

## 1. ANTENNA RADIATORS

- | Radiator type                   | X-band |        |        |        | S-band |
|---------------------------------|--------|--------|--------|--------|--------|
|                                 | XN5A   | XN12AF | XN20AF | XN24AF | SN36AF |
| Length                          | 10 ft  | 4 ft   | 6.5 ft | 8 ft   | 12 ft  |
| Beam width(H)                   | 0.75°  | 1.8°   | 1.23°  | 0.95°  | 1.8°   |
| Beam width(V)                   | 20°    | 20°    | 20°    | 20°    | 25°    |
| Sidelobe within $\pm 10^\circ$  | -26 db | -24 db | -28db  | -28 db | -24 db |
| Sidelobe outside $\pm 10^\circ$ | -30 db | -30 db | -32 db | -32 db | -30 db |

- |                     |   |
|---------------------|---|
| 3. Polarization     | Horizontal  |
| 4. Rotation         | FAR-2117(-BB)/2127(-BB)/2827: 24 rpm or 42 rpm<br>FAR-2137S(-BB)/2837S: 21 rpm (50 Hz)/26 rpm (60 Hz)/<br>45 rpm (HSC)<br>FAR-2827W: 24 rpm<br>FAR-2837SW: 21 rpm (50 Hz), 26 rpm (60 Hz), 45 rpm (HSC) |
| 5. Wind tolerance   | Relative wind 100 kt  |
| 6. De-icer (option) | On: When temperature goes down to +5°C<br>Off: When temperature goes up to +12°C  |

1. Frequency X-band: 9410 MHz  $\pm$ 30 MHz, S-band: 3050 MHz  $\pm$ 30 MHz
2. Output power FAR-2117(-BB)/2817: 12 kW  
FAR-2127(-BB)/2827/2827W: 25 kW  
FAR-2137S(-BB)/2837S/2837SW: 30 kW
3. Range, pulse repetition frequency (PRF), pulselength

PRF Freq (Hz)	Range																				
	0.125	0.25	0.5	0.75	1	1.5	2	3	4	6	8	12	16	24	32	48	96	120			
3000*	0.07μs																				
3000*			0.15μs																		
1500			0.3μs																		
1000								0.5μs													
1000								0.7μs													
600 (500**)										1.2μs											

\* 32 nm w/TT: 2200 Hz    \*\* For 96 nm

4. Duplexer Ferrite circulator with diode limiter for FAR-2117(-BB)/2127(-BB)/2137S(-BB)/ 2817/2827/2837S  
Ferrite circulator with TR limiter for FAR-2837SW

### 3. MONITOR UNIT

1. Screen Raster scan, daylight bright, yellow or green echoes in 32 levels

2. Display

	FAR-2107(-BB) series	FAR-2107 series	FAR-2107 series	FAR-2807 series
Size, model	17-inch color LCD, MU-170C	19-inch color LCD, MU-190	20.1-inch color LCD, MU-201CR	23.1-inch color LCD FAR-28x7: MU-231CR, MU-231
Display area (mm)	338 x 270	376.32 x 301.06	399.36 x 319.49	470.4 x 352.8
Resolution	1280 x 1024 pixels	1280 x 1024 pixels	1280 x 1024 pixels	1600 x 1200 pixels
Effective radar diameter	260 mm (H: 64 kHz; V: 60 Hz)	290 mm (H: 64 kHz; V: 60 Hz)	308 mm (H: 64 kHz, V: 60 Hz)	340 mm (H: 75 kHz, V: 60 Hz)
Viewable range	920 mm	1020 mm	1080 mm	1200 mm

3. Minimum range 22 m

4. Range discrimination 26 m

5. Range scales (nm), ring interval

Range (nm)	0.125	0.25	0.5	0.75	1.5	2	3	4	6	8	12
Ring interval (nm)	0.025	0.05	0.1	0.25	0.25	0.5	0.5	1	1	2	2
No. of rings	5	5	5	3	6	6	6	4	6	4	6

16	24	32	48	72	96	120
4	4	8	8	12	16	20
4	6	4	6	6	6	6

6. Range accuracy 1% of the maximum range of the scale in use or 10 m, whichever is greater

7. Bearing discrimination 0.98° (XN5A), 2.1° (XN12AF), 1.5° (XN20AF), 1.2° (XN24AF), 2.0° (SN36AF)

8. Bearing accuracy ±1°

9. Presentation mode Head-up, Cursor Gyro, North-up, Course-up, True Motion (sea or ground stabilization in True Motion)

10. Target tracking (TT) Auto or Manual acquisition: 100 targets in 0.2-24(32) nm  
Auto tracking on all acquired targets  
Tracking: 5/10 pts on all targets

11. AIS Capacity: 1000 targets, Tracking: 10 pts on all targets  
Time of vector: Off/3/1-50 minutes

12. Radar map 20,000 pts in radar mode, 6000 pts on IC card in chart mode

13. Acquisition zone 2 zones

14. Interswitch function Selectable from menu

### 4. INTERFACE

1. Heading signal input - Synchro signal (20-100 VDC, 20-135 VAC 50/60/400/500 Hz),  
- Stepper signal (20-100 V), built-in interface (option) required,  
- AD-10 format or IEC 61162-2

2. Speed log IEC 61162-1

3. AIS IEC 61162-2

4. Input data sentences ABK, ACK, ALR, BWC, BWR, DBK, DBS, DBT, DPT, DTM, GGA, GLL, HDT, MTW, MWV, RMB, RMC, RTE, THS, VBW, VDM, VDO, VDR, VHW, VTG, VWR, VWT, WPL, ZDA
5. Output data sentences ABM, ACK, ALR, BBM, OSD, RSD, TLB, TLL, TTD, TTM, VSD

## 5. POWER SOURCE

1. Monitor unit MU-201CR 24 VDC:2.3 A or 100-230 VAC: 0.7 A, 1 phase, 50/60 Hz  
MU-231CR 24 VDC:3.2 A or 100-230 VAC: 0.9 A, 1 phase, 50/60 Hz  
MU-231:1 00-230 VAC; 1.0-0.6 A, 1 phase, 50/60 Hz  
MU-190: 100-230 VAC; 0.7-0.4 A, 1 phase, 50/60 Hz

2. Processor unit FAR-2117(-BB)/2817:  
24VDC: 7.6A (8.5A), 100-115 VAC: 2.6A (3.0A),  
220-230 VAC: 1.6A (1.7A)  
FAR-2127(-BB)/2827:  
24 VDC: 8.8A (9.7A), 100-115 VAC: 3.0A (3.4A),  
220-230 VAC: 1.8A (1.9A)

( ): Value for 42 rpm antenna unit

FAR-2827W:  
100-115 VAC: 3.2A, 220-230 VAC: 1.6A

FAR-2137S(-BB)/2837S/2837SW:  
100-115 VAC: 3.0A, 220-230 VAC: 1.5A

3. Antenna unit S-band: 200/220/380/440 VAC, 3ø, 50/60 Hz

Model	Antenna voltage input (100 kt)				
	200 VAC, ø3, 50 Hz, 220 VAC, ø3, 60 Hz	380 VAC, ø3, 50 Hz, 440 VAC, ø3, 60 Hz	220 VAC, ø3, 50 Hz (HSC)	220 VAC, ø3, 60 Hz (HSC)	440 VAC, ø3, 60 Hz (HSC)
FAR-2137S(-BB)	3.0 A	1.5 A	3.5 A	3.5 A	1.7 A
FAR-2837S	3.0 A	1.5 A	-	-	-

4. Console 115/230 VAC, 1ø, 50/60 Hz
5. Transformer (option) Single phase: RU-1803 (440 VAC, 1 phase, 50/60 Hz)  
Triple phase: RU-5693 (100 VAC, 3 phase, 60 Hz)  
RU-6522 (220 VAC, 3 phase, 50 Hz)  
RU-5466-1 (440 VAC, 3 phase, 50 Hz)

## 6. ENVIRONMENTAL CONDITIONS

1. Ambient temperature  
Display/processor unit/ transceiver/control/power supply unit  
-15°C to +55°C  
Antenna unit -25°C to +55°C (storage +70°C)
2. Relative humidity less than 95% at 40°C
3. Degree of protection  
Display/processor/control/power supply unit: IPX0  
Monitor unit 170C Front panel: IP56, Rear panel: IP20  
MU-190, MU-231 IP22  
Antenna unit: IPX6
4. Vibration IEC 60945 Ed. 4

**7. COLOR**

1. Display unit (MU-201/231CR) Chassis: 2.5GY5/1.5, Panel: N3.0 (fixed)
2. Monitor units N2.5 (fixed)
3. Processor unit/ Power supply unit 2.5GY5/1.5.
4. Control unit N3.0 (fixed)
5. Antenna unit N9.5 (fixed)

**8. SWITCHING HUB HUB-100**

1. Access format CSMA/CD
2. Switching format Store and Forward
3. Transmission speed Semi-duplex: 10 Mbps/100 Mbps  
Full-duplex: 20 Mbps/200 Mbps
4. Necessary cabling 10BASE-T: Category 3 or higher STP cable  
100 BASE-TX: Category 5 or higher STP cable
5. Max. cable length 100 m
6. Ports 8 ports
7. Port functions All ports auto-MDI/MDIX compliant (straight/cross cable auto-recognition)  
EMC compliant (STP cable port)  
3 LED injectors (Link/Act, Full-duplex/Collision, 100/10 Mbps)
8. Environmental Conditions
  - Ambient Temperature -15 to +50°C
  - Relative Humidity 95% (at 40°C)
  - EMC IEC 60945
  - Degree of protection IPX0
9. Power source 100-230 VAC, 0.1A or less
10. Coating color N3.0