Multi-color High Performance

X/S-BAND BlackBox RADAR
DISPLAYING ARPA AND AIS TARGET INFORMATION

Models FAR-21x7-BB Series

- 12, 25 kW T/R UP X-band, 30 kW S-band
- Supports non-interlaced SXGA (1280 x 1024) monitors with DVI-D input
- Presentation of very high-quality radar image by employing new Digital Video Interface (DVI) techniques
- Advanced signal processing for improved detection in rough seas
- Up to four radar sets can be interconnected in the network without an extra device
- Standard ARPA plotting/tracking of 100 targets acquired automatically or manually
- Displays up to 1,000 AIS-equipped targets
- Easy operation by customizable function keys, trackball/wheel palm modules and rotary knobs

Photo: Control unit with optional monitor MU-155C
FURUNO’s FAR-21x7-BB series of X- and S-band BlackBox Radars are constructed with our finest commercial grade components and technology. These precision quality radar systems are designed for high end vessels and offer advanced target detection performance for safe navigation.

The BlackBox Radars work with virtually any size multi-sync SXGA (1280 x 1024) LCD or CRT monitor. Furuno also offers a premier line of high-quality LCD monitors that are a perfect compliment to the FAR-21x7-BB Radar series. FURUNO’s MU-155C is a high-resolution LCD monitor that features a variety of features and inputs, including 2 RGB analog, 1 DVI-D and 3 NTSC/PAL video inputs. Connecting a high-resolution SXGA monitor provides crisp radar images, which are presented in selectable colors with a day and night background for easy observation in any lighting condition. Different colors are assigned for marks, symbols and text for user-friendly operation.

Target detection is enhanced by employing sophisticated signal processing techniques such as echo stretch, echo average and anti-clutter functions. With useful functions including ARPA, AIS target display, target trail, chart overlay and radar map, the operator can improve navigation efficiency and safety while cruising.

The radar antenna is available with 4, 6.5, or 8 ft radiator. For the X-band, the rotation speed is selectable from 24 rpm for standard radar or 42 rpm for high speed craft (HSC). The S-band radar is available with the antenna radiator of 10 or 12 feet. The S-band radar assures target detection in adverse weather where an X-band is heavily affected by sea or rain clutter.

**Menu icons**
Various menu options can be easily selected with the use of the trackball and scroll wheel. All of the settings are assigned to icons on the screen, which can be easily selected with single-hand operation.

**Control Unit**
An ergonomically designed control unit features a trackball, scroll wheel and operational push keys all organized in a functional and logical layout. A well organized menu structure ensures that all operation can be executed by trackball operation.

**Photo: MU-155C**
The sunlight viewable MU-155C is a 15” Color TFT LCD monitor and is an ideal match for the FAR-21x7-BB series. The monitor features 2 RGB analog, 1 DVI-D and 3 NTSC/PAL video inputs. Use the NTSC/PAL input for picture in picture (PIP).

**Trackball Control Unit**
Use the Trackball Control Unit as a remote control for the main Control Unit, or as the main system controller for those helms with limited space.
The radar can be connected to an Ethernet network for a variety of user requirements. Each of X- and S-band radars can be interconnected without requiring extra options. Up to four radar sets can be interchanged in the network. In addition, the essential navigational information including the electronic chart, L/L, COG, SOG, STW, etc., can be shared in the network.

**AIS/ARPA**

A variety of navigational information, own ship status, radar plotting data, wind, water temperature and information from other shipborne sensors are displayed in the cells.

**Target Trails**

The target trails feature generates monotone or gradual shading afterglow on all objects on the display. This feature is useful to show own ship movement and other ship tracks in a specific fishing operation. The trail time is adjustable at 30 seconds intervals or continuous.

**Radar Map**

Up to 200 waypoints and up to 30 routes can be stored. Each route may contain up to 30 waypoints. A radar map is a combination of map lines and marks. The radar map has the capacity of 20,000 points for lines and marks.

**Chart Overlay**

This radar incorporates a VideoPlotter that allows the user to display electronic charts (Navionics and Furuno Charts), plot own and other ship's track, enable entry of waypoints/routes, and make a radar map. A chart may be overlaid with the radar image. Optional card reader required.
**SPECIFICATIONS OF FAR-21x7-BB Series**

### Antenna Radiators
1. Type: Slotted waveguide array
2. Beamwidth and sidelobe attenuation
   - **X-Band**
     - Beamwidth(H): 1.9°, 1.23°, 0.95°, 2.3°, 1.8°
     - Beamwidth(W): 20°, 20°, 20°, 25°, 25°
   - **S-Band**
     - S-band 10 ft radiator usable for a HSC

### Radar Display
1. Frequency: 9410 MHz ± 30 MHz
2. Output power: 25 kW
3. Pulsed length/PRR
   - Range scale (nm) | Pulsed length (µs) | PRR (Hz)
     - 0.125, 0.25 | 0.07 | 3000
     - 0.5 | 0.07, 0.15 | 3000
     - 0.75, 1.5 | 0.07, 0.15, 0.3 | 3000, 1500
     - 1.0 | 0.15, 0.3, 0.5, 0.7 | 3000, 1500, 1000
     - 2.0 | 0.3, 0.5, 0.7, 1.2 | 1500, 1000, 600
     - 12, 24 | 0.5, 0.7, 1.2 | 1000, 600
     - 48, 96 | 1.2 | 600
4. I.F. | 60 MHz, Logarithmic
5. Bandwidth: 40 MHz
6. Short pulse: 10 MHz
7. Long pulse: 3 MHz
8. ARP: Automatic tracking of all acquired targets
9. 100 targets
10. AIS Display (Data input from AIS is required)

### Power Supply
- 480 VAC, 3 ø, 50 Hz with RU-5466-1
- 220 VAC, 3 ø, 60 Hz with RU-5466-1
- 440 VAC, 3 ø, 60 Hz
- 110 VAC, 3 ø, 60 Hz

### Equipment List
1. **Standard**
   - Processor Unit RPU-013 1 unit
   - Control Unit RCU-014 or Trackball Control Unit RCU-015 1 unit
   - Antenna Unit with cable, 15/30/40/50 m 1 pc
   - Power Supply unit PSU-007 for FAR-2137S 1 unit
2. **Option**
   - Performance Monitor PM-31 for X-band, PM-51 for S-band
   - Remote Control Unit RCU-016
   - Gyro Interface GC-10
   - DVI-Analog RGB Conversion Kit OP03-180
   - RGB Connector DSUB-BNC-1 (for VDR)
   - Chart/Memory Card Interface Unit CU-200-FAR
3. **Electrical**
   - Transformer RU-1803/5466-1/5693/6522
   - Rectifier RU-3424/1746B
   - Pulselength/PRR
     - Long pulse: 3 MHz
     - Short pulse: 40 MHz
4. **Performance Monitor**
   - PM-31
   - PM-31
   - Performance Monitor PM-31
5. **Performance Monitor**
   - PM-51
   - PM-51
   - Performance Monitor PM-51

### Antenna Unit
- SN-12AF: 3765 148.2”
- SN-30AF: 378 14.9”
- SN-36AF: 378 14.9”
- XN-20AF: 2040 80.3”
- XN-24AF: 2550 100.4”
- XN-12AF: 1260 49.6”
- XN-20AF: 2550 100.4”
- XN-24AF: 2550 100.4”

### Processor Unit RPU-013
- 10 kg 22 lb

### Control Unit RCU-015
- 3.7 kg 8.2 lb

### Trackball Control Unit RCU-015
- 2.4 kg 5.3 lb

### INTERCONNECTION DIAGRAM
- Power Monitor
- Trackball Control
- INS VOYAGER
- GPS Navigator
- Gyro Compass
- Performance Monitor
- Remote Control Unit

**SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE**

04097Y Printed in Japan