



# KODEN

## QUICK REFERENCE

---

### MARINE RADAR

# MDC-5000

## SERIES

**This product is specifically designed to be installed on boats and other means of maritime transport. If your country forms part to the EU, please contact your dealer for advice before attempting to install elsewhere.**



**MDC-5000 Series Quick Reference****Doc No: 0093153005****Document Revision History**

No.	Doc. No.- Rev. No.	Date Revised (Y/M/D)	Revised Content
0	0093153005-00	2017/12/22	First edition
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Document No. Revised Version Norm**

When part of the document needs to be revised, the document has advanced revision number.

The document No. is indicated at the lower right side on the cover and at the left or right side of the footer region of each page.

© 2017 Kodens Electronics Co., Ltd. All rights reserved.

No part of this publication may be reproduced, transmitted, translated in any form by any means without the written permission of Kodens Electronics Co., Ltd. The technical descriptions contained in this publication are subject to change without notice. Kodens assumes no responsibility for any errors, incidentals or consequential damages caused by misinterpretation of the descriptions contained in this publication.



USB Mouse / Trackball can be connected to this radar display.

Mouse icon to the left will be referenced throughout this document for references on mouse / trackball operation.

## Contents

Document Revision History .....	i
Contents .....	ii
<b>Chapter 1 Radar Basic Operation .....</b>	<b>1-1</b>
1.1 Power ON/OFF .....	1-1
Power ON .....	1-1
Power OFF .....	1-1
1.2 Change Brilliance and Day/Night mode .....	1-2
Display Brilliance .....	1-2
Operation unit Brilliance .....	1-2
Day/Night mode .....	1-2
1.3 Transmission .....	1-3
Transmission ON .....	1-3
Transmission OFF .....	1-3
1.4 Change range scale .....	1-4
1.5 Adjust receiver gain (GAIN) .....	1-5
Selection of MAN GAIN and AUTO GAIN .....	1-5
Adjustment of GAIN .....	1-5
1.6 Reject sea clutter (anti-SEA) .....	1-6
Selection of MAN SEA and AUTO SEA .....	1-6
Adjustment of SEA .....	1-6
1.7 Reject rain/snow clutter (anti-RAIN) .....	1-7
Changing method of CFAR and MAN .....	1-7
RAIN MAN (manual) adjustment .....	1-7
CFAR (Constant False Alarm Rate) adjustment .....	1-8
1.8 Change transmission pulse width (SP/LP) .....	1-9
1.9 Select Display Mode .....	1-9
1.10 Cross cursor operation .....	1-10
1.11 Measurement of distance by VRM .....	1-11
1.12 Measurement of bearing by EBL .....	1-12
1.13 Trail .....	1-13
Trail ON/OFF and change Trail time .....	1-13
Change motion mode .....	1-13
<b>Chapter 2 Target (AIS and TT) .....</b>	<b>2-1</b>
2.1 Enable AIS function .....	2-1
2.2 AIS Active/Sleep .....	2-1
2.3 Set Input range .....	2-2

2.4	Set AIS filter .....	2-2
2.5	Enable TT function .....	2-2
2.6	Manual acquisition .....	2-3
2.7	Delete TT Target .....	2-3
2.8	Delete All TT Target.....	2-3
2.9	Display Target Information .....	2-4
Chapter 3 Other Setting .....		3-1
3.1	VECTOR REL/TRUE .....	3-1
3.2	VECTOR TIME.....	3-1
3.3	CPA/TCPA Alarm.....	3-1
3.4	USB Mouse/Trackball Basic Operation.....	3-2

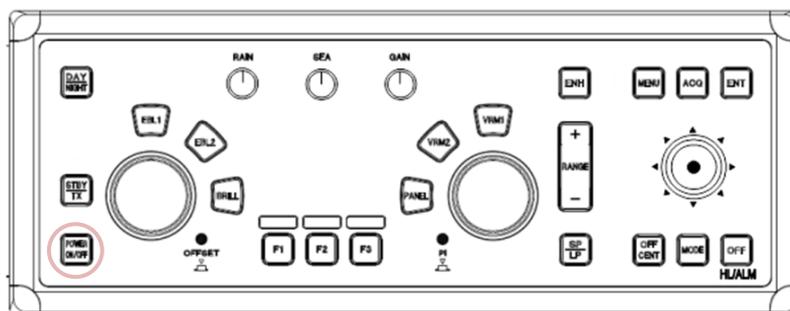
- This page intentionally left blank.-

## Chapter 1 Radar Basic Operation

### 1.1 Power ON/OFF

#### Power ON

- 1 Press **POWER ON/OFF** key. Radar system is turned on with beep sound.



After power on, radar model name and preheating countdown time will appear on the center of the display.



The brilliance of the display is set to the previous value of the last power off.

#### Power OFF

- 1 Press **POWER ON/OFF** key for longer than five seconds.

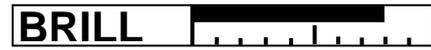
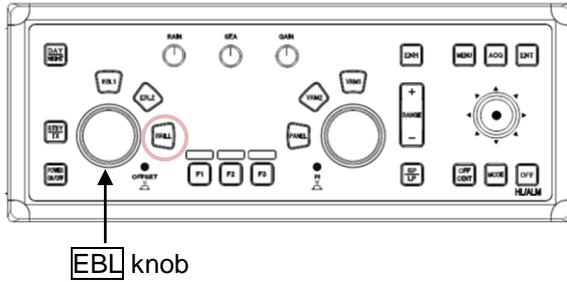
After radar has been turned off, wait at least five seconds before turning it back on.

## 1.2 Change Brilliance and Day/Night mode

### Display Brilliance

- 1 Press **BRILL** key.

The BRILL adjustment window will appear on the upper left of the display.



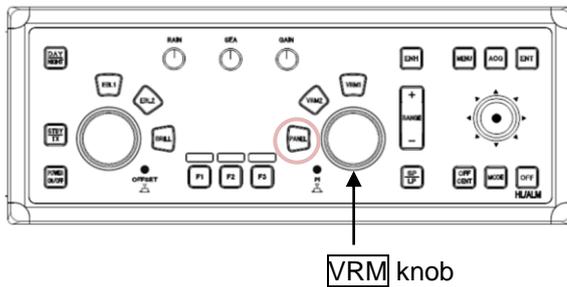
BRILL adjustment window

- 2 Turn **EBL** knob to adjust the display brilliance.

### Operation unit Brilliance

- 1 Press **PANEL** key.

The PANEL adjustment window will appear on the upper left of the display.

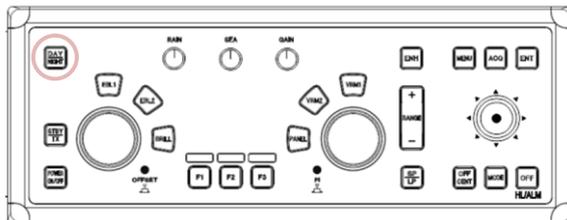


PANEL adjustment window

- 2 Turn **VRM** knob to adjust the panel brilliance.

### Day/Night mode

- 1 Press **DAY/NIGHT** key.

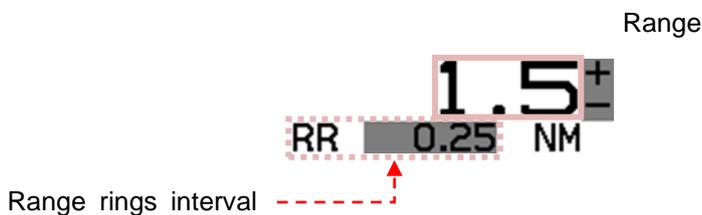
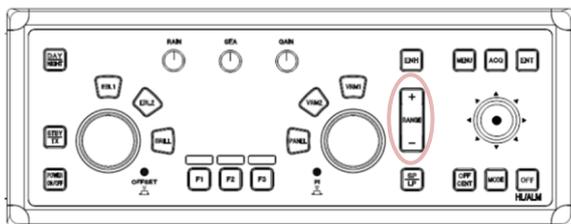


When **DAY/NIGHT** key is pressed, DAY mode and NIGHT mode change alternately.



### 1.4 Change range scale

- 1 Press **RANGE +** key. The picture zoom out, and to observe a wider area.
- 2 Press **RANGE -** key. The picture zoom in, and to observe closer to own ship position.



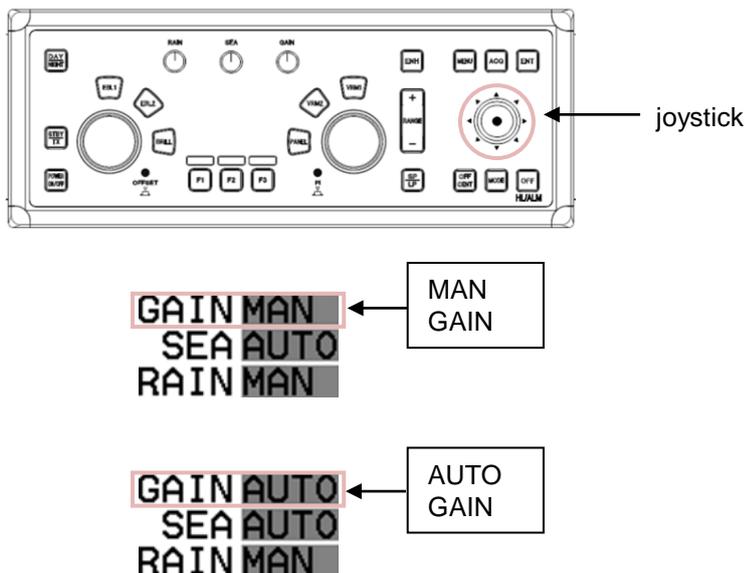
 To change range scale, move the cursor to **+** and click the **left button**.

 To change range rings display on or off, move the cursor to [RR **OFF/ Interval**] and click the **left button**.

## 1.5 Adjust receiver gain (GAIN)

### Selection of MAN GAIN and AUTO GAIN

- 1 Move cursor with joystick on the **MAN** or **AUTO** display (whichever is shown) at right side of [GAIN] on the top of the display.
- 2 Press **ENT** key to change **AUTO** or **MAN** as appropriate.

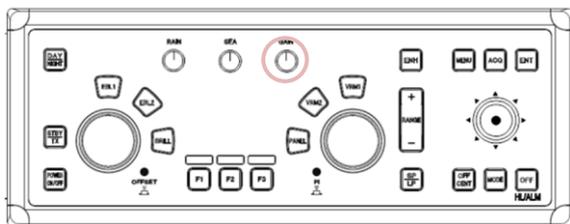


### Adjustment of GAIN

When **MAN GAIN** is selected, GAIN can be adjusted manually.

- 1 Turn **GAIN** knob clockwise to increase receiving gain.
- 2 Turn **GAIN** knob counterclockwise to decrease receiving gain.

When **AUTO GAIN** is set, [GAIN] is adjusted automatically.

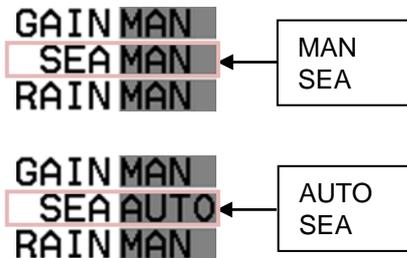
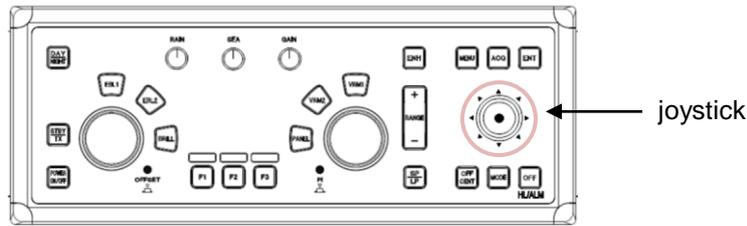


**AUTO GAIN** may remove weak target echoes, or too much sea clutter may be on the display, turn **GAIN** knob clockwise or counterclockwise to adjust **AUTO GAIN** effectively.

## 1.6 Reject sea clutter (anti-SEA)

### Selection of MAN SEA and AUTO SEA

- 1 Move cursor with joystick on the **MAN** or **AUTO** display (whichever is shown) at right side of [SEA] on the top of the display.
- 2 Press **ENT** key to change **AUTO** or **MAN** as appropriate.

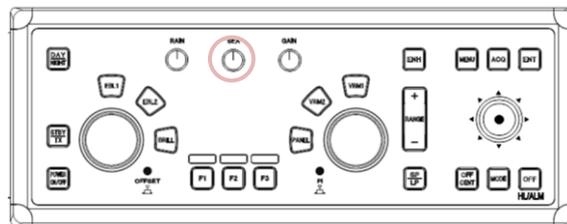


### Adjustment of SEA

When **MAN SEA** is selected, anti-SEA can be adjusted manually.

- 1 Turn **SEA** knob clockwise to increase anti-sea clutter effect.  
Turn **SEA** knob counterclockwise to decrease anti-sea clutter effect.
- 2 Turn **SEA** knob clockwise until even low (weak) SEA clutter is displayed by observing the display.
- 3 Adjust **SEA** knob from time to time to get low (weak) SEA clutter on the display as intensity of sea clutter changes as time passes.

When **AUTO SEA** is set, anti-SEA is adjusted automatically.



AUTO SEA may erase weak target echoes. If excessive sea clutter erasing or too much clutter is observed, turn **SEA** knob clockwise or counterclockwise to adjust AUTO SEA effectively.

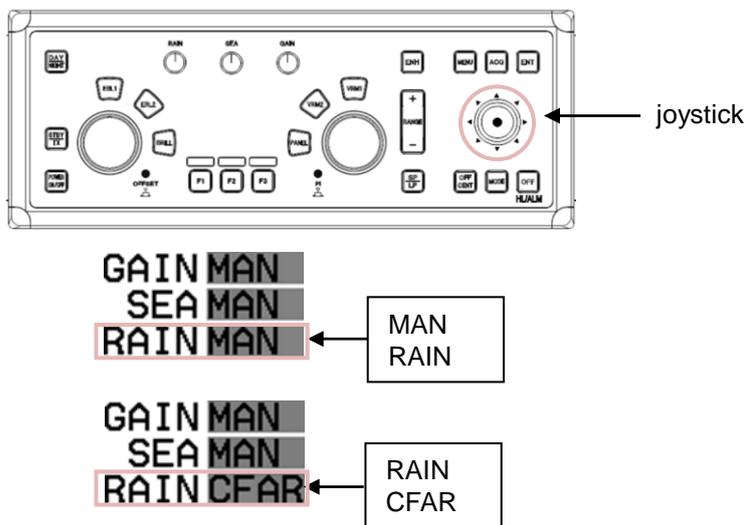
Note:

- If anti-SEA and anti-RAIN are used in combination, then small targets will be less visible.

## 1.7 Reject rain/snow clutter (anti-RAIN)

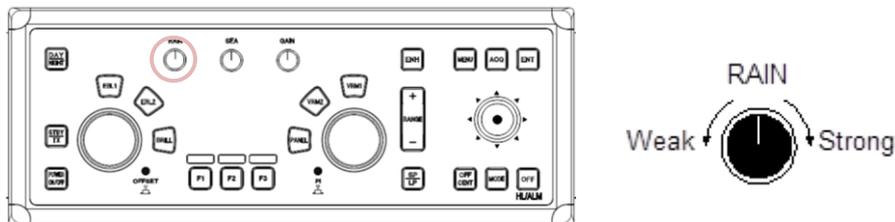
### Changing method of CFAR and MAN

- 1 Move cursor with joystick on the **MAN** or **CFAR** display (whichever is shown) at right side of [RAIN] on the top of the display.
- 2 Press **ENT** key to change **CFAR** or **MAN** as appropriate.



### RAIN MAN (manual) adjustment

- 1 Turn **RAIN** knob clockwise to increase anti-clutter effect.  
Turn **RAIN** knob counterclockwise to decrease anti-clutter effect.  
Turn **GAIN** clockwise until sea clutter is visible on the display.
- 2 Use anti-SEA (AUTO SEA or MAN SEA).
- 3 While observing the display, suppress RAIN clutter outside of anti-SEA effective area by turning **RAIN** knob clockwise. Adjust RAIN so that sea clutter is lightly visible.
- 4 Intensity of RAIN clutter is affected by weather. Adjust by **RAIN** knob according to weather change by watching the display.

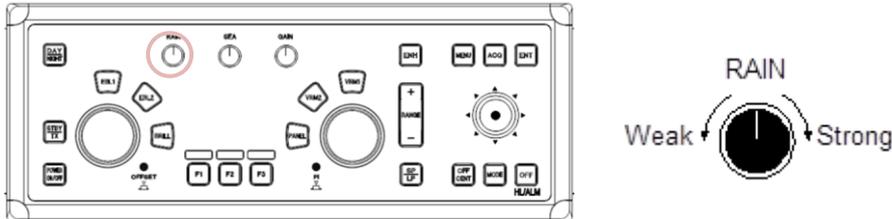


Note:

- In typical environment RAIN should be turned all the way down via **RAIN** knob, and no white level should be indicated by RAIN window.
- Turning the knob to the right shows profiles of the targets hidden in the rain/snow image, but care shall be taken that small target may be hidden and not displayed.
- Small target becomes harder to detect when RAIN is used together with SEA.

## CFAR (Constant False Alarm Rate) adjustment

- 1 Turn **RAIN** knob clockwise to increase anti-clutter effect.  
Turn **RAIN** knob counterclockwise to decrease anti-clutter effect.
- 2 Turn **RAIN** knob clockwise to get even low (weak) clutter while watching the display.

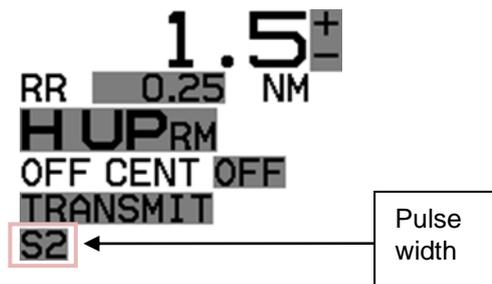
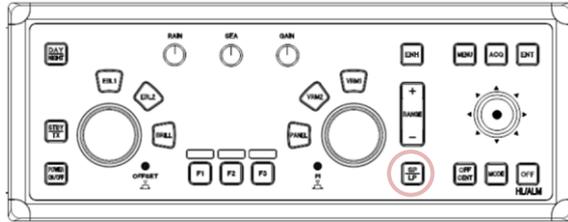


### Note:

- In typical environment CFAR should be turned all the way down via **RAIN** knob, and no white level should be indicated by CFAR window.
- Turning the knob to the right shows the targets hidden in the rain/snow image, but care shall be taken that small target may be hidden and not displayed if over adjusted.
- If there are strong echo targets such as in the harbor or channel, CFAR tends to suppress targets excessively. In that case, change CFAR to MAN and use MAN SEA in addition.
- In case of **CFAR** mode, the gain adjustment is not possible.

## 1.8 Change transmission pulse width (SP/LP)

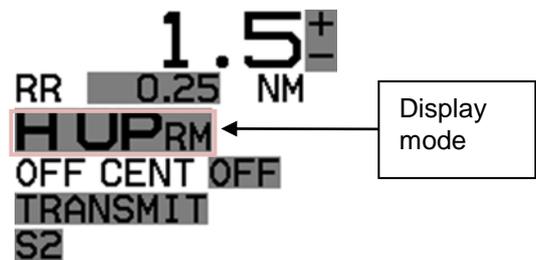
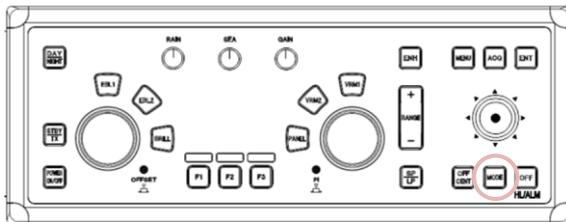
- 1 Press **[SP/LP]** key. Two different pulse widths are toggled by pressing **[SP/LP]** key.



To change transmission pulse width, move the cursor to **[S1]**, **[S2]**, **[M1]**, **[M2]**, **[M3]**, **[L1]**, **[L2]** or **[L3]** and click the **left button**.

## 1.9 Select Display Mode

- 1 Press **[MODE]** key.



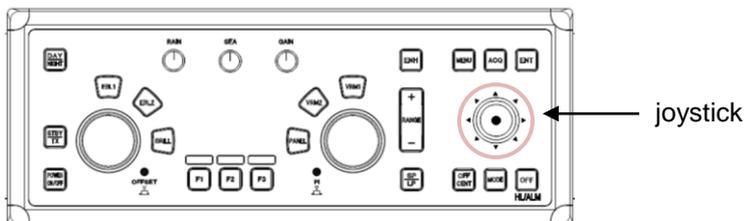
The display mode changes in following order by pressing **[MODE]** key.



To change display mode, move the cursor to **[HUP<sub>RM</sub>]**, **[CUP<sub>TM</sub>]**, **[CUP<sub>RM</sub>]**, **[NUP<sub>TM</sub>]** or **[NUP<sub>RM</sub>]** and click the **left button**.

### 1.10 Cross cursor operation

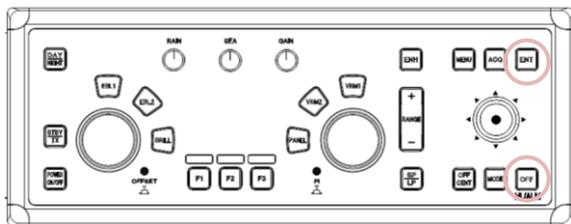
- 1 Move the cross cursor with joystick.  
The information data of cross cursor position is displayed at lower right of the display.



 Cross cursor can be moved with the mouse / trackball.

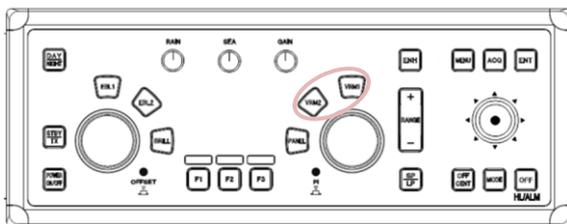
#### How to move the cross cursor to own ship position

- 1 Press **ENT** key while pressing **OFF** key.



## 1.11 Measurement of distance by VRM

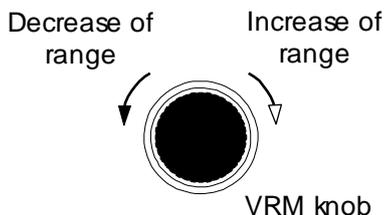
- 1 Press **VRM1** or **VRM2** key to display VRM1 or VRM2 circle.



The distance to the target is indicated on the lower right of the display.



- 2 Turn **VRM** knob clockwise or counterclockwise, respectively.



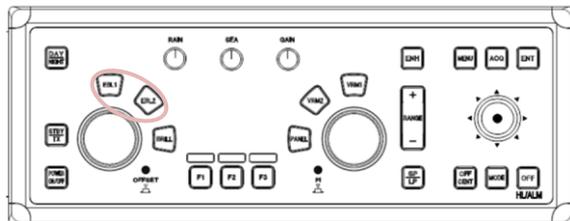
- 3 Another press of selected **VRM1** or **VRM2** key, and the VRM circle disappears.

 Move the cursor to **VRM1** or **VRM2** and click the **left button**. Then the VRM1 or VRM2 circle changes to display or non-display.  
The selected VRM radius can be changed by turning the **mouse wheel**.

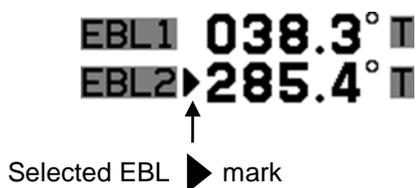
 Move the cursor to the VRM1 or VRM2 circle. Move the mouse while holding the **left button** down and release the **left button** to change the VRM radius.

## 1.12 Measurement of bearing by EBL

- 1 Press **EBL1** or **EBL2** key to display EBL line.



The bearing value to the target is indicated on the lower left of the display.



- 2 Turn **EBL** knob to adjust the line on the desired target.
- 3 Another press of selected **EBL1** or **EBL2** key, and the EBL line disappears.



Move the cursor to **EBL1** or **EBL2** and click the **left button**. Then the EBL1 or EBL2 line changes to display or non-display.

Bearing of the selected EBL can be changed by turning the **mouse wheel**.



Move the cursor to the EBL1 or EBL2 line. Move the mouse while holding the **left button** down and release the **left button** to change the bearing of EBL.

## 1.13 Trail

### Trail ON/OFF and change Trail time

- 1 Press **MENU** key to display "Menu".
- 2 [TRAIL] => [TIME] => select [OFF], [30 sec], [1 min], [3 min], [6 min], [12 min], [30 min], [60 min] or [PERM], and press **ENT** key.  
Select [OFF], the trail is not displayed.



For trail ON/OFF function and to change Trail time, move the cursor to "TRAIL TIME" on the lower left corner of display and click the **left button**.

### Change motion mode

- 1 Press **MENU** key to display "Menu".
- 2 [TRAIL] => [TRUE/REL] => select [REL] or [TRUE], and press **ENT** key.



To change motion mode, move the cursor to "TRAIL" **T** or **R** on the lower left corner of display and click the **left button**.

- This page intentionally left blank.-

## Chapter 2 Target (AIS and TT)

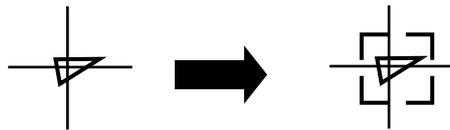
### 2.1 Enable AIS function

- 1 Press **MENU** key to display "Menu".
- 2 **[TARGET]** => **[AIS]** => **[AIS]** => select **[ON]**, and press **ENT** key.

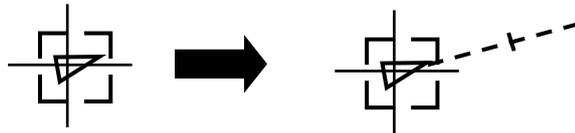
### 2.2 AIS Active/Sleep

- 1 Move cursor to the desired AIS target, and press **ENT** key.  
The mark of selected AIS will be shown around desired AIS target.  
Selected AIS target information will be displayed at lower area of the display.

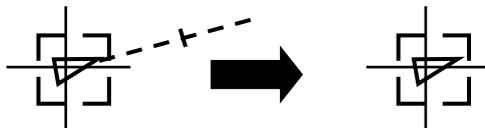
Note: When **[DISPLAY]** => **[ASSISTANT INFO DISP]** => select "Information display area" => **[TGT INFO]** is not selected, this information will not be displayed.



- 2 Press **ENT** key. Selected AIS target will be activated.



- 3 Press **ENT** key again. Selected AIS target will sleep.



For AIS Active/Sleep, move the cursor to the AIS target and click the **left button**.

## 2.3 Set Input range

Input range menu designates the entire operation range of AIS and TT. So, AIS and TT do not function outside of the range.

- 1 Press **MENU** key to display "Menu".
- 2 [TARGET] => [INPUT RNG] => and press **ENT** key after selecting the setup value.  
Setting value: 1.0NM to 64.0NM

## 2.4 Set AIS filter

It is possible to hide unnecessary sleeping targets or to display the necessary targets only by setting AIS FILTER.

- 1 Press **MENU** key to display "Menu".
- 2 [TARGET] => [AIS] => [AIS FILTER] => AIS FILTER menu will be shown.

12	>AIS FILTER	
01	CLASS A	ON
02	CLASS B	ON
03	RNG	1 .0NM
04	SPD	1 .0kn
05	CPA/TCPA	ON
06	MOORED	OFF
07	AT ANCHOR	OFF
08	AGROUND	OFF
09	NUC	OFF
10	GUARD ZONE	ON
11	ECHO ALARM	OFF

The filter is absolutely used to limit display. When input data is to be limited, [TARGET] => [INPUT RNG] shall be operated.

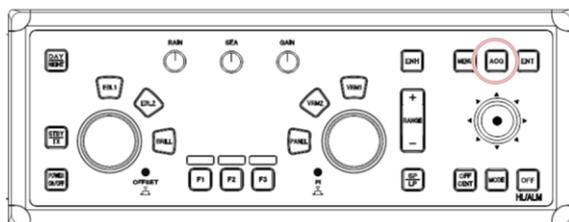
## 2.5 Enable TT function

- 1 Press **MENU** key to display "Menu".
- 2 [TARGET] => [TT] => [TT] => select [ON], and press **ENT** key.

Pressing **ACQ** key in [OFF] state automatically turns to [ON] state.

## 2.6 Manual acquisition

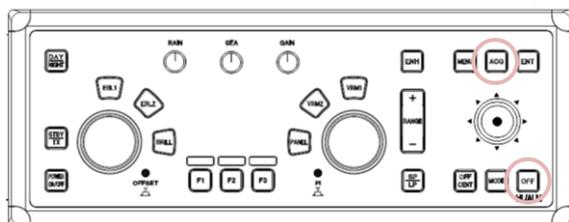
- 1 Move cursor to a target to be acquired, and then press **ACQ** key. A symbol is displayed at the cursor location, and acquisition starts.



For manual acquisition, move the cursor to the target and click the **right button**.

## 2.7 Delete TT Target

- 1 Move cursor to a target to be deleted, and then press **OFF** and **ACQ** key.



Selected TT symbol will disappear.

## 2.8 Delete All TT Target

- 1 Press **MENU** key to display "Menu".
- 2 **[TARGET] => [TT] => [ALL DELETE]**, and press **ENT** key.

All TT targets will disappear.

## 2.9 Display Target Information

- 1 Move cursor on the TT or AIS target to display the numerical information, and press **[ENT]** key. The information of the selected TT or AIS targets will be displayed at INFO data area of the right side of the display.

Note: When [DISPLAY] => [INFO DISP] => select "Information display area" => [TGT INFO] is not selected, this information will not be displayed.

```
TGT INFO 1/2
TT      100
SHAPE   REF  OFF
BRG    T      320.0°
RNG           12.8NM
CTW    T      008.2°
STW    T      22.8kn
CPA           10.5NM
TCPA           35.4min
```



To display target information, move the cursor to the TT symbol and click the **left button**.

## Chapter 3 Other Setting

### 3.1 VECTOR REL/TRUE

- 1 Press **MENU** key to display "Menu".
- 2 [TARGET] => [VECT] => [TRUE/REL] => select [TRUE] or [REL], and press **ENT** key.

### 3.2 VECTOR TIME

- 1 Press **MENU** key to display "Menu".
- 2 [TARGET] => [VECT] => [TIME] => select [OFF], [30 sec], [1 min], [3 min], [6 min], [12 min], [30 min] or [60 min], and press **ENT** key.

### 3.3 CPA/TCPA Alarm

The menu of "[TARGET] => [CPA/TCPA]" sets the alarm function ON or OFF.

To avoid collision, it sets up LIMIT CPA and LIMIT TCPA.

- 1 Press **MENU** key to display "Menu".
- 2 [TARGET] => [CPA] => change the setting value with joystick, and press **ENT** key.  
CPA setting value: 0.0 to 19.9 NM
- 3 [TARGET] => [TCPA] => change the setting value with joystick, and press **ENT** key.  
TCPA setting value: 1.0 to 63.0 min

### 3.4 USB Mouse/Trackball Basic Operation



#### MENU operation

- 1 Move the cursor to **MENU ^** on the lower left corner of display and click the **left button**.  
“MENU” is displayed on the lower of the display.
- 2 Move the mouse to select the menu item.
- 3 Click the **left button** to go to the following “MENU”.  
Click the **right button** to return to the previous “MENU”.
- 4 Long press the **left button** to confirm a setting value.
- 5 Click the **right button** while holding the **left button** down to close “MENU”.



#### “ASSISTANT INFO DISP” operation

- 1 Move the cursor to **< INFO** on the lower right corner of display and click the **left button**.  
“ASSISTANT INFO DISP” is displayed on the right part of the display.
- 2 Move the cursor to **INFO >** on the upper right corner of the “ASSISTANT INFO DISP” and click the **left button**.  
“ASSISTANT INFO DISP” is closed on the right part of the display.



#### ALARM stop (Acknowledged)

In case of malfunction, the alarm sound and display appear on the lower right of the display.

Record the alarm detail and move the cursor to the alarm display area on the lower right corner of display. Click the **left button**, and the alarm sound and display will disappear.



#### MOUSE movement speed

The tracking speed of the mouse pointer can be set by the following menu.

[MAINTENANCE] => [STARTUP] => [MOUSE SPEED]

Setting Value : FAST, MEDIUM, SLOW





## Koden Electronics Co., Ltd.

**Tamagawa Office:**

2-13-24 Tamagawa, Ota-ku, Tokyo, 146-0095 Japan

Tel: +81-3-3756-6501 Fax: +81-3-3756-6509

**Uenohara Office:**

5278 Uenohara, Uenohara-shi, Yamanashi, 409-0112 Japan

Tel: +81-554-20-5860 Fax: +81-554-20-5875

**[www.koden-electronics.co.jp](http://www.koden-electronics.co.jp)**