20.1" LCD SCREEN
X/S-BAND RADAR

Models FR-2115-B/2125-B/2135S-B

- Wide viewing angle LCD screen
- 12 and 25 kW T/R up X-band, 30 kW S-band
- Powerful processor with high-speed, high-density gate array and sophisticated software
- Proven cast aluminum scanner and stylish streamlined antenna
- Complies with IMO and IEC standards
- Easy operation by a combination of discrete keys, rotary controls, and menu operation, all logically arranged and configured
- Reliable CPA and TCPA warning in any plotting mode, accurate target data
- Optional 42 rpm X-band and 45 rpm S-band scanners for High Speed Craft
The new LCD screen radar FR-21x5-B Series consist of a 20.1" LCD display, processor unit, control head and proven antenna unit. This series radars comply with IMO Res MSC.64(67) Annex 4 for shipborne radar and A.823 (19) for ARPA performance (except display size).

The equipment is available in a variety of configurations: 12, 25 or 30 kW output, short or long antenna radiator, 24 or 42 rpm X-band and 21 or 45 rpm S-band scanner, with standard electronic plotting facility and optional Automatic Radar Plotting Aid (ARPA). The automatic plotting is essential to reduce the workload of ship personnel and to improve the standard of collision avoidance.

The 20.1" LCD screen provides an effective diameter of 275 mm. Radar echoes are presented in a selected color with a day or night background color for easy observation under all lighting conditions. Different colors are assigned for marks, symbols and texts, for user-friendly operation.

The control head has logically arranged controls in a combination of push keys, rotary controls and a well-organized menu structure, and can be separated from the display unit via a flexible cable.

Operational features include all functions required by the IMO and IEC, such as Head-up/Course-up/ North-up orientation, parallel index lines, True Motion, sensor status message for compass, SDME, GPS and other electronic position-fixing systems, wind parameters, depth sounder data, etc. interfaced in IEC 61162.

Other features include two VRMs, range marker on the EBL, two EBLs with capability of offcentering and instant flipback, custom macro keys, multiple pulselengths, storage of operator-created maps, optional chart cards and the RP-26 VideoPlotter module.
and proven antenna give outstanding performance to demanding mariners

Radar Plotting Facilities

Target detection is enhanced by sophisticated signal processing techniques such as 16-level quantization, echo stretch, echo average, noise reducer, radar interference rejector.

The IMO Resolution MSC.64(67) Annex 4 defines 3 types of radar plotting facilities: Electronic Plotting Aid (EPA), Automatic Tracking Aid (ATA), and Automatic Radar Plotting Aid (ARPA). All these Plotting Aids generate CPA and TCPA and collision alerts, complying with all IMO and IEC standards. This series of radars provide IMO and IEC standards.

Chart Display

VideoPlotter RP-26 (optional)
The RP-26 offers the capability of superimposing the digitized chart over the real-time radar display. The chart may be instantly removed by a simple action (The radar display has priority over the chart). Photo to the right is produced by a simulator. Radar image in yellow tones, charts in blue with light brown in fill to display the radar images day and night.

Map Area: 0.125 to 96 nm
Latitude Limits: Between 85°N and 85°S
Plot Interval: 10, 30 s, 1, 5, 10, 30 or 60 min
Built-in Memory: 6,000 points for ships track and marks, 98 waypoints, 25 routes

Interconnection diagram
### Power Supply

**FR-2115-B/FR-2125-B/FR-2135S-B**

- **Model**: FR-2115-B/FR-2125-B
- **Rating**: 230 VAC, 24-32 VDC
- **Weight**: 96 kg, 212 lb

**FR-2135S-B**

- **Model**: FR-2135S-B
- **Rating**: 30 kW
- **Weight**: 90 kg, 198 lb

### Antenna

- **Type**: Slotted Waveguide Array
- **Beamwidth**:
  - X-band: 25°, 20°, 25°
  - S-band: 20°, 1.8°, 4.5°, 9°
- **Radiator Type**:
  - XN12AF: 1290 mm (50.8"")
  - XN20AF: 2060 mm (81.1"")
  - XN24AF: 2570 mm (101.2"")
- **Type**: XN20AF only
- **Beamwidth**:
  - X-band: 25°, 20°, 25°
  - S-band: 20°, 1.8°, 4.5°, 9°
- **Radiator Type**:
  - XN12AF: 1290 mm (50.8"")
  - XN20AF: 2060 mm (81.1"")
  - XN24AF: 2570 mm (101.2"")
- **Weight**: 3 kg, 6.6 lb

### Display

- **Type**: 20.1" (400 x 320 mm) multi-synchronized SXGA LCD (1280 x 1024 pixels)
- **Effective display diameter**: 275 mm
- **Screen View**: 150 points x 10 areas stored in PROM.

### Radar Map

- **Resolution**: Better than 1°
- **Range**: 1 % of range in use or 15 m, whichever is greater

### Interface

- **IEC 61162-1**
- **Input**: BWC, BWR, DBS, DBT, DPT, GGA, GLL, MTW, MWV, RMA, RMB, RMC, RTE, QSO, RSD, TTM, VBB, VDR, VH, VTG, VW, VWR, WPL, ZDA
- **Output**: TLL, RSD, TTM

### Specifications of FR-2115-B/2125-B/2135S-B

<table>
<thead>
<tr>
<th>Range (mm)</th>
<th>P/L (µs)</th>
<th>PRR (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.125, 0.25</td>
<td>0.07</td>
<td>3000</td>
</tr>
<tr>
<td>0.5</td>
<td>0.07/0.15</td>
<td>3000</td>
</tr>
<tr>
<td>0.75, 1.5</td>
<td>2 from 0.07/0.15/0.3</td>
<td>3000/1500</td>
</tr>
<tr>
<td>3</td>
<td>2 from 0.15/0.3/0.5/0.7</td>
<td>3000/1500</td>
</tr>
<tr>
<td>6</td>
<td>2 from 0.3/0.5/7.1/12</td>
<td>1500/1000</td>
</tr>
<tr>
<td>12, 24</td>
<td>2 from 0.5/7.1/12</td>
<td>1000/600</td>
</tr>
<tr>
<td>48, 96</td>
<td>1.2</td>
<td>600</td>
</tr>
</tbody>
</table>

### Performance Monitor PM-30 (X-Band), PM-50 (S-Band)

- **Max. 30 targets automatically acquired by electronic plotting aid**

### Equipment List

1. **Standard**
   - **Antenna Unit**: 1 unit
   - **Display Unit**: 1 unit
   - **Processor Unit**: 1 unit
   - **Control Head**: 1 unit
   - **Power Supply Unit**: 1 unit
   - **Installation Material & Spare Parts**: 1 set

2. **Optional**
   - **Auto Plotter ARP-26 (ARPA module)**
   - **VideoPlotter RP-26**
   - **Chart ROM Card for RP-26**
   - **RAM Card for RP-26**
   - **42 rpm Scanner for X-band or 45 rpm Scanner for S-band**
   - **Interswitch Box RJ-7**
   - **Gyro Interface**
   - **Plotting Facilities**: 150 points x 10 areas stored in PROM.
   - **Navigation Facilities**: Adjustment and display of CPA, TCPA, GZ, ACQ through various display modes.
   - **Display Unit**: Weight: 23 kg, 50.7 lb
   - **Control Head**: Weight: 3 kg, 6.6 lb
   - **Processor Unit**: Weight: 17 kg, 37.5 lb

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**Specifications Subject to Change Without Notice**