support@amarine.com.mm (Service)

PHILIPPINES

SCAN MARINE, INC.

P.O. Box 3241
#160 Honorio Lopez Blvd.
Balut, Tondo Manila
Phone: +63 2 5222826~27
Fax: +63 2 5222970
E-mail: smiphil@scanmarine.com.ph (Sales)
smiservice@scanmarine.com.ph (Service)

SINGAPORE

FURUNO SINGAPORE PTE LTD

Loyang Lane, SINGAPORE 508917
Phone: +65 6745-8472 (Office)
+65 6745-8473 (Service)
Fax: +65 6747-1151 (Office)
+65 6743-6077 (Service)
E-mail: fsg@furuno.sg

SRI LANKA

QUEENS RADIO MARINE ELECTRONICS (PTE) LIMITED

861 Aluthmawatte Road, Colombo 15, Sri Lanka.
Phone: +94-11-2523511/12
+94-77-7730167 (24Hrs Service)
Fax: +94-11-2523669
E-mail: queensradio@queensgroup.net (General)
sales@queensgroup.net (Sales)
service@queensgroup.net (Service)

TAIWAN

ANCHANG BROTHERS CO., LTD.

No. 28, Lane 113
Hou-Pin Road Chien Chen District
P.O. BOX 44-1, Kaohsiung
Phone: +886 7-8114510
Fax: +886 7-8119369
E-mail: sales@anchangbros.com.tw
service@anchangbros.com.tw

THAILAND

C. SAHAMONGKOL ENGINEERING LTD., PART.

76/92-93 Ratchada-Thapra Road
Bangkok-Yai, Bangkok 10600
Phone: +66 2 4570066
Fax: +66 2 4579428
E-mail: csm@csm.co.th
dsc@csm.co.th

VIETNAM

HAIDANG CO., LTD.

666/64/30 Ba Thang Hai St.,
Dist.10, Ho Chi Minh City, S.R.
Phone: +84-8-3863 21 59
Fax: +84-8-3863 25 24
E-mail: haidang@haidang.vn

OCEANIA

AUSTRALIA

J. N. TAYLOR & CO. LTD.

62 Sparks Road Hendersen WA 6166
Phone: +61 (8) 9494-9393
Fax: +61 (8) 9494-9388
E-mail: admin@taylormarine.com.au

NEW ZEALAND

ELECTRONIC NAVIGATION LTD.

46 Hillside Road
Wairau Valley
Auckland 0627
Phone: +64 9-3735595
Fax: +64 9-3795655
Inmarsat C: 451200183
E-mail: enl@enl.co.nz

FIJI

Refer to **EELECTRONIC NAVIGATION LTD.**,
NEW ZEALAND

FRENCH POLYNESIA

Refer to **FURUNO FRANCE S.A.S.**, FRANCE

Find us on   

BEWARE OF SIMILAR PRODUCTS

All other brand and product names are trademarks, registered trademarks or service marks of their respective holders.

The information contained in this catalog is current as of January 1, 2020

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE



Catalog No. LIT-APC-020
Printed In U.S.A.