

KODEN

OPERATION MANUAL

ATA (Automatic Tracking Aid)

MRE-230

The ATA Board Specifications

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|-------------------------------|---|
| (1) Acquisition | Manual
A target is acquired manually by a cross cursor driven by the Pointing Device. |
| (2) Tracking | Automatic |
| (3) Number of tracked targets | 10 targets maximum |
| (4) ATA data output | Target Number, distance, bearing, speed, course, CPA and TCPA |
| (5) Alarm | Collision alarm, activated when a target enters the preset CPA and TCPA ranges.
Lost alarm, activated when a target can no longer be tracked. |
| (6) Display | Symbols: Predicted point and target number
Vector : Predicted motion of a target as a result of own ship's direction and speed input.
Display modes: Relative (REL)/True (TRUE) |
| (7) Tracking range | 0.5 to 40 NM |
| (8) PRF | 2,000 Hz maximum |
| (9) Bearing signal | 1,080 or 2,048 pulses / rev (Switched automatically) See Note. |

Note: The ATA board does not accept bearing signals other than specified above. In case the ATA board is used in the monitor mode display, make sure an incoming bearing pulse rate agrees with that specified in this specification.

Operating Instructions

1. Outline

The ATA detects a target from radar image signals and measures the distance from the target and its bearing automatically. By calculating changes in the measurement results to predict the target movement, the ATA tracks the target automatically.

The ATA calculates the CPA (closest point of approach) and the TCPA (time required for the ship to reach the CPA) from the movement of the target toward the ship. Then comparing them to those preset, it generates a collision alarm if both values are smaller than the preset ones.

The target bearings are calculated by (1) bearing of the target toward the ship and (2) bearing of the ship's heading marker. Therefore, the accuracy of the data on the heading marker's bearing affects tracking performance. Tracking may become impossible if the compass is inaccurate and especially when the ship is yawing or changing the course. These cases, however, are not caused by a malfunction of ATA.

2. Setting

Before using the ATA function, the settings described below are necessary.

Note: Use the ATA function in either the PPI or ALL PPI mode. Even if other modes are used, the ATA still continues tracking though the symbols and data are not displayed on the radar.

1 Switching the ATA function ON/OFF

Select the ATA PRESET items from the SET UP/CUSTOM menu. The menu contents are as follows.

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-----  
CPA SET      0.0 NM  
TCPA SET     0 MIN  
VECT SET     6 MIN  
VECT MODE    REL  TRUE  
ATA          ON   OFF  
-----
```

Check that ON in the ATA items is highlighted. If OFF is highlighted (selected), the ATA does not function.

* Unless the ATA board is installed properly, the ATA PRESET items are not displayed on the above SET UP/CUSTOM menu.

3. Operation

(1) Acquisition of a target

Firstly, select the target to track. Place the cursor on the target image and acquire it by using the ACQ (acquisition) function.

Press the soft key if the ACQ function has been set. When operating from the MENU, place the cursor on NAVI/ACQ and press the ENT key.

Select the target when it is displayed clearly and no other targets are displayed around it. If other targets are displayed around it, the ATA may track a different one.

All targets acquired by ATA are identified by the numbers, from 0 to 9. These figures will be shown in the upper right window on the screen. A vacant column shown like "-" indicates no target being acquired.

Before starting selection, use the TGT NUM (target number) function so that "-" is highlighted. The TGT NUM function is used to change the target numbers. The target number will not change automatically unless this function is used.

Press the soft key if the TGT NUM function has been set. When operating from the MENU, place the cursor on NAV/TGT NUM and press the ENT key.

When ATA starts acquisition, a symbol appears at the cursor position on the screen, and the target number is shown on the lower right side of the symbol.

(2) Tracking the target

When the operator acquired the target by the procedure (1), ATA automatically detects the target to start automatic tracking. As soon as stable tracking is established, a vector will be developed on the screen.

The target tracking is not relevant to the range scale in use, i.e. the tracking continues even if the range scale is changed beyond the viewable ranges for the target.

Note: A tracked small target may be lost when the range scale is changed to shorter pulse ranges, causing the target signal level to be decreased. This may lead to a tracking failure on the target that will become a lost target.

(3) Canceling target tracking

To cancel tracking, use the DEL (delete) function. The number highlighted on the upper right of the screen will disappear. If ALL DEL (delete all) is selected, the ATA will cancel tracking of all targets.

Press the soft key if the DEL function has been set.

When operating from the MENU, place the cursor on NAVI/DEL or NAVI/ALL DEL and press the ENT key. When the radar is set to the SY'BY mode, the ATA will cancel tracking of all targets.

(4) Data display

When necessary, numerical data of the current tracking target can be displayed in the data display window. Use the DATA function to display the numerical data of the number highlighted on the upper right corner of the screen. Press the soft key if the DATA function has been set.

When operating from the MENU, place the cursor on NAVI/DATA and press the ENT key.

Items to be displayed are as follows.

Target number: TGT NO.x	The number of the target currently displayed.
Vector time: TIME xx MIN.	Setting time to display vector length. (Speed x Time=vector length)
Vector mode: TRUE or REL	Display mode of vector and data. TRUE and REL represent true and relative speeds, respectively.

Target data:

BRG (bearing), DIST (distance), CRS (course), SPD (speed), CPA (closest point of approach) and TCPA (time required for the ship to reach the CPA)

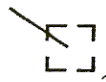



State: A collision or lost alarm will appear according to the state of the target.

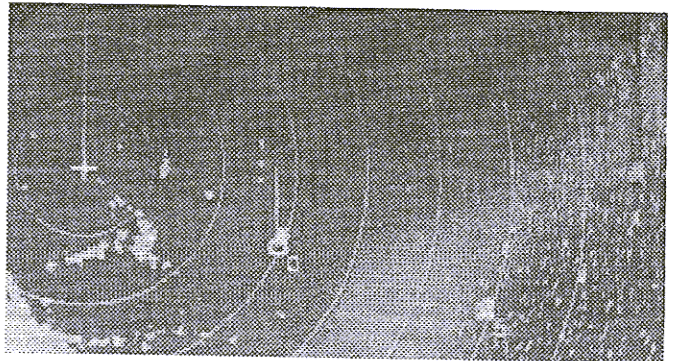
Example:

	TGT No.x	ALM	LOST	TIMExxMIN	TRUE	
	BRG 123.4DEG		CRS 234.5DEG	CPA 12.3NM		
	DIST 12.3NM		SPD 10.0KT	TCPA 12.3MIN		

(5) ATA indications

In the PPI and ALL PPI modes, symbols and data are displayed. In other modes, target tracking is still continued though the ATA display and operation are disabled. The symbols are as follows:

-  **Acquired target**
-  **Tracked target**
-  **Target whose data is currently displayed**
-  **Lost target**



(6) Ship's speed setting

The ship's speed can be set in the SPD SET item in the SET UP/CUSTOM/PRESET2 menu. Other than the standard NMEA interface, manual setting and log pulse input can also be selected. In the case of manual setting, input the ship's actual speed. Menu indication is as follows:

SPD SET	NMEA	MANU 0.0 KT	LOG 200P
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4. Interface

(1) Data output

The ATA data output is ready at the optional connector terminal on the rear of the display unit. Pin No.32 is the NMEA_OUT signal terminal which outputs signals conforming to the NMEA0183. This output terminal is used for the TARGET function (to output L/L of the cursor position), the MOB function (to output L/L of the ship's position) and the ATA data output function.

The data format is as follows:

\$RATTM,01,0.42,292.1,T,4.99,0.0,T,0.4,0.0,N,,T,,M*2A

Description

- \$RA Unit identification code (radar)
- TTM Formatter
- 01 Target number
- 0.42 Distance to the target
- 292.1 Bearing of the target (°)
- T Indicates the true bearing.
- 4.99 Speed (knots)
- 0.0 Course (°)

T Indicates the true speed and course, while R indicates relative movement.
0.4 Indicates the CPA (closest point of approach)
0.0 Time required for the ship to reach the CPA (min.)
N Indicates the unit of distance used: NM
T Indicates tracking condition: Q: unstable, T: tracking, L: lost
M Indicates that aquisition is carried out manually.
*2A Sum checking

(2) Log signal input

The log signal can be used for ship speed input by inputting it to the optional connector terminal on the rear of the display unit. Pin No.31 is the log signal terminal and it is driven between itself and pin No.14 (GND) using contact signals such as a relay.
400, 200, 150 or 100 pulses/NM signal can be selected.

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