CHAPTER 8. PRODUCT SPECIFICATIONS

8.1 General

Type:		RA40C, RA41C and RA42C
Power supply voltage and power consumption		
••••Power supply voltage:		24Vdc (nominal) (10.2 to 41.6 Vdc)
••••Power consumption:		55 W or less (RA40C/41C) 70 W or less (RA42C)
Distance range:		0.125 to 24 NM, 9 ranges (RA40C) 0.125 to 36 NM, 10 ranges (RA41C) 0.125 to 48 NM, 10 ranges (RA42C) (Continual variable range also possible)
Distance resolution:		Within 30 m (RA40C) Within 25 m (RA41C/42C)
Distance accuracy:		Better than 0.9% of maximum range of the scale in use, or 8m, whichever is the greater
Minimum detecting distance:		Within 30 m (RA40C) Within 25 m (RA41C/42C)
Bearing resolution:		Within 7.5°(RA40C) Within 4.5° (RA41C) Within 3.0° (RA42C)
Bearing accuracy:		1° or less
Warm-up time:		2 minutes
Environment conditions		
•••Ambient temperature range	(S/U):	-25 to 55 °C
	(D/U):	0 to 55 °C
Humidity:		93% RH at +40 °C
Vibration:		(S/U): 3 mm(300 to 500 rpm) 1.2 mm(500 to 1500 rpm) 0.3 mm(1500 to 3000 rpm) 14.7m/s^2(1.5G) Resonance test
	(D/U):	3 mm(300 to 500 rpm) 0.75 mm(500 to 1500 rpm) 0.2 mm(1500 to 3000

rpm)

Wind resistance:		100 knots (max.)
Waterproof standard:	(D/U):	IPX-5
	(S/U):	IPX-6
Interconnecting cable:		30 m in max. (RA40C) 100 m in max. (RA41C/42C)
Noise:	(D/U):	65 dB or less
	(S/U):	65 dB or less (RA40C/41C)
	(S/U):	70 dB or less (RA42C)

8.2 Scanner Unit

Type: RB714A (RA40C)
RB715A (RA41C)
RB716A (RA42C)

Antenna type: Parabolic (RA40C)
Slotted-array (RA41C/42C)

Antenna characteristics
Beam width (horizontal): 6.0° ± 1.0° (RA40C)
3.9° (RA41C)
2.5° ± 0.3° (RA42C with 3ft antenna)
1.8° ± 0.2° (RA42C with 4ft antenna)
Beam width (vertical): 25° (typ.) (RA40C/41C)
22° (typ.) (RA42C with 3/4ft antenna)

Pulse width and peak power output:•

RA40C		RA41C/42C	
Pulse width (µsec)	Peak Power (kW)	Pulse width (µsec)	Peak Power (kW)
0.12 ± 0.02	1.5 (±50%)	0.08	4 (-50% to +20%)
0.3 ± 0.05	2.0 (±50%)	0.25	4 (-50% to +20%)
0.8 ± 0.1	2.0 (±50%)	0.8	4 (-50% to +20%)

Radio wave type and frequency: P0N, 9445 ± 30 MHz (RA40C)
P0N, 9410 ± 30 MHz (RA41C/42C)

Antenna revolution: 24 rpm ± 20%

Transmit/receive switching: Magic T and limiter type (RA40C)
Circulator and limiter type (RA41C/42C)

Intermediate frequency: 60 MHz (logarithmic amplifier)

Noise figure: 6.5 dB or less

8.3 Display Unit

Type: RF719A

Indication system: PPI, PPI+semi-3D,
Split radar range

Indicator: 10-inch color LCD(TFT)
640 x 480 dots
Four(4) levels

Cursor Control:	Analog cursor key and rotary encoder
VRM:	2 lines (One line can be offset.) Unit of distance can be selected from NM, KM, and SM.
EBL:	2 lines (One line can be offset.)
Display modes:	HU, HS, NU, CU, and TM
Off-center:	Can be 100% off-centered over the full range.
Guard zone:	Can be set at any desired distance and angle in any desired width. IN and OUT modes are available.
Stretch:	2 modes
Echo track:	15, 30 sec, 1, 3, 6 min. and continuous.
Other functions:	Interference rejection, Zoom, Sleep mode, Hold mode, Course error display, Parallel cursors, Stern marker, and Navigation data display mode
Panel brightness:	4 levels
Language support:	Chinese, Danish, English, French, German, Greek, Italian, Japanese, Korean, Norwegian, Portuguese, Russian, Spanish, Swedish, and Turkish

8.4 External Interface

NMEA0183:		2 channels (One standard channel; Optional cable is required for 2nd-channel connections)
	L / L	GGA, GLL, RMA, RMC
	Heading	HDT, HDG, HDM, HSC, VHW, VTG
	Speed	VHW, VTG, RMA, RMC
	Way point	RMB, BEC, BWC, BWR, BER, BPI
	Depth	DBT, DPT
	Course error	RMB, XTE

Seawater temperature MTW

Others (using optional cable):
External buzzer control output, Auxiliary indicator connecting signal output and input, Bow direction signal input(SIN/COS signals), and compass interface (10/12 bits serial)

8.5 Standard set

Display unit	1
Scanner unit	1
Display cover	1
Fuse	1 set
Interconnecting cable	1 (10m)
Power supply cable	1 (2m)
M10 hexagonal bolt	4 sets (for RA40C/41C)
M12 hexagonal bolt	4 sets (for RA42C)

8.6 Options

Interconnecting cable (15, 20, and 30 m for RA40C)	
Interconnecting cable (15, 20, and 25 m for RA41C/42C)	
Flush-mount installation kit	
Junction box for external connection (with cable 1.5m)	
Option connector kit	249J153058

8.7 External dimensions and weight

See APPENDIX

8.8 External Connection and function

X1 Connector for Option

pin No.	Name	function
1	NMEA2-A	NMEA ch2 data input(A)
19	NMEA2-B	NMEA ch2 data input(B)
2	GND	
20	EXBUZ+	Output for External Buzzer
3	EXBUZ-	Output for External Buzzer controlled ship's power output
21	VIDEO_IN	Video input for Monitor operation 0 to -1V negative video, Zi = 50ohm
4	VIDEO_OUT	Video output for External Monitor 0 to -1V negative video, Zo = 50ohm
22	GND	
5	TRIG_IN	Trigger signal input for Monitor operation 0 to 5V positive pulse, rising edge
23	TRIG_OUT	Trigger output for External Monitor 0 to 5V positive pulse, rising edge
6	SHF_IN	Heading signal input for Monitor operation 0 to 5V negative pulse, falling edge
24	SHF_OUT	Heading signal output for External Monitor 0 to 5V negative pulse, falling edge
7	AZI_IN	Bearing Pulse input for Monitor operation 0 to 5V positive pulse, rising edge
25	AZI_OUT	Bearing Pulse output for External Monitor

		0 to 5V positive pulse, rising edge
8	GND	
26	GYRCK+	Gyro Interface clock(+) input
9	GYRCK-	Gyro Interface clock(-) input apply 5V pulse between (+) and (-), isolated
27	GYRDT+	Gyro Interface data(+) input
10	GYRDT-	Gyro Interface data(-) input apply 5V pulse between (+) and (-), isolated
28	GND	
11	MARK_I	External Marker signal input, ex) Radar Buoy negative video, 0 to -1V Zi = 50ohm
29	+12V	External interface power, 100mA max.
12	SIN	Compass Interface for SIN/COS type
30	COS	Compass Interface for SIN/COS type
13	REF	Compass Interface for SIN/COS type SIN/COS signal: SIN = REF+/-1V, COS = REF+/-1V
31	--	not used
14	GND	
32	NMEA_OUT	NMEA data output, ex) MOB data, TARGET data