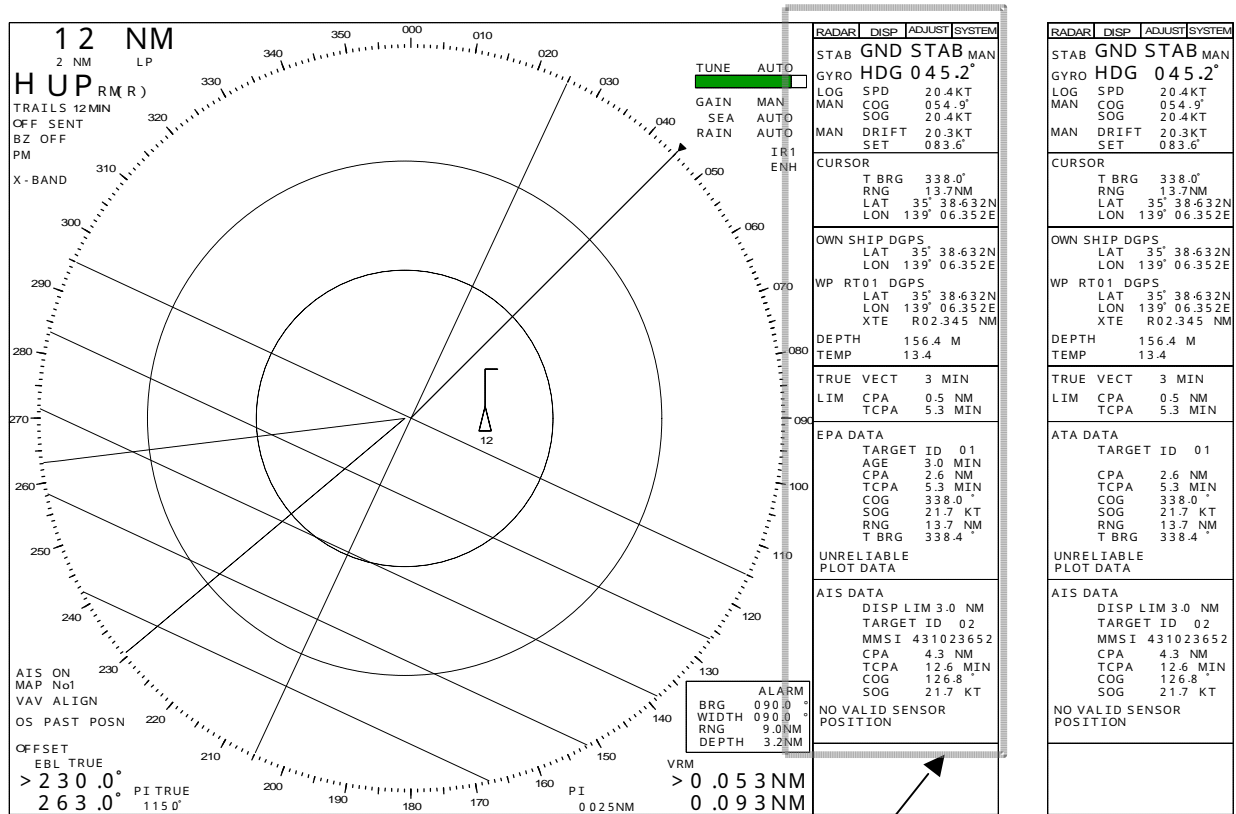


Chapter 6 Using The Menu



Menu Area

[Common key operation]

All menu-driven functions can be selected by the same key sequence. In the menu, there are four main menus available such as RADAR, DISP (Display), ADJUST, and SYSTEM.

The RADAR menu provides operational sub menus, used in setting up parameters for picture stabilizing mode and EPA/ATA functions.

The DISP menu provides sub menus that set on-screen marks, cursor, echo trails, plotting mode selection, etc. all used for screen display.

The ADJUST menu is protected from ordinary operations. This menu provides operational sub menus for adjustments and presets for the screen display, including video contrast controls for radar, markers, alpha-numeric characters, presetting manual/auto tuning functions, manual/auto GAIN, SEA, RAIN functions, etc.

The SYSTEM menu is also protected. The menu provides technical sub menus used for setting up various technical parameters of the radar system during installation or post repair adjustments.

To select the menu items, use the following procedures.

(1) Press the MENU key and use the Joystick to select an item. The selected item is highlighted. Subsequent pressing of the MENU key brings back to the normal operation.

- 1) Press the MENU key.
- 2) Highlight a desired menu by pressing the Joystick.
- 3) Highlight a desired sub menu or item by pressing the Joystick up or down.
- 4) Press the ENT key to activate the selection sequence or select the sub menu.
- 5) Press the Joystick up or down to select a status or parameter of the item selected. When the parameters are identified with numbers (1:PANEL, 2:MODE, 3:TRUE/REL, etc.) the numerical keypad can also be used for the selection.
- 6) Press the ENT key to fix the selection. The highlighted part is removed and its function becomes effective.
- 7) Press the Joystick up or down to select the item.
- 8) Press the ENT key to activate the selection sequence.
- 9) Press the Joystick up or down to select a status or parameter of the item selected. When the parameter is numerical, the numerical keypad can be used for the selection.
- 10) Press the ENT key to fix the selection.

NOTE: When you have finished setting the relevant menu functions, exit the menu by pressing the MENU key to make sure the settings become active.

6.1 RADAR Menu

The RADAR menu includes the setting and display items used for the ordinary radar operations.

6.1.1 Picture Stabilization

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
SEA STAB/GND STAB	Stabilizing mode indication	<u>SEA</u> GND (Note)

NOTE 1: The under lined is a default value.

NOTE 2: To change the selection, go to DISP=>SEA STAB/GND STAB.

SEA (Sea Stabilized mode): The radar picture is stabilized with respect to the water with signals supplied from a bearing sensor and a water speed sensor. The current direction (Set) and speed (Drift) are combined in the motion of targets on the screen.

GND (Ground Stabilized mode): The radar picture is stabilized with respect to the ground with the signals supplied from a bearing sensor and a speed sensor (either a water speed sensor or a ground speed sensor). When a water speed sensor is used, a tidal effect causes the deviation in picture stabilization. In such a case, the Set and Drift correction must be made by manual means or NMEA signal. Refer to Para 6.4.1.3 and 6.4.1.4 for details.

6.1.2 Ship's Heading

GYRO HDG

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
GYRO HDG	Gyro heading indication	None

NOTE: *This item is for display only.*

6.1.3 Ship's Speed

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
LOG/DOLOG SPD	Ship's Speed indication	LOG or DOLOG

LOG: Magnetic Log or Mechanical Log.

DOLOG: Doppler Log.

NOTE: *This item is for display only. To change the selection, go to SYSTEM => I/O SETUP => SEA STAB SPD or GND STAB SPD.*

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MAN SPD	Manual Speed	0 to 99.9 (KT)

NOTE: *To set the speed, go to SYSTEM => IO SETUP => SEA STAB SPD.*

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MAN COG	Course Over Ground indication	N.A.
SOG	Speed Over Ground indication	N.A.

NOTE: *This item is for display only.*

6.1.4 Set and Drift

When the GND STAB (Ground Stabilized) mode is selected via SYSTEM/IO SETUP/GND STAB SPD, the Set and Drift data is displayed.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MAN SET	Direction of the current	0 to 359.9 (Deg.)
DRIFT	Speed of the current	0 to 99.9 (KT)

To set or change setting, go to SYSTEM/IO SETUP/GND STAB SPD.

6.1.5 Cursor Position

<u>Indication</u>	<u>Meaning</u>
CURSOR T BRG	Cursor True or Relative(R) Bearing indication
RNG	Cursor Range
LAT	Cursor Latitude
LON	Cursor Longitude

NOTE: To use this function the heading and latitude/longitude data must be supplied from the gyro/log interface unit KSA-08A and a GPS or Loran-C navigator unit.



CAUTION:

- When no bearing data is entered from the gyrocompass, the latitude and longitude display will turn to "XXX.XX.XXX".
- The position data may deviate when a navigator unit is used in latitude above 70 degrees.

[Data Indication]

OWN SHIP DGPS	Own Ship Information (Input Device Name) (Select with DATA DISP key)
LAT	Latitude/ COG/LOP1
LON	Longitude/ SOG/LOP2
WP RT01 DGPS	Waypoint Information/Route Name/Input Device
LAT	Latitude/Bearing
LON	Longitude/Range
XTE	Cross Track Error
DEPTH K (W)	Depth

NOTE: K means the depth from the Keel, W means the depth from Water surface.

WATER TEMP	Water Temperature
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6.1.6 Vector Time

The vector indication mode can be set with the TRUE/REL key. A vector time can be set from the following menu.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TRUE (REL) VECT	Vector Indication Time	<u>OFF</u> , 30SEC, 1MIN, 3MIN, 6MIN, 12MIN, 30MIN, 60MIN

6.1.7 CPA Alarm Limit

This function is used to set up the warning limit at which the CPA and TCPA alarms are activated. Use the following procedure to set up.

- (1) Highlight the item and press the ENT key.
- (2) Move the Joystick up or down to select the value and press the ENT key.
- (3) Setting ranges for CPA and TCPA are as follows:
 - ATA CPA: 0.00 NM to 19.9 NM.
 - ATA TCPA: 1 Minute to 63 min.
 - AIS LIM CPA: 0 NM to 19.9 NM
 - AIS TCPA: 1 to 63 min.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
LIM CPA	Limit for CPA (NM)	0 to 19.9 (NM)
TCPA	Limit for Time to CPA (Min.)	1 to 63 (Min.)

6.1.8 Data indication

The following data are shown in the data window.

EPA/ATA DATA	Plot Mode (Select with DISP/NAV/PLOT MODE menu. ATA: option)
TARGET ID	ID for Operating Target
AGE	EPA Life
CPA	Closest Point of Approach
TCPA	Time to CPA
CSE/COG	Course/Course Over Ground
STW/SOG	Speed Through Water/Speed Over Ground
RNG	Range
T/R BRG	True or Relative(R) Bearing

AIS DATA	(ON/OFF with DISP/NAV/AIS menu)
LIM	Indicating Range ----- 1.0 to 6.5 (NM) AIS data will be displayed inside the range of LIM setting.
TARGET ID	Target ID for Data Indication ----- 1 to 20 Set the ship's ID to data display.
MMSI	Ship's ID
CPA	Closest Point of Approach
TCPA	Time to CPA
CSE/COG	Course/Course Over Ground
STW/SOG	Speed Through Water/Speed Over Ground

6.2 DISP Menu

The DISP menu has three sub menus; MARK, ECHO, and NAV. Each menu has the following sub menus.

6.2.1 MARK

The MARK menu has various markers such as VRM (Variable Range Marker), EBL (Electronic Bearing Line), Stern Marker and Cursor L/L (Position Cursor) that can be turned on or off. This menu also has the bearing mode control that affects the bearing indication of the EBL and vectors.

6.2.1.1 VRMs and EBLs

VRM 1 and 2, EBL 1 and 2, and PI (Parallel Index Line) can be set with the menu.

1st VRM	Variable Range Marker No.1	<u>OFF</u> , ON
2nd VRM	Variable Range Marker No.2	<u>OFF</u> , ON
1st EBL	Electronic Bearing Line No.1	<u>OFF</u> , ON
2nd EBL	Electronic Bearing Line No.2	<u>OFF</u> , ON
PI	Parallel Index Line Cursor	<u>OFF</u> , ON

NOTE: *The underlined items are default values.*

To change the bearing and interval of the parallel index line, use the following procedure:

- 1) Set the screen to normal display mode.
- 2) Keep pressing the EBL SEL key until the wedge symbol points to the letters PI, shown in the left bottom of the screen. In the same manner, press the VRM SEL key until the wedge symbol points to the letters PI in the right bottom of the screen.
- 3) Rotate the EBL control to move the PI in azimuth and the VRM control to change the interval of the index lines.

6.2.1.2 VRM Unit

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
VRM UNIT	Unit for VRM	<u>NM</u> , KM, SM

6.2.1.3 RANGE RINGS

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
RANGE RINGS	Range Rings	<u>OFF</u> , ON

6.2.1.4 BRG TRUE/REL (Bearing True or Relative)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
BRG TRUE/REL	Bearing Mode	<u>REL</u> , TRUE (True or Relative)

6.2.1.5 STERN MKR (Stern Marker)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
STERN MKR	Stern Marker	<u>OFF</u> , ON

6.2.1.6 CURSOR L/L (Cursor Position Indication)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
CURSOR L/L	Cursor Position (Latitude/Longitude)	<u>OFF</u> , ON

6.2.2 ECHO (Echo Menu)

The ECHO menu has various functions associated with radar echo presentations and signal processing as described below.

6.2.2.1 TRAILS (Echo Trail Setting)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TRAILS	Radar Echo Trails	<u>OFF</u> , EVERY, 15SEC, 30SEC, 1MIN, 3MIN, 6MIN, 12MIN

OFF: The TRAILS function is turned off.

EVERY scan: All ship's echoes are plotted on every picture scan.

15SEC, 30SEC, 1MIN, 3MIN, 6MIN and 12MIN: All ships' tracks are plotted every specified time, 15 sec, 30 sec, 1 min, 3 min, 6 min or 12 min.

6.2.2.2 IR (Interference Rejection)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
IR	Interference Rejection	<u>OFF</u> , 1, 2, 3, 4

OFF: The IR function is turned off.

1, 2, 3 and 4: The effect of interference rejection increases as the number increases.

6.2.2.3 ENH (Echo Enhancement)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
ENH	Radar Echo Enhance	<u>OFF</u> , ON

When the ENH is set to ON, the target echo, which signal level exceeds a predetermined level, are stretched towards range for better recognition.

6.2.2.4 TUNE (Receiver Tuning Mode)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TUNE	Tuning Mode	<u>AUTO</u> , MANUAL

6.2.2.5 MAN TUNE (Manual Tuning Set)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MAN TUNE	Manual Tuning	0 to 99

This function becomes effective when the manual-tuning mode is selected.

6.2.2.6 DAY/NIGHT (Day or Night Screen)

The screen color can be changed according to the lighting conditions as required.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
DAY/NIGHT	Day/Night screen color	<u>NIGHT</u> , DAY

NIGHT: Echoes in green with red characters and black background.

DAY: Echoes in yellow with white characters and dark blue background.

6.2.2.7 RADAR VIDEO (Radar picture color)

The radar picture can be changed to your requirements as follows:

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MONO	Mono color picture	Picture color changes automatically to yellow in DAY mode and green in NIGHT mode.
YELLOW	Yellow picture color	Fixed to yellow irrelevant to DAY or NIGHT.
GREEN	Green picture color	Fixed to green irrelevant to DAY or NIGHT.
MULTI	Multi picture color	Radar picture changes in 7 different colors according to its signal strength.

6.2.3 NAV (NAV Menu)

The NAV menu includes various navigational items such as the screen stabilization, potting function setting, AIS data indication, etc.

6.2.3.1 STAB (Screen stabilizing Mode)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
STAB	Stabilizing Mode	<u>SEA</u> , GND

6.2.3.2 PLOT MODE (Plotting Mode)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
PLOT MODE	Plot Mode	<u>EPA</u> , ATA

In the RA83/84/85/93/94/95 radar series, the Electronic Plotting Aid (EPA) function is installed as standard, while the Automatic Tracking Aid (ATA) unit is an optional item. To use the ATA function, the ATA module (PCB based) must be installed inside the processor unit.



CAUTION: *To use the EPA and ATA functions, the bearing and speed information must be applied from an external bearing/speed sensor.*

6.2.3.3 TARGET ALL CLEAR (Plotting Target All Clear)

Using this function, all target plots can be cleared. To do so, highlight the “TARGET ALL CLEAR” sign and press the ENT key.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TARGET ALL CLR	All plotted targets cleared	None

6.2.3.4 ID DISP (ID Number Display)

When this item is set to ON, the target number is indicated beside the target symbol mark.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
ID DISP	Target ID Display	<u>OFF</u> , ON

6.2.3.5 AIS (Automatic Identification Systems) Data Display

This function is available on option basis. For operating details, refer to Para. 6.8 “Operating the AIS.”

6.2.3.6 Navigation Display, Map function

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
NAV ALIGN MODE	Navigation Display Align Mode	<u>OFF</u> , MANUAL, SERIAL
MAP	Map Display	<u>OFF</u> , ON
MAP DATUM	Map Display Datum	<u>NONE</u> , WGS84, WGS72, SGS85, PE90
GPS DATUM REFERENCE LOCAL	GPS Datum	See NOTE

NOTE: *The GPS DATUM (REFERENCE or LOCAL) is shown only when SERIAL is selected as NAV ALIGN MODE.*

6.2.3.7 TM RESET (True Motion Center Reset)

When this function is activated, the picture center position is reset to the position designated by the SYSTEM/SYS SETUP/TM RESET menu.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TM RESET	True Motion Center Reset	No choice

6.2.3.8 OS PAST CRS (Own Ship's Past Course)

When this function is selected, the course own ship has traveled past is displayed in a line form plotted at a predetermined interval.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
OS PAST CRS	Own Ship's Past Course	<u>OFF</u> , EVERY, 15SEC, 30SEC, 1MIN, 3MIN, 6MIN, 12MIN

6.3 ADJUST MENU

The ADJUST menu has two sub menus; ADJUST and PRESET.

Details of each sub menu are as follows:

6.3.1 ADJUST

6.3.1.1 Screen Contrast Settings

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
VIDEO CONTR	Radar Video Contrast	0 to <u>99</u>

Changes the brilliance of the radar echo presentation.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MARKER CONTR	Marker Contrast	0 to <u>99</u>

Changes the brilliance of various markers, Parallel Cursor, Heading Line, Alarm Zone, and Cross Cursor.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
PLOT CONTR	Plot Contrast	0 to <u>99</u>

Changes the brilliance of plotting symbols and ID number used for the EPA and ATA functions.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
DATA CONTR	Data Contrast	0 to <u>99</u>

Changes the brilliance of texts and graphics outside the PPI screen.

6.3.1.2 Navigation Position Alignment

This function is used to move a user defined Navigation Line(s) or map to a desired position on the screen. To do so, perform the following procedure.

- (1) Set the NAV ALIGN MODE to MANUAL in the DISP/NAV menu. Highlight the prompt NAV ALIGN d-LAT or d-LON.
- (2) Press the ENT key to set the NAV ALIGN.
- (3) Press the Joystick up or down to set the align value and press the ENT key.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
NAV ALIGN d-LAT	Manual Navigation Alignment	-1.000 to 1.000
d-LON		-1.000 to 1.000

6.3.1.3 RADAR SENSITIVITY (Selecting Auto/Man Receiver Functions)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
AUTO SELECT	Auto Function Select	<u>AUTO1</u> , AUTO2, HARBOR

NOTE:

The AUTO function provides automated Gain, STC and FTC functions without the need of operator's control, giving an optimized radar picture while it is activated.

The **AUTO 1** is suited for coastal navigation. In this mode the picture is optimized for short and mid ranges with reduced noise and weather clutters.

The **AUTO 2** is used for open sea navigation. In this mode the sea and weather clutters are effectively reduced while the long-range performance is maintained.

The **HARBOR** mode is used for the navigation in a confined area such as a harbor, inland waterway, canal, etc. where hard and tall objects give strong radar reflections causing the picture to be saturated. Using this mode the Gain, STC and FTC are effectively introduced to minimize such strong echoes while the picture definition is maintained.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MANUAL SELECT		
GAIN	Auto/Manual Gain	<u>AUTO</u> , MANUAL
SEA	Auto/Manual STC	<u>AUTO</u> , MANUAL
RAIN	Auto/Manual FTC	<u>AUTO</u> , MANUAL

6.3.2 PRESET

This menu is protected from ordinary operations. To use this function, first turn off the radar set. Second, press and hold the MODE key and turn the equipment on. When

the standby condition is established, turn the radar on. This allows you to enter the PRESET menu and select the following menu functions.

6.3.2.1 AUTO TUNE (Auto Tune Preset)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
AUTO TUNE	Auto Tune Preset	0 to 99

This function is used to correct the deviated automatic tuning function. Use the following procedure to do:

- (1) Prior to presetting the AUTO TUNE, open the DISP/ECHO menu and set TUNE to AUTO.
- (2) Highlight AUTO TUNE in the ADJUST/PRESET menu, and press the ENT key.
- (3) Press the Joystick either up or down until the radar picture becomes the largest.
- (4) Press the ENT key to fix the setting.

6.3.2.2 MANUAL TUNE (Tuning Meter Center Preset)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MANUAL TUNE	Tuning Meter Center Preset	0 to 99

To make tuning meter preset, carry out the following procedure.

- (1) Open the DISP/ECHO menu and set TUNE to MANUAL and press the Joystick up or down to obtain the largest radar video presentation.
- (2) Press the ENT key to fix the setting.
- (3) Highlight MANUAL TUNE in the ADJUST/PRESET menu and press the ENT key.
- (4) Perform the manual tuning by pressing the Joystick up or down to let the tuning meter bar graph becomes the longest.
- (5) Press the ENT key to fix the setting.

6.3.2.3 GAIN AUTO/MANUAL (Gain Preset)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
GAIN AUTO/MANUAL	Gain preset	1 to 30

GAIN AUTO: This function is used to preset the reference receiver gain in AUTO mode. Once set, the receiver gain will be automatically controlled to a preset level, providing a constant optimized receiver gain even if the amount of video presentation and climatic condition change. Select a desired level by the Joystick and press the ENT key to fix the entry.

GAIN MANUAL: This function is used to preset the reference receiver gain in MANUAL mode. Once set, the receiver gain will be controlled with reference to the preset level. Select a desired level by the Joystick and press the ENT key to fix the entry.

6.3.2.4 SEA AUTO/MANUAL/HARBOR (STC Preset)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
SEA AUTO/MANUAL	STC Preset	1 to 16

SEA AUTO: This function is used to preset the effect of AUTO STC (Anti-Sea Clutter). Once set, the sea clutter echo will be reduced to a predetermined level, providing constant effect of Anti-Sea Clutter even if the sea state varies. Select a desired level with the Joystick and press the ENT key to fix the entry.

SEA MANUAL: This function is used to preset the Anti- Sea Clutter effect in manual mode. Before setting up the level, turn the SEA control to an appropriate position at which the Anti- Sea Clutter needs to be preset. Select a desired level by the Joystick and press the ENT key to fix the entry.

HARBOR: This function is used to preset the Anti-Sea Clutter effect used in a confined area such as a harbor, waterway, etc. Run your radar in a harbor for instance, and select the most suited level with the Joystick and press the ENT key.

6.3.2.5 RAIN AUTO/MANUAL (FTC Preset)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
RAIN AUTO/MANUAL	FTC Preset	1 to 16

RAIN AUTO: This function is used to preset the effect of AUTO RAIN. Once set, the clutter echo caused by the rain or snow will be reduced to a predetermined level, providing the constant Anti-Rain Clutter effect even if the weather conditions vary. Select a desired level by the Joystick and press the ENT key to fix the entry.

RAIN MANUAL: This function is used to preset the reference receiver Anti-Clutter Rain in MANUAL mode. Once set, the Anti-Clutter Rain will be controlled with reference to the preset level. Select a desired level by the Joystick and press the ENT key to fix the entry.

6.3.2.6 MBS (Main Bang Suppression)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
MBS	Main Bang Suppression	0 to 99

This function is used to minimize the center sun shown on the radar screen caused by

the split of the transmitting energy generated by the magnetron (transmitting tube).

6.3.2.7 TARGET LEVEL (Target Detection Level)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TARGET LEVEL	Target Detection Level	1 to 8

This function is used to set the signal level to be supplied to the ATA system. Use the following procedure to select a signal level.

(1) Highlight the TARGET LEVEL. The signal level increases in ascending order.

(2) Press the ENT key to set the ready to select status.

Press the Joystick up or down to select an appropriate level and press the ENT key to set up the level.

6.4 SYSTEM MENU

The SYSTEM menu has I/O SETUP, SYS SETUP, and BITE functions. Details of each function is as follows:

6.4.1 I/O SETUP

This function is used to select the data source supplied from a speed sensor and a bearing sensor.

NOTE: *This menu is protected from ordinary operations. To use this function, turn off the radar first. Press and hold the MODE key and turn the radar on again. When the standby condition is established, turn the radar on to enter the following menu functions.*

6.4.1.1 HDG INPUT (Heading Input)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
HDG INPUT	Heading Input	<u>GYRO</u> , HDT

GYRO: The compass data is taken from a gyrocompass via the gyro interface unit KSA-08A. Use the GYRO SET to set up the bearing.

HDT: The true bearing data will be automatically set in the incoming data sentence.

6.4.1.2 GYRO SET (Gyro Initial Setting)

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
GYRO SET	Gyro Initial Setting	0.0 to 359.9

NOTE: The GYRO HDG bearing data becomes “XXX.X” and the buzzer sounds in the following circumstances:

1. When no gyro signal is input.
2. When no power is applied to KSA-08A. Check the power supply line to KSA-08A for power failure, disconnection, etc.
3. When initial setting of the gyro bearing is not completed.

In case at least one condition has been met, the bearing stabilized picture in relative or true motion mode such as N UP RM (North Up Relative Motion), C UP (Course Up Relative Motion) or N UP TM (North Up True Motion) will be reset to H UP RM (Head Up Relative Motion) mode.

6.4.1.3 SEA STAB SPD (Water Speed Input)

This function is used to select the signal source of the water speed input. The available selections include; MAN (Manual setting), PULSE (Pulse signal supplied from a speed log) and the NMEA sentences (VHW and VBW).

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
SEA STAB SPD	Water Speed Input	MAN, <u>PULSE</u> , VHW, VBW

NOTE for NMEA sentences, VHW and VBW:

When the VHW sentence is selected, the Doppler Log or a speed log (Magnetic or Mechanical) can be selected according to the talker device name included in the sentence. When the VBW sentence is selected, only the Doppler LOG is selected.

The relation of the sentences and available device names is shown in the following table.

Table 6.1 Available NMEA sentences and talker devices

Sentence	Talker identifier	On-screen display	Device name
VHW	VD	DO LOG	Doppler LOG
	VM	LOG	Speed LOG, magnetic
	VW	LOG	Speed LOG, mechanical
VBW	VD	DO LOG	Doppler LOG

6.4.1.4 GND STAB SPD (Ground Stabilized Speed)

This function is used to select the signal source of the ground speed and set/drift inputs. The available selections include; MAN (Manual setting), PULSE (Pulse signal supplied from a speed log) and the NMEA sentences.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
GND STAB SPD	Speed stabilized over ground	See the following table.
SET / DRIFT	Set: The direction towards which current flows. Drift: The speed of a current	See the following table.

Table 6.2 Combinations of GND STAB SPD and SET/DRIFT

GND STAB SPD	SET/DRIFT	Notes
MAN	MAN	
PULSE	MAN	
VHW	MAN	
VHW	VDR	
VBW	Not needed	Set/Drift data included in the sentence
VTG	Not needed	Course and speed measured over ground

NOTE for NMEA sentences, VHW, VBW, VTG and VDR:

When the VHW sentence is selected, the Doppler Log or a speed log (Magnetic or Mechanical) can be selected according to the talker device name included in the sentence.

When the VBW sentence is selected, only the Doppler LOG is selected.

When the VDR sentence is selected, only the Doppler LOG is selected.

When the VTG sentence is selected, the Doppler LOG or the GPS receiver is selected.

Table 6.3 The relation of the sentences and available device names

Sentence	Talker identifier available	On-screen display	Device name
VHW	VD	DO LOG	Doppler LOG
	VM	LOG	Speed LOG, magnetic
	VW	LOG	Speed LOG, mechanical
VBW	VD	DO LOG	Doppler LOG
VDR	VD	DO LOG	Doppler LOG
VTG	GP	GP	GPS receiver
	VD	DO LOG	Doppler LOG

6.4.1.5 LOG PULSE (Log Pulse Rate)

This menu is used to set up the incoming log pulse ratio, which is fed to the Gyro Interface unit, type KSA-08A built into the processor unit.

The following pulse ratios can be selected: 100, 200, 400 and 500 pulses/nm.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
LOG PULSE	Log pulse count for 1 NM	100, 200, <u>400</u> , 500

6.4.1.6 GYRO (Gyro Gear Ratio)

This menu is used to set up the gyro gear ratio used, which is fed to the Gyro Interface unit, type KSA-08A. The following pulse ratios can be selected: 36X, 90X, 180X and 360X.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
GYRO	Gear Ratio for Gyro repeater	36, 90, 180, <u>360</u>

6.4.1.7 Serial Input Format

This menu is used to select the type of incoming serial signal sent from external equipment for each data input connector from DATA1 to DATA3. The following signal formats can be selected:

SERIAL GPS (DATA1: J4)	<u>IEC61162-1</u> , NMEA-0183, NMEA-0182, KODEN-717
SERIAL COMPASS (DATA2: J5)	<u>IEC61162-1</u> , NMEA-0183, NMEA-0182, KODEN-717
SERIAL LOG (DATA3: J6)	<u>IEC61162-1</u> , NMEA-0183, NMEA-0182, KODEN-717

6.4.1.8 SERIAL TRANSMIT (Serial Output Interval)

This menu is used to select the interval of transmission of outgoing signals.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
SERIAL TRANSMIT	Serial Output Interval	0.1 to 9.9 SEC

6.4.2 SYSTEM SETUP

This menu is used to select various functional parameters, which are specific to respective users and their operating conventions.

NOTE: *This menu is protected from ordinary operations. To use this function, turn off the radar se first. Press and hold the MODE key and turn the equipment on. When the standby condition is established, turn the radar on to enter the following menu functions.*

6.4.2.1 RANGE DISP (Range Scale Display)

This function is used to select the range scale notation system; decimal or fraction.

Example: DECIMAL: 0.125, 0.25... FRACTION: 1/8, 1/4....

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
RANGE DISP	Range Display Mode	<u>DECIMAL</u> , FRACTION

6.4.2.2 BUZZER

This function is used to turn on or off the electronic buzzer.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
BUZZER	Alarm Buzzer	OFF, <u>ON</u>

NOTE: *To momentary silence the audio alarm, press the AUDIO OFF key.*

6.4.2.3 DELAY (Transmission Timing Adjustment)

This function is used to adjust the transmission delay time in order to coincide the radar transmission timing with the start of the radar sweep. In practice, the Figure 4.7 in Chapter 4 illustrates the result of the setting, whether it is properly adjusted or not. To effectively perform this setting, find an appropriate object that is straight across from your radar.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
DELAY	Radar Echo Timing	<u>0</u> to 99

Carry out the following procedure to set up the proper transmission delay time.

- (1) Highlight DELAY and press the ENT key to set up the selection ready status.
- (2) Press the Joystick up or the down until a straight picture is shown on the screen.
- (3) Press the ENT key to exit.

6.4.2.4 HDG (Ship's Heading Adjustment)

This function is used to correct the ship's heading bearing to allow the entire radar picture to be set to correct bearings.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
HDG	Radar Echo Bearing Set	<u>0.0</u> to 359.9

Use the following procedure for correction.

First, take an optical bearing of a stationary target located within viewable range using a standard magnetic compass. Second, measure the target bearing on the radar. If the deviation is found more than +/- 1 degree on the screen, carry out the following procedure for correction.

- (1) Highlight HDG and press the ENT key.
- (2) Press the Joystick up or down to change the bearing, in order to set the radar echo bearing to coincide with the compass bearing within a specified accuracy.
- (3) Press the ENT key to fix the bearing.

6.4.2.5 HEIGHT (STC Law Selection)

This function is used to set the most suited Anti-Clutter Sea control law that corresponds to the height of a radar antenna from the sea level. The variable range of the figure is 1 to 9, which does not represent an actual height but an index of the law. Select the most suited figure while the radar is operated.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
HEIGHT	Antenna Height (STC curve)	<u>1</u> to 9

6.4.2.6 TM RESET (True Motion Reset Position)

This function is used to set the resetting point of the radar picture in the True Motion mode when the center of a radar picture reaches the predetermined boundary of the screen.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TM RESET	True Motion Reset Position	<u>OPPOSITE</u> , <u>CENTER</u>

There are two resetting modes available as, CENTER and OPPOSITE.

CENTER: The picture is brought back to the center of the radar screen.

OPPOSITE: The picture is brought back in parallel to the course taken to a point on the circle of 66 % of the screen radius. Refer to Figure 6.1 for detail.

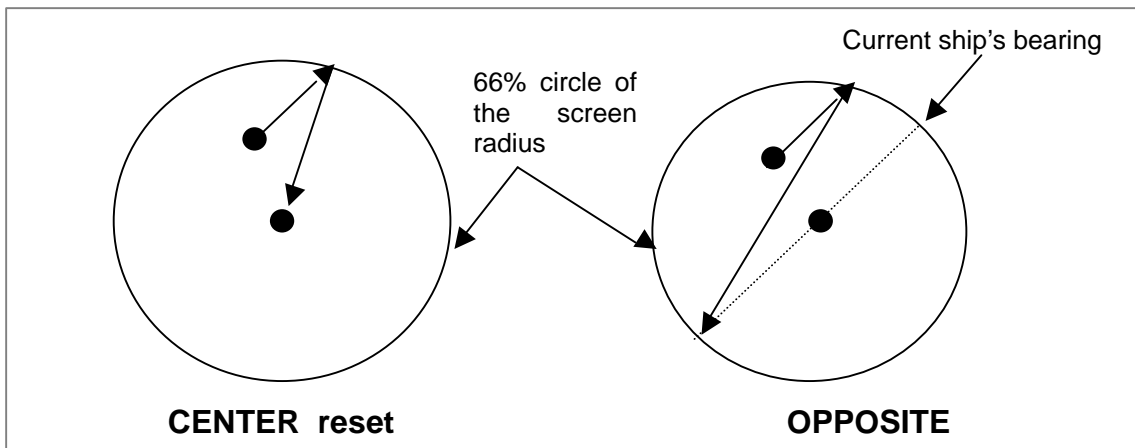


Figure 6.1 Resetting point in the True Motion mode

6.4.2.7 KEY SOUND (Key Click Sound)

This menu is used to turn on or off the key click.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
KEY SOUND	Key Click Sound	<u>OFF</u> , <u>ON</u>

6.4.2.8 BUZZER FREQ (Buzzer Sound Frequency)

This menu is used to set up the audio frequency of a key click. The frequency can be selected among the frequencies ranging from 100 Hz to 9999 Hz.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
BUZZER FREQ	Buzzer Sound Frequency[Hz]	100 to 9999

6.4.2.9 ALARM MODE (Alarm Zone Set Mode)

This menu is used to set up the alarm zone shape.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
ALARM MODE	Alarm Zone Set Mode	<u>VARIABLE</u> , FIXED

Selectable alarm zones are as follows:

VARIABLE: The alarm zone shape can be changed from a full circle to any form of semi-circles. The depth and angle of the alarm zone can be set using the EBL and VRM.

FIXED: The alarm zone can be selected from three different shapes, the 90 degree, 180 degree and full circle.

6.4.2.10 TRAIL MODE (Echo Trail Mode)

This menu is used to select the type of trail presentations.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
TRAIL MODE	Echo Trail Mode	<u>PAINT</u> , PLOT

PAINT: The ship's trail is displayed for the time specified by the operator. Once selected, the trail is displayed every picture scan for a specified time. After fully displayed within the time, the entire trail length is first shortened to 2/3 of a total length and then it continues to stretch to its full length. The PAINT is a default setting.

PLOT: The trail is plotted every specified time, leaving the ship's trail in a dot form.

6.4.2.11 OFF CENTER (Off-center Mode)

This menu is used to select the point of offset to which the center of the radar picture is shifted.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
OFF CENTER	Off-Center Mode	<u>CURSOR</u> , OPPOSITE

The available off center modes are as follows:

CURSOR: An entire radar screen can be shifted to any point within 66% of the screen radius.

OPPOSITE: An entire radar screen can be shifted downwards by 66% of the screen radius.

6.4.3 BITE (Built In Test Equipment)

NOTE: This menu is protected from ordinary operations. To use this function, turn off the radar first. Press and hold the MODE key and turn the radar on. When the standby condition is established, turn the radar on to enter the following menu functions.

6.4.3.1 ALARM TEST (Alarm System Test)

This function is used to verify that the alarm function is in normal order.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
ALARM TEST	Alarm System Test	<u>OFF</u> , ON

Carry out the following operation to perform this function.

- (1) Highlight the words ALARM TEST.
- (2) Press the ENT key to set the selection ready status.
- (3) Press the joystick down to select the ON sign.
- (4) Press the ENT key to fix the selection. The alarm test will start.
- (5) In approximately 10 seconds, various alarm messages will be shown and an audio alarm will be activated. (NOTE: NO audio alarm sounds if the BUZZER OFF status is activated)
- (6) To cancel the ALARM TEST function, set the ALARM TEST to OFF, or set the radar to standby mode once, and then transmit again.

6.4.3.2 ATA TEST (ATA Tracking Test Mode)

This function is used to test the ATA function.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
ATA TEST	ATA Tracking Test Mode	<u>OFF</u> , ON

When the ATA Test mode is selected, the following test conditions and display will be available on the screen.

- (1) Range scale: 6 NM
- (2) Ship's heading: 90 degrees
- (3) Test target speed: 12 knots
- (4) Test target bearing: 90 degrees
- (5) A small letter "x" will be shown near the test target as an identifier and a large letter "X" at the bottom of the screen, showing that the display is in the TEST mode.

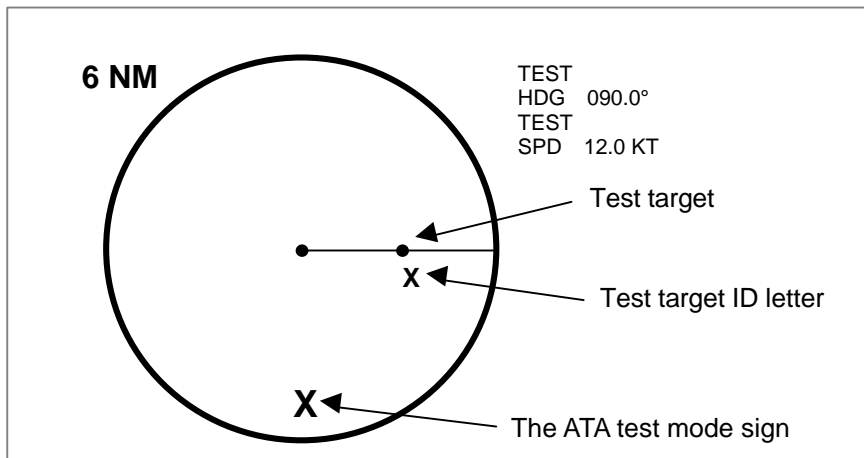


Figure 6.2 The ATA test mode display

(6) To perform the ATA test function, use the SYSTEM/BITE/ATA TEST menu.

6.5 MAINTENANCE MENU

This menu is protected from ordinary operation. To activate this function, press and hold the Mode Key and turn the unit on.

6.5.1 ANTENNA

The following maintenance test items will be shown:

<u>Items shown</u>	<u>Meaning</u>	<u>Normal indication (range)</u>
TUNING LEVEL	Tuning Level Indicator	10 to 20
TUNING VOLTAGE	Tuning Voltage Level Monitor	50 to 240
250V(HT)	250V monitor	100 to 180
MAG. CURRENT	Magnetron Current Monitor	5 to 240
P.M. RX	Performance Monitor Receiver Level	10 to 240
P.M. TX	Performance Monitor Transmitter Level	10 to 240
ANTENNA TYPE		1
ANTENNA MODE	Scanner Unit ID2	ID No. (See NOTE)

NOTE: ID number varies according to the transmission power level as follows:

7: 6 kW, 0: 12 kW, 5: 25 kW

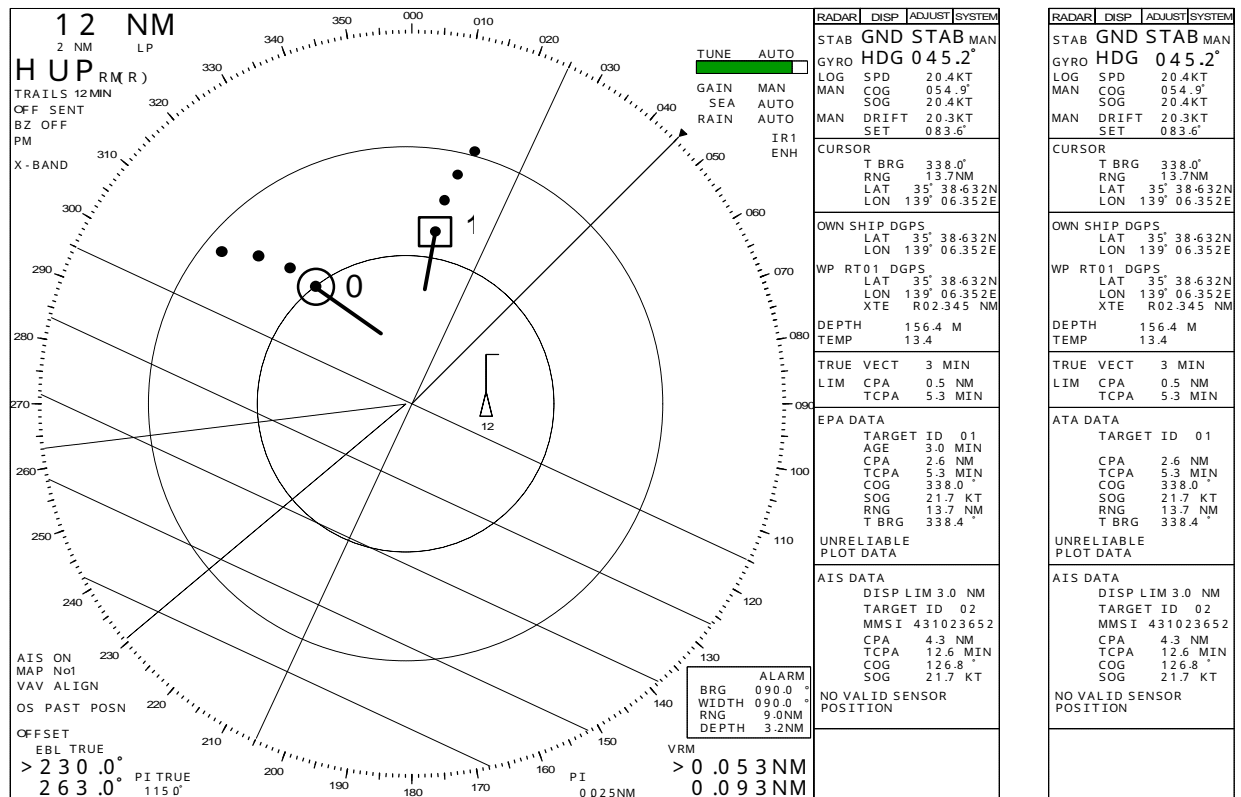
6.6 Operation of the EPA

The EPA (Electronic Plotting Aid) provides the information for collision avoidance by manually plotting the first and second positions of each target. These include: CPA (Closest Point of Approach), TCPA (Time to Closest Point of Approach), Ship's speed, Ship's course and Ship's vector

6.6.1 Using the EPA

Perform the following procedure to use the EPA function:

- (1) Move the Joystick to move the cross cursor to a target for plotting.
- (2) Press the ACQ key to acquire the target. The assigned target is braced with a dashed acquire mark with the figure 1 shown nearby.
- (3) After 30 seconds or more since the target has been acquired, plot the target again as a second plot by placing the cross cursor on it and pressing the ACQ key. A vector will be developed and the relevant data will be shown on the right side of the screen. (Refer to Figure 6.2)
- (4) Press the DELETE key to cancel the target tracking. The symbol of the target and data will be cleared.



6.6.2 CPA and TCPA

The definition of CPA and TCPA is shown in the Figure 6.3.

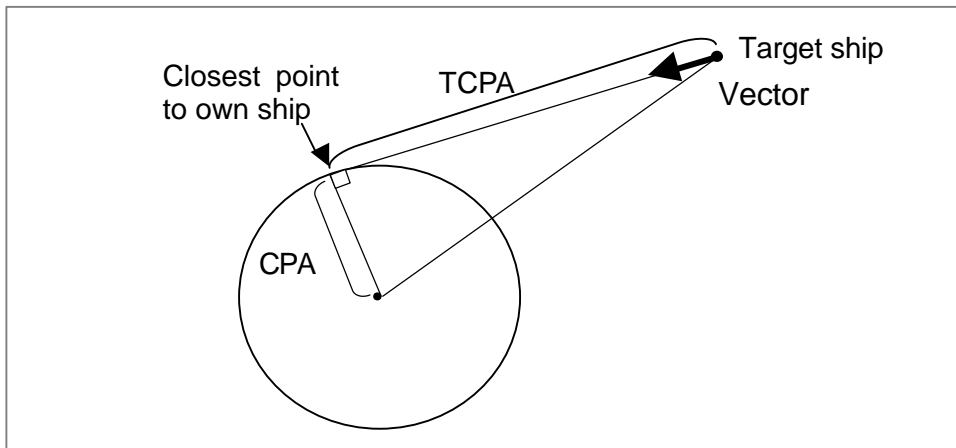


Figure 6.4 Definition of CPA and TCPA

6.6.3 EPA plotting on the screen

The EPA data is displayed for 10 minutes on the screen. Up to 5 plots are available. When the 6th plot is entered, plot 1 will be deleted automatically.

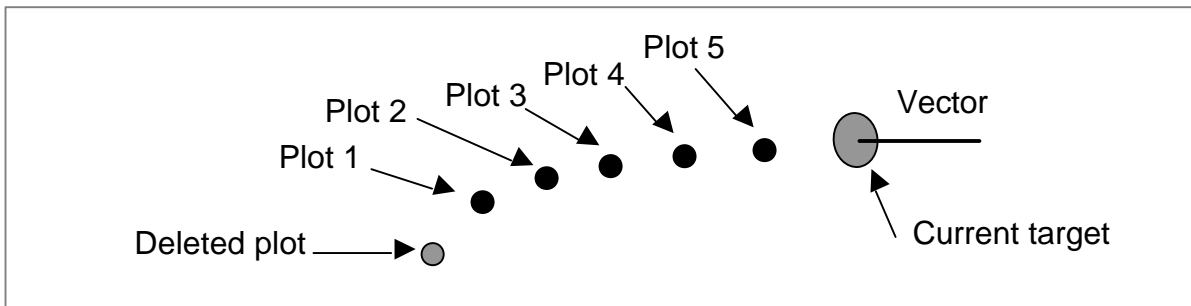



Figure 6.5 Plotting sequence

6.6.4 Alarm display

When 10 minutes has elapsed since a target has been plotted on the screen, the system judges that the reliability of the plot data is lost, and accordingly turns the audio alarm on together with the screen message "UNRELIABLE PLOT DATA" and the blinking symbol  shown. Responding to the audible alarm and the screen message, you must update the plot. If you leave the plotted data without updating for 15 minutes, all symbols and the data currently plotted on the screen will be automatically deleted.

6.6.5 Explanation of the EPA terms

TARGET ID:

The target ID number can be tagged on each displayed target from 1 to 10.

AGE:

The time elapsed from when a target is plotted. The unit is in minute(s).

CPA (Closest Point of Approach):

The closest distance of a plotted target to own ship. The unit is in nautical mile(s).

TCPA (Time to CPA):

The time required for a target reaching CPA.

CRS/COG (Course/Course Over Ground):

The course of a target plotted is shown. The course can be switched to true or relative by pressing the TRUE/REL key.

STW/SOG (Speed):

The true speed of a plotted target, can be switched to true or relative by pressing the TRUE/REL key.

VECT (Vector):

The vector time of a plotted target.

BRG (Bearing):

The bearing of a target, plotted in true or relative mode. The bearing display is referenced to own ship.

DIST (Distance):

The distance of a target plotted from own ship.

UNRELIABLE PLOT DATA:

A warning that means the assigned target plot is old and not reliable, suggesting you to update the plotting. When this display is shown, an audio alarm is activated. If you leave the plot not updated for 15 minutes after the last update, all symbols and data currently plotted will be deleted.

LIMIT CPA TCPA

This is a warning limit of CPA and TCPA. If the CPA and TCPA figures exceed the set up limit the assigned warning symbols flash and the audio alarm sounds. Set the warning limit with the RADAR/LIM CPA or TCPA menu.

6.6.6 VECT TIME (Selecting the Vector Time)

This function is used to set up the length of a vector that predicts the position of a target after preset time. Set with the RADAR/TRUE (REL) VECT menu.

6.6.7 EPA symbols

Acquisition symbols

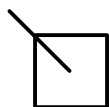
The symbol for the plotted target changes as follows according to the plotting status:



This symbol appears when a target is plotted for the first time.



This symbol appears when a target is plotted for more than two points. A vector develops and the target data can be displayed when its target number is assigned (highlighted).



This symbol appears when a target is plotted for more than two points with its target number assigned. The target data is shown in the right side of the screen.

Warning symbols

The following symbols are used in the EPA functions to notify the operator of a high-risk target or invalid plotting. These symbols will blink when they are shown.



This is a CPA alarm symbol that appears when a plotted target is predicted to infringe a predetermined CPA and/or TCPA range. The symbol blinks at an interval of 0.5 seconds. The data can be displayed by assigning the target number.



This is a CPA alarm symbol that appears when the relevant target number is assigned. The rest of the features are the same as above.



This is an Unreliable Plot symbol that appears when a target is not plotted over 10 minutes. The on-screen error message "UNRELIABLE PLOT DATA" will also appear on the screen. In approximately 15

minutes from when the symbol is shown and no further plotting is made, the symbol mark and audio-visual alarm will be turned off automatically.

6.6.8 WARNING LIMIT (Setting the Warning Limit of CPA and TCPA)

This function is used to set up the limit at which the warning alarm for CPA and TCPA is activated. Use the RADAR/LIM CPA and LIM TCPA menu. Setting ranges for CPA and TCPA are as follows:

CPA: 0.00 NM to 19.9 NM.

TCPA: 1 Minute to 63 Minutes

6.6.9 TARGET ALL CLEAR (Clearing all target plots)

Use the DISP/NAV/TARGET ALL CLR menu.

6.6.10 ID DISP (Displaying Target ID Number)

Using this function, the target ID number can be tagged on each displayed target. Use the DISP/NAV/ID DISP menu.

6.6.11 Correcting the latest plotting position

In case you find a wrong plotting and need to correct it, carry out the following steps:

- (1) Move the Joystick to move the cross cursor on to the new plot point.
- (2) Press the UPDATE key. Wrong plot will be corrected as shown below.

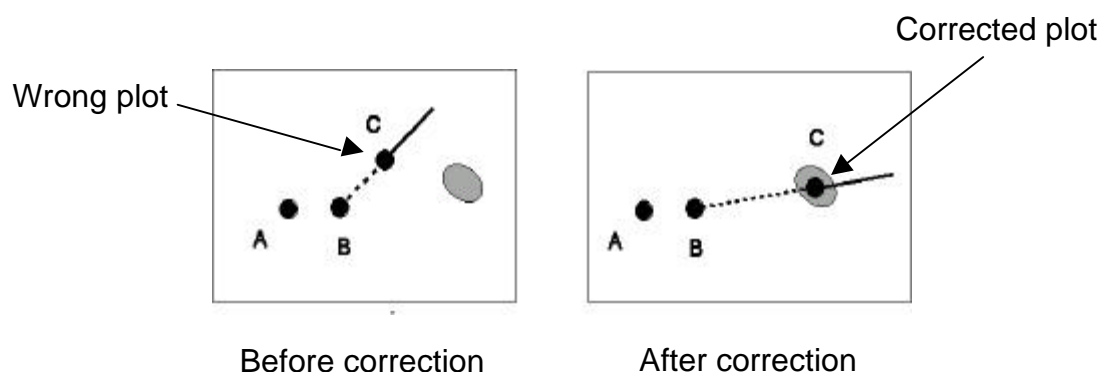


Figure 6.6 Correcting the plotting position

6.7 Operating the ATA

6.7.1 Using the ATA

The ATA (Automatic Tracking Aid) unit is an optional PC Board that can be installed into the processor unit. Using this function, up to ten targets can be manually acquired and tracked automatically. All tracked target data is the same type as the EPA data, and is shown on the right of the screen.

All operating procedures are also the same as that of the EPA function with one exception i.e. no second plotting is needed in the ATA system.

Note: If the ATA system gets malfunctioned, the plotting system will switch to EPA mode automatically.

6.7.2 Outline of the ATA system

To use the ATA function the MRE-300 ATA module must be installed. (Refer to APPENDIX 1 in Chapter 4 for installation instruction) To run the ATA function, the bearing signal and the speed signal must be supplied to the Processor unit.

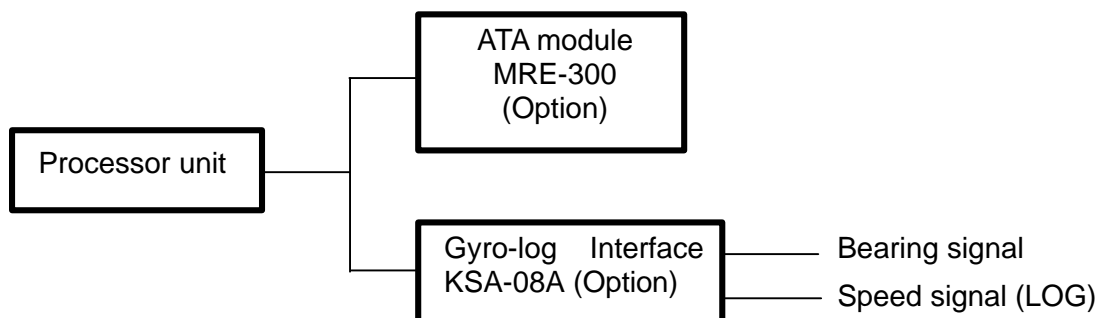


Figure 6.7 Configuration of ATA



WARNING: *The accuracy of the auto tracking function provided by the ATA could be affected by the following factors:*

- (1) Sea clutter and weather clutter such as rain and snow may degrade the ATA tracking capability. These clutter components should be appropriately reduced.*
- (2) Poor receiver sensitivity may also degrade the tracking capability.*
- (3) Faulty azimuth synchronization could be the cause of erratic vectors.*
- (4) Degraded bearing and speed data fed from external sensor devices also cause erratic vectors.*

If any of the errors stated above are detected, the following data provided by the ATA will be erratic.

- (1) The CPA and TCPA value.*
- (2) The target ship's course and speed.*
- (3) The target ship's bearing and distance.*

6.7.3 ATA functions

The ATA system provides the following functions and display on the screen.

(1) Symbols:

- Acquisition symbols
- Warning symbols

(2) Target acquisition

(3) Target data display

(4) Changing the vector length

(5) Cancellation of an acquisition and tracking of target

(6) Warning limit setting

(7) Clearing all plotted targets

(8) Target number display

(9) Selecting the TRUE or RELATIVE tracking

6.7.4 Operating procedures

Perform the following procedure to use the ATA function:

(1) Move the Joystick to let the cross cursor fall on a target.

(2) Press the ACQ key to acquire the target. At the same time, the assigned target will be braced with a dashed acquire mark with an ID number shown nearby.

(3) To acquire a next target, press the TARGET key to set the next target ID.

(4) Repeat step (1) and (2) for other targets up to ID number 9.

(5) Press the DELETE key to cancel the target tracking. The symbol of the target and data will be cleared.

NOTE: The target detection echo level can be set with the menu "ADJUST/PRESET/TARGET LEVEL".

6.7.5 ATA symbols

Acquisition symbols

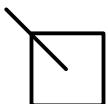
The symbol mark for the plotted target changes as follows according to the plotting status:



This symbol appears when a target is acquired for the first time.



This symbol appears when the target tracking becomes stable. A vector develops and the target data can be displayed when its target number is assigned (highlighted).



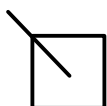
This symbol appears when a target tracking becomes stable with its target number assigned. The target data is shown in the right side of the screen.

Warning symbols

The following symbols are used in the EPA functions to notify the operator of a high-risk target or invalid plotting. These symbols will blink when they are shown.



This is a CPA alarm symbol that appears when a displayed target is predicted to infringe a predetermined CPA and/or TCPA range. It blinks at an interval of 0.5 seconds. The data can be displayed by assigning the target number.



This is a CPA alarm symbol that appears when the relevant target number is assigned. The rest of the features are the same as above.



This symbol appears with audio alarm when the target is lost during tracking. The on-screen error message "UNRELIABLE PLOT DATA" will also appear on the screen. The symbol mark and audio-visual alarm will be turned off automatically 15 seconds after first appearance of the symbol.



This symbol appears when the target enters the Guard Zone. The symbol is shown overlaid on the target and is automatically deleted as the target leaves the zone.

6.7.6 Setting the Guard Zone

The Guard Zone Alarm warns the operator an entry of a target to a preset alarm zone. When the target enters the zone, a flashing equilateral triangle with its apex down is shown to mark the target. (Refer to Figure 6.7) At the same time, the GZ sign flickers and an audio alarm sounds. To stop the audio alarm, press the AUDIO OFF key.

6.7.6.1 To set up the position of the Guard Zone

- (1) Press the ALARM (GZ) key. This allows the EBL and VRM controls to be used for moving the Alarm Zone in azimuth and range, respectively.
- (2) Move the EBL control to set the position of the Guard Zone in azimuth. The center bearing of the Guard Zone will be displayed in the lower right corner of the screen.
- (3) Move the VRM control to set the position of the Guard Zone in range. The distance of the outer edge of the Guard Zone will be displayed in the same place as the bearing display.

6.7.6.2 To set up the depth and width of the Guard Zone

(Reference drawing: Figure 6.7 The outline of the Guard Zone Alarm)

- (4) Press the EBL SEL key and rotate the EBL control to set up the width of the alarm zone. An arrow mark will be shown on the front of the WIDTH to indicate width is active to control. A further press of the key will return to control the Guard Zone in azimuth.
- (5) Press and hold the VRM SEL key and rotate the VRM control to set up the depth of the alarm zone. An arrow mark will be shown on the front of the DEPTH to indicate depth is active to control. A further press of the key will return to control the Guard Zone in range.
- (6) Press the ENT key to fix the settings. The Guard Zone will be shown on the screen.

⚠ Caution: *In the following circumstances, the alarm function will become inoperative. The ALARM range and bearing displays accordingly flicker to notify that the function is inoperative.*

- (1) *When the alarm zone is set lower than 0.5 NM.*
- (2) *When the alarm zone is set beyond the viewable screen area caused by an improper range scale setting such as, the range scale is too short, off-centering is too much, etc.*

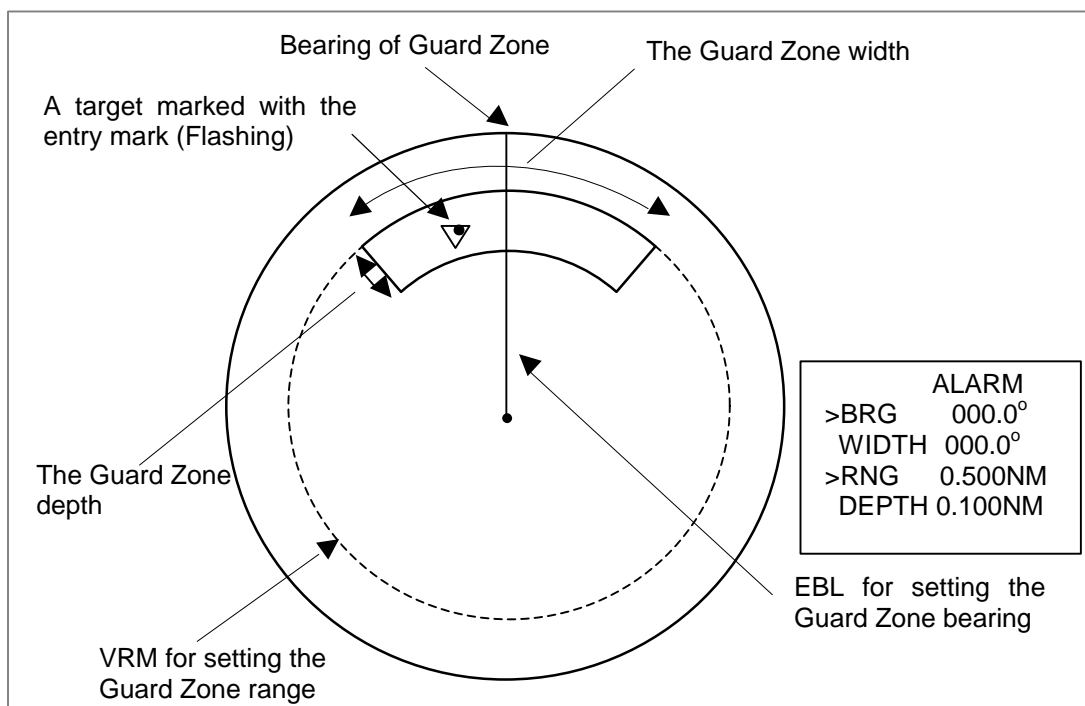


Figure 6.8 The outline of the Guard Zone Alarm

6.8 Operating the AIS

NOTE: To use this function, the optional AIS interface module (PCB based) must be installed inside the processor unit and connected to an external AIS transponder. The installation of the module must be performed by an authorized KODEN service personnel.

Reference description: APPENDIX 1 Installation of AIS module, AIS-100, Chapter 4 Installation.

6.8.1 Outline of the AIS

The AIS interface module receives the other ship's information sent from an external AIS transponder and displays the AIS symbols and data. (NOTE: The AIS transponder transmits own ship's information at certain interval and also receives the navigational information broadcast from ships located within the AIS reception coverage.

6.8.2 Setting the AIS to work

(1) In the DISP menu select AIS and select ON.

<u>Indication</u>	<u>Meaning</u>	<u>Selection</u>
AIS	AIS data display	<u>OFF</u> , SYMBOL OFF, ON

(2) In the RADAR menu select LIM (AIS range). Selecting the LIM range causes the AIS symbols to be displayed within the LIM range.

(3) The AIS symbols are displayed on the target echoes, which are termed "activated target." The AIS interface can handle up to 20 targets for AIS processing. The targets of 21 up to 40 are deemed to be "sleeping targets" or unprocessed targets, causing the alarm message "Number of targets have exceeded the limit" to be shown on the screen.

(4) To prevent potential dangerous targets from being unprocessed, always keep the LIM range to allow a total number of activated targets to be within 20. To view the AIS data of a specific activated target, set a target ID number in the RADAR menu to an associated TARGET ID shown on the screen.

6.8.3 AIS data display

MMSI	An acronym of "Maritime Mobile Service Identity", which means the identification number of each ship that carries the AIS transponder. The number is assigned by the IMO.
CPA	Closest Point of Approach
TCPA	Time to CPA
CSE/COG	Course/Course Over Ground

STW/SOG Speed through Water/Speed Over Ground

The TARGET ID is applied from 0 to 19 automatically. When a target has moved out of LIM range or been lost, the ID number being used will be applied to other newly entered target automatically.

6.8.4 AIS target symbols

According to the AIS operational status, the following target symbols are used.

Activated Target

A target, which the AIS user has activated is termed “Activated Target” and is supplied with an ID number (0 to 20). The vector time and mode are determined with the settings being made for the radar plotting function.

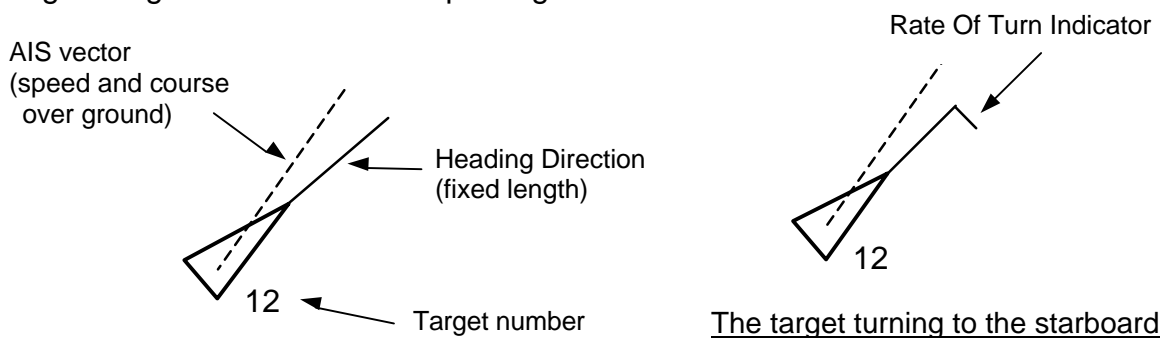


Figure 6.9 Activated Target Symbol

Sleeping Target

A target, which is not activated by the AIS user is termed “Sleeping Target.” The target has no ID, vectors or ROT information, only showing the presence of a vessel with AIS equipped.



Figure 6.10 Sleeping Target Symbol

Selected Target

A target selected by the AIS user is termed “Selected Target.” A target to be selected can be Activated or Sleeping, whatever. Once selected, a dashed square is drawn around the target and AIS data (MMSI, CPA, TCPA, COG and SOG) will be displayed in the AIS data window.

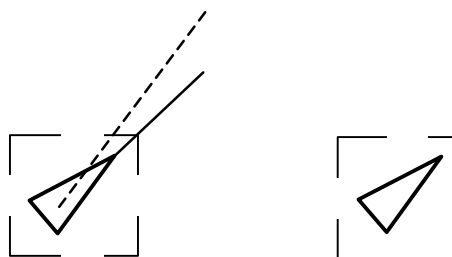


Figure 6.11 Selected Target Symbol

Dangerous Target

If predicted CPA and TCPA values of an Activated Target are smaller than the one being set up, the AIS target symbol will turn to a flashing bold symbol as shown below.

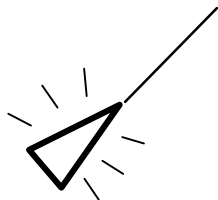


Figure 6.12 Alarm Target Symbol

Lost Target

A target that strays out of tracking is termed “Lost Target.” The lost symbol is displayed flashing with a line drawn across. When an activated target changes to a lost target, the buzzer sounds. When a sleeping target changes to a lost target, the buzzer does not sound and the symbol will disappear automatically approx. 1 minute later.

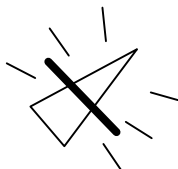


Figure 6.13 Lost Target Symbol

NOTE:

The radar vector (generated by EPA or ATA) and the AIS vector may differ in terms of the vector length and its direction. This is not a fault. The radar vector is developed based on the past target positions stored either by manual plotting (EPA) or automatic tracking (ATA). Meanwhile, the AIS vector is generated from the navigation data sent from the AIS transponder. The radar vectors take a certain time until they are fully displayed, while the AIS vector is displayed as soon as the AIS data is received from the AIS transponder.