

12.2 STARTING GM OPERATION

NOTE

To start GM operation, configure the GM Group Directory setting in setup menu. Otherwise, you cannot start the GM operation. Refer to section “12.1.1 Setting Up GM Group Directory” for details.

- 1.  → “GM”
- 2. Rotate the **DIAL/ENT** knob to select the desired category (“**HISTORY**” or “**MEMORY**”), then press the [**SELECT**] soft key.
- 3. Rotate the **DIAL/ENT** knob to select a group you want to monitor, then press the [**SELECT**] soft key.

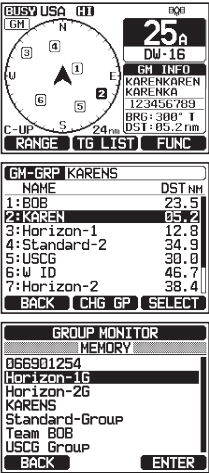
The GM operation starts and the GM target display appears.

- 4. Press the **CLEAR** key to return to radio operation.



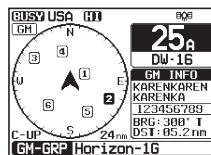
12.2.1 Changing the GM Group Being Monitored

- 1. On the GM target display, press one of the soft keys to show the key selections.
- 2. Press the [**TG LIST**] soft key.
- 3. Press the [**CHG GP**] soft key.
- 4. Rotate the **DIAL/ENT** knob to select the name of the group you want to start monitoring, then press the [**ENTER**] soft key.



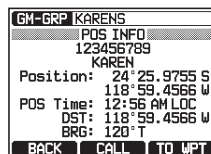
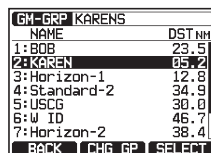
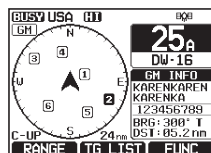
The GM group being monitored changes. The GM target display appears.

- Press the **CLEAR** key to return to radio operation.



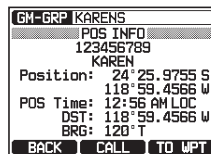
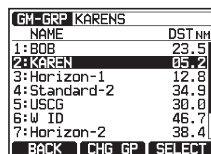
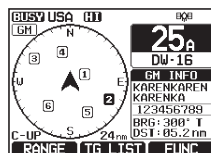
12.2.2 Transmitting a DSC Call to a Group Member

- On the GM target display, press one of the soft keys to show the key selections.
- Press the **[TG LIST]** soft key.
- Rotate the **DIAL/ENT** knob to select a member you want to call.
- Press the **[SELECT]** soft key to display the location, distance, and bearing of the selected member.
- Press the **[CALL]** soft key to transmit a DSC Individual call to the selected member.



12.2.3 Starting Navigation to a Group Member

- On the GM target display, press one of the soft keys to show the key selections.
- Press the **[TG LIST]** soft key.
- Rotate the **DIAL/ENT** knob to select a member you want to approach.
- Press the **[SELECT]** soft key to display the location, distance, and bearing of the selected member.
- Press the **[TO WPT]** soft key to start navigation to the selected member. (Press the **[BACK]** soft key twice to cancel and return to the GM target display.)



13 AUTOMATIC IDENTIFICATION SYSTEM (AIS)

13.1 GENERAL

NOTE

- The **GX6000** is equipped with an antenna connection designated for AIS. By connecting a marine antenna to this connector, the transceiver can receive AIS signals while receiving a VHF voice transmissions.
- Install the VHF antenna and the AIS antenna as far away from each other as possible. Having a large vertical distance is especially effective for improving high frequency isolation. To make even longer-range communication possible, it is recommended to install the antenna for VHF at a height higher than the antenna for AIS.

The Automatic Identification System (AIS) is a short range coastal tracking system. AIS is intended to assist in collision avoidance by seeing positions and courses of AIS equipped vessels around your vessel.

AIS is mandatory on passenger ships, irrespective of size, all ships 300 gross tonnage and larger engaged on international voyages, cargo ships of 500 gross tonnage and larger not engaged on international voyages.

AIS uses two marine VHF channels. Each ship equipped with an AIS transponder transmits a packet every few seconds with information about the ship and its voyage. Radio frequencies: AIS1 = 161.975 MHz, or channel 87B and AIS2 162.025 MHz, or channel 88B. A stand-alone AIS receiver or the AIS receiver built in to a Class A or Class B transponder can pick up these radio signals and translate them into a NMEA data sentence that can be understood by a computer with the proper software or by an AIS-enabled chart plotter.

Classes of AIS:

Class A - 12.5W power output - mandated for use on SOLAS Chapter V vessels (and others in some countries).

Class B CS - 2W output - lower cost derivative for leisure and non-SOLAS markets.

The **GX6000** is capable of receiving Class A and Class B CS transmissions with the internal Dual Channel AIS receiver.

13.2 AIS OPERATION

The **GX6000** is equipped with an AIS receiver and can display AIS targets around your vessel on the radio's display. Therefore, you can identify and avoid in proximity to your vessel.

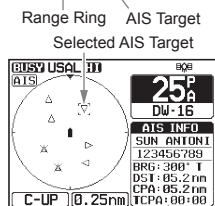
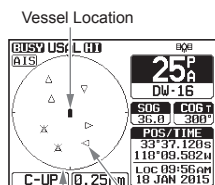
NOTE

To show AIS targets on the radio's display, the **SCU-31** or an external GPS devices needs to be connected via NMEA 0183 or NMEA 2000 so the radio knows its position relative to the AIS targets.

1.  → "AIS"

The AIS display shows your vessel as a  icon in the center of the display. AIS targets are shown as triangles. The line projected from the circle is the AIS vessels course over ground (COG).

2. Press the  /  key to change the AIS target. Pressing the  key sequentially displays AIS vessels in order closest to your ship. Pressing the  key sequentially displays AIS vessels in order furthest from your ship. The selected AIS target is displayed with  icon, while other stations are displayed with  icon.



Information of the AIS Target

Note: Up to 15 AIS targets can be shown on the display. All received AIS targets are displayed on the compatible chartplotter or navigation software via NMEA 0183 or NMEA 2000.

3. Press the **CLEAR** key to return to radio operation.

13.2.1 Displaying the AIS Target Information Screen

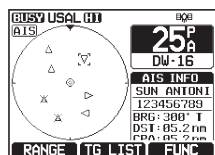
1. On the AIS screen, press one of the soft keys to show the key selections. These selections are described below:

[RANGE]: Press this key to change the display range of the screen.

[TG LIST]: Press this key to show a list of the MMSI numbers or the vessel names being received.

[FUNC]: Press this key to show the function menu.

2. Press the **[TG LIST]** soft key to show a list of AIS target being received.



3. Rotate the **DIAL/ENT** knob to select the MMSI number (or vessel name). then press the **[SELECT]** soft key. Pressing the **[DANGER]** soft key changes the order to the T CPA time order.
4. The AIS target information screen appears. To see more information of the AIS target, press the **[NEXT]** soft key.
5. Press the **CLEAR** key to return to radio operation.

ALL TARGET LIST			
NAME/MMSI	BRG	T	DST NM
BOB	118.5°	23.5	
KAREN	338.0°	05.2	
Horizon-1	---	12.8	
Standard-2	---	34.9	
USCG	---	30.0	
W ID	---	46.7	
Horizon-2	---	38.4	
BACK DANGER SELECT			

TARGET INFO 1/5	
Class:	CLASS A
MMSI:	366901254
Name:	BOB
Origin:	
Call Sign:	
IMO No:	
BACK CALL NEXT	

13.2.2 Changing the AIS Range

1. On the AIS screen, press one of the soft keys to show the key selections.
2. Press the **[RANGE]** soft key. Press the soft keys at the center and right side to select the radius range to display on the AIS screen.
3. Press the **[BACK]** soft key to return to AIS screen.

GDSY USAL (1)	
AIS	25°P DW-16
AIS INFO	
SUN ANTONI	
123456789	
BRG: 300° T	
DST: 05.2 nm	
CPA: 05.2 nm	
RANGE TG LIST FUNC	

GDSY USAL (1)	
AIS	25°P DW-16
AIS INFO	
SUN ANTONI	
123456789	
BRG: 300° T	
DST: 05.2 nm	
CPA: 05.2 nm	
BACK 12nm 48nm	

NOTE

You may change the display range unit of the AIS screen, refer to section **"18.7 UNITS OF MEASURE"**.

13.2.3 Transmitting an Individual Call to an AIS Ship

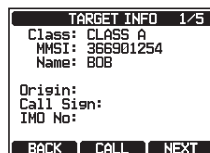
It is possible for the **GX6000** to transmit a DSC individual call to a received AIS target by the procedure below:

1. On the AIS screen, press one of the soft keys to show the key selections.
2. Press the **[TG LIST]** soft key to show a list of AIS target being received.
3. Rotate the **DIAL/ENT** knob to select the MMSI number (or vessel name). then press the **[SELECT]** soft key.

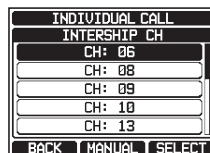
GDSY USAL (1)	
AIS	25°P DW-16
AIS INFO	
SUN ANTONI	
123456789	
BRG: 300° T	
DST: 05.2 nm	
CPA: 05.2 nm	
RANGE TG LIST FUNC	

ALL TARGET LIST			
NAME/MMSI	BRG	T	DST NM
BOB	118.5°	23.5	
KAREN	338.0°	05.2	
Horizon-1	---	12.8	
Standard-2	---	34.9	
USCG	---	30.0	
W ID	---	46.7	
Horizon-2	---	38.4	
BACK DANGER SELECT			

4. Press the **[CALL]** soft key



5. In the INTERSHIP CH list, rotate the **DIAL/ENT** knob to select the operating channel on which you want to communicate, then press the **[SELECT]** soft key. To select operating channels from all voice channels, press the **[MANUAL]** soft key.



6. To transmit an individual DSC call to the select AIS ship, press the **[YES]** soft key.

After the **GX6000** transmits, the radio waits for the DSC radio on the AIS ship to transmit a reply, at which time the radio will ring like a telephone. Pick up the mic, press the **PTT** switch and talk to the AIS vessel.



7. Press the **[QUIT]** soft key to return to AIS screen.
8. Press the **CLEAR** key to return to radio operation.



13.2.4 CPA/TCPA Alarm Functions

The CPA (Closest Point of Approach) alarm sounds when other AIS vessels enter within the range set as the CPA Limit. For details, refer to section “**13.3.1 CPA**”.

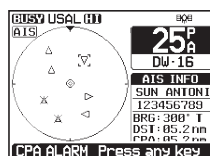
The TCPA (Time to Closest Point of Approach) alarm sounds according to the time set as the TCPA Limit which is the time taken until other AIS vessels enter within the range set as the CPA Limit. For details, refer to section “**13.3.2 TCPA**”.

1. If other AIS vessels approach your ship, the alarm sounds according to the CPA Limit and TCPA Limit that you set in advance.
2. Press any key to stop the alarm.

The targets for the CPA/TCPA alarm will appear with “**!**” and flash.

Up to 15 targets for the CPA/TCPA alarm can be shown on the screen.

Note: If the display is in a mode other than AIS, the radio automatically switches to the AIS mode.



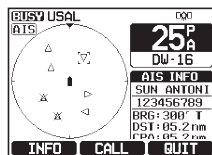
- On the display you will notice 3 soft key selections. These selections are described below:

[INFO]: Pressing this key shows the information screen of the CPA/TCPA alarm targets.

[CALL]: Pressing this key switches the screen to the setting screen for transmitting individual DSC calls.

[QUIT]: Press this key to return to AIS screen.

- To transmit individual calls to the CPA/TCPA alarm targets, follow steps 4 through 8 in “**13.2.3 Transmitting an Individual Call to an AIS Ship**”



13.2.5 Changing the Compass Display

The compass display can be switched between “COURSE-UP” and “NORTH-UP”. The default setting is “COURSE-UP”.

Refer to section “**18.2 COMPASS DIRECTION**” for details.

13.3 AIS SETUP



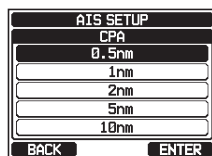
13.3.1 CPA

This function allows you to set the CPA (Closest Point of Approach)* alarm distance.

※: CPA means the positions at which two moving vessels reach their closest possible distance.

1. 

2. Rotate the **DIAL/ENT** knob to select the distance you want the radio to alert you of an approaching AIS equipped vessel. You can select one from “**0.5nm**”, “**1nm**”, “**2nm**”, “**5nm**”, or “**10nm**” (“0.5nm” is default).
3. Press the **[ENTER]** soft key to store the selected setting.
4. Press the **CLEAR** key to return to radio operation.



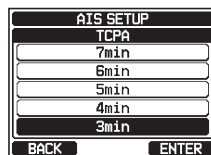
13.3.2 TCPA

This function allows you to set the TCPA (Time to Closest Point of Approach)* alarm.

※: Setting up a TCPA alarm sets a time point where the radio will alarm when an AIS equipped vessel approaching is within the time selected.

1.  → "SETUP" → "AIS SETUP" → "TCPA"

2. Rotate the DIAL/ENT knob to select the time you want the radio to alert you of an approaching AIS equipped vessel. The time can be set from "1min" to "30min" ("10min" is default).
3. Press the **[ENTER]** soft key to store the selected setting.
4. Press the **CLEAR** key to return to radio operation.

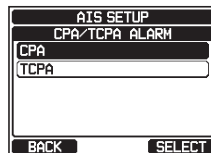


13.3.3 CPA/TCPA Alarm

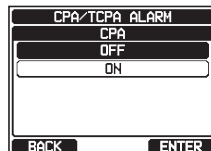
Enable/disable the CPA/TCPA alarm functions. The default setting is "OFF".

1.  → "SETUP" → "AIS SETUP" → "CPA/TCPA ALARM"

2. Rotate the **DIAL/ENT** knob to select "CPA" or "TCPA", then press the **[SELECT]** soft key.



3. Rotate the **DIAL/ENT** knob to select "OFF" or "ON".
4. Press the **[ENTER]** soft key to store the selected setting.
5. Press the **CLEAR** key to return to radio operation.



NOTE

The alarm will sound until it is disabled (1) by pressing any key, (2) following the steps above and selecting "OFF" in step 3, or (3) when the ship is out of the selected CPA/TCPA alarm range. The alarm is produced from the front panel speaker, the speaker in the mic, the optional external speaker and optional **RAM4** and **RAM4W** mic when connected.

14 NMEA 2000 SETUP

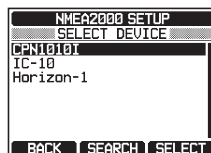
Set the device numbers and system numbers of devices connected to the NMEA 2000 network.

14.1 SELECT DEVICE

Select the device for which you want to set the device number and system number.

1.  → "SETUP" → "NMEA2000 SETUP" → "SELECT DEVICE"

2. In the SELECT DEVICE list, rotate the **DIAL/ENT** knob to select the external device for which you want to set the device number or the system number.



3. Press the **[SELECT]** soft key to store the selected setting.
4. Press the **CLEAR** key to return to radio operation.

NOTE

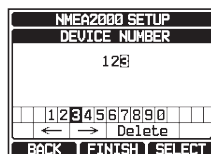
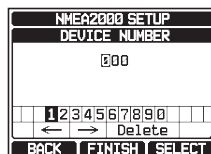
If any devices connected to the network are not displayed in the list, press the **[SEARCH]** soft key to update the list.

14.2 DEVICE NUMBER

If connecting two or more GX6000 radios, change the device number of either one. Set the device number of the device selected in "14.1 SELECT DEVICE".

1.  → "SETUP" → "NMEA2000 SETUP" → "DEVICE NUMBER"

2. Rotate the **DIAL/ENT** knob to select the first digit of the device number, then press the **[SELECT]** soft key to step to the next number.
3. Repeat step 2 to set the device number within the range of 000 to 251. ("000" is default).
4. If a mistake was made entering in the device number, rotate the **DIAL/ENT** knob to select "←" or "→", press the **[SELECT]** soft key until the wrong character is selected, then perform step 2.
5. When finished programming the device number, press the **[FINISH]** soft key.

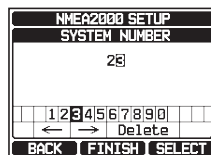
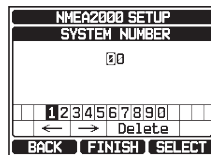


6. Press the **CLEAR** key to return to radio operation.

14.3 SYSTEM NUMBER

Set the system number of the device selected in “14.1 SELECT DEVICE”.

1.  → “SETUP” → “NMEA2000 SETUP” → “SYSTEM NUMBER”
2. Rotate the **DIAL/ENT** knob to select the first digit of the system number, then press the **[SELECT]** soft key to step to the next number.
3. Repeat step 2 to set the system number within the range of 00 to 15. (“00” is default).
4. If a mistake was made entering in the system number, rotate the **DIAL/ENT** knob to select “←” or “→”, press the **[SELECT]** soft key until the wrong character is selected, then perform step 2.
5. When finished programming the system number, press the **[FINISH]** soft key.
6. Press the **CLEAR** key to return to radio operation.



14.4 SUMMARY OF THE NMEA 2000 SETUP

Item	Description	Default Value	Page
SELECT DEVICE	Select the device for which you want to set the device number or the system number	–	102
DEVICE NUMBER	Set the device number	000	102
SYSTEM NUMBER	Set the system number	00	103

14.5 COMPATIBLE NMEA 2000 PGN LIST

Receive		Transmit	
059392	ISO Acknowledgement	059392	ISO Acknowledgement
059904	ISO Request	059904	ISO Request
060928	ISO Address Claim	060928	ISO Address Claim
065240	ISO Commanded Address	–	–
126464	Receive/Transmit PGN's group function	126464	Receive/Transmit PGN's group function
126993	Heartbeat	126993	Heartbeat
126996	Product Information	126996	Product Information
127237	Heading/Track Control	–	–
127250	Vessel Heading	–	–
127258	Magnetic Variation	–	–
128259	Speed	–	–
129025	Position, Rapid Update	–	–
129026	COG and SOG, Rapid Update	–	–

Receive		Transmit	
129029	GNSS Position Data	129029	GNSS Position Data
129033	Local Time Offset	–	–
–	–	129038	AIS Class A Position Report
–	–	129039	AIS Class B Position Report
–	–	129040	AIS Class B Extended Position Report
–	–	129041	AIS Aids to Navigation (AtoN) Report
–	–	129793	AIS UTC and Date Report (Base Station)
–	–	129794	AIS Class A Static and Voyage Related Data
–	–	129796	AIS Acknowledge
–	–	129797	AIS Binary Broadcast Message
–	–	129798	AIS SAR Aircraft Position Report
–	–	129799	Radio Frequency/Mode/Power
–	–	129801	AIS Addressed Safety Related Message
–	–	129802	AIS Safety Related Broadcast Message
–	–	129808	DSC Call Information
–	–	129809	AIS Class B “CS” Static Data Report, Part A
–	–	129810	AIS Class B “CS” Static Data Report, Part B
129540	GNSS Sats in View	129540	GNSS Sats in View

15 CONFIGURATION SETUP

15.1 DISPLAY MODE

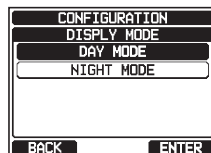
The display mode can be selected according to the time of day you operate the radio.

1.  → "SETUP" → "CONFIGURATION" → "DISPLAY MODE"

2. Rotate the **DIAL/ENT** knob to select the desired setting. You can select one from "**DAY MODE**" or "**NIGHT MODE**".

DAY MODE: Normal display mode.

NIGHT MODE: Low brightness display mode for night use.



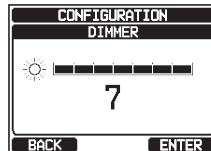
3. Press the **[ENTER]** soft key to store the selected setting.
4. Press the **CLEAR** key to return to radio operation.

15.2 DIMMER ADJUSTMENT

This menu selection adjusts the backlight intensity.

1.  → "SETUP" → "CONFIGURATION" → "DIMMER"

2. Rotate the **DIAL/ENT** knob to select the desired level ("7" is default). When "OFF" is selected, the lamp is turned off.
3. Press the **[ENTER]** soft key to store the selected level.
4. Press the **CLEAR** key to return to radio operation.



15.3 DISPLAY CONTRAST

The display contrast can be adjusted to suit your operation environment.

1.  → "SETUP" → "CONFIGURATION" → "CONTRAST"

2. Rotate the **DIAL/ENT** knob to select the desired level. The contrast level can be set from "1" to "30" ("15" is default).
3. Press the **[ENTER]** soft key to store the selected level.
4. Press the **CLEAR** key to return to radio operation.

