Chapter 3 Technical Specifications

3.1 Antenna specification

Model name	RA83/93	RA84/94	RA85/95
Aerial length	4 feet / 6 feet		
Peak power output	6 kW	12 kW	25 kW
Frequency	9410 +/- 30 MHz		
Beam width Horizontal	1.8^o / 1.2^o		
Vertical	22^o		
Side lobes Within +/- 10^o	Better than –23 dB		
Outside +/- 10^o	Better than –30 dB		
Rotation	24 r.p.m.		
Transmission pulse width	6 kW	12 kW	25 kW
S (Short pulse)	0.08 μs / 4000 Hz		0.08 μs/2000 Hz
M1 (Medium 1 pulse)	0.25 μs / 2000 Hz		0.3 μs / 1300 Hz
M2 (Medium 2 pulse)	0.5 μs / 1000 Hz		0.6 μs / 800 Hz
L (Long pulse)	1.0 μs / 500 Hz		1.2 μs / 500 Hz, 400Hz(96NM)
IF center frequency	60 MHz		
IF bandwidth	15 MHz (S, M1) / 3 MHz (M2, L)		
Noise figure	Better than 6 dB		
Operation in wind	100 knots as relative		
Water proofing grade	IPX6 (IEC 60529)		

3.2 Processor specification

Effective diameter	269 mm (at 18 inch LCD)
Resolution	1280 x 1024 pixels
Video level	8 levels
Presentation mode	Head-up, north-up, course-up and true motion
Range scale (NM)	1/8 1/4 1/2 3/4 1.5 3 6 12 24 48 64 (6 kW) 72 (12 kW) 96 (25 kW)
Rings interval (NM)	1/16 1/8 1/4 1/2 1 2 4 8 16 (6 kW) 12 (12 kW) 16 (25 kW)
Off-centering	Sweep origin can be moved to any point within 2/3 of the screen radius.
Trail display interval	Every scan, 15 sec, 30 sec, 1 min, 3 min, 6 min, 12 min and OFF
Alarm	Entry alarm [alarm range (Minimum 0.5 NM), depth and bearing can be varied]
EPA	Up to 10 targets can be plotted, 5 points for one target each

(Processor specification)

ATA (Option)	Display of acquire/track data of up to 10 targets and Guard Zone are available. Display of guard zone is also available (any alarm range, width and bearing can be set).
AIS data display	Symbols and data, up to 20 targets,
Data available for EPA and ATA	Speed, course, CPA, TCPA, distance, bearing and age (time elapsed since the first plot, applicable to EPA only).
Minimum detectable range	20 meters at 1/8 nm range
Range resolution	20 meters at 1/8 nm range
Range data accuracy	70 meters or 1% of the range scale selected, whichever is the greater.
Bearing data accuracy	+/-1^{o} maximum
Navigation data display	Data of own ship's position (latitude/longitude)

3.3 ATA Specification (Option)

Acquisition	Manual
Tracking	Automatic
Number of targets tracked	Up to 10 targets
Numerical data output	Distance, bearing, speed, course, CPA and TCPA
Alarm	Collision alarm and lost alarm
On screen display	Symbols (acquired target, tracked target, target with data display and lost target), target number and vectors.
Display mode	Relative and True
Tracking distance range	Up to 40.0 nm
ATA data output	To be taken via the DATA 1 connector on the processor rear panel. Signal level: RS422 Data format: IEC 1162-1

3.4 AIS specification (Option)

Number of targets displayed	Up to 20 activated targets and 20 sleeping targets
Numerical data indication	MMSI, CPA, TCPA, CSE/COG, STW/SOG
On screen display	Symbols, target number and vectors.
Indication limit range	1.0 to 6.5 nm
AIS data input	To be taken via the AIS connector on the processor rear panel. Signal level: RS422 Data format: IEC61162-2 Formatter: ALR, VDO, VDM

3.5 Serial data and sentence used

Serial data: IEC 61162-1 or NMEA 0183 ver 2.0

Sentence: BWC, GGA, GLC, GLL, HDT, RMB, RTE, VBW, VDR, VHW, VTG, WPL

3.6 Power Supply

Mains Input Voltage: 24 VDC / 32 VDC

Input Voltage Tolerance: 10.8 VDC – 41.6 VDC (for RA83/84/93/94)
21.6 VDC – 41.6 VDC (for RA85/95)

Input Power: 170 W nominal at 24 VDC

Transient Protection:

Specified to the requirements of IEC 60945 4th Edition.

Reversed polarity protection: Protected by the Main Fuse.

AC Operation

Rectifier Unit Type PS-010 is required.

Input voltage range: 115/230 VAC

Input voltage tolerance: +/- 10%

Input voltage frequency range: 47 to 63 Hz

Input Power: 220 W

3.7 Compass Safe Distance

Component Unit	Type Name	Standard	Steering
Antenna	RB717A/RW701A-04	1.4 m	0.95 m
	RB717A/RW701A-06	1.4 m	0.95 m
	RB718A/RW701A-04	1.4 m	0.95 m
	RB718A/RW701A-06	1.4 m	0.95 m
	RB719A/RW701A-04	1.2 m	0.65 m
	RB719A/RW701A-06	1.2 m	0.65 m
Processor	RP100A	0.6 m	0.4 m
Operation	RO100A	0.6 m	0.4 m

3.8 Environmental specification

To the requirements of IEC 60945 4th Edition. The measure environmental specifications are as follows:

(1) Temperature and humidity

	Operating temperature	Storage temperature	Humidity
Antenna	-25°C - +55°C	+70°C	93%+/-3% at +40°C
Display	-15°C - +55°C	+55°C	93%+/-3% at +40°C

(2) Vibration

2-5Hz up to 13.2 Hz: Amplitude +/-1mm +/-10% (Maximum acceleration 7m/s^2 at 13.2Hz)

13.2 Hz up to 100Hz: Maximum acceleration 7 m/s^2 constant

3.9 Mechanical specification

Dimensions: W (Width) x Depth x Height, Unit in mm

Weight: Unit in kg

Antenna:

RB717A/718A: 280 x 390 x 450, 23 kg (for 4ft system), 25 kg (for 6ft system)

RB719A: 280 x 470 x 450, 27 kg (for 4ft system), 29 kg (for 6ft system)

Aerial Swing circle: 1346 for 4 ft, 1970 for 6 ft

Processor:320 x 122 x 320, 5.5 kg

Operation: 354 x 130 x 49, 2 kg

[Antenna unit]

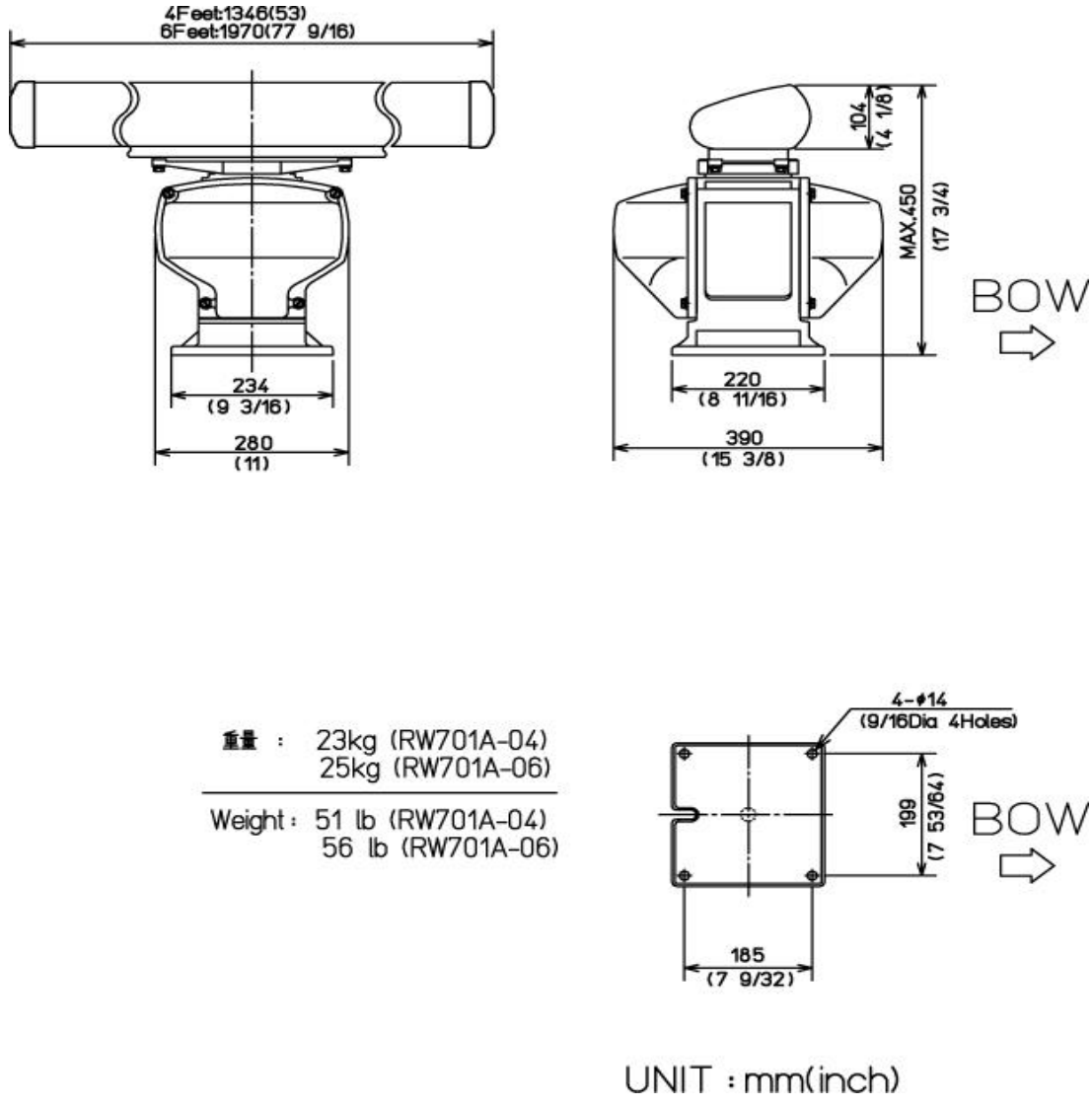

Figure 3.1 External dimensions of the Antenna unit, RB717A/718A

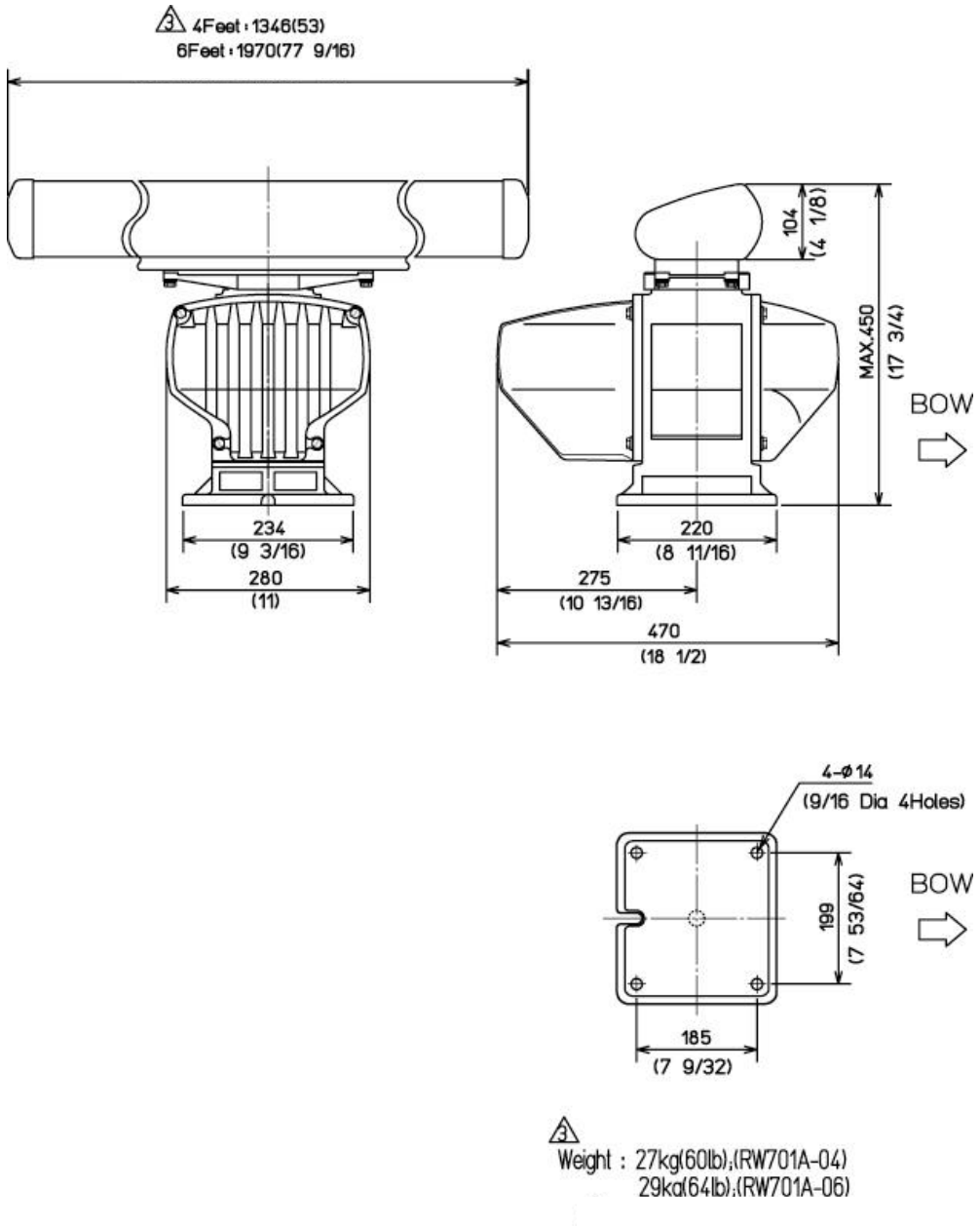

Figure 3.2 External dimensions of the Antenna unit, RB719A

[Processor unit]

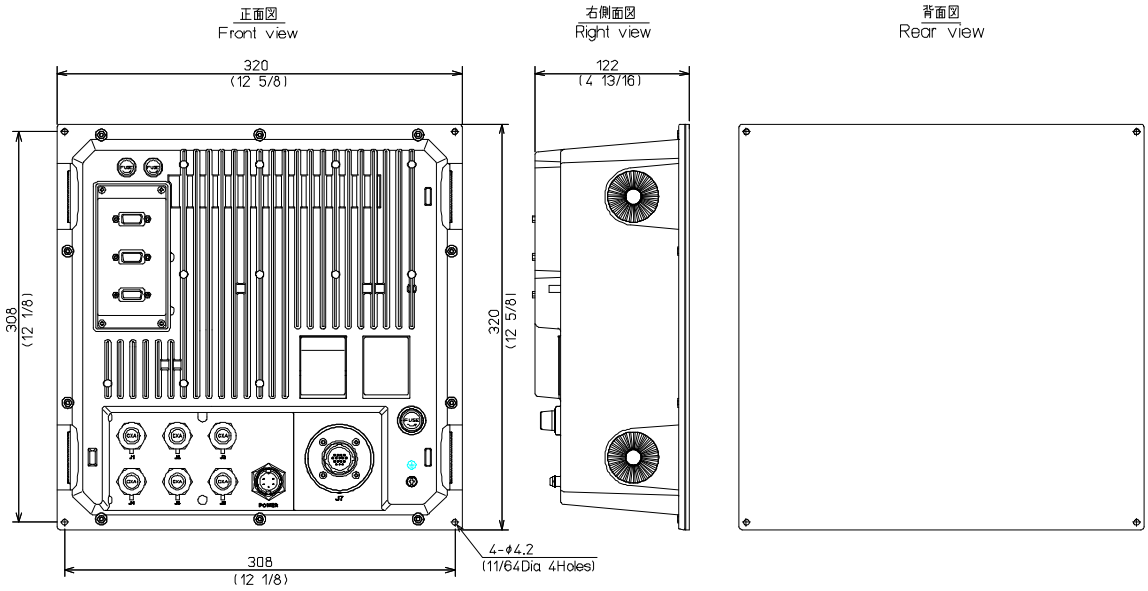

Figure 3.3 External dimensions of the Processor unit, RP100A

[Operation unit]

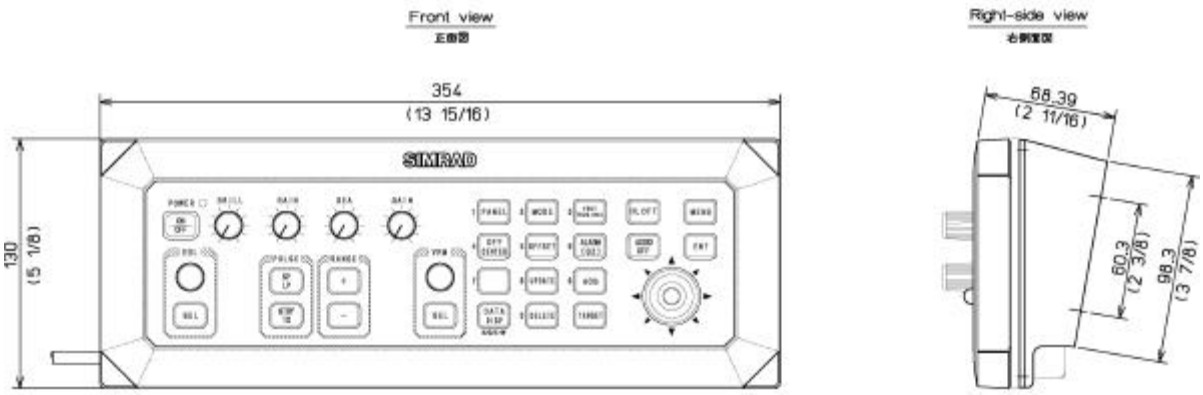

Figure 3.4 External dimensions of Operation Unit, RO100A