

Powerful Electronics, Effortless Control

NAVnet
touchXL



FURUNO

NAVnet

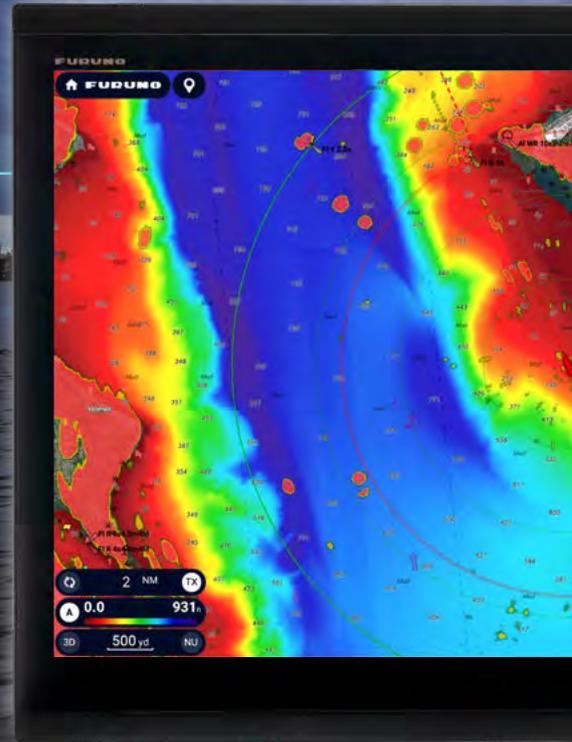
TZ
touchXL



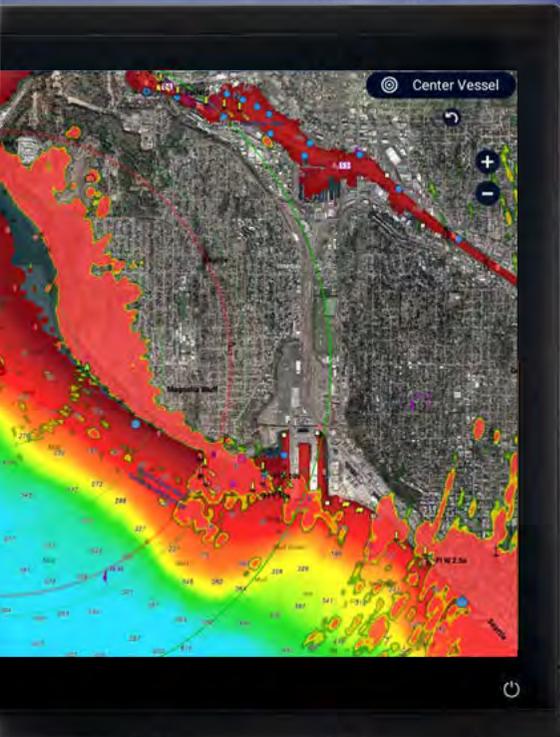
DISCOVER LIFE

Your time on the water is invaluable. It's cherished memories in the company of family and friends that will last a lifetime. It's making the most of every day, a blend of relaxation and adventure as you explore hidden treasures along the coast or seek out the next, best hotspot to cast your lines. We get it, and we're answering the call from boaters around the globe who've asked for a suite of electronics that is both powerful and easy to use, with cutting-edge features of tomorrow blended with the reliability and experience of a company with a worldwide reputation for excellence.





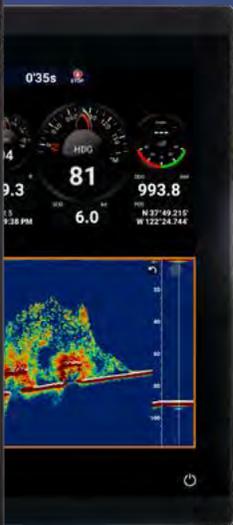
NAVnet
touchXL



TZT24X



TZT22X



TZT16X



TZT13X



TZT10X

Explore More

Explore the future of navigation with NavNet TZtouchXL Multi Function Displays. Extra-large, wide 16", 22", and 24" all-glass MFDs with exceptional clarity from all angles enhance the functionality and style of your helm. The hybrid controls of the 10" & 13" options make navigating intuitive and easy under any sea conditions, giving you the confidence to navigate with ease. Or go with the phenomenally powerful black box TZTBBX, capable of driving a variety of multi touch displays to supercharge your navigation no matter the size of your vessel.



TZTBBX

- Lightning-fast 16", 22", & 24" all-glass, or 10" & 13" Hybrid Control displays
- Powerful TZTBBX Black Box option drives a variety of multi touch display sizes
- New TZ MAPS for highly-detailed navigation and fishing charts with customizable terrain shading
- Purchase and update charts directly from MFD with internet connection
- Power-packed NXT Solid-State Doppler Radars (DRS6A-NXT/DRS12A-NXT/DRS25A-NXT)
- Award-winning 24" and 19" Solid-State Doppler Radome Antenna options (DRS4D-NXT and DRS2D-NXT)
- Built-in Dual Channel 1kW TruEcho CHIRP™ & CW Fish Finder (TZT10X/13X/16X only)
- Built-in 230kHz or 455kHz CHIRP Side-Scan (TZT10X/13X/16X only)
- Powerful hexacore processor for rapid response
- Deepwater DFF-3D Multibeam Sonar for up to 300m depth & 200m Side-Scan, with Personal Bathymetric Generator (PBG)
- Video Converter Kits stream compatible Sonar and other video sources directly to TZtouchXL MFDs
- Furuno's exclusive Fish-It, Drift-It, & Follow-It features save time and fuel, and increase fish catch
- High-power 2/3/5kW* TruEcho CHIRP™ DFF3-UHD

* Built-in power is 3kW; Connect a 5kW or 10kW transducer when using the BT-5 Booster Box

TZ MAPS An All-New Chart Engine Providing Game-Changing Safety Technology

- Affordable, highly-detailed charts purchased directly from MFD
- Annual subscription includes free chart updates: Low-cost renewals after first year
- High-resolution satellite photos
- 8 types of chart presentations
- Use your TZ MAPS across multiple MFDs, TimeZero software, or TZ iBoat app



The interface shows a map with a grid overlay. A green bar at the bottom indicates 'Download Succeeded'. To the left, there are settings for 'Vector', 'Raster', 'Photo', and 'HR Bathy'. Below these is a 'DISK USAGE' section showing 'Free Space: 11.8 GB' and a list of items with their sizes: Vector Size (927 MB), Raster Size (3.69 MB), Photo Size (12.2 MB), and HR Bathy Size (1.44 GB). A legend at the bottom right identifies the map colors: Not Purchased (hatched), Not Downloaded (blue), Favorites (green), and Downloaded (light blue).

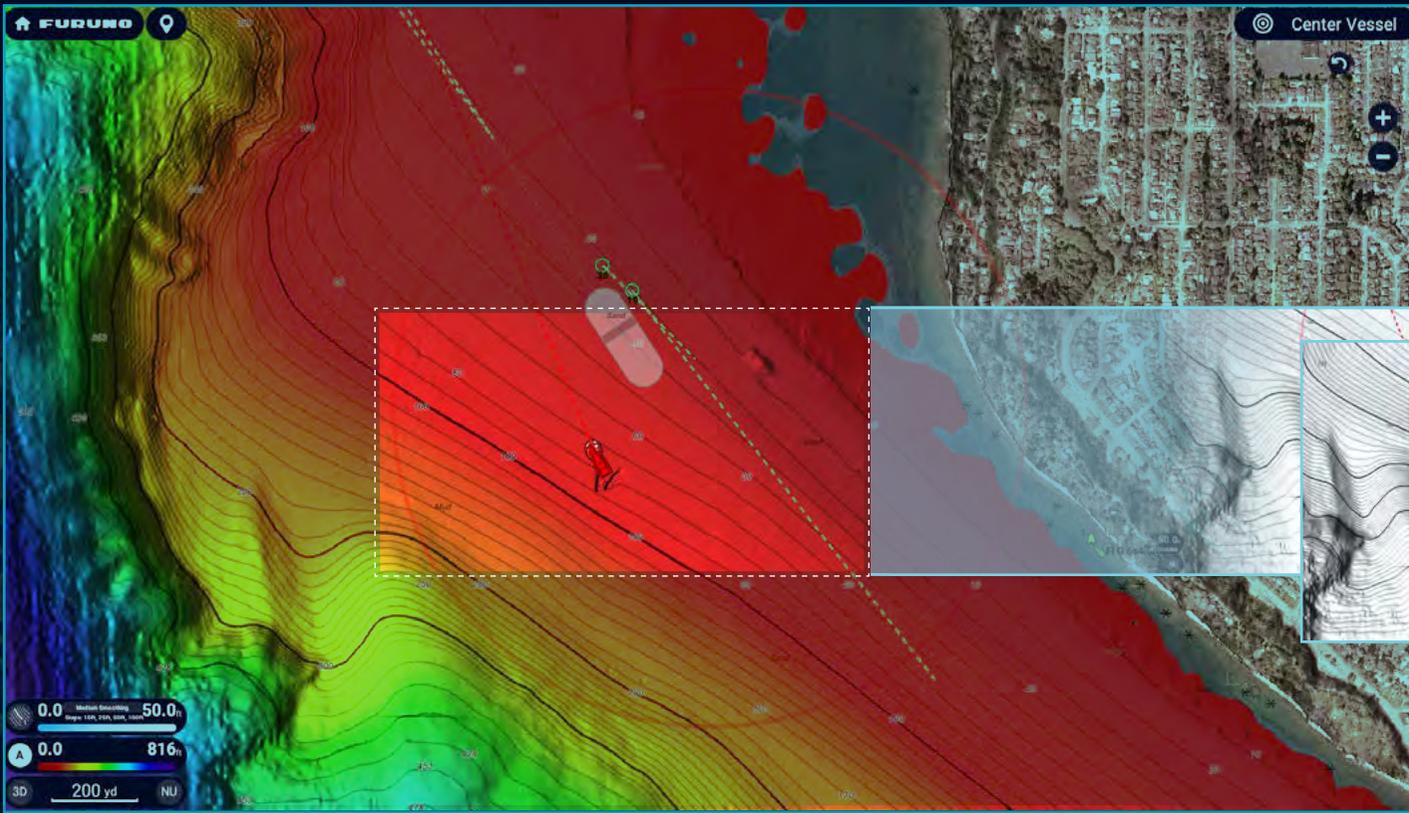
The panel displays information for a 'Crab buoy'. It shows the chart type as 'spherical' and provides coordinates: Lat N 25°42.916' and Lon W 80°00.551'. It also lists the Range as 4.286 NM and the Bearing as 297.4° R. Below this, there are options for 'Chart Object Info', 'Move Chart Object', 'Undo my Modifications', 'Delete Chart Object', 'Update Name', and 'Comment'.

- **Community Maps:** Edit cartographic objects and benefit from the most reliable and up-to-date information submitted and vetted by users like you, including photos, comments, and ratings

The store interface shows three chart categories: 'USA' (updates until 12/14/2024), 'Canada East and North', and 'Central America & Caribbean'. Each category has a 'Buy' button. At the bottom, there are options to 'Show Purchased Items Only' and 'Check/Download Permit file'.

Easily purchase & unlock new chart areas directly from the MFD, then keep them up to date with just an internet connection.

The interface asks 'What do you think about this Object?' and provides two thumbs-up/down icons. A button at the bottom right says 'I don't know!'.



Step 1

Step 2

Step 3

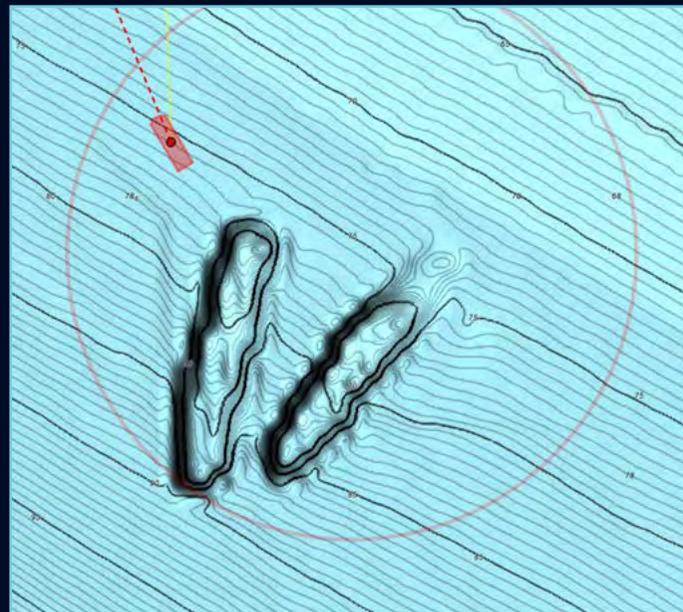
Step 4

Step 5

BATHYVISION... Reveal The Secrets Of The Seabed Like Never Before

The seabed holds many secrets! However, thanks to the advanced functionality and highly detailed information provided by our all-new BathyVision, those secrets will be revealed!

TZ MAPS offer the best bottom data available and BathyVision lets you display dynamic & intuitive high-resolution relief shading in color and/or with contour lines. Configure the density of contour lines to about 7.5 cm (3 in) & associated shading to focus precisely on high-potential fishing areas.



DYNAMIC FISHING MAPS

- Choose the density of contour lines with 1 tap
- 5 levels of contours down to within 7.5 cm (3 in)
- Add dynamic color shading based on custom settings
- Adjust terrain shading for totally customized high-resolution depth contours
- Combined depth shading plus fishing charts

AI ROUTING

Furuno's AI Routing utilizes TZ MAPS to give you a recommended point-to-point route to follow. It intelligently plans a path that takes you through channels, marina entrances, inlets, and more using your set boat draft, chart data, and other safety parameters. Once an AI Route is generated, you can easily edit and add new points as desired.



A screenshot of the Furuno chartplotter interface. The top status bar shows 'FURUNO' with a home icon, a location pin, a 'Restart' button, and various data points: '106 yd' (depth), '277.3 M' (speed), '3'08s' (time), and '1h34'' (time). Below this is a 'DATA' panel with fields for 'DATE' (9:36:07 AM), 'HDG' (276 °M), 'COG' (269 °M), 'SOG' (1.0 kn), 'DPT' (29 ft), and 'POS' (N 25°45.886', W 80°08.072'). An 'EDIT' button is at the bottom of the data panel. The main display is a map of Miami, Florida, with a blue route line overlaid on the water channels. The route is numbered 1 through 10. A 'Manual' button and an 'AI Routing' button are visible at the bottom right of the map area. A blue arrow points from the text 'Select Manual or AI Routing to create routes' to the 'AI Routing' button.

Select Manual or AI Routing to create routes



- New AI algorithm analyzes nautical chart elements: water depths, channels, and recommended routes to ensure seamless & secure navigation
- Swift & precise solution for planning your next voyage
- Calculate an optimal route in seconds

STOP Center Vessel

Lat N 47°36.993'
Lon W 122°27.774'

Range 2.042 NM
Bearing 255.6 ° R

Depth 716 ft

Chart Object Info

New Point

Goto

Fish-It

New Route

New Boundary >

ANALYZES:
Channels
Water depths
Recommended routes



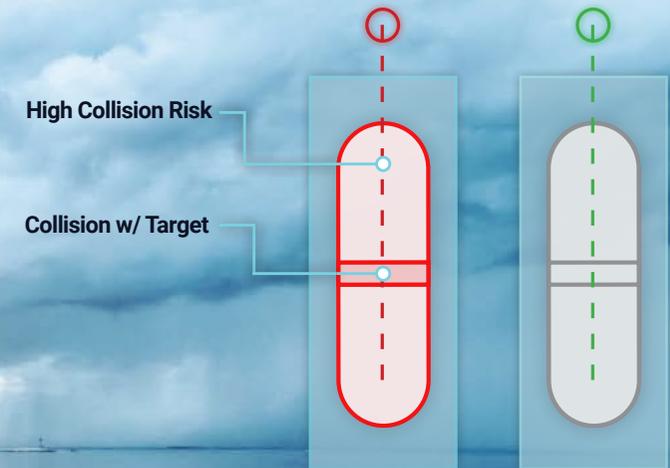
RISK VISUALIZER

Risk Visualizer™ is a unique feature that shows potential collision areas based on the current position and movement of all surrounding vessels, providing a quick and intuitive overview of the situation around your boat.



- The new Risk Visualizer™ allows the navigator to see areas with a high risk of collision, as well as displaying the time to reach those areas
- Quick and intuitive read on potentially dangerous targets
- Color-coded alerts for collision
Red = Hazardous / Green = Normal

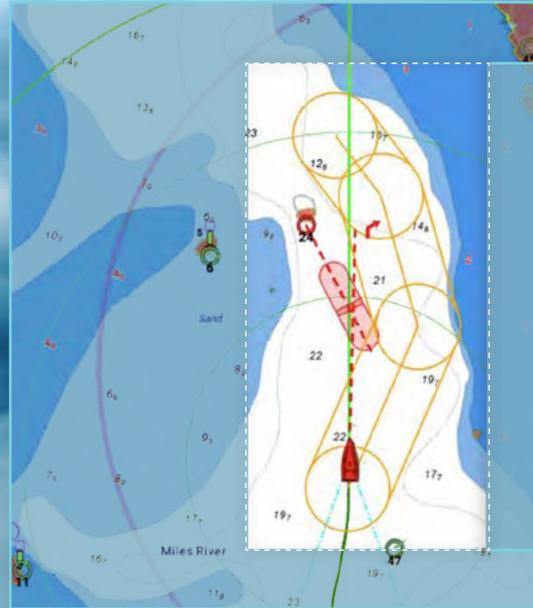
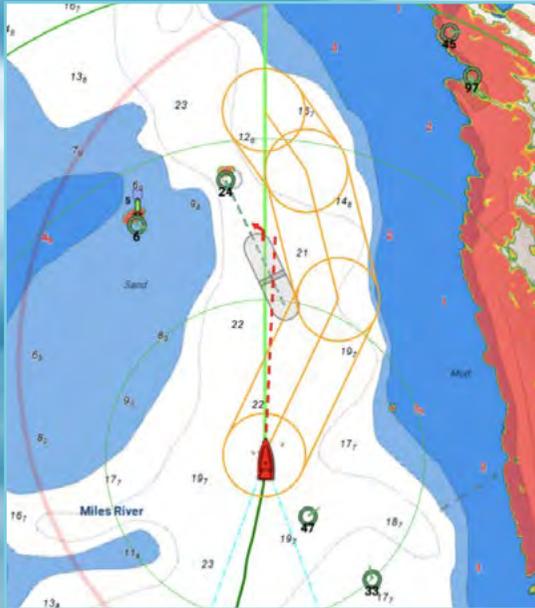
* Requires DRS Radar Sensor with latest software update



* Requires DRS-NXT Radar Sensor with latest software update

AI AVOIDANCE ROUTE

When Risk Visualizer™ warns you of a potential collision, the new AI Avoidance Route™ calculates and plans your next move. It intelligently draws a suggested collision avoidance route that you can steer to avoid the collision, keeping you and your vessel safe.



Recommended AI
Avoidance Route
to avoid a collision

- Uses a proprietary AI Routing algorithm to automatically calculate the best route for safety*
- * Requires DRS-NXT Radar Sensor and TZ MAPS with latest software update



Total Control Made Simple



INTUITIVE USER INTERFACE

You asked for the simplest interface possible, and we were listening. We've delivered the most intuitive User Interface available, bar-none. If you swipe your phone, you can operate TZtouchXL.

With edge swipe features and single-tap menu options, you're never more than a tap or swipe away from what you want to see or do, because NavNet TZouchXL provides the easiest and most powerful MFD on the planet.

Designed for captains who have multiple TZtouchXL all-glass MFDs or the TZTBBX on their helm, a single MCU-006 or MCU-006H can control all of the displays. It features a large RotoKey™, which can be used to zoom in/out, increase/decrease gain, and scroll through menu options. With the same 10 dedicated buttons as seen on the TZT10X/13X, you will be able to fully control all of your MFDs remotely.

MCU-006



MCU-006H

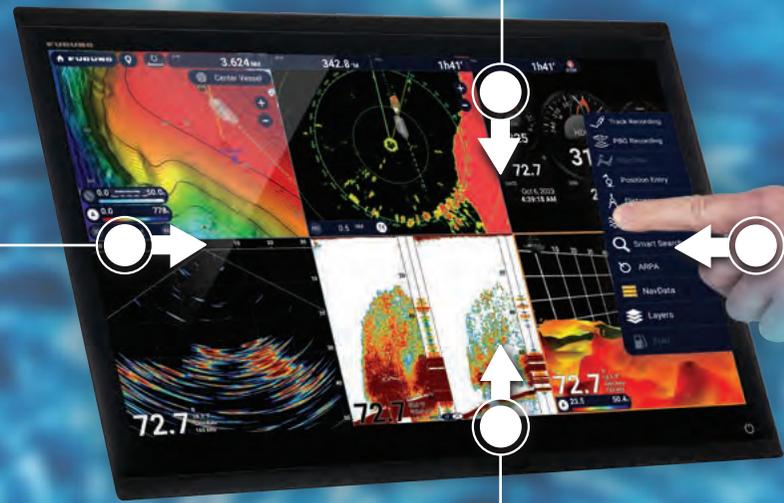
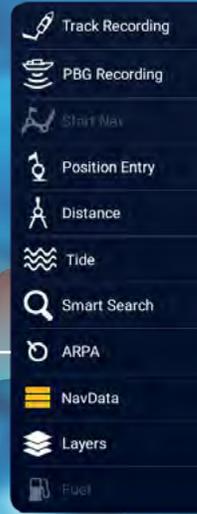


Top Edge Swipe - Quick Page

Left Edge Swipe - NavData



Right Edge Swipe - Shortcuts



Bottom Edge Swipe - Layers



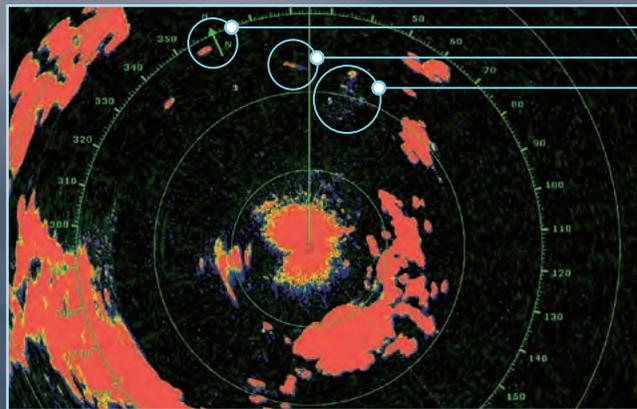
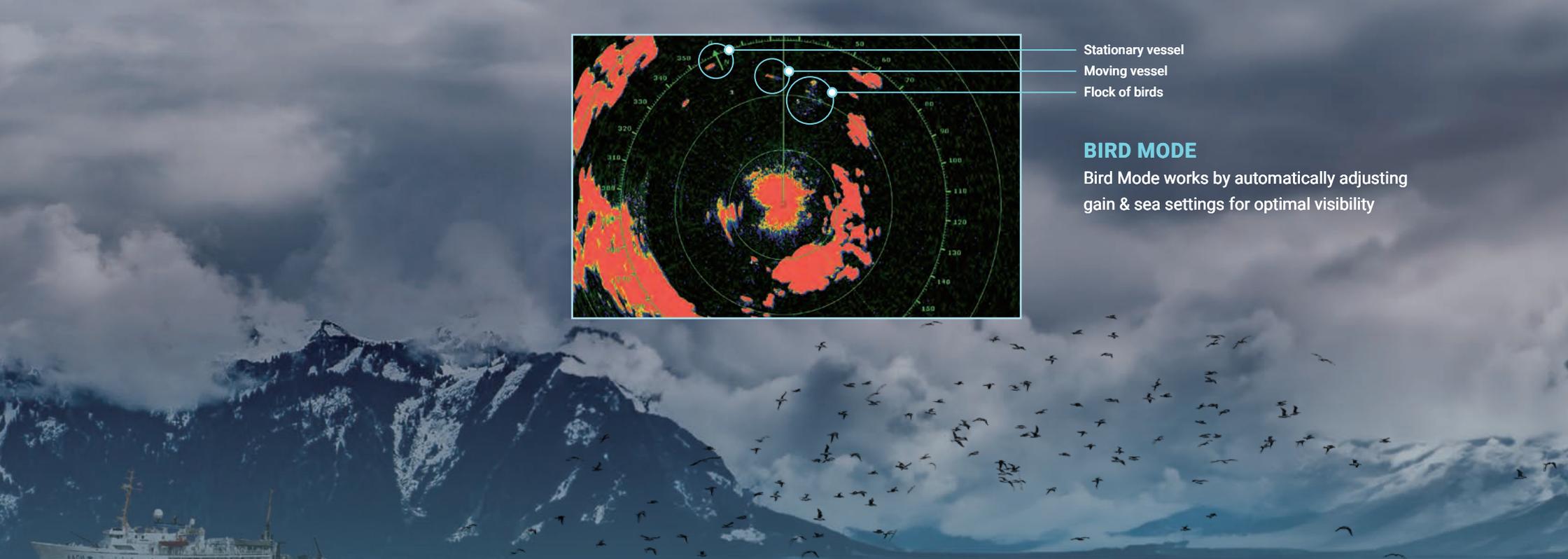


	DOME	OPEN ARRAYS - 3.5', 4', OR 6'		
NXT	DRS2D-NXT/DRS4D-NXT	DRS6A-NXT	DRS12A-NXT	DRS25A-NXT
X-CLASS	DRS4DL+/DRS4DX	DRS6A	DRS12A	DRS25A

The Undisputed Benchmark For Marine Radar

However you spend your time on the water, you need Radar you can rely on to keep you safe. Whether you choose the time-tested X-Class magnetron option or NXT Solid-State Doppler models, Furuno Radar delivers power and clarity like you've never seen and provides the assurance that you're navigating with the most reliable and feature-packed equipment on the planet. From the compact DRS2D-NXT/DRS4D-NXT domes to the high-power 200-watt DRS25A-NXT open array, you'll quickly become accustomed to the dynamic features that only Furuno

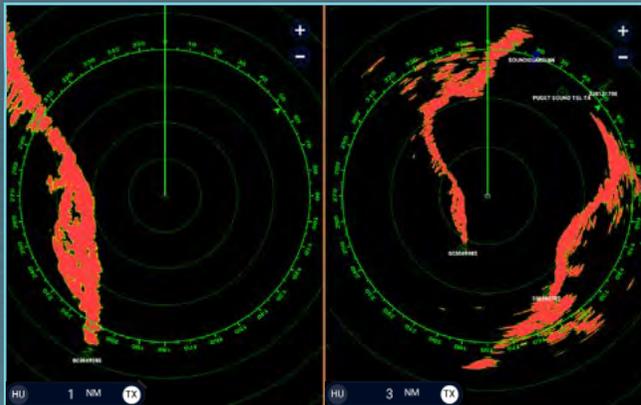
provides, like Target Analyzer™ that warns you of potentially hazardous targets, Fast Target Tracking that displays a speed and course vector in seconds, best-in-the-business Bird Mode to track elusive flocks and even individual birds feeding on baitfish, and Rain Mode that can pick out and display in different colors the targets you need to see through even the nastiest of squalls. (Some features may require additional sensors)



- Stationary vessel
- Moving vessel
- Flock of birds

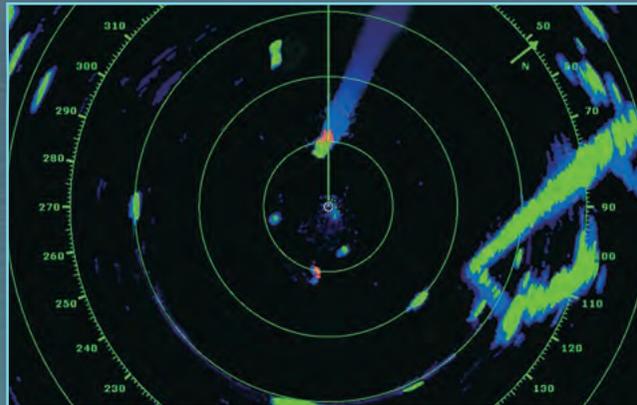
BIRD MODE

Bird Mode works by automatically adjusting gain & sea settings for optimal visibility



DUAL RANGE MODE

Display two Radar images at different ranges with complete control of all Radar settings



TARGET ANALYZER™

Warns of potential hazards approaching



AIS TARGET TRACKING

Display AIS targets on your Radar and Chart Plotter

Your Ultimate Fishing Dream Machine

TZtouchXL incorporates a powerful internal 1kW dual channel TruEcho CHIRP™ Fish Finder* designed to operate across a wide range of frequencies. For those wanting to go even deeper, the 2kW/3kW DFF3-UHD TruEcho CHIRP™ Network Fish Finder delivers the ability to penetrate the deepest waters to find your catch. With the BT-5 Booster Box, you can boost that output power up to 5 or 10kW to take advantage of high-power transducer options that will unveil the deepest waters like you've never experienced before.

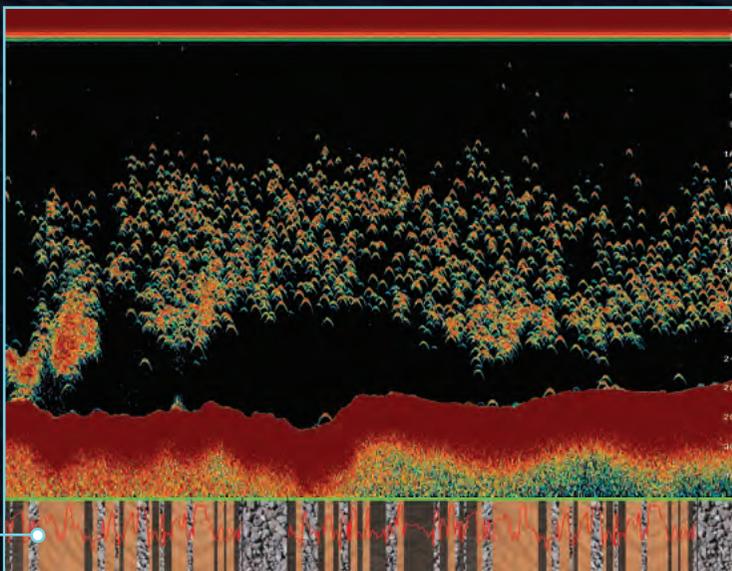
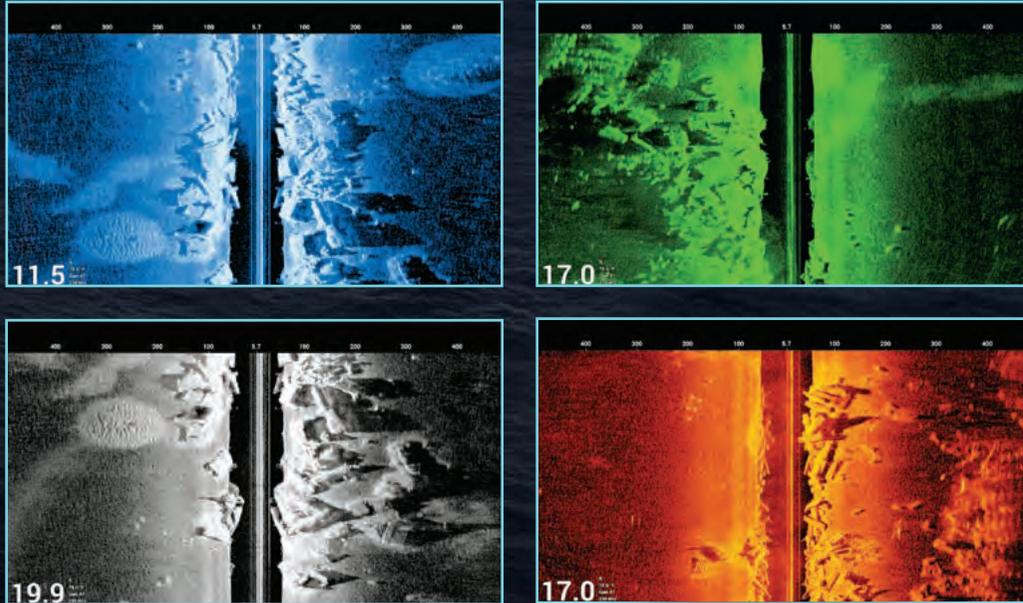
* Note: Built-in Fish Finder available in TZT10X/13X/16X only



DFF3-UHD High-Power TruEcho
CHIRP™ Network Fish Finder

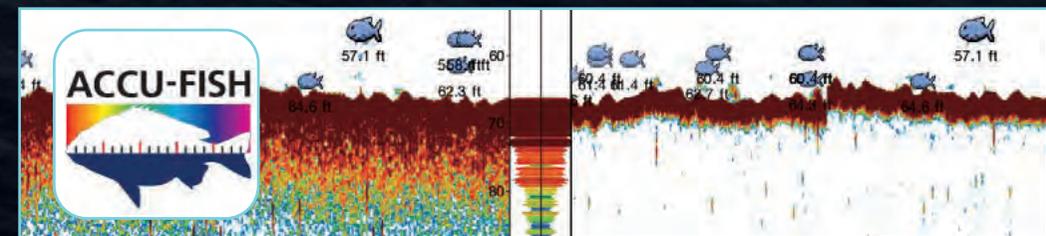
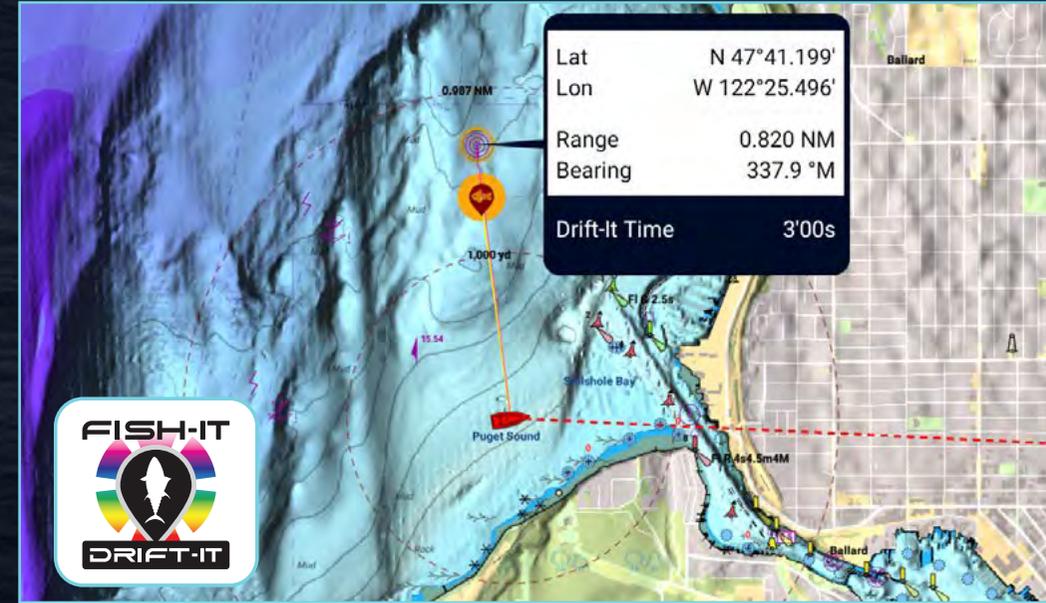
BUILT-IN CHIRP SIDE-SCAN

Furuno's CHIRP Side-Scan for NavNet TZtouchXL scans both port and starboard, illuminating the shape of bottom structure in high definition. CHIRP Side-Scan reveals the shape of fish targets and fish-hoarding structure to each side of your vessel. CHIRP from 230kHz or 455kHz center frequencies with thru-hull, paired, or transom mount transducer options. (TZT10X/13X/16X only)



DRIFT-IT, FISH-IT... CATCH IT

When a Fish-It point has been selected, the Drift-It feature can set the perfect drift. Drift-It will save you time and fuel by eliminating the guesswork in determining vessel drift in challenging wind and current conditions.



BOTTOM DISCRIMINATION* & ACCU-FISH™ FISH SIZE ANALYZER**

Bottom Discrimination indicates if the seafloor is made up of sand, mud, gravel, or rocks. ACCU-FISH™ analyzes echo returns to compute individual fish size, ranging from 10 cm up to 199 cm (>4" to <78") long.

* Feature works only with certain transducers. Check to ensure your transducer is compatible.
 ** In some instances, fish size indicated on the TZtouchXL may differ from its actual size. Please carefully read the operator's manual before utilizing this feature.

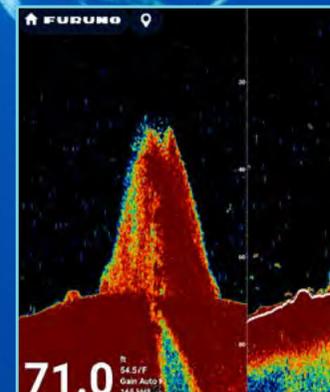
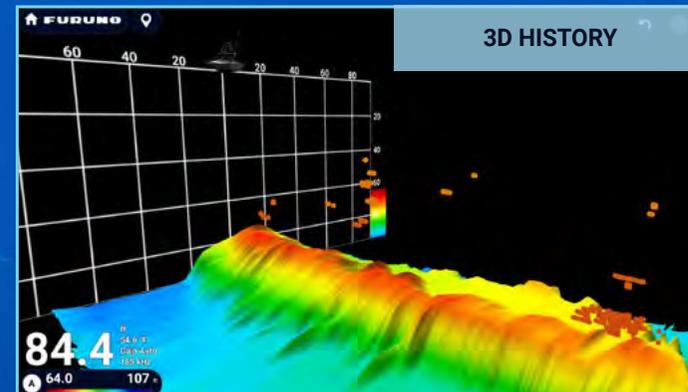
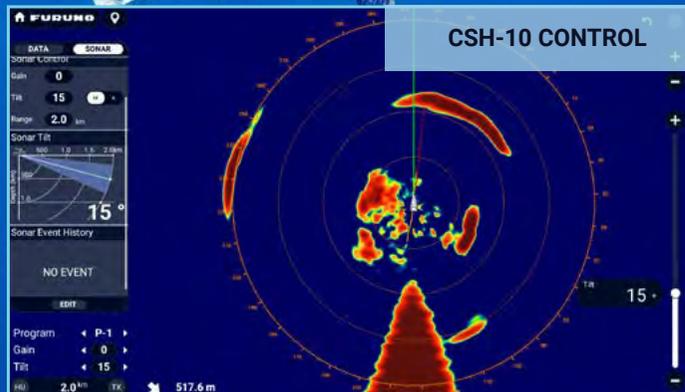
Discover A New World Beneath The Surface

Normal down-sounding Fish Finders have a beam angle of 40° or less. But with the DFF-3D Multibeam Sonar, you'll see a 120-degree swath, offering coverage up to 3X water depth (example: 300' side-to-side in 100' water depth). Plus, with the power of the DFF-3D, you can see fish directly below the boat 300m (nearly 1,000ft). When you match this with the DFF3-UHD TruEcho CHIRP™, you'll have the ultimate fishing machine!



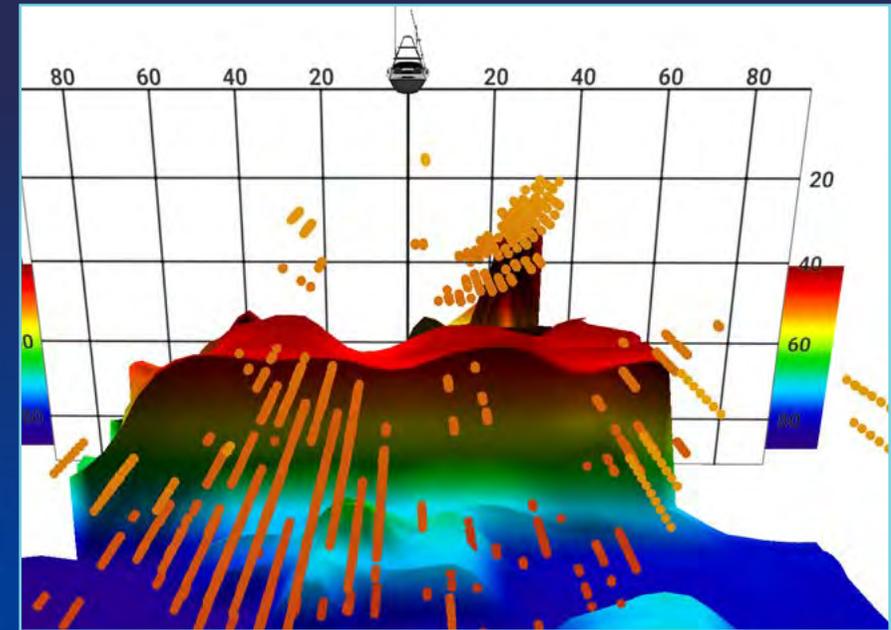
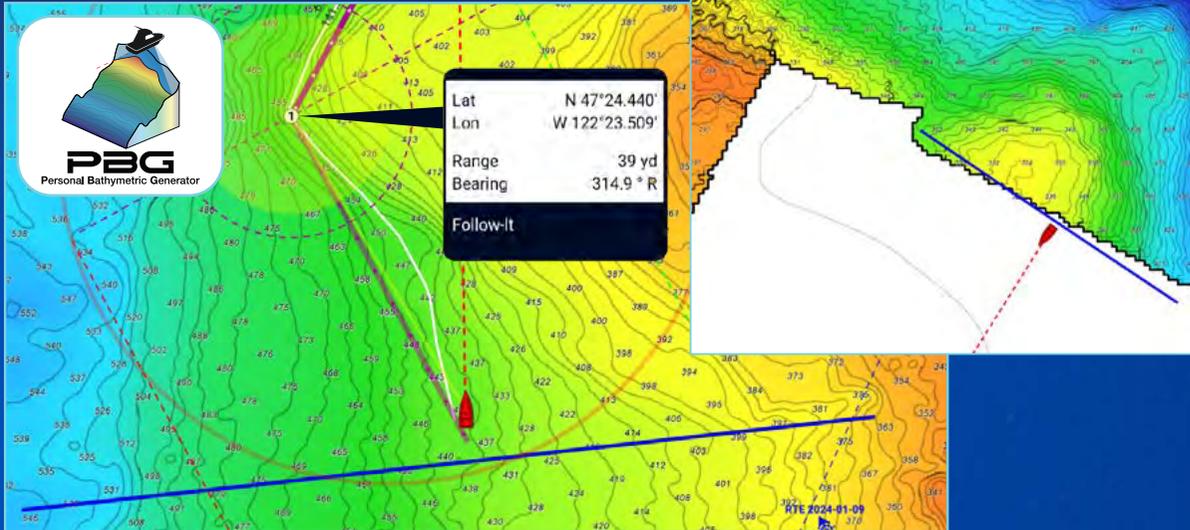
DFF-3D Multibeam Sonar

Control the CSH-10 directly from your TZtouchXL with Range Up/Down Buttons and Gain/Tilt Slider Bar. Edge-Swipe from the left to display the Sonar Data Box to view the Sonar tilt angle and Sonar Event History. (Requires software version 25.11 or higher)



BATHYMETRIC SHADED RELIEF MAPS

Quickly create your own PBG (Personal Bathymetric Generator) Shaded Relief Maps using TZtouchXL and the DFF-3D. Bottom images are drawn with shaded relief, depth contours, and variable colors, making it easy to identify hidden structure and ridges that hold fish in a simple, easy-to-interpret presentation. Multiple color palettes are available, including the ability to show contour lines only.

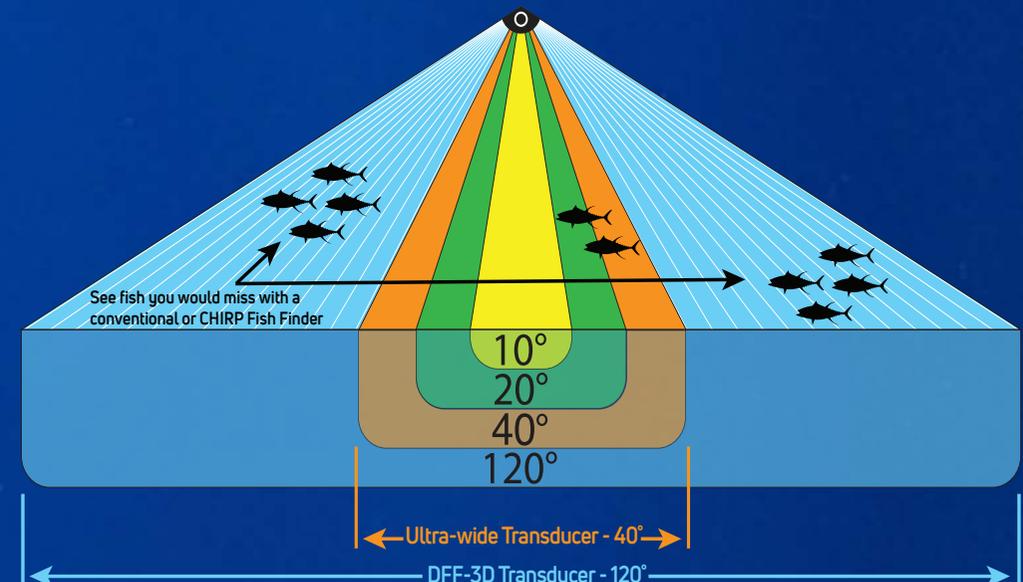
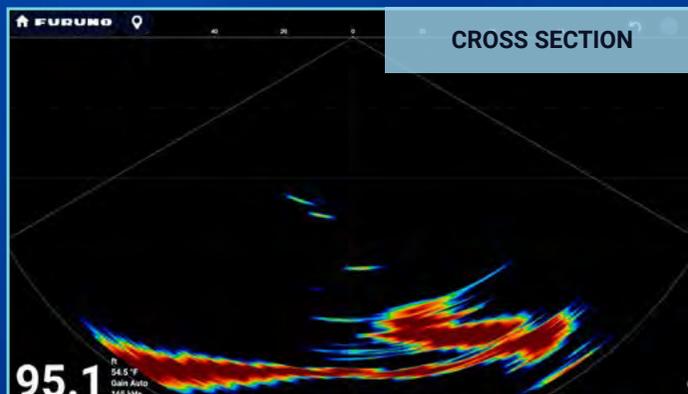
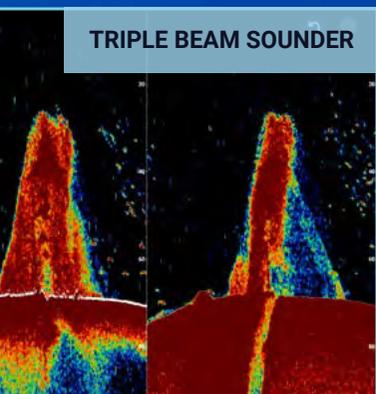


MORE POWER TO SEE 120° PORT - STARBOARD

The DFF-3D Multibeam Sonar operates at 165kHz, giving you fantastic depth penetration with high-resolution echoes. Compared to a 40° ultra-wide transducer, you will see 3-times the area around your boat, helping you find fish you might have otherwise missed.

FOLLOW-IT FEATURE

Leverage your recorded PBG data by creating a constant depth route from the PBG data, allowing you to select Follow-It from the menu and send it to your NAVpilot Autopilot. This is particularly useful when you want to keep your bait at a certain depth while trolling without having to adjust your reel.



FIP-460 Camera



- Up to 3MP Resolution (2304 x 1296)
- High-Performance LED - 10 Meter Range
- Mechanical IR Cutout filter for True Day / Night Operation
- Fully rotatable for a variety of mounting configurations
- Compatible with TZtouchXL, TIMEZERO software v4.1+, and ONVIF-compliant devices
- Connect up to 8 FIP-460 Cameras to the TZtouchXL network

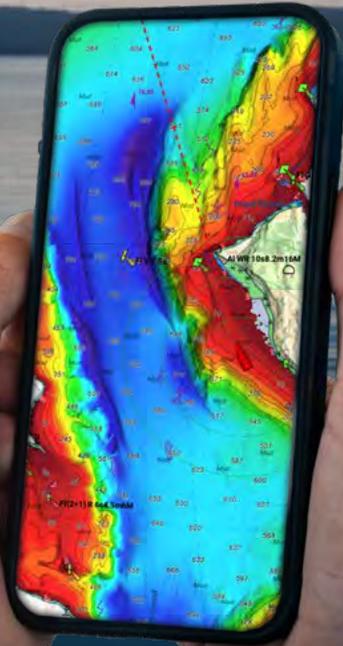


NavNet Command Center Apps:

Display & control third-party equipment directly from the MFD



Never Lose Waypoints, Routes, Or Settings With TZ Cloud



NavNet VIEWER APP
View instruments on your handheld device

NavNet REMOTE APP
View and operate your system
on your handheld device

NavNet CONTROLLER APP
Control your system with
this simple app

TZ FIRST MATE APP KEEPS TRACK OF YOUR CATCH & LOCATION

Drop an event mark. Upload a photo of your catch from your phone and record species, weight, length and more! View & edit the marks on your smart devices with the TZ First Mate App, TZ PC Software, or TZ iBoat



RADAR



Radar Sensor
 DRS4DL+ / DRS4DX /
 DRS2D-NXT / DRS4D-NXT
 DRS6A/12A/25A-NXT
 DRS6A/12A/25A X-Class
 Ethernet

NavNet TZtouchXL Network / Product Lineup

FISH FINDER



External Fish Finders can also be connected to TZtouchXL. You can select which one to use from the settings menu.



Fish Finder / TruEcho CHIRP™ 2/3kW¹
 DFF1-UHD / DFF3-UHD
 Ethernet



Bottom Discrimination Fish Finder
 BBDS1
 Ethernet



Multibeam Sonar
 DFF-3D
 Ethernet



TZTBBX
MFD Black Box

AIS



AIS Receiver
 FA-40
 NMEA2000 NMEA0183



Class-B AIS Transponder
 FA-70
 NMEA2000 NMEA0183



Class-A AIS Transponder
 FA-170
 NMEA0183 Ethernet

WEATHER/ PC PLOTTER



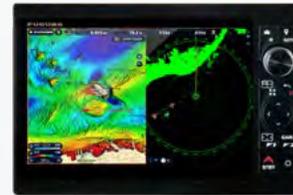
TZ PC Software
 Ethernet



Network Weather Facsimile Receiver
 FAX-30
 Ethernet



Network Satellite Weather and Radio Receiver
 BBWX4²
 Ethernet



TZT10X
10" Hybrid Control



TZT13X
13" Hybrid Control



TZT16X
16" Multi Touch

OTHERS

NavNet Command Center *More apps planned
 3rd Party Compatible Apps (v2.01*)



Marine Entertainment System
 Fusion APOLLO Series, etc.
 Ethernet NMEA2000



IP Camera
 Ethernet



Analog Camera
 Video



Thermal Camera
 Ethernet Video



FIP-460
 Ethernet Video



Digital Switching System
 NMEA2000



NavNet TZtouchXL is NMEA2000 certified. NMEA2000 offers improved data transfer rates and true plug-and-play operation.

CONVERTERS



NMEA Data Converter
 IF-NMEA2K2
 NMEA2000 NMEA0183



Analog NMEA Data Converter
 IF-NMEAFI
 NMEA2000 Analog



IP Video Stream Encoder (VGA)
 VI-CSH8L
 Video Ethernet



IP Video Stream Encoder (HDMI)
 VI-HDMI
 Video Ethernet



Internal GPS Antenna
 TZT10X/TZT13X/TZT16X



Internal 1kW TruEcho CHIRP™ Fish Finder
 (Dual Channel for TZT10X/TZT13X/TZT16X only)

* Optionally connect a 5kW or 10kW transducer to DFF3-UHD using BT-5
 ** SiriusXM weather coverage is currently available only in U.S. and Canada. SiriusXM subscription required
 *** Requires IF-NMEAFI Data Converter

NAVnet

TZ
touchXL



AutoPilot
NAVpilot-1000
NMEA2000



AutoPilot
NAVpilot-300
NMEA2000



AutoPilot
NAVpilot-711C
NMEA2000 NMEA0183

AUTOPILOT



Integrated Heading Sensor
PG-700
NMEA2000



Satellite Compass
SCX-20
NMEA2000



Satellite Compass
SC-33
NMEA2000

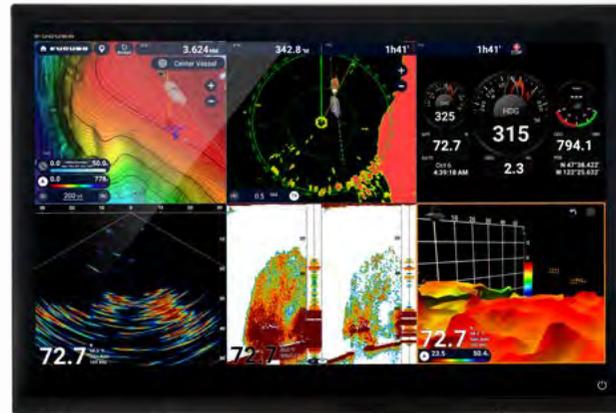


Satellite Compass
SC-70
NMEA2000 NMEA0183

COMPASS



TZT22X
22" Multi Touch



TZT24X
24" Multi Touch



GPS/WAAS
Receiver Antenna
GP-330B
NMEA2000



External GPS antennas & navigators
can also be connected to TZtouchXL.
You can select which one to
use from the settings menu.

GPS



Ultrasonic Weather Station
200WX
NMEA2000



Depth/Speed/Temp Sensor
DST-810 series & other Smart Sensors for depth/speed/temp
NMEA2000

SENSOR



Wind Transducer - Analog
FI-5001/L***
NMEA2000



Instrument
FI-70
NMEA2000

INSTRUMENTS

Interface Connection Legend

- Ethernet 100 Base-T Connection
- Can bus or NMEA2000 Connection
- NMEA0183 Connection
- Video Connection
- Analog Connection
- USB Connection



Touch Encoder Unit
TEU001B (Black)
TEU001S (Silver)



Enhanced Remote Controller
MCU-006H
NMEA2000



Enhanced Remote Controller
MCU-006
NMEA2000



Remote Control Unit
MCU-004
USB



Remote Control Unit
MCU-002
USB



Keyboard
MCU-005
Ethernet

REMOTES

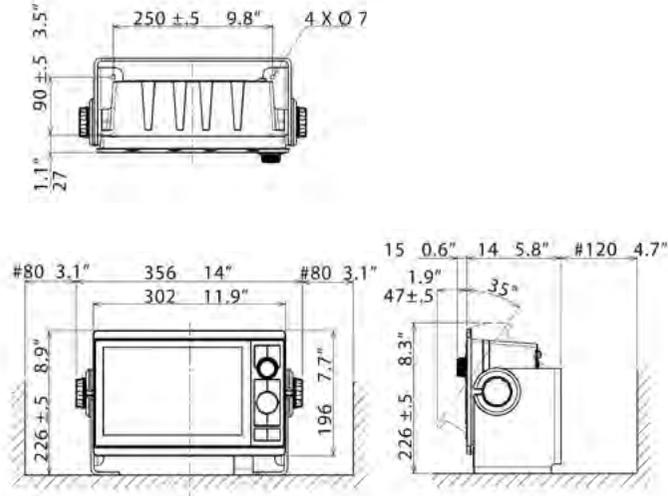
Specifications - NavNet TZtouchXL

MODEL	TZT10X	TZT13X	TZT16X	TZT22X	TZT24X	TZTBBX
DISPLAY UNIT						
Type	Color TFT multi touch IPS LCD					Owner Supplied
Screen Size	10.1" Wide	13.3" Wide	15.6" Wide	21.5" Wide	24" Wide	Owner Supplied
Screen Resolution	WUXGA 1920 x 1200	FHD 1920 x 1080	FHD 1920 x 1080	FHD 1920 x 1080	FHD 1920 x 1080	1024 x 768, 1280 x 1024, 1920 x 1080
Screen Brightness	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, Turkish, Polish					
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	100 ms or 10 Hz			---	---	---
CHART PLOTTER						
Cartography	TZ MAPS, MM3 Vector, and CMOR capable (U.S. only)					
Memory Capacity	30,000 user points, 100,000 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	100 ARPA Targets (Radar dependent) with fully automatic target acquisition (Heading input required)					
Radar Alarms	Guard Zone, CPA/TCPA, Video, Azimuth, Heading Line					
FISH FINDER						
Transmit Frequency*	CW: 50/200 kHz, CHIRP: 40 kHz to 240 kHz (Low, Medium, and High)			---	---	---
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 (1,200-2,400m / 4,000-8,000ft)			---	---	---
Extension Mode	ACCU-FISH™, A-Scope, Auto (Fishing/Cruising), 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	Fish School, Fish School for bottom lock			---	---	---
SIDE-SCAN						
Transmit Frequency*	CHIRP: 220-240KHz/445-465KHz			Side-Scan with networked TZT10X, TZT13X, TZT16X Only		
Transducer	230kHz: 225T-PR904, 225T-SS904. 225T-TM904 / 455kHz: 455T-PR903, 455T-SS903. 455T-TM903			Side-Scan with networked TZT10X, TZT13X, TZT16X Only		
Display Range	750 feet to each side			---	---	---
Display Colors	Green, Blue, Amber, White			---	---	---
Display Screen Sizes	Full Screen, 1/2 Screen, 1/4 Screen, 1/6 Screen			---	---	---
Direct Connect to MFD	Can be displayed/controlled when connected to TZ10X, TZ13X, TZ16X only; may be networked with TZT22X/TZT24X/TZTBBX					
INTERFACE						
NMEA2000	1 Port					
Input	065280, 126992/993/996, 127237/245/250/251/257/488/489/505, 128259/267, 129025/026/029/330/038/039/040/041/291/538/540, 129793/794/798/801/802/808/809/810, 130306/310/311/312/313/314/316/576/577/578, 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	1 Port (1000 BASE-T)					
USB	1 Port (USB 3.0) for control unit		1 Port (USB 3.0) for touch monitor and control unit: 1 Port USB touch output for HDMI device			
Video I/O	Input: 1 port (NTSC/PAL)		Input: 1 port (NTSC/PAL) and 1 port HDMI 1920 x 1080p or less (progressive only) Output: 1 port (HDMI 1080p)			
AUX I/O	2 Ports (Event Switch, Buzzer Output, [10", 13" and 16" KP I/O], and External Power Switch)					
SD Card Slot	1 Slot (Micro SDXC, rear)					1 Slot (Micro SDXC, front)
Wireless LAN	IEEE802.11b/g/n, Transmit frequency: 2.412 to 2,462 GHz, 11dBm max					
Transducer Connection	1 Port 12 pin for CHIRP/CW, 1 Port 12 pin for Side-Scan			---	---	---
ENVIRONMENT						
Temperature (IEC60945)	-15°C to +55° C					
Relative Humidity	93% or less at +40° C					
Waterproofing	IP56					
POWER						
	12-24 VDC					
	3.8-1.9A	3.9-1.9A	4.0-2.0A	5.1-2.5A	6.7-3.2A	2.1-1.1A

Specifications - NavNet TZtouchXL Continued

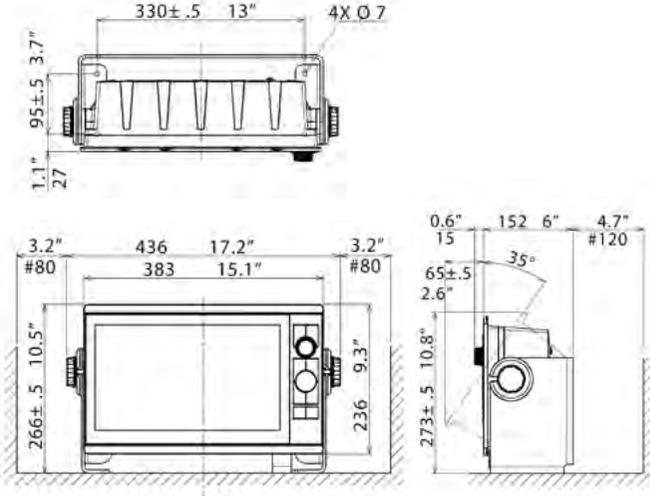
TZT10X (Bracket Included)

TZT10X (Tabletop Mount) 3.9 kg 8.6 lb



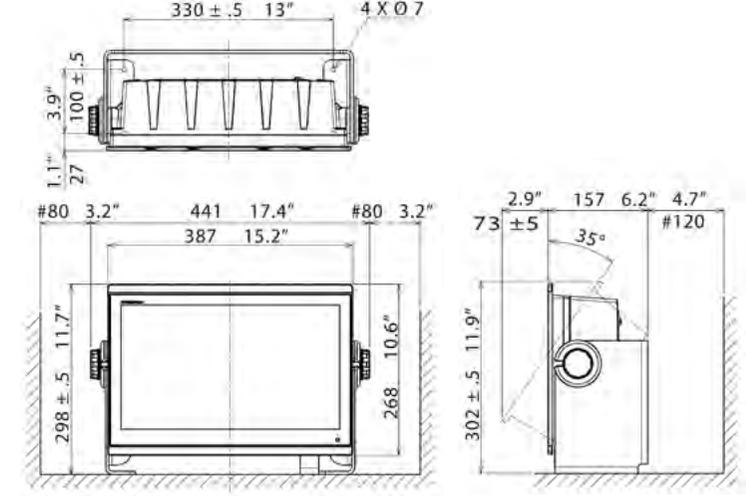
TZT13X (Bracket Included)

TZT13X (Tabletop Mount) 5.4 kg 11.9 lb

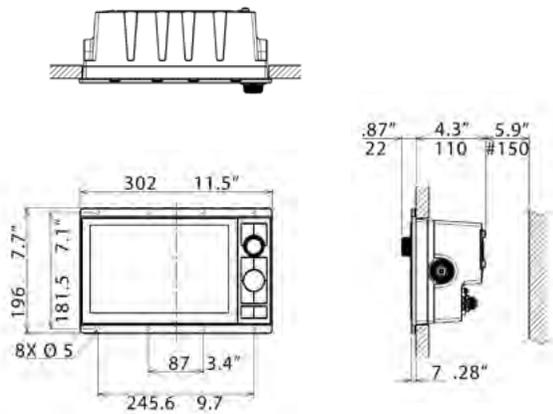


TZT16X (Bracket Not Included)

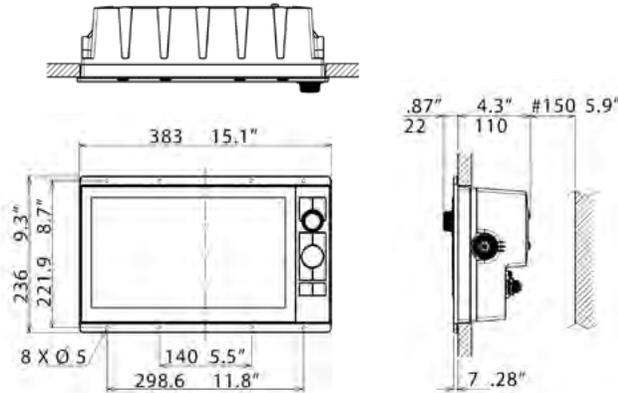
TZT16X (Tabletop Mount) 5.9 kg 13.0 lb



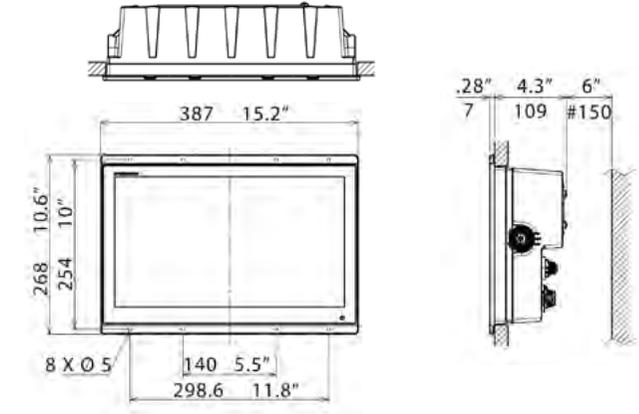
TZT10X (Flush Mount) 2.9 kg 6.4 lb



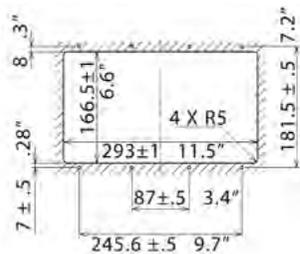
TZT13X (Flush Mount) 4.1 kg 9.0 lb



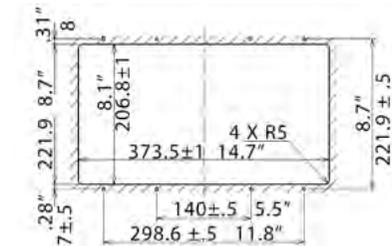
TZT16X (Flush Mount) 4.4 kg 9.7 lb



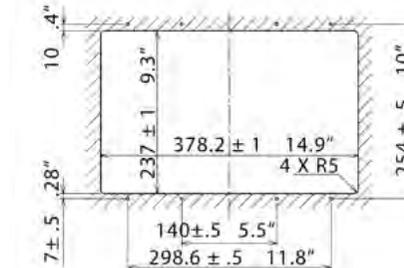
TZT10X (Flush Mount) Cutout Dimension



TZT13X (Flush Mount) Cutout Dimension



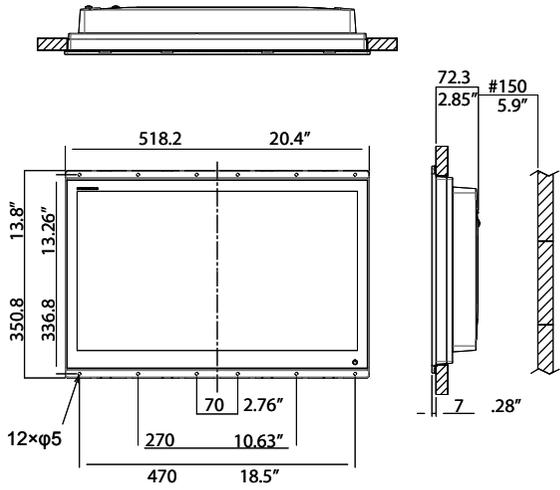
TZT16X (Flush Mount) Cutout Dimension



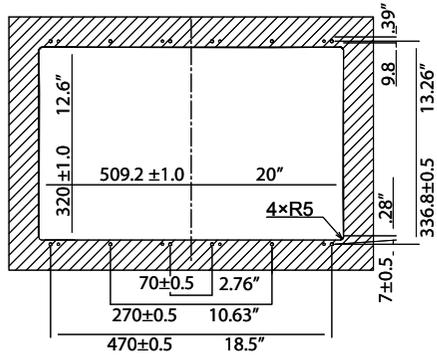
Specifications - NavNet TZtouchXL Continued / Remote Controllers

TZT22X

TZT22X (Flush Mount) 5.7 kg 12.6 lb

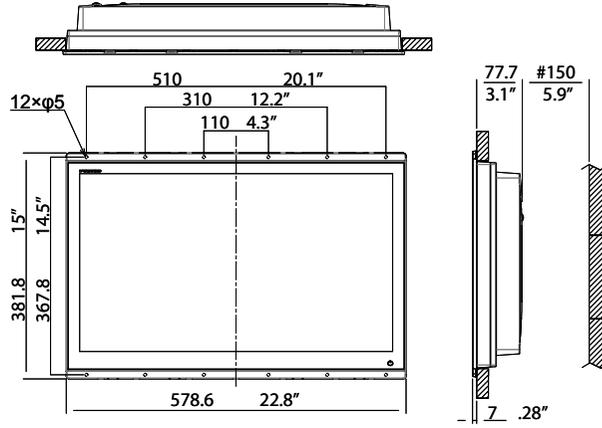


TZT22X (Flush Mount) Cutout Dimension

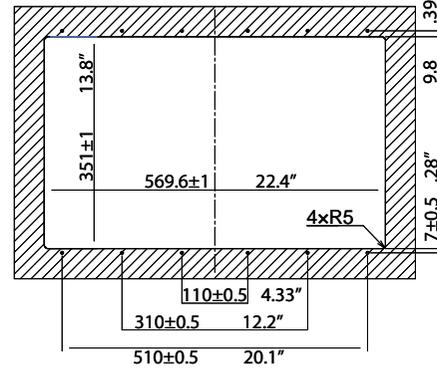


TZT24X

TZT24X (Flush Mount) 8.1 kg 17.9 lb

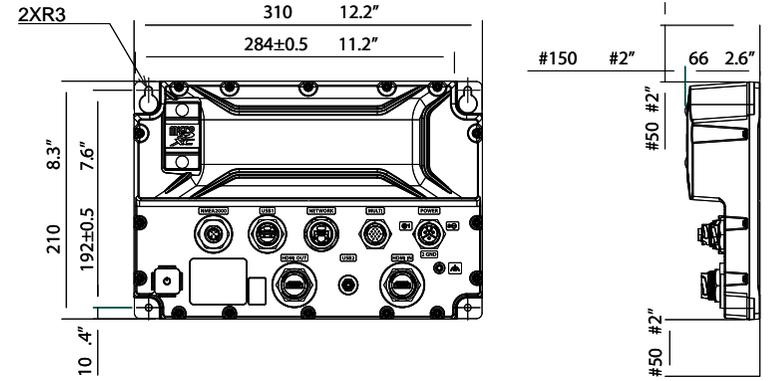


TZT24X (Flush Mount) Cutout Dimension



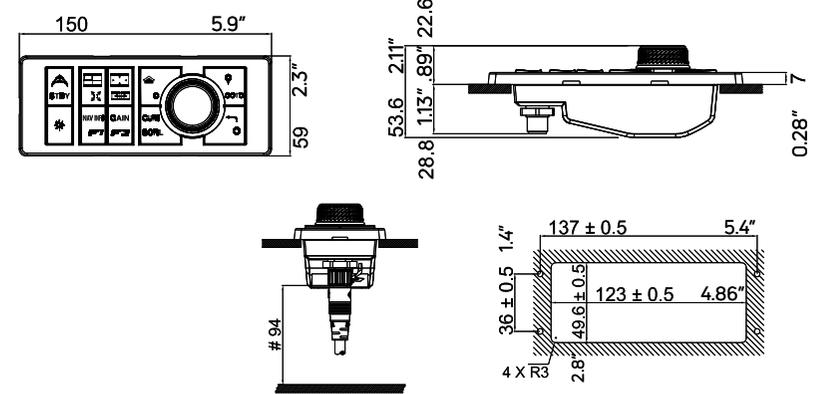
TZTBBX

TZTBBX MFD Black Box 1.3 kg 2.87 lb



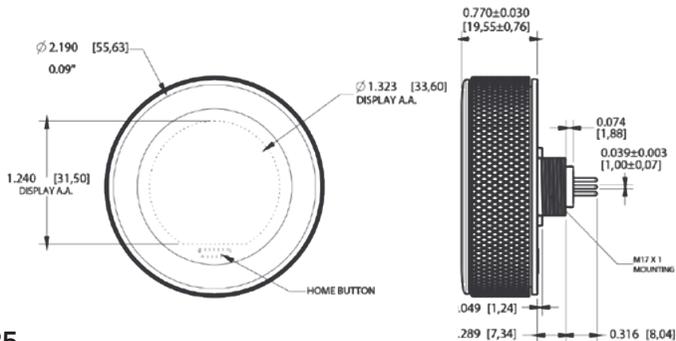
MCU-006H Control Unit (option)

0.2 kg 0.44 lb

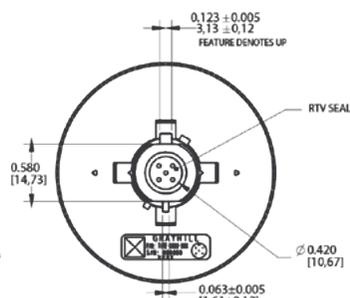


TEU001B/S Touch Encoder Unit (option, U.S. and Canada only)

0.12 kg 0.26 lb

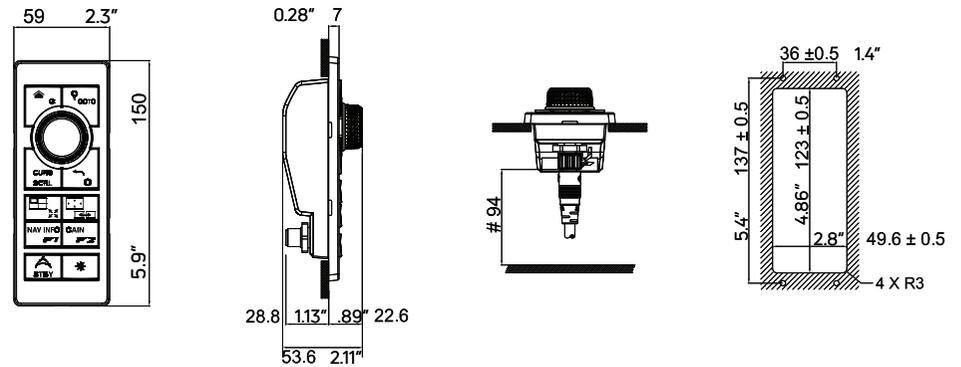


MATING CONNECTORS (OR EQUIVALENT):
PHOENIX CONTACT P/N 1411976
PHOENIX CONTACT P/N 1411977



MCU-006 Control Unit (option)

0.2 kg 0.44 lb



Specifications - NavNet NXT Series Radar

MODEL		DRS2D-NXT	DRS4D-NXT	DRS6A-NXT	DRS12A-NXT	DRS25A-NXT
ANTENNA						
Type		ø488 mm Radome (19")	ø610 mm Radome (24")	ø1036 mm Open (3.5') 1255 mm Open (4') 1795 mm Open (6')	ø1036 mm Open (3.5') 1255 mm Open (4') 1795 mm Open (6')	ø1036 mm Open (3.5') 1255 mm Open (4') 1795 mm Open (6')
Beam Width	Horizontal	5.2° typical (-3 dB) Adjustable between 2.6° and 5.2° (Array basic beamwidth shown; RezBoost also available)	3.9° typical (-3 dB) Adjustable between 2° and 3.9° (Array basic beamwidth shown; RezBoost also available)	2.3°/1.9°/1.35° (Array basic beamwidth shown; RezBoost also available)	2.3°/1.9°/1.35° (Array basic beamwidth shown; RezBoost also available)	2.3°/1.9°/1.35° (Array basic beamwidth shown; RezBoost also available)
	Vertical	25°		22°/22°/22°	22°/22°/22°	22°/22°/22°
Antenna Rotation Speed		24*/36/48 rpm range coupled or 24 rpm fixed * In dual range mode, speed is limited to 24 rpm				
RF TRANSCEIVER						
Frequency		CH1: 9380 MHz (P0N), 9400 MHz (Q0N) CH2: 9400 MHz (P0N), 9420 MHz (Q0N) CH3: 9420 MHz (P0N), 9440 MHz (Q0N)				
Pulselength & PRR		P0N: 0.08 µs to 1.2 µs/1100 Hz Q0N: 5 µs to 18 µs/1100 Hz		P0N: 0.04µs to 1.2µs/ 700Hz to 2000Hz Q0N: 5µs to 48µs/ 700Hz to 2000Hz		
Peak Output Power		Solid-State, 25 W			Solid-State, 100 W	Solid-State, 200 W
Range Scales		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		
Bearing Accuracy		±1°				
INTERFACE						
Ports		LAN: 1 port, Ethernet, 100Base-TX RJ45				
ENVIRONMENT						
		Temperature: -25°C to +55°C, Waterproofing: IP56		Temperature: -25°C to +55°C, Waterproofing: IP56		
POWER SUPPLY						
		12-24 VDC, 2.5-1.3 A	12*/24 VDC, 9.5/5.0 A	24 VDC, 5.0 A	24 VDC, 5.0 A	24 VDC, 5.6 A

* 12v is limited in antenna and cable size selection

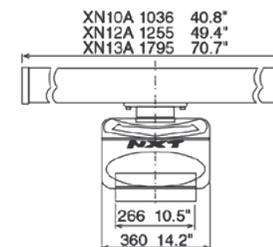
[DRS2D-NXT 19" Radome Radar Sensor](#) 6.5 kg 14.3 lb



[DRS4D-NXT 24" Radome Radar Sensor](#) 7.3 kg 16.1 lb



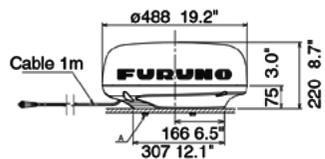
[3.5 ft Open Array NXT Radar](#) 22 kg 48.5 lb
[4 ft Open Array NXT Radar](#) 25 kg 55.1 lb
[6 ft Open Array NXT Radar](#) 27 kg 59.5 lb



Specifications - NavNet X-Class Series Radar

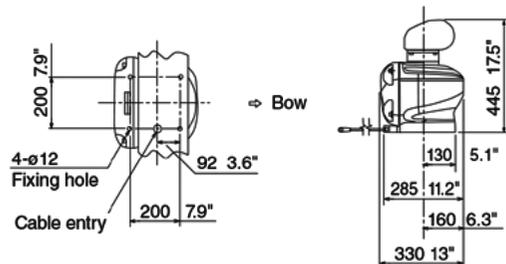
MODEL	DRS4DL+	DRS6A X-Class	DRS12A X-Class	DRS25A X-Class
ANTENNA				
Type	ø480 mm Radome (19")	ø1036 mm Open (3.5) 1255 mm Open (4) 1795 mm Open (6)	ø1255 mm Open (4) 1795 mm Open (6)	
Beam Width	Horizontal	5.2°	2.3°/1.9°/1.35°	1.9°/1.35°
	Vertical	25°	22°/22°/22°	
Antenna Rotation Speed	24 rpm	24/36/48 rpm range coupled or 24 rpm fixed		
RF TRANSCEIVER				
Frequency	9410 ± 30 MHz	9410 ±30 MHz		
Pulse length & 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)	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)		
Peak Output Power	4 kW	6kW	12kW	25kW
Range Scales	0.0625 to 36* NM	0.0625 to 96 NM		
Bearing Accuracy	±1°			
INTERFACE				
Ports	LAN: 1 port, Ethernet, 100Base-TX RJ45			
ENVIRONMENT				
	Temperature: -25°C to +55°C, Waterproofing: IPX6	Temperature: -25°C to +55°C, Waterproofing: IP56		
POWER SUPPLY				
	12-24 VDC, 2.1-1.0 A	24 VDC, 4.0 A	24 VDC, 4.5 A	24 VDC, 5.6 A

DRS4DL+ 19" Radome Radar Sensor 5.7 kg 12.6 lb

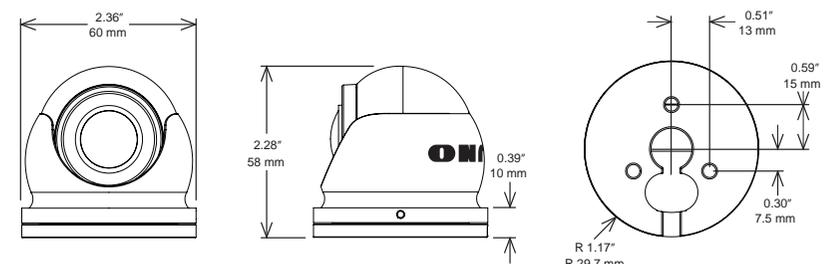


3.5 ft Open Radar Sensor X-Class
4 ft Open Radar Sensor X-Class
6 ft Open Radar Sensor X-Class

20.0 kg 44.1 lb
21.0 kg 46.3 lb
23.0 kg 50.7 lb



FIP-460 Camera 0.42 kg 0.93 lb

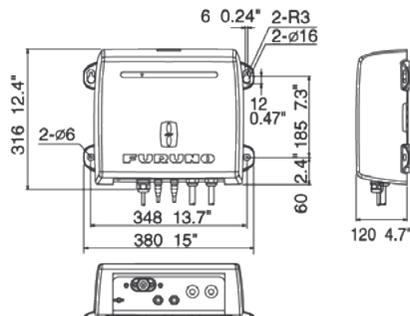


Specifications - NavNet Series Fish Finders

MODEL	DFF1-UHD	BBDS1	DFF3-UHD
TRANSCIVER & DISPLAY			
Display Modes	Single (High or Low frequency), Dual (Both High and Low frequencies), Bottom-lock, Bottom-Zoom, ACCU-FISH™, Bottom Discrimination, Marker Zoom, A-Scope	Single (50 or 200 kHz), Dual (50 and 200 kHz), Bottom-lock, Bottom-Zoom, ACCU-FISH™, Bottom Discrimination, Marker Zoom, A-scope	Single (High or Low frequency), Dual (Both High and Low frequencies), Bottom-lock, Bottom-Zoom, A-Scope
Frequency	Dual frequency 30-70 & 175-225 kHz	Dual frequency 50 and 200kHz	The synthesized transducer works with dual frequencies between 28 and 200 kHz (Low, Medium, and High CHIRP ranges)
Broadband (CHIRP)	Available	N/A	Yes
Range Scale	Max. 1,000m (3,281ft)	Max. 1,200m (3,937ft)	Max. 3,000m (9,842ft); shift 0-2,000m (2,000-5,000m / 6,000-15,000ft)
Output Power	1kW	1kW	2kW/3kW/5kW/10kW*
ENVIRONMENT			
Temperature	-15°C to +55°C		
Waterproofing	IP55	IP20	IP20
POWER SUPPLY			
	12-24 VDC		12-24 VDC
	30 W, 2.8-1.4 A	12 W, 1.1-0.4 A	3.0-1.6 A (stand-by: 0.8-0.4 A)
TRANSDUCERS (Specify when ordering)			
	1 kW Broadband transducers by AIRMAR 42-65 kHz (low), 130-210 kHz (high) CM265LH, B265LH (with temperature sensor) CM275LHW, B275LHW	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: 50/200-1T, 50/200-12M	CHIRP 2/3 kW 2kW/1kW: PM111LHW, R109LHW 2kW/2kW: PM111LH, PM411LWM, R109LH, R109LM, R111LH, R111LM, R409LWM, 165T-PM542LM 3kW/1kW: R509LHW 3kW/2kW: CM599LH, CM599LM, R509LM, R599LH, R599LM CW 2/3/5/10 kW 28 kHz: CA28BL-6HR, CA28BL-12HR, CA28F-38M, CA28F-72 38kHz: CA38BL-9HR, CA38BL-15HR 50kHz: CA500BL-12HR, CA50BL-24HR, CA50F-38, CA50F-70 68 kHz: CA68F-30H, CA82B-35R 82kHz: CA82B-35R 88 kHz: CA82B-35R, CA100B-10R 150 kHz: CA150B-12H 200 kHz: CA200B-8/8B, CA200B-12H *BT-5 Required for 5kW/10kW Transducers

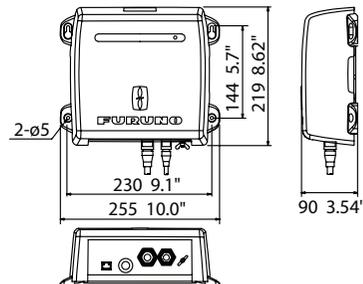
DFF1-UHD Network Fish Finder

3.1 kg 6.8 lb



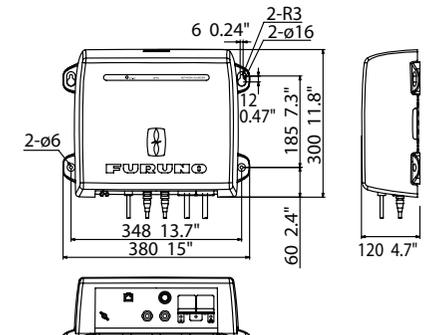
BBDS1 Network Fish Finder/Bottom Discrimination Sounder

1.3 kg 2.9 lb



DFF3-UHD Network Fish Finder

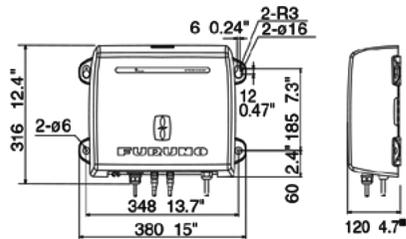
3.8 kg 8.4 lb



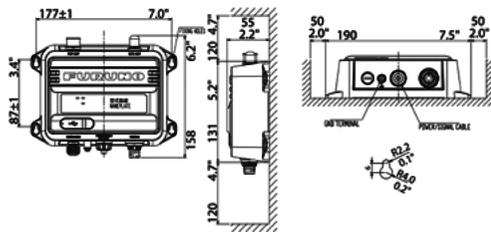
Specifications - NavNet Series Multibeam Sonar | AIS Receiver & Transponder

MODEL	DFF-3D NETWORK MULTIBEAM SONAR
TRANSCEIVER & DISPLAY	
Display Mode	Cross Section, Triple/Single Beam Sounder, Side-Scan, 3D Sounder History, PBG (Personal Bathymetric Generator)
Frequency	165 kHz
Beam Angle	60° Port/Stbd, 120° total
Detection Range	200 m* (Side beam best performance) 300 m* (Main beam directly under boat) * Depending on bottom type and water conditions.
Range Scale	5-1,200m
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-265LH-PM488 (pocket mount), or 165T-50/200-TM260 (transom mount)

DFF-3D Network Multibeam Sonar 3.0 kg 6.6 lb



FA-40/70 AIS Receiver 1.5 kg 3.3 lb



MODEL	FA-40 AIS RECEIVER	FA-70 CLASS - B+ AIS TRANSPONDER	
STANDARDS			
	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, 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	
TRANSPONDER UNIT* *FA40: RECEIVER UNIT			
TX/RX Frequency (FA40: RX Frequency)	156.025 to 162.025 MHz		
Output Power	---	5W or 1W(SOTDMA), 2W(CSTDMA)	
Channel Spacing	25 kHz	25 kHz	
GPS RECEIVER			
Receiving Channels	---	12 channels, SBAS 2 channels, 14 satellites tracking	
Rx Frequency	---	1575.42 MHz	
Rx Code	---	C/A code	
Position Accuracy	---	13 m (2 drms, HDOP <= 4)	
INTERFACE			
NMEA0183	Input	ACA, ACK, AIQ, DTM, GBS, GGA, GLL, GNS, HDT, OSD, RMC, SSD, THS, VBW, VSD, VTG	ABM, ACK, AIQ, BBM, HDT, SSD, THS, VSD (ABM, BBM: SOTDMA only)
	Output	ABK, ACA, ACS, ALR, GGA, GLL, RMC, SSD, TXT, VDM, VDO, VER, VSD, VTG	ABK, ACA, ACS, ALR, GGA, GLL, RMC, SSD, TXT, VDM, VDO, VER, VSD, VTG
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)
ENVIRONMENT			
Temperature	Antenna Unit	-25°C to +70°C	-25°C to +70°C
	Other Units	-15°C to +55°C	-15°C to +55°C
Waterproofing	Antenna Unit	IP56	
	Other Units	IP55	
POWER SUPPLY			
Transponder Unit (FA40: Receiver Unit)	12-24 VDC, 0.3-0.2 A	12-24 VDC, 1.8-0.9 A	
Display Unit:	---	---	

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