

FURUNO

RADAR



Models:
FAR-15x8 series
(with 15" or 19" LCD)

Photo: 15" LCD MU-150HD



www.furuno.com

**Excellent target detection,
improved user interface, made possible
with the very latest technologies**



RADAR

- ▶ High performance Radar with Cat.2 (500-10,000GT) and Cat.3 (<500GT) support.
- ▶ Accurately tracks other vessels with advanced Target Tracking (TT) function for collision avoidance.
- ▶ Improved sea and rain clutter suppression function.
- ▶ Improved user interface for simple and efficient operation.

Easy to operate control unit

Simple and efficient operation is made possible with individual knobs for setting gain/rain/sea clutter suppression, as well as a RotoKey and touch panel. The optional trackball unit, as well as a regular USB mouse, can also be used.



Rotate to adjust rain reflection, sea surface reflection, gain

Touch panel area

Rotokey and frequently used key



Trackball Control Unit (option)

FAR-15x8 series

FAR-1518/ FAR-1518-BB X-band, 12 kW, TR up
FAR-1528/ FAR-1528-BB X-band, 25 kW, TR up

Antenna Unit

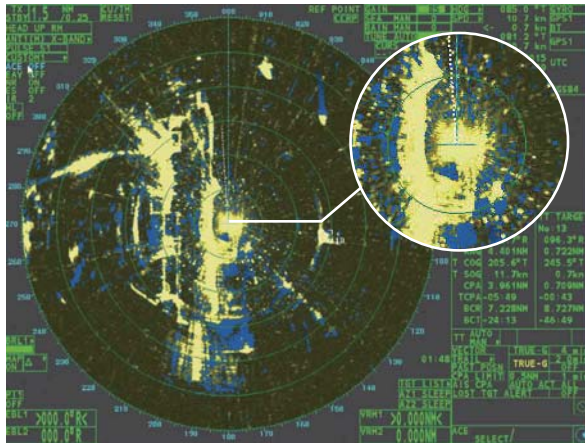


Photo: XN24AF

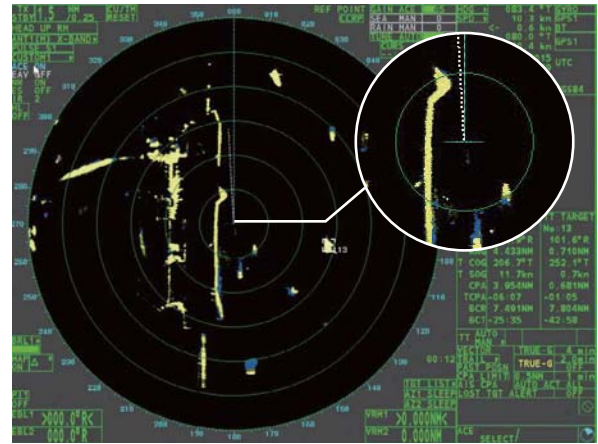
NEW

► Automatic Clutter Elimination (ACE) for unprecedented echo clarity

Quickly adjust the radar image with the push 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 selected by the user (calm/rough sea/hard rain).



Automatic Clutter Elimination (ACE) OFF

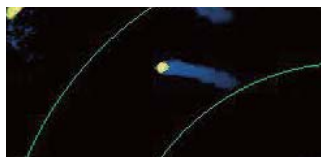


Automatic Clutter Elimination (ACE) ON

NEW

► Fast Target Tracking™ (TT)

It only takes a few seconds after a target has been selected, that a speed and course vector is displayed. With accurate tracking information, estimation of other vessels' course and speed is made easier.



Before selecting a target



Speed and course vector

► Customizable data display for efficient and simple operation



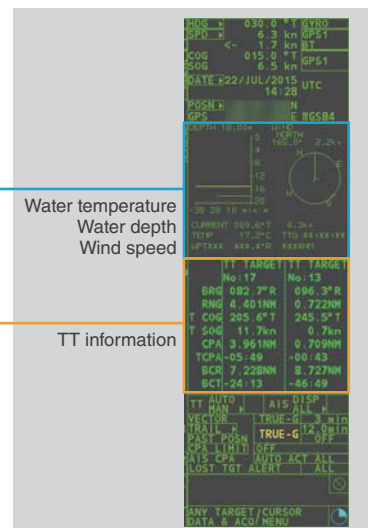
OS data cell

Data cell 1

Close up display

Data cell 2

AIS information



Water temperature
Water depth
Wind speed

TT information

Data display

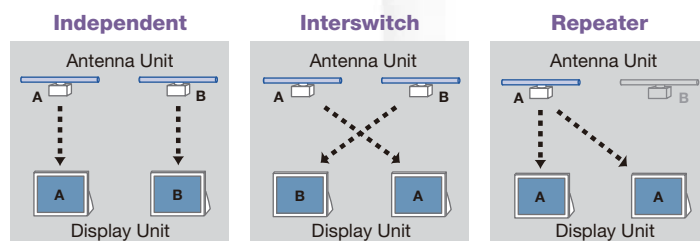
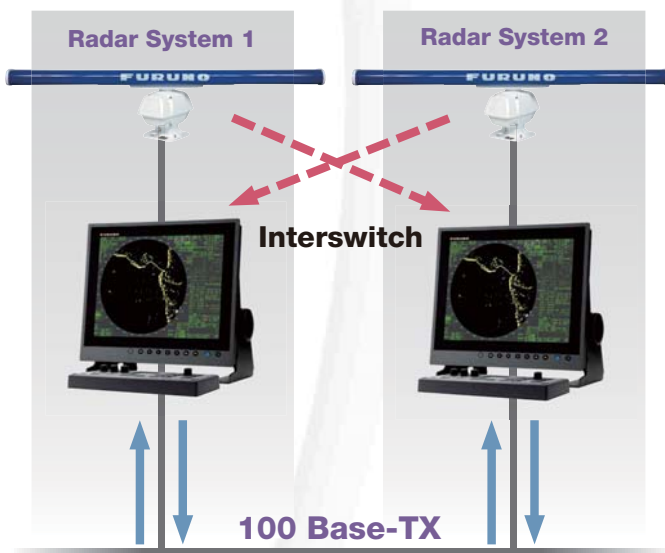
Whether it be a close up of approaching targets or target information, you can customize the display freely to show the information you need at hand. Up to four TT targets can be displayed as well as two AIS targets, complete with information.

Close up display (Zoom function)

You can view a close up of a point of interest, enlarged two or three times. Enlarge incoming targets for increased situational awareness. Echo trails can also be displayed in order to further enhance situational awareness in busy shipping lanes.



► **Scalable Ethernet Network System**



FAR-15x8 series utilizes a 100 Base-TX Ethernet connection to network up to two radar systems 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.

► **High visibility monitor MU-190 and MU-150HD**

19" LCD MU-190 (Cat.2) and 15" LCD MU-150HD (Cat.3) are offered to fit the needs of your vessel. High brightness ensures great visibility in all environments.

► **AIS connectivity built-in, accurately track targets for increased safety**

► **Display Radar overlay on connected ECDIS**

► **Customizable warning function for CPA/TCPA, Guardzone and more**

► **Conforms to IEC62388 and IEC62288**

SPECIFICATIONS

PRODUCT NAME MARINE RADAR

1 Antenna Radiators

Antenna type

Slotted waveguide array

Radiator length

4 ft (XN12AF), 6.5 ft (XN20AF), 8 ft (XN24AF)

Horizontal beamwidth

1.9° (XN12AF), 1.23° (XN20AF), 0.95° (XN24AF)

Vertical beamwidth

20°

Sidelobe attenuation

XN12AF

-24dB(within ±10°),

-30dB(outside ±10°)

XN20/24AF

-28dB(within ±10°)

-32dB(outside ±10°)

Polarization

Horizontal

Rotation

26 rpm (RSB-120), 48 rpm (RSB-121)

2 RF TRANSCIVER

Frequency

9410 MHz ±30 MHz, P0N

Output power

FAR-1518/FAR-1518-BB

12 kW

FAR-1528/FAR-1528-BB

25 kW

Minimum range

25 m

Range discrimination

25 m

Range accuracy

1 % of range in use or 10 m whichever is the greater

Bearing accuracy

±1°

Range, Pulse length and Pulse Repetition Rate

| PRR (Hz approx.) | Range scale (NM) | | | | | | | | | | |
|---------------------|------------------|------|-----|------|-----|---|---|----|----|----|----|
| | 0.125 | 0.25 | 0.5 | 0.75 | 1.5 | 3 | 6 | 12 | 24 | 48 | 96 |
| 3000* | 0.08 μs | | | | | | | | | | |
| 2760* | 0.12 μs | | | | | | | | | | |
| 1500 | 0.22 μs | | | | | | | | | | |
| 1000 | 0.38 μs | | | | | | | | | | |
| 1000 | 0.68 μs | | | | | | | | | | |
| 600** | 1.2 μs | | | | | | | | | | |

*2200 Hz approx. with TT range on 32 NM. **500 Hz on 96 NM range.

IF frequency

60 MHz

3 PROCESSOR UNIT

Range scales and ring interval

| Scale (NM) | 0.125 | 0.25 | 0.5 | 0.75 | 1.5 | 3 | 6 | 12 | 24 | 48 | 96 |
|-----------------|-------|------|-----|------|------|-----|---|----|----|----|----|
| RI (NM) | 0.025 | 0.05 | 0.1 | 0.25 | 0.25 | 0.5 | 1 | 2 | 4 | 8 | 16 |
| Number of rings | 5 | 5 | 5 | 3 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |

Warm-up time

3 minutes approx

Presentation mode

Head-up, STAB Head-up, North-up (TM/RM), Course-up, Stern-up

Marks

Cursor, Radar ring, Heading mark, North mark, Bearing line, Vector, Map mark, Zoom, VRM, EBL, Acquisition zone

Target tracking (TT)

Auto or manual acquisition: 50 targets in 0.1 - 32NM

Tracking: 5/10 pts on all target

Time of vector: 0 to 60 minutes

AIS

Display capacity: 300 targets, Tracking: 5/10 pts on all target

Time of vector: 0 to 60 minutes

Echo trail

True/Relative, Trail length: 0 to 30 minutes (30 s steps) or continue

Radar map

5,000 pts

Interswitch function

Selected from menu

4 MARINE DISPLAY*

Screen size

MU-150HD

MU-190

Resolution

15-inch LCD

19-inch LCD

Brightness

XGA

SXGA

Contrast ratio

1000 cd/m²

450 cd/m²

Contrast ratio

600:1

900:1

Radar effective diameter

213 mm

250 mm

*The display unit for BB-type should be prepared by user.

5 INTERFACE

Number of ports on 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)

Contact closure

Alert output: 4 ch, Remote ACK input, System fail, Power fail

Remote display

2 ports (Signal: HD, BP, Trigger and Video)

LAN

Ethernet 100Base-TX: 1 port

DVI

DVI-D: 1 port for main display

RGB

1 port for VDR or RGB monitor

Data sentences

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

Output

ABM, ACK, ALC, ALF, ALR, ARC, BBM, EVE, HBT, OSD, RSD, TLB, TLL, TTD, TTM, VSD

6 POWER SUPPLY

Processor Unit

AC type

FAR-1518/1518-BB

100-115/220-230 VAC: 1.8/0.8 A (26 rpm), 2.2/1.0 A (48 rpm)

FAR-1528/1528-BB

100-115/220-230 VAC: 2.3/1.0 A (26 rpm), 2.6/1.2 A (48 rpm)

DC type

FAR-1518/1518-BB

24 VDC: 6.1 A max. (26 rpm), 7.2 A max. (48 rpm)

FAR-1528/1528-BB

24 VDC: 7.5 A max. (26 rpm), 8.6 A max. (48 rpm)

Marine display

MU-150HD: 12-24 VDC 4.5-2.2 A

MU-190: 100-240 VAC 0.7-0.4 A

Rectifier (RU-1746B-2/RU-3424, option)

100-115/220-230 VAC, 1 phase, 50/60Hz

Transformer (RU-1803, option)

440 VAC, 1 phase, 50/60Hz

7 ENVIRONMENTAL CONDITIONS

Ambient temperature

Antenna Unit

-25°C to +55°C (storage: +70°C or less)

Processor Unit

-15°C to +55°C

Marine display

-15°C to +55°C

Relative humidity

93% or less at +40°C

Degree of protection

Antenna Unit

IP56

Processor Unit

IP20 (IP22: option)

Control Unit

IP22

Marine display

IP56 (panel), IP22 (chassis)

Vibration

IEC 60945 Ed.4

EQUIPMENT LIST

Standard supply

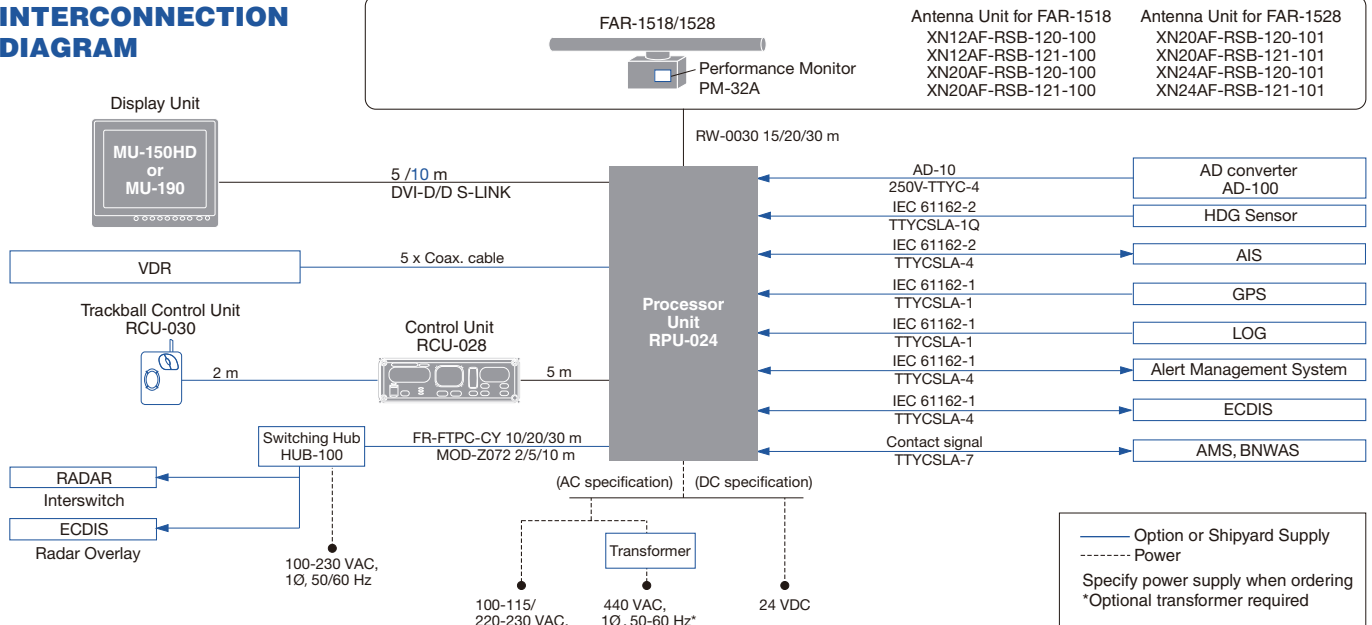
1. Display Unit MU-190 or MU-150HD (selectable)
2. Processor Unit RPU-024
3. Control Unit RCU-028
4. Antenna Radiator
FAR-1518/1518-BB: XN12AF/XN20AF
FAR-1528/1528-BB: XN20AF/XN24AF
5. Gear Box RSB-120/121
6. Transceiver RTR-100/101
7. Performance Monitor PM-32A
8. For Display Unit, DVI cable (5 m) DVI-D/D S-LINK 5M, not supplied with BB model
9. Standard Spare Parts and Installation Materials

Optional supply

1. Trackball Control Unit RCU-030
2. AD Converter AD-100
3. Stepdown Transformer Unit RU-1803
4. AC-DC Power Rectifier
PR-240/PR-850A/RU-3423/RU-1746B-2/RU-3424
5. Radar signal cable (1 m/5 m/10 m/15 m)
RW-4864 1M/RW-4864 5M/RW-4864 10M/RW-4864 15M
6. For Display Unit, DVI cable (10 m) DVI-D/D S-LINK 10M
7. Switching Hub HUB-100

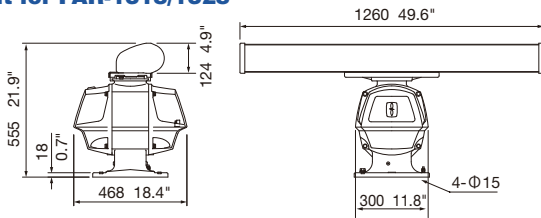
INTERCONNECTION DIAGRAM

Antenna Unit (Specify when ordering)

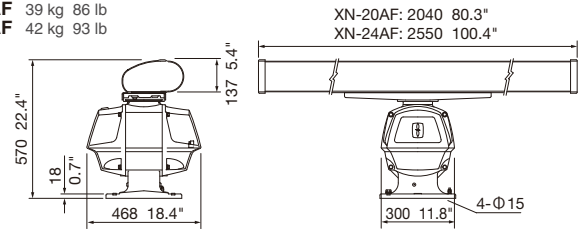


Antenna Unit for FAR-1518/1528

XN12AF
33 kg 73 lb

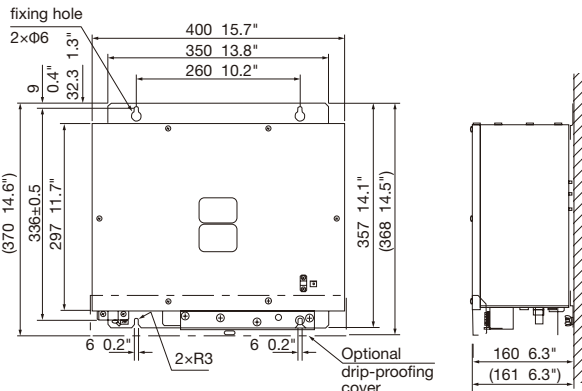


XN20AF 39 kg 86 lb
XN24AF 42 kg 93 lb



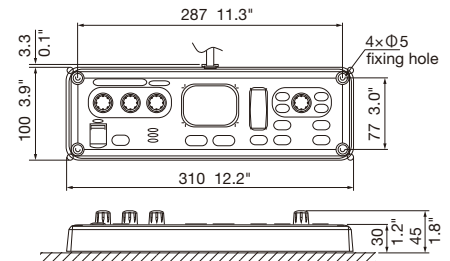
Processor Unit RPU-024

DC 6.2 kg 13.7 lb
AC 6.8 kg 15.0 lb



Control Unit RCU-028

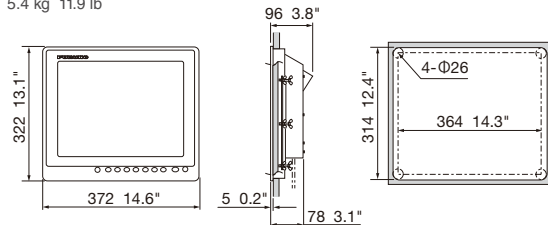
1.2 kg 2.6 lb



Display Unit

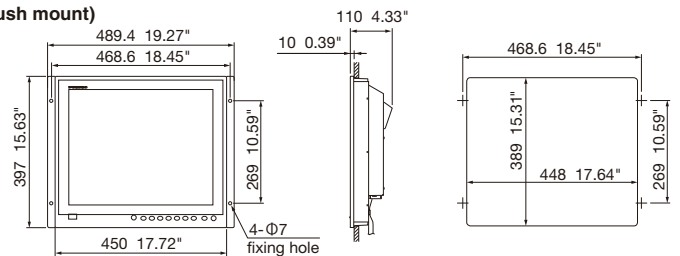
MU-150HD (Flush mount)

5.4 kg 11.9 lb



MU-190 (Flush mount)

8.8 kg 19.4 lb



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