

Contents

For safety

CHAPTER 1 OVERVIEW.....	1
1.1 Introduction	1
1.2 Organization of This Manual	1
CHAPTER 2 USING RADAR FOR THE FIRST TIME.....	2
2.1 What is radar?	2
2.2 Characteristics of Radar Wave	3
2.3 Terms Specific to Radars	6
CHAPTER 3 INSTALLATION.....	9
3.1 Checking Inventory.....	9
3.2 Checking Power Supply Voltage	10
3.2.1 Power Supply Requirement	10
3.2.2 Fuse Replacement.....	10
3.3 Where to install the Scanner	11
3.3.1 Scanner unit.....	11
3.3.2 Display unit	11
3.3.3 Shifting away from obstacles.....	12
3.4 Installing Scanner Unit	13
3.5 Installing Antenna Unit	15
3.6 Installing Display Unit.....	15
3.7 Connecting Cables	16
3.7.1 Interconnecting cable (RA51 Radome scanner).....	16
3.7.2 Interconnecting cable (RA52/53/54/55 Open scanner)	18
3.7.3 Grounding wire.....	19
3.7.4 Power supply cable	20
3.8 Adjustment	20
3.9 Connecting External Equipment to Display Unit.....	21
3.10 Countermeasure for Electromagnetic Interference.....	21
3.11 When Discarding Your Radar	22
CHAPTER 4 FUNCTIONS AND NAMES.....	23
4.1 Key layout	23
4.2 Rear panel.....	24
4.3 Radar screen (Single screen)	24
4.4 Radar screen (Dual screen)	25
4.5 Radar screen (All PPI screen)	25
4.6 Radar screen (All PPI/PPI screen).....	26
4.7 Navigation screen	26

CHAPTER 5 OPERATION	27
Basic operation of Radar-----	27
5.1 Powering ON and OFF-----	27
5.2 Adjusting contrast and brilliance of the screen, and key-backlight-----	27
5.3 Basic Operations-----	28
5.3.1 Turning On and Off-----	28
5.3.2 Transmitting-----	28
5.3.3 Adjusting contrast and brilliance of the screen, and key-backlight-----	28
5.3.4 Changing the range scale (RANGE UP, RANGE DOWN)-----	28
5.3.5 Automatic adjustment (AUTO)-----	29
5.3.6 Sensitivity adjustment (GAIN)-----	29
5.3.7 Removing Sea clutter (STC)-----	30
5.3.8 Removing rain and snow clutter (FTC)-----	30
5.3.9 Man Over Board (MOB)-----	30
5.4 Soft Key Functions-----	31
5.4.1 Bearing measurement (EBL1)-----	31
5.4.2 Bearing measurement (EBL2)-----	31
5.4.3 Distance measurement (VRM1)-----	31
5.4.4 Distance measurement (VRM2)-----	31
5.4.5 Measuring the angle between two points (FL EBL2)-----	31
5.4.6 Measuring the distance between two points (FL VRM2)-----	32
5.4.7 Changing the Soft Key function grouping (NEXT)-----	32
5.4.8 Temporarily erasing heading marker (HDG OFF)-----	33
5.4.9 Using parallel cursor (///CSR)-----	33
5.4.10 Establishment of the indication of the RANGE RINGS (RINGS)-----	33
5.4.11 Variable range function (VAR RNG)-----	33
5.4.12 Changing the display modes (MODE)-----	33
5.4.13 Guard Zone (GZ)-----	33
5.4.14 Off Center (OFF-C)-----	33
5.4.15 Setting the SLEEP mode (SLEEP)-----	34
5.4.16 Tuning adjustment (TUNE)-----	34
5.4.17 Echo expansion (ST)-----	34
5.4.18 Displaying track of targets (TRACK)-----	35
5.4.19 Enlarging a selected area (ZOOM)-----	35
5.4.20 Increasing transmitter average power (S/L)-----	35
5.4.21 Switching the screen (SEL WIN)-----	35
5.4.22 Reversing the screen color (PICTURE)-----	36
5.4.23 Change to PPI screen (PPI)-----	36
5.4.24 Change to SEMI3D/PPI screen (SEMI3D)-----	36
5.4.25 Change to PPI/PPI screen (PPI/PPI)-----	36
5.4.26 Change to PPI/NAV screen (PPI/NAV)-----	36
5.4.27 Change to ALL PPI screen (ALL PPI)-----	37
5.4.28 Change to ALL PPI/PPI screen (ALL PPI2)-----	37
5.5 MENU Operation-----	38
List of MENU-----	38
5.5.1 Mark Menu-----	39
5.5.1.1 Bearing measurement (EBL1)-----	39
5.5.1.2 Determining distance (VRM1)-----	39
5.5.1.3 Bearing measurement (EBL2)-----	40
5.5.1.4 Determining distance (VRM2)-----	40
5.5.1.5 Measuring the distance between two points (VRM2, FL VRM2)-----	40
5.5.1.6 Measuring the angle between two points (EBL2, FL EBL2)-----	40
5.5.1.7 Erasing the heading marker temporarily (HDG OFF)-----	41
5.5.1.8 Using parallel cursors (///CSR)-----	41

5.5.1.9	Establishment of the indication of the RANGE RINGS (RINGS)	41
5.5.1.10	Variable range function (VAR RNG)	42
5.5.1.11	Output the position of the cursor location to another NMEA device (TARGET)	42
5.5.1.12	Determine the distance and bearing to a marker (+MK LINE)	42
5.5.2	Nav (Navigation) Menu	44
5.5.2.1	Changing display mode (MODE)	44
5.5.2.2	Guard Zone (GZ)	44
5.5.2.3	Off centering the screen display (OFF-C)	45
5.5.2.4	Setting the SLEEP function (SLEEP)	45
5.5.2.5	Activating Automatic Tracking Aid (ATA)	46
5.5.3	Echo Menu	47
5.5.3.1	Sensitivity adjustment (GAIN)	47
5.5.3.2	Removing Sea clutter (STC)	47
5.5.3.3	Removing rain and snow clutter (FTC)	48
5.5.3.4	Adjusting receiver tuning (TUNE)	48
5.5.3.5	Echo expansion (ST)	48
5.5.3.6	Displaying track of targets (TRACK)	49
5.5.3.7	Enlarging a selected area (ZOOM)	49
5.5.3.8	Increasing average transmitter power (S/L)	50
5.5.4	SETUP Menu	51
5.5.4.1	Selecting the screen display (WINDOW)	51
	Funtions Available On Each Screen	51
	Screen Modes and Operations	52
	(a) PPI Screen	52
	(b) PPI/SEMI3D Screen	52
	(c) PPI/PPI Screen	52
	(d) PPI/NAV Screen	53
	(e) ALL PPI Screen	53
	(f) ALL PPI/PPI Screen	53
	(g) MOB Screen	53
5.5.4.2	Switching screens on PPI/PPI screen (SEL WIN)	54
5.5.4.3	Reversing the screen (PICTURE)	54
5.5.4.4	Slave Display Operation	54
5.5.4.5	Fault Diagnosis by Self Check (SYSTEM CHECK)	54
5.5.4.6	Changing the custom setting (CUSTOM)	56
5.5.4.6.1	Changing the settings of the soft keys (KEY ASSIGN)	56
5.5.4.6.2	Changing the settings in PRESET1 screen	58
5.5.4.6.3	Changing the settings in PRESET2 screen	60
	HOLD function	61
5.5.4.6.4	Changing the content of priority for NMEA input (NMEA PRESET)	62
5.5.4.6.5	Initial adjustment settings (ADJUSTMENT)	62
	(1) Adjusting the distance (TIMING ADJ)	62
	(2) Adjusting the angle (HEAD ADJ)	63
	(3) Adjusting tuning circuit (TUNING CAL)	63
	(4) Adjusting the antenna height (ANTENNA)	64
	(5) Setting automatic GAIN circuit (GAIN)	65
	(6) Setting automatic STC circuit (STC)	65
	(7) Setting HARBOR STC circuit (HARBOR)	66

CHAPTER 6 MAINTENANCE AND INSPECTION 67

CHAPTER 7 TROUBLESHOOTING	69
7.1 Fault Diagnosis by Self-check	69
7.2 Inspecting Each Part	69
CHAPTER 8 PRODUCT SPECIFICATIONS	71
8.1 General	71
8.2 Scanner Unit	72
8.3 Display Unit	73
8.4 External Interface	74
8.5 Standard set	74
8.6 Options	75
8.7 External dimensions and weight	75
8.8 External connection and function	75
APPENDIX	76
1. RA51 GENERAL SYSTEM DIAGRAM	76
2. RA52 GENERAL SYSTEM DIAGRAM	76
3. RA53 GENERAL SYSTEM DIAGRAM	77
4. RA54 GENERAL SYSTEM DIAGRAM	77
5. RA55 GENERAL SYSTEM DIAGRAM	78
6. INTERCONNECTION DIAGRAM	79
OUTLINE DRAWING DISPLAY UNIT E43BG11000	
RA51 OUTLINE DRAWING SCANNER UNIT 23W72647	
RA52 OUTLINE DRAWING SCANNER UNIT E38BG52000	
RA53/54 OUTLINE DRAWING SCANNER UNIT E38BG62000	
RA55 OUTLINE DRAWING SCANNER UNIT E48BG10000	
FLUSH MOUNT PROCEDURE E43BG11020	

INDEX

RB715A TEMPLATE OF SCANNER MOUNTING HOLES (ACTUAL SIZE)