Enhanced dynamic range for a more complete EAV (Echo Average) Function!

The EAV determination technology has been taken to the extreme by integrating wide-range dynamic image correlation techniques. Despite being a digital Radar, all echoes, from the weakest to the strongest, are displayed with richer shades.

Target Analyzer™

Furuno’s unique Target Analyzer™ function helps to find targets in high noise areas (rain/snow), or where there is interference from sea clutter.
Automatic Clutter Elimination (ACE)

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

Compared to the other two images on the right, the ACE function allows near-total suppression of noise and other unwanted echoes, while reinforcing those of targets and landmasses. In addition to this smart suppression capability, and unlike the sea clutter reduction, ACE also recognizes ghost and other false echoes, allowing them to be eliminated.

Fast Target Tracking™

With Fast Target Tracking™, the FAR-22x8 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.

Chart Overlay

Plotter-related functions, such as ship’s path (own ship and others), destination settings, route registration, waypoints are all integrated.

It is possible to superimpose Radar and Plotter information on the same image to have an even more precise image containing all the most useful information.

InstantAccess Bar™ Provides immediate access to the functions you need

InstantAccess Bar™ contains shortcuts to menus for tasks (functions/actions) that are most frequently used by operators, providing quick access to the most critical functions.
The power to judge the situation at a glance with customizable TT and AIS displays

When these are previously set, AIS symbols can be displayed with different colors for each MMSI. It is also possible to change the name of the acquired targets and change their color or symbol.

*In the case of TT, it is possible to easily change the display by creating specific presets.

Solid State Radar model - NXT - specialized in target detection and maintainability (S-band only)

FURUNO Solid State Radar technology generates clear echo images, which allows users to obtain a clear picture of the area around their vessel, including weaker echoes from small craft. Moreover, a fan-less Solid State antenna dramatically reduces maintenance costs for the magnetron and CPU fan. Solid State Radar keeps almost same power ability as conventional magnetron radar according to low output power.

Well-designed controllers for stress-free operation

These control units are designed based on ergonomics. The RCU-031 Control Unit, specially designed for fisheries, incorporates all the main Chart Plotter functions and allows you to perform a variety of operations.

Refined antenna with high signal accuracy and excellent reliability

High image quality is achieved by the signal processor inside the antenna unit directly converting analog to digital signals before sending them to the main processor unit.

The new antenna shape suppresses aerodynamic drag and lightens the burden on the gear box. The gear box itself has also been redesigned. Decreased aerodynamic drag and DC brushless motor result in a very durable gear box that can be used for prolonged period of time.
### Specifications

**Antenna Radiator**
- **1. Type**: Slotted waveguide array
- **2. Beam width and sidelobe attenuation**

<table>
<thead>
<tr>
<th>Radiator type</th>
<th>X-Band</th>
<th>S-Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>4 ft</td>
<td>6.5 ft</td>
</tr>
<tr>
<td>Horizontal beam width</td>
<td>1.9°</td>
<td>1.23°</td>
</tr>
<tr>
<td>Vertical beam width</td>
<td>20°</td>
<td>25°</td>
</tr>
<tr>
<td>Sidelobe within ±10°</td>
<td>-24 dB</td>
<td>-28 dB</td>
</tr>
<tr>
<td>Sidelobe within ±20°</td>
<td>-30 dB</td>
<td>-32 dB</td>
</tr>
<tr>
<td>Sidelobe outside ±20°</td>
<td>-32 dB</td>
<td>-32 dB</td>
</tr>
<tr>
<td>Sidelobe outside ±20°</td>
<td>-24 dB</td>
<td>-24 dB</td>
</tr>
</tbody>
</table>

- **3. Polarization**: Horizontal
- **4. Rotation**: 24 rpm or 42 rpm (for high speed craft)
- **5. Wind load**: 10 lbf relative
- **6. De-icer (option)**: On: when temperature goes down to 0°C
  - Off: when temperature goes up to +5°C

**Transceiver**
- **1. TX Frequency and modulation**
  - X-band (Magnetron): 9410 MHz ±30 MHz, PON
  - S-band (Solid state): CH1: PON: 3043.75 MHz/ QON: 3063.75 MHz ±5 MHz or CH2: PON: 3053.75 MHz/ QON: 3073.75 MHz ±5 MHz
- **2. Output power**
  - FAR-2218-BB: 12 kW
  - FAR-2228-BB: 25 kW
  - FAR-2238S-BB: 30 kW
  - FAR-2238S-NXT-BB: 250 W (equivalent to magnetron radar 30 kW)
- **3. Range scale, Pulse Repetition Rate and Pulseshape**

<table>
<thead>
<tr>
<th>Range scale (NM)</th>
<th>3000°</th>
<th>3000°</th>
<th>1500°</th>
<th>1200°</th>
<th>1000°</th>
<th>600°</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRR (Hz approx.)</td>
<td>0.125</td>
<td>0.25</td>
<td>0.5</td>
<td>0.75</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**Solid state radar**: FAR-2238S-NXT-BB

<table>
<thead>
<tr>
<th>Range scale (NM)</th>
<th>2400°</th>
<th>2400°</th>
<th>1500°</th>
<th>1000°</th>
<th>600°</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRR (Hz approx.)</td>
<td>0.125</td>
<td>0.25</td>
<td>0.5</td>
<td>0.75</td>
<td>2</td>
</tr>
</tbody>
</table>

**Processor Unit**
- **1. Minimum range**: 22 m
- **2. Range discrimination**: 26 km
- **3. Range accuracy**: 1% of the maximum range of the scale in use or 10 m, whichever is the greater
- **4. Bearing discrimination**
  - X-band: 2.1° (XN12CF), 1.5° (XN20CF), 1.2° (XN24CF), S-band: 2.8° (SN24CF), 2.5° (SN30CF), 2.0° (SN36CF)
- **5. Bearing accuracy**: ±1°
- **6. Range scale and Range ring interval (RRI)**

| Range scale (NM) | 0.125 | 0.25 | 0.5 | 0.75 | 1 | 2 | 3 | 4 | 6 | 8 | 12 | 16 | 24 | 32 | 48 | 60 |
|------------------|------|------|------|------|---|---|---|---|---|---|----|----|----|----|----|----|---|
| RRI (NM)         | 0.025 | 0.05 | 0.1 | 0.25 | 0.5 | 0.75 | 1 | 1.5 | 2 | 3 | 4 | 6 | 8 | 12 | 16 | 24 | 32 |

**Power Supply**
- **1. Processor unit (w/ antenna unit)**
  - FAR-2218-BB: 100-230 VAC: 2.2-1.1 (2.8-1.4) A, 1 phase, 50-60 Hz or 24 VDC: 6.4 A (9.9 A)
  - FAR-2228-BB: 100-230 VAC: 2.6-1.3 (3.9-1.7) A, 1 phase, 50-60 Hz or 24 VDC: 10.2 A (13.7 A)
  - FAR-2238S-BB: 100-230 VAC: 3.9-1.7 (6.6-2.8) A, 1 phase, 50-60 Hz
  - FAR-2238S-NXT-BB: 100-230 VAC: 3.0-1.5 (5.8-2.6) A, 1 phase, 50-60 Hz
- **2. HUB (option)**: 100-230 VAC: 0.1 A max. 1 phase, 50/60 Hz
- **3. De-icer (option)**: 100-220-230 VAC: 2.6/1.3 A, 1 phase, 50-60 Hz

### Environmental Conditions
- **1. Ambient temperature**
  - Antenna unit: -25°C to +55°C (storage: -25°C to +70°C)
  - Indoor units: -15°C to +55°C (storage: -20°C to +70°C)
- **2. Relative humidity**: 93% or less at +40°C
- **3. Degree of protection**
  - Antenna unit: IP66
  - Processor unit: IP22
  - Control unit: IP20 (RCU-014/015/016), IP22 (RCU-031)
  - HUB: IP20 (HUB-100), IP22 (HUB-3000)
- **4. Vibration**: IEC 60945 Ed.4
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