

Instruction Manual

SGC – 750

GPS COMPASS



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[PRECAUTIONS]

- To avoid the malfunction of the equipment, fire, or electric shock:
 - Do not disassemble or modify the equipment.
 - Do not allow the display and processor unit to become wet.
 - Operate the equipment only at the indicated voltage.
 - Consult with SAMYUNG or an affiliate to perform installation. Installation by unauthorized personnel may result in malfunction.
- Repair has to be performed on the specified representative.

- To avoid malfunction and damage of the equipment:
 - The dip switches on the unit are all set at the factory, and must not be changed.
 - Do not install the display unit in locations where it may come in contact with water, oil, or chemicals.
 - Do not install the equipment in places subject to vibration or shock.
 - Do not place items on top of the equipment.

- Install this unit at least 1 m away from any magnetic compasses. Installation near a magnetic compass may result in an accident.

- Only use the specified batteries. Failure to do so may result in battery leakage or rupture, resulting in fire, injury, or equipment failure. When disposing of the used lithium battery, place insulating tape over the battery terminals, or otherwise insulate the battery. Failure to do so may result in heating, explosion, or fire due to a shorted battery.

- Do not use the equipment in environments other than those provided in the specifications.

- Use the indicated screws when installing the display unit to a stable surface. Failure to do so may result in the display unit falling over, causing injury or property damage.

- Use only the specified fuse. Failure to do so may result in fire or malfunction.

- Do not bend the cables included with this equipment excessively, or twist them or subject them to other strong forces. Doing so may result in damage to the interior or exterior of the cables, and may result in fire or electrocution.

SECTION 1 EQUIPMENT OVERVIEW

- This equipment determines the heading of a ship by measuring the orientation between two antennas using the signal from GPS satellites. This equipment also for outputting azimuth data is useful to be used in connection with Radar, ECDIS, AIS & Autopilot.
- If the ship under the bridge in place or the GPS signal is blocked by the tall building, the built-in gyro sensor and an acceleration sensor replaces it.

■ FEATURES

- High accuracy and high stability
- Short setting time (less than 3 minutes)
- High visibility 5.6-inch FTF color LCD
- Various display mode
- Easy installation & maintenance
- SBAS compatible: Differential positioning by receiving correction data from SBAS satellites
- Enhanced attitude measuring functions (rolling, pitching)

■ This device complies with the following requirements:

- IMO MSC. 116 (73): Performance Standards for Marine heading delivery device.
- ISO / FDIS 22090-3: Ships and marine technology – heading delivery device.
- IMO A. 694 (17): General requirements for ship radio equipment and electronic navigational support of GNSS.
- IEC 60945 (2002-08): Maritime navigation and radio communication equipment systems – Requirements – Test methods and results.
- IEC 61162 (2000): Maritime navigation and radio communication equipment systems – Digital interface

SECTION 2 CONSTRUCTION

2.1 STANDARD CONFIGURATION

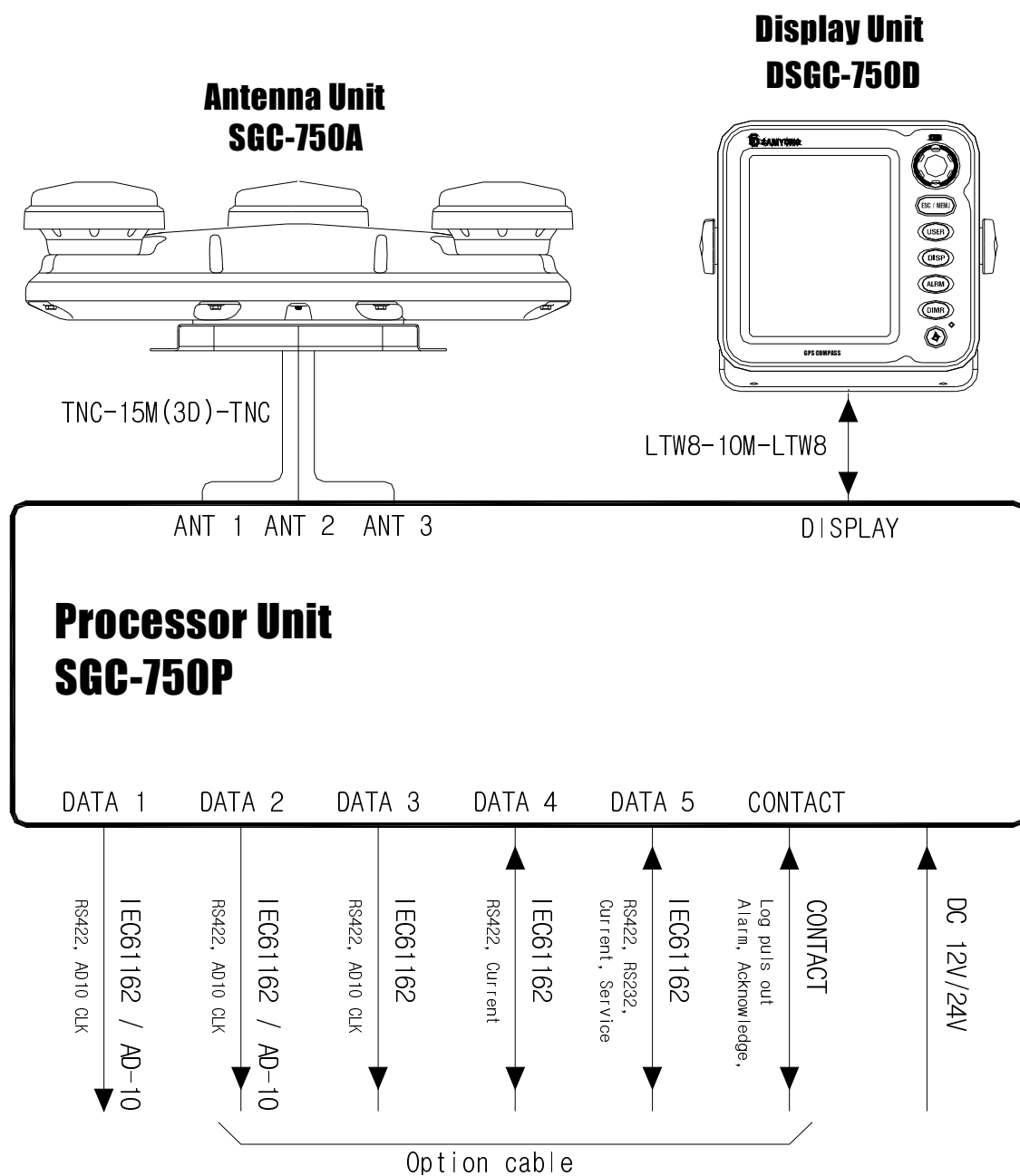
No	Name	Model / Code	Q'ty	Remark
1	Display unit	SGC-750D	1	
2	Processor unit	SGC-750P	1	
3	Antenna unit	SGC-750A	1	
4	Installation material	SGC-750-A	1	Refer to Section 10
5	Instruction manual	SGC-750-MK	1	M00-0190-00

2.2 OPTION

No	Name	Model / Code	Q'ty	Remark
1	Antenna cable	TNC3-15M(3D2VX3)-TNC3	1	Standard
2	Antenna extension cable	NP-30M(LMR400)-NP-A	1	L=30m (3 pcs.)
		NP-50M(LMR400)-NP-A	1	L=50m (3 pcs.)
3	Data cable	LTW6-3M-07	1	Standard or Option 6P(DATA)
		LTW10-3M-11	1	10P(DATA)
		LTW12-3M-13	1	12P(CONTACT)
4	Antenna mounting plate	SGC-750A-M	1	
5	Bird Repellent kit	SGC-750A-BRK	1	Including an adhesive

2.3 SYSTEM CONFIGURATION

SGC-750 is composed of antenna units (SGC-750A), a display unit (SGC-750D) & a processor unit (SGC-750P).



Radar, ECDIS/GPS Plotter, AIS, Autopilot...etc
Alarm System, External Buzzer, Repeater...etc

SECTION 3 SPECIFICATION

■ GENERAL

- Receiver Type 50-channel, L1 frequency
- Rx Frequency 157.42 MHz(± 1 MHz)
- Rx Code C/A code, SBAS
- Position Fixing System All-in-view, 8-state Kalman filter
- Position Accuracy GPS: 2.5 m CEP, SBAS: 2.0 m CEP
- Heading Accuracy $\pm 0.5^\circ$ rms
- Rolling Accuracy $\pm 0.5^\circ$ rms
- Pitching Accuracy $\pm 0.5^\circ$ rms
- Display resolution 0.1° rms
- Resolution output $0.1^\circ / 0.01^\circ$ (selectable)
- Follow-up $45^\circ/\text{s}$ rate-of-turn
- Tracking Acceleration 1G
- Settling Time ≤ 2 minutes
- Roll/Pitch Output $-60^\circ\text{C} \sim +60^\circ\text{C}$

■ DISPLAY

- Display Type 5.6 inch, TFT color LCD, 480 x 640 pixel
- Effective Area 85 mm (H) x 113 mm (W)
- Contrast 64 levels
- Display Mode Highway, Compass, Heading, ROT, Navigation, Roll & Pitch, Speed, GPS status

- POWER SUPPLY DC 12V
~24V (15W)

■ ENVIROMENTAL CONDITION AND EMC

- Storage Temperature $-25^\circ\text{C} \sim +75^\circ\text{C}$
- Operating Temperature PROCESSOR & DISPLAY: $-15^\circ\text{C} \sim +55^\circ\text{C}$, ANTENNA: $-25^\circ\text{C} \sim +55^\circ\text{C}$
- Waterproofing PROCESSOR: IPX2, DISPLAY: IPX4, ANTENNA: IPX6
- Vibration IEC60945 ed.4
- EMC IEC60945 ed.4
- Compass Safe Distance $\leq 1^\circ$ (30cm)

■ DIMENSION AND WEIGHT

- ANTENNA unit $\varnothing 675 \times 194(\text{H})$ mm / 4.8 Kg
- PROCESSOR unit $302(\text{W}) \times 106(\text{D}) \times 252(\text{H})$ mm / 3.5 Kg
- DISPLAY unit $179(\text{W}) \times 76(\text{D}) \times 170(\text{H})$ mm / 0.7 Kg

■ External Interface

Connector	I/O	Standard	Purpose	Remark
DATA 1	Output	RS-422	NMEA / AD-10	
DATA 2	Output	RS-422	NMEA / AD-10	
DATA 3	Output	RS-422	NMEA / AD-10	
DATA 4	Output	RS-422	NMEA	
	Input	RS-422	NMEA	CURRENT
DATA 5	Output	RS-422	NMEA	
	Input (1)	RS-422	NMEA	CURRENT
	Output	RS-232	NMEA / SERVICE	Update
	Input (2)	RS-232	NMEA / SERVICE	Update / CURRENT
CONTACT	Output	RELAY-0	External Alarm 1	For unusual purpose
	Output	RELAY-1	Log Pulse	OFF, 200P/nm, 400P/nm
	Output	RELAY-2	External Alarm 2	For usual purpose
	Input (1)	ACK	External Alarm 2 Off	

- Data Standard NMEA, AD-10(25ms / 200ms)
- Transmission Speed 4800 / 9600 / 19200 / 38400 / 57600 / 115200bps
- Data Bit 8 bit / parity : none / stop bit : 1 bit
- Output Interval 20ms / 25ms / 50ms / 100ms / 200ms / 500 ms
/ 1s / 2s / 3s / 4s / 5s / 6s / 7s / 8s / 9s
- Sentence HDT / THS / ROT / ZDA / GGA / VTG / RMC / GBS/
DTM / GSA / GSV / GNS / MSS / GST / GLL / ALR / ATT

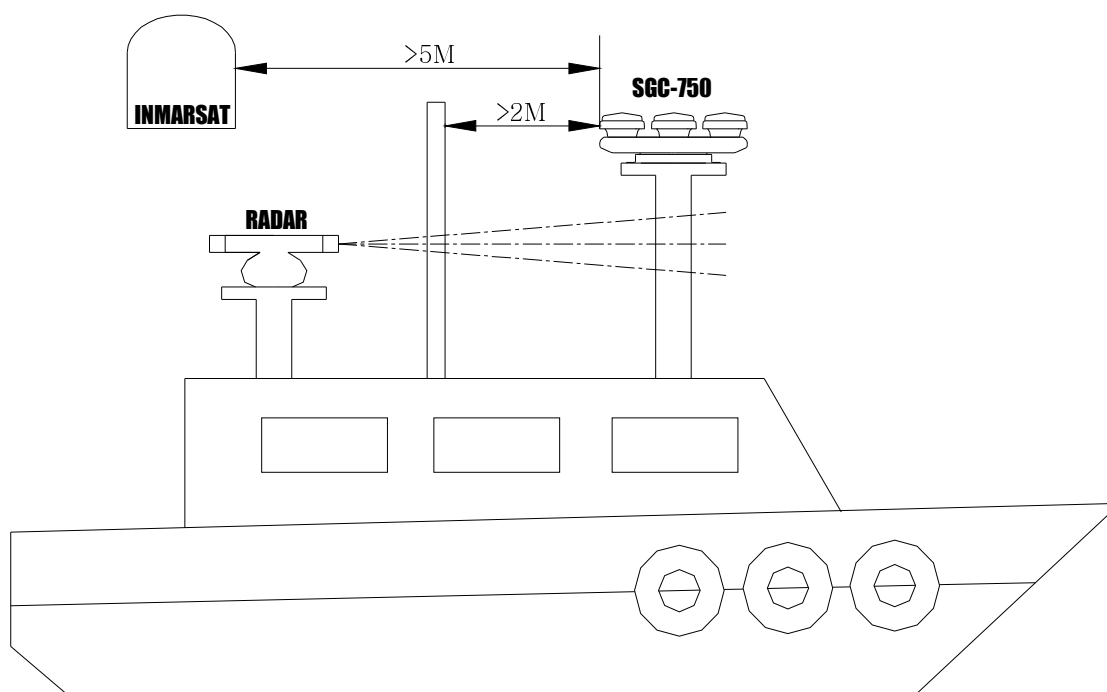


- HDT and THS sentences cannot be set together due to sensor's data throughput.
- Some combination of output sentence could be not available depends on bit rates and output interval.

제 4 장 Installation

4.1 Install Antenna Unit

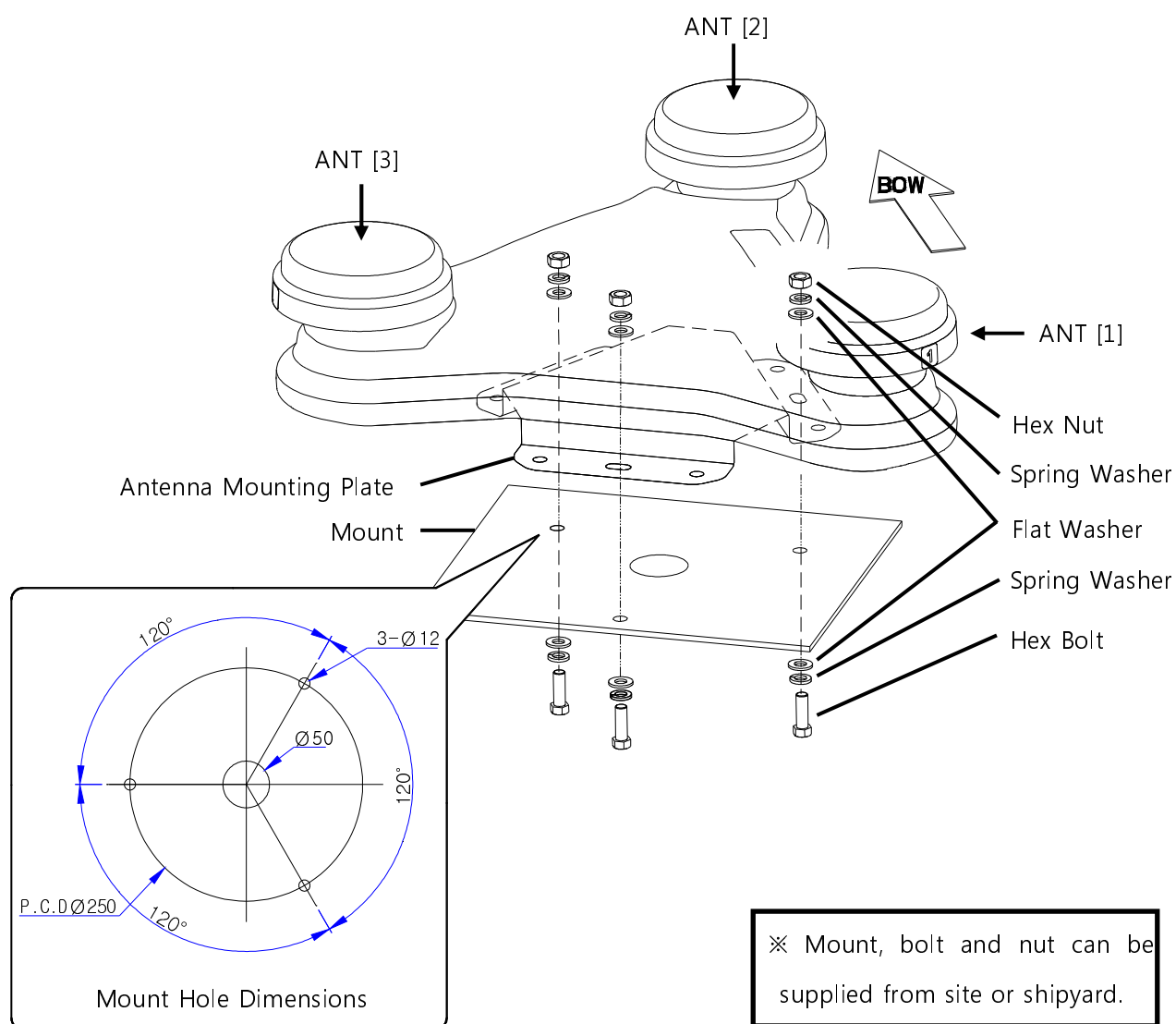
This Equipment uses GPS satellite signal to detect the heading of vessel. Antenna should be installed at the place without reflection and interference to receive the signal. If it is installed at improper place, reduction of accuracy, repetitive stop of calculation and disorder of equipment can be caused. To check if the place is proper to install, do a test before fix the antenna permanently. Place with below features is recommended for best performance.



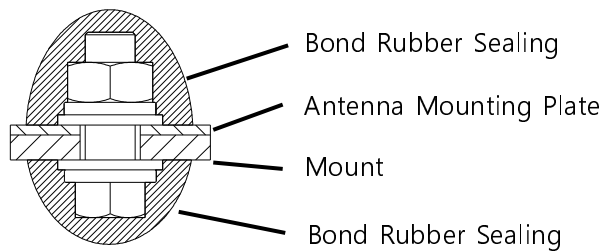
- Keep distant over 5m from IMO instruments' antennas including Inmarsat.
- Install the antenna where is no viewing obstacle for sky.
- Install at away of radar beam over 2m. Reduction of accuracy can be caused by multi-interference.

■ Install using Standard Mount

- Put the antenna unit on the Mount like below picture. Fix using M10 Hex bolt, washer, spring washer and nut.
- When make a hole on the mount, be aware about the heading direction of vessel. Too long bolt can be touched antenna unit (Recommend to use M10x30mm bolt for 5mm mount). Using double nut is effective to fix antenna fasten.

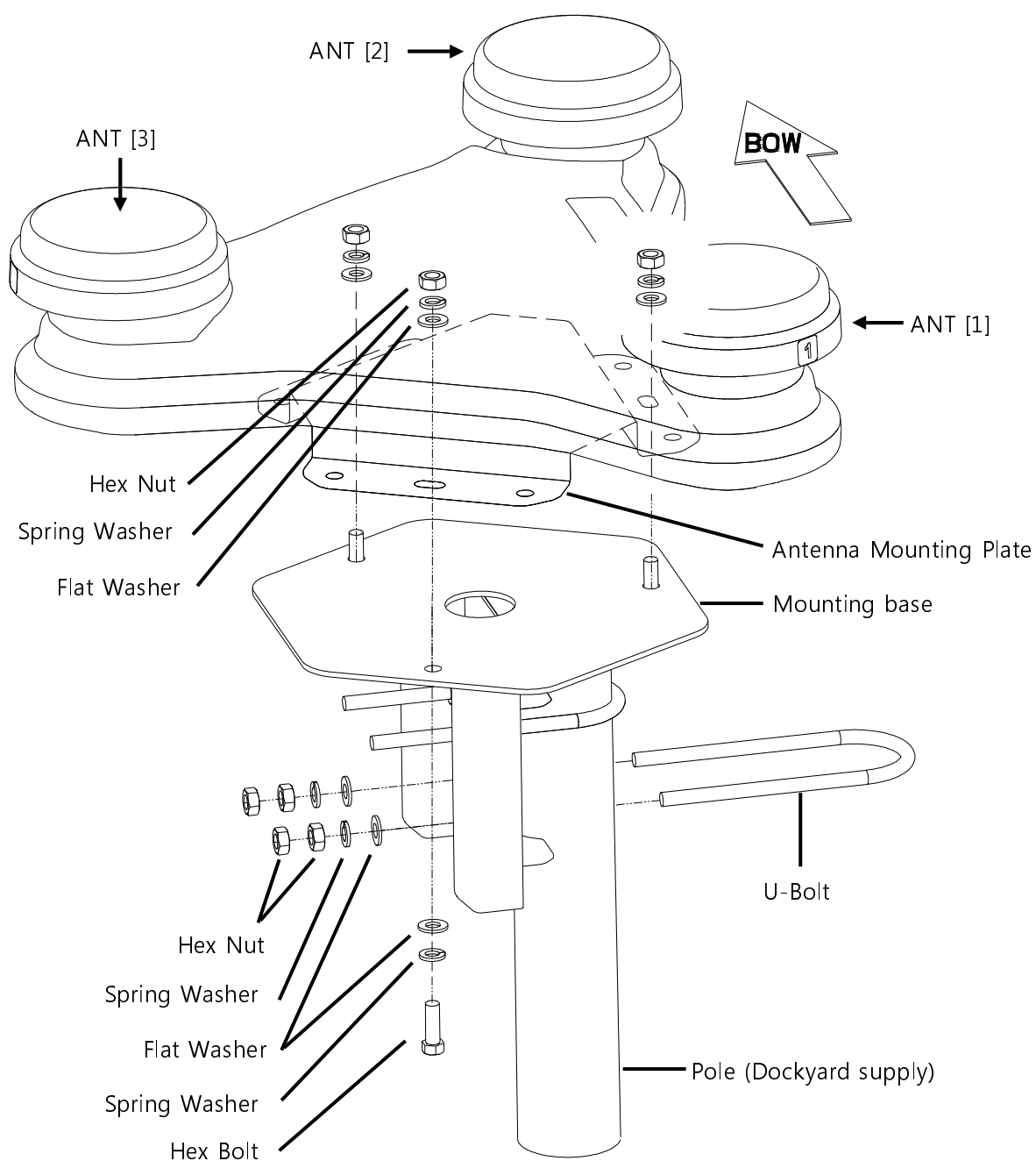


- Seal the bolt and nut using rubber bond.
(threebond1211, Silicone Sealant...)

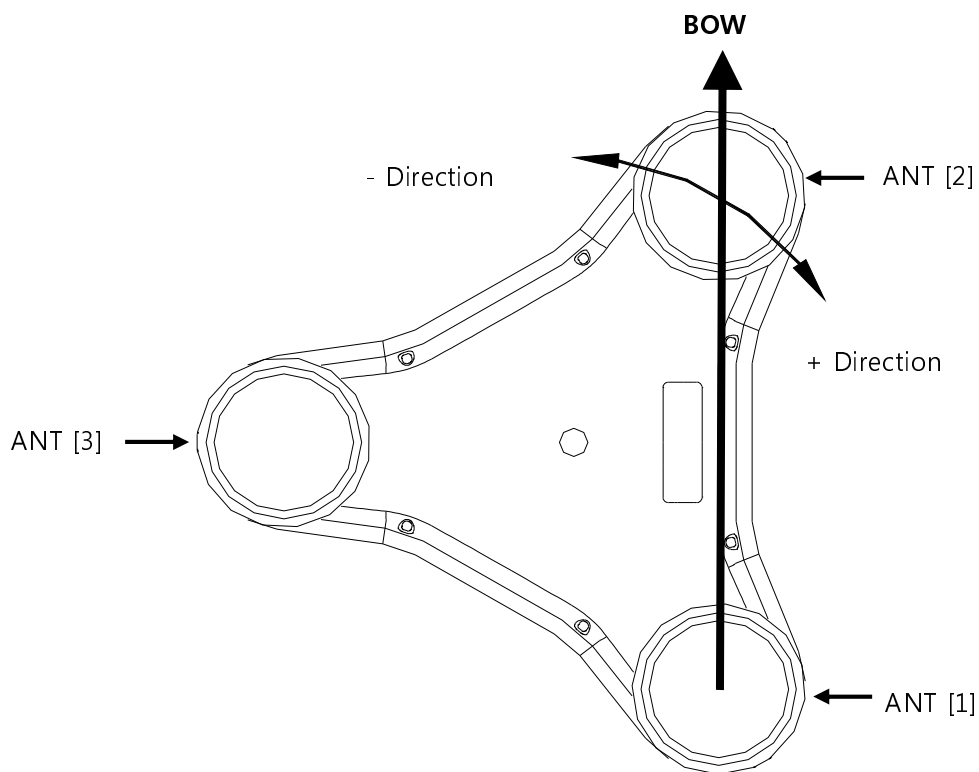


■ Install using Option Mount

- Install the mount on the pole like below picture. Put the antenna unit on mount with attention about the heading direction of vessel.

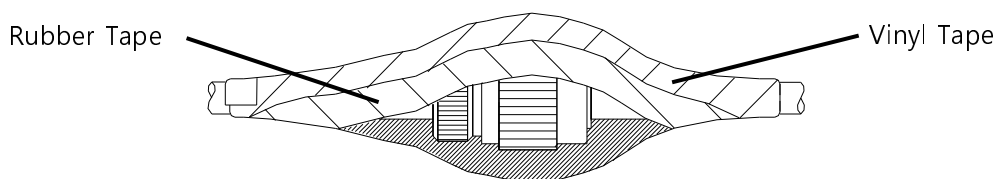


- Antenna unit should be installed as the direction indicated from below picture. The number of antenna is marked on the side of each antenna and "BOW" mark is on between ANT [1] and ANT [2]. Make sure the "BOW" mark face the bow. Antenna unit should be placed within $\pm 2.5^\circ$ of bow.

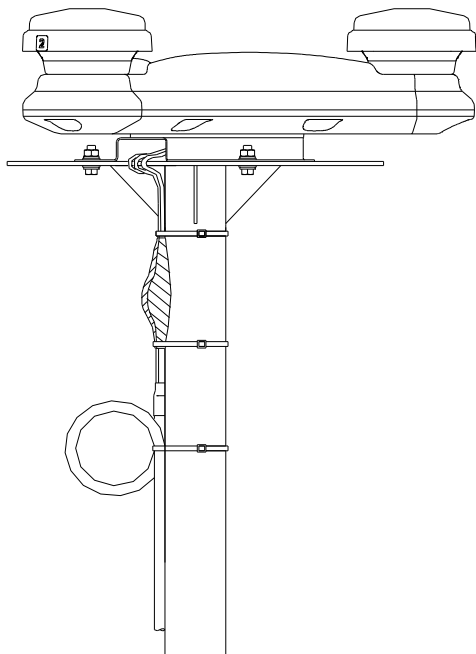


■ Fixing Antenna Cable

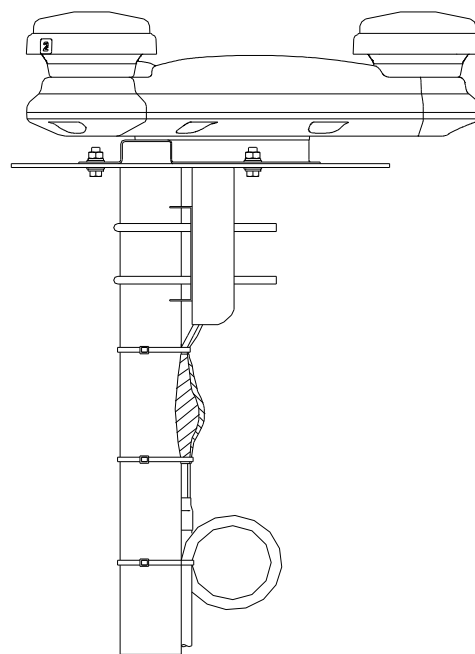
- If some slack is provided for the cable, beware of the influence from wind or sea wave. Arrange the cable so that it will not be hooked by a crane or fishing equipment.
- Wrap the antenna connector with offered rubber tape like below picture and cover with offered vinyl tape for waterproof.



- Make the loop with antenna cable like below picture and fix on the pole with cable tie (offered).



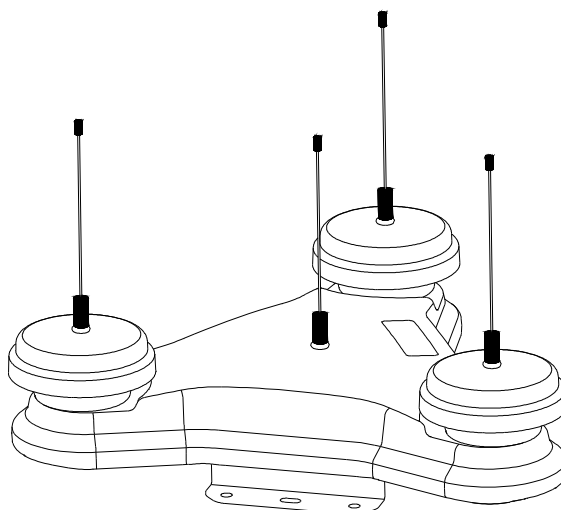
With Standard Mount



With Option Mount

■ Bird Protection Kit installation

- Wipe cleanly the place to install the kit.
- Remove the sticker of the bottom and attach like below picture.
- Apply the glue around the adherend. (Setting time: more than 24 hours)

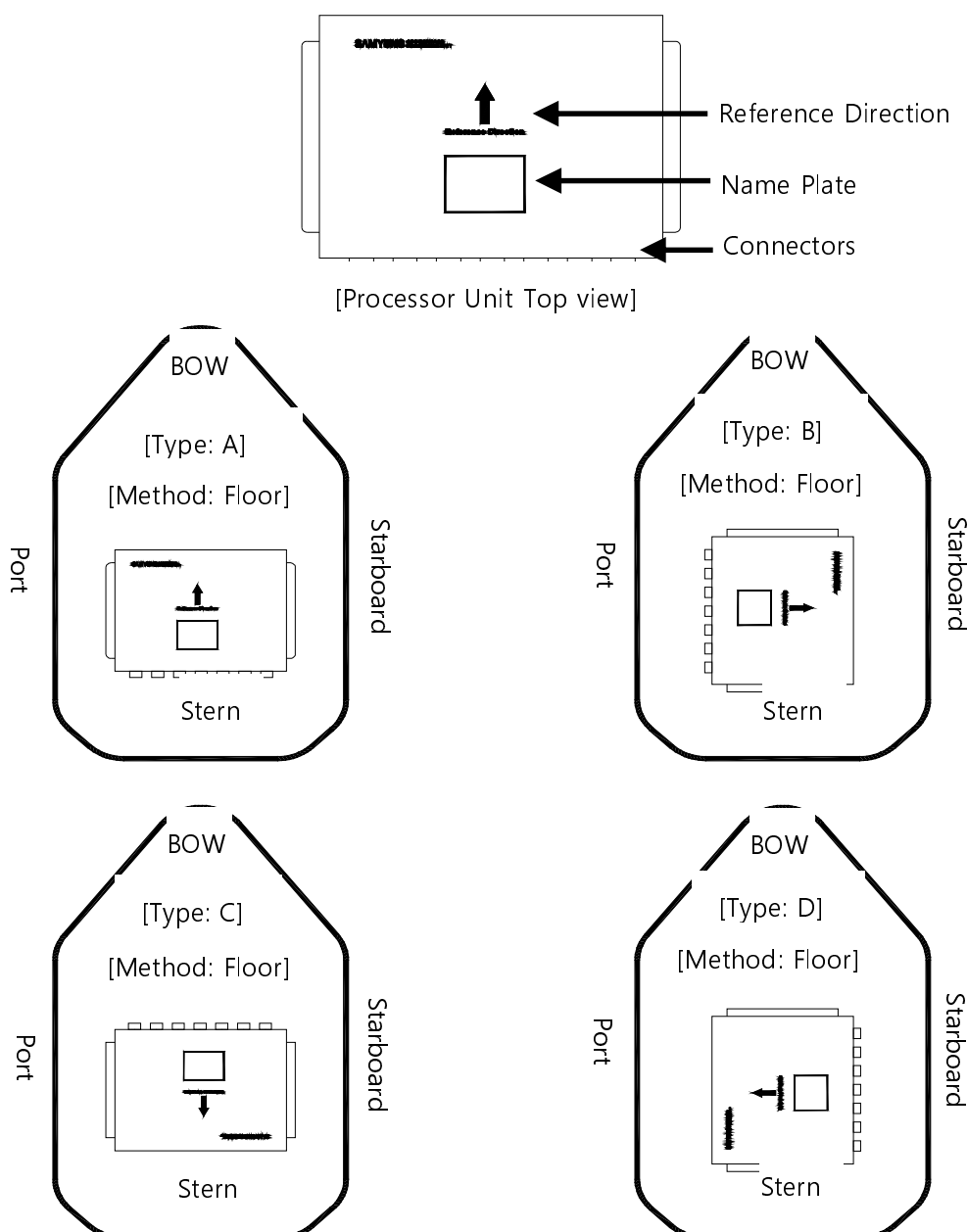


4.2 Install Processor Unit

Processor unit can be installed on the deck, bulkhead or underside of a desk. It must be in a parallel line of bow and stern (within $\pm 2.5^\circ$).

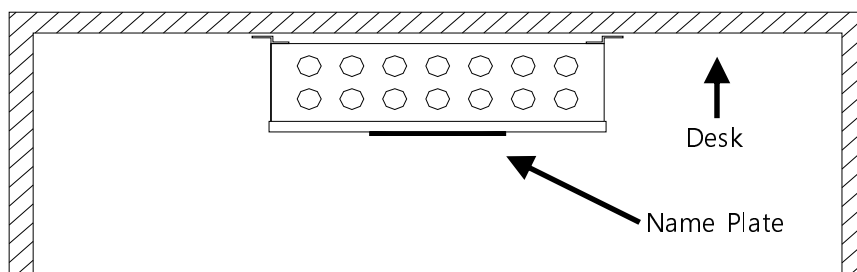
■ Installing on deck

- Processor unit is basically set as deck floor installation when released from factory. The unit should be installed as direction from one of below pictures and should set the installed way from menu after installation. (Refer to 7.4.6.6 INSTALLATION SETUP)

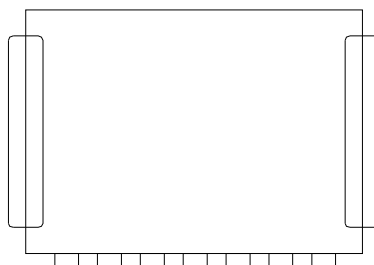


■ Install under the desk

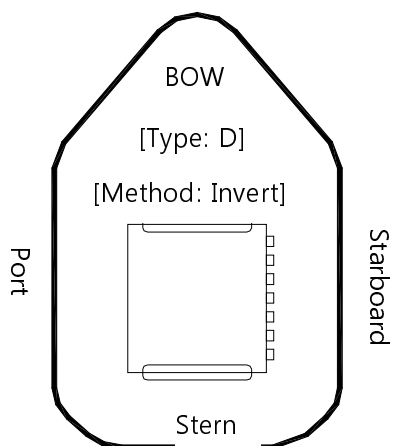
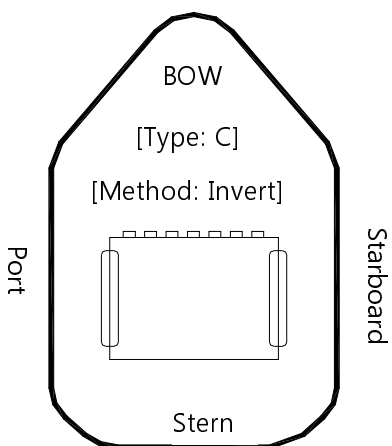
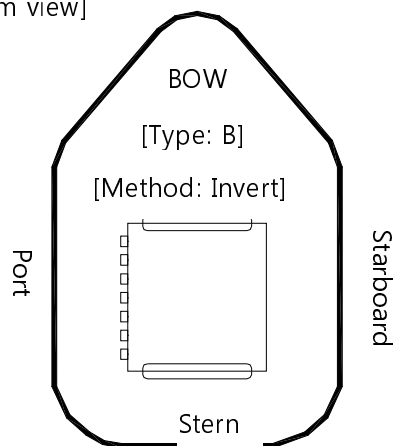
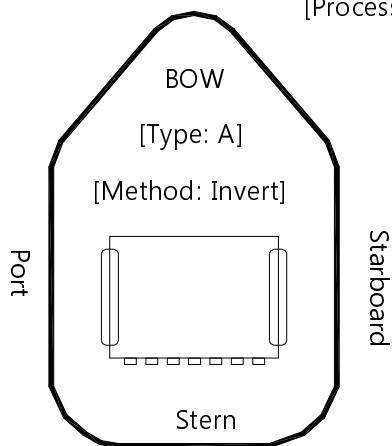
- The processor unit can be installed on the underside of a desk. But do not install overhead (eg. ceiling). After installation, should set the installed way from menu. (Refer to 7.4.6.6 INSTALLATION SETUP)



[Installation on the underside of a desk]

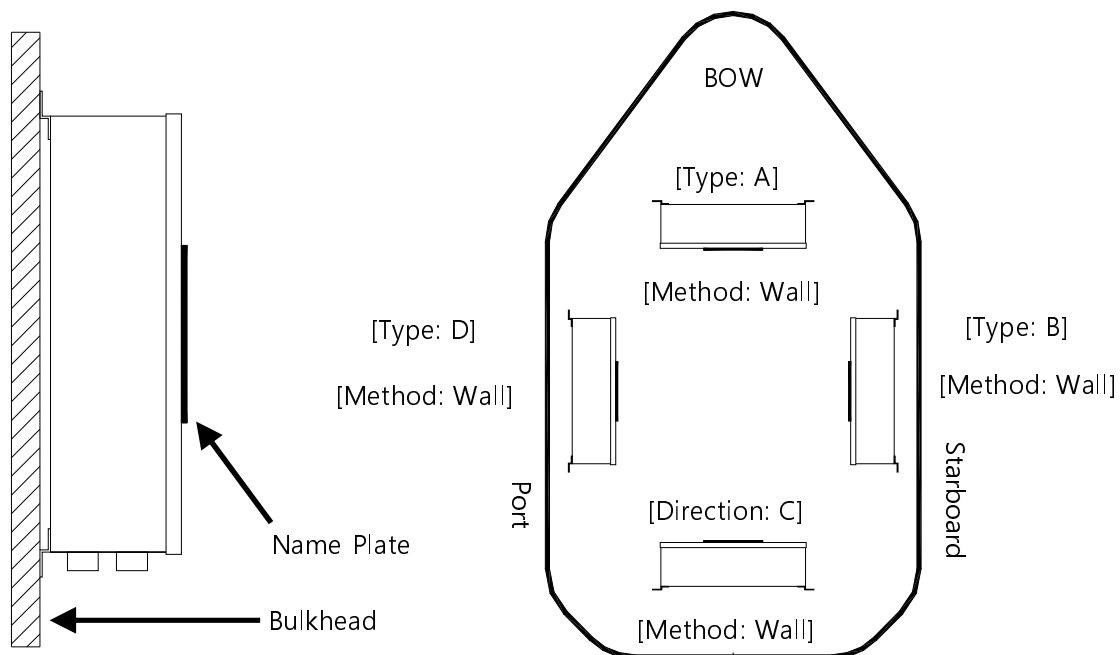


[Processor Unit Bottom view]

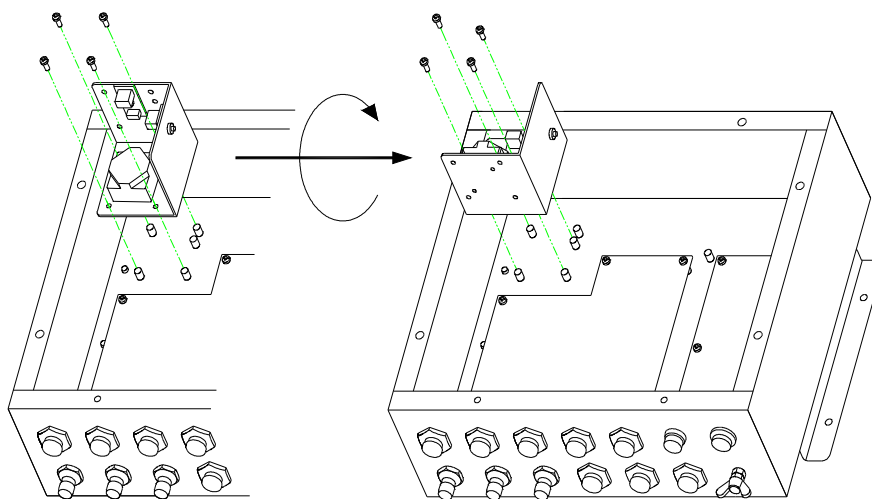


■ Install on Bulkhead

- The processor unit can be installed on the bulkhead like below picture. After installation, should set the installed way from menu. (Refer to 7.4.6.6 INSTALLATION SETUP)

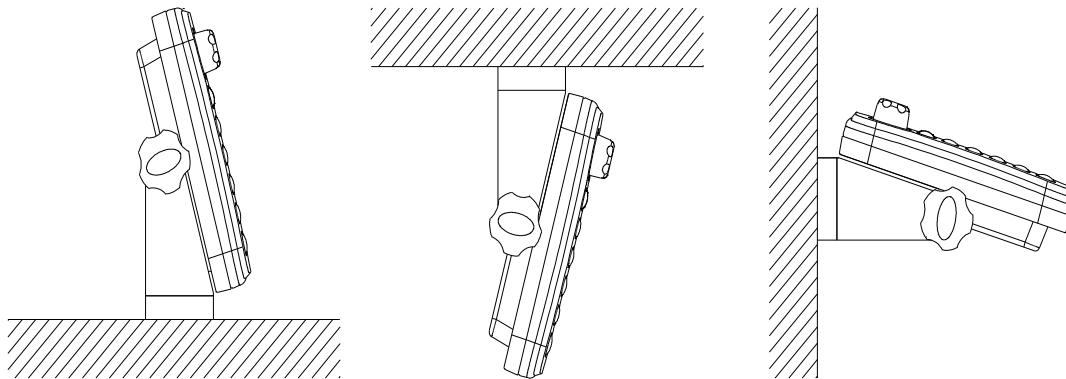


- The precision gyro sensor inside of processor unit should remain horizontal with sea surface. So when install on bulkhead, should assemble after rotate the gyro sensor 90 degree to make it horizontal.



4.3 Installation of display unit

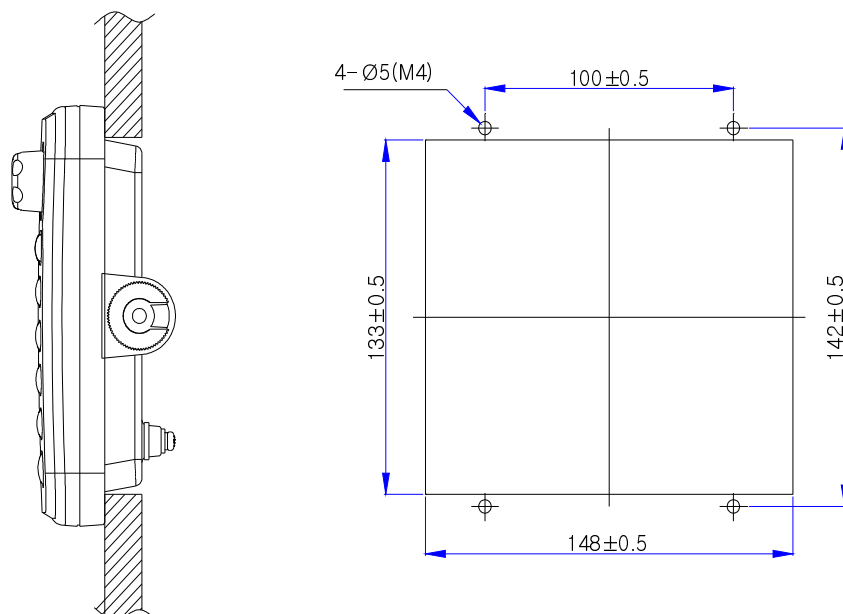
■ Bracket mounting



- Selecting the right place to install the device, and secure the mounting base with screws
- Secure the unit to the mounting base.
- Without hindering the operation of ship, install in easy operation..
- Refer to the diagram in chapter 11 for detailed dimension.

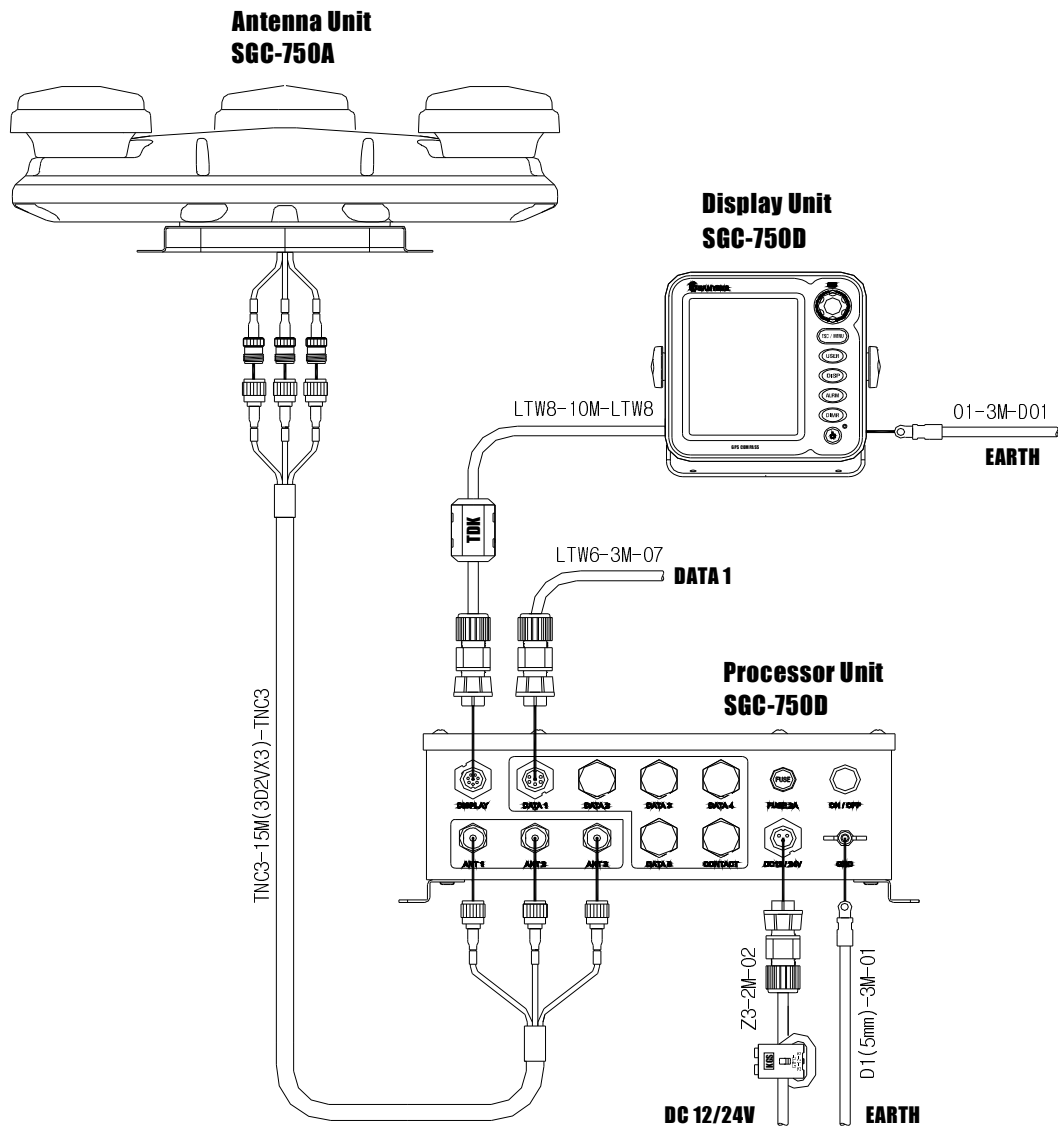
■ Flush mounting

- Select the location for the installation of flush mounting.
- Make sure you have enough space to drill the mounting holes, refer to the figure below.
- Secure the mounts using screw.



4.4 Wiring

- The following represents a general wiring. Please refer to the manual "11.1 full wiring diagram" for more information.



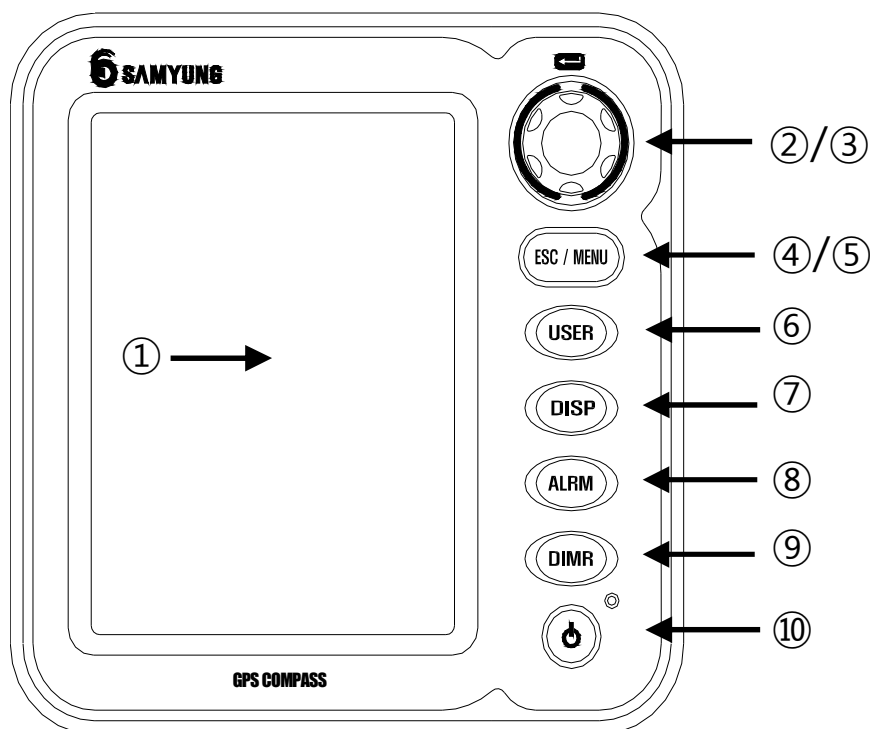
- The length of display cable (LTW8-10M-LTW8) is 10m. Please connect cables to the 8P connector on the back of the display unit and display port of processor unit.
- The length of antenna cable [TNC3-15M(3D2VX3)-TNC3] is 15m(standard). Connect the antenna cable to processor unit matching with the indicated number on cable

Inconsistency of connection results in improper output, so please attention to the antenna number.

- Please attach the supplied EMI filter to the power cable (Z3-2M-02) and the display cable
- Make the ground of display unit and processor unit using earth cable.

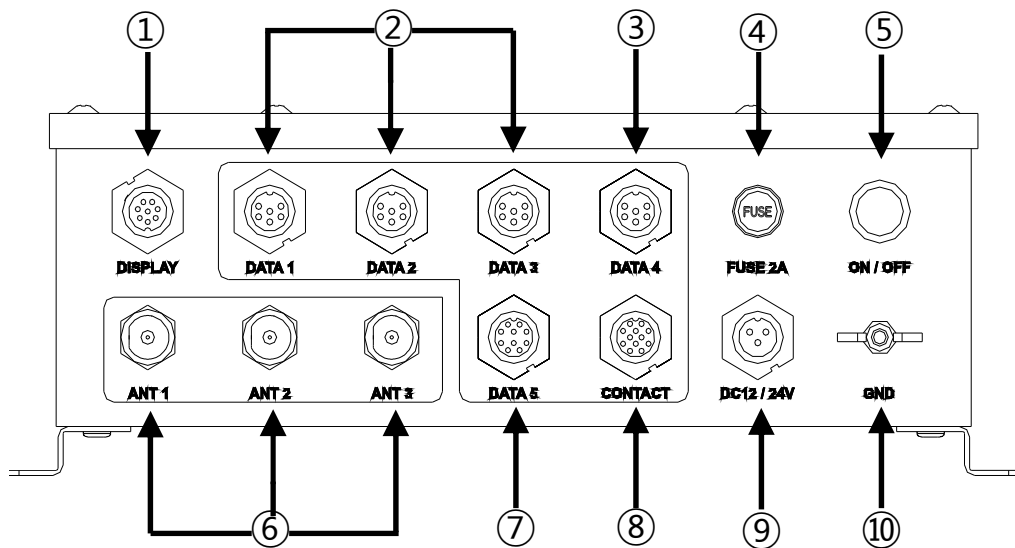
Chapter 5. part names and functions

5.1 display unit



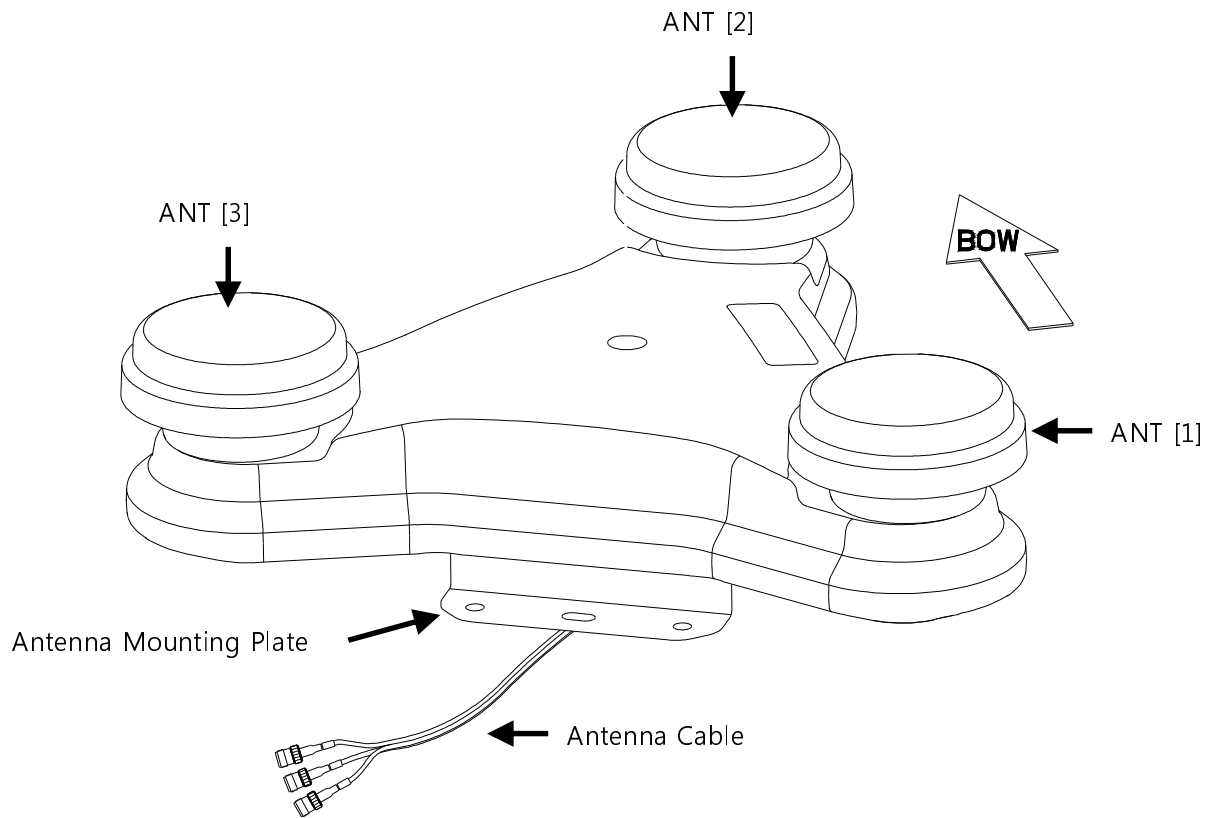
NO	name	button	function
5	LCD	5.6 inch	Various information
②/③	[ENT] / [DIAL]		ENT: press to select DIAL: rotate for cursor movement
④/⑤	[ESC] / [MENU]		ESC: return and cancel of alarm MENU: enter to menu
⑥	[USER]		Satellite information display and switch
⑦	[DISP]		Display screen and switch
⑧	[ALRM]		Alarm information
⑨	[DIMR]		Adjust the screen brightness (10 levels)
⑩	[POWER]		LCD power ON/OFF

5.2 Processor Unit



NO	Name	Function
①	DISPLAY	Display connection
②	DATA1 / 2 / 3	NMEA, AD-10 output
③	DATA4	NMEA input/output
④	FUSE 2A	Fuse holder(2A)
⑤	ON / OFF	power ON/OFF switch
⑥	ANT1 / 2 / 3	antenna input
⑦	DATA5	NMEA input/output, update
⑧	CONTACT	Contact output, log pulse output, alert response
⑨	DC12 / 24V	Power supply(12V/24V)
⑩	GND	ground

5.3 Antenna unit



Chapter 6. Display

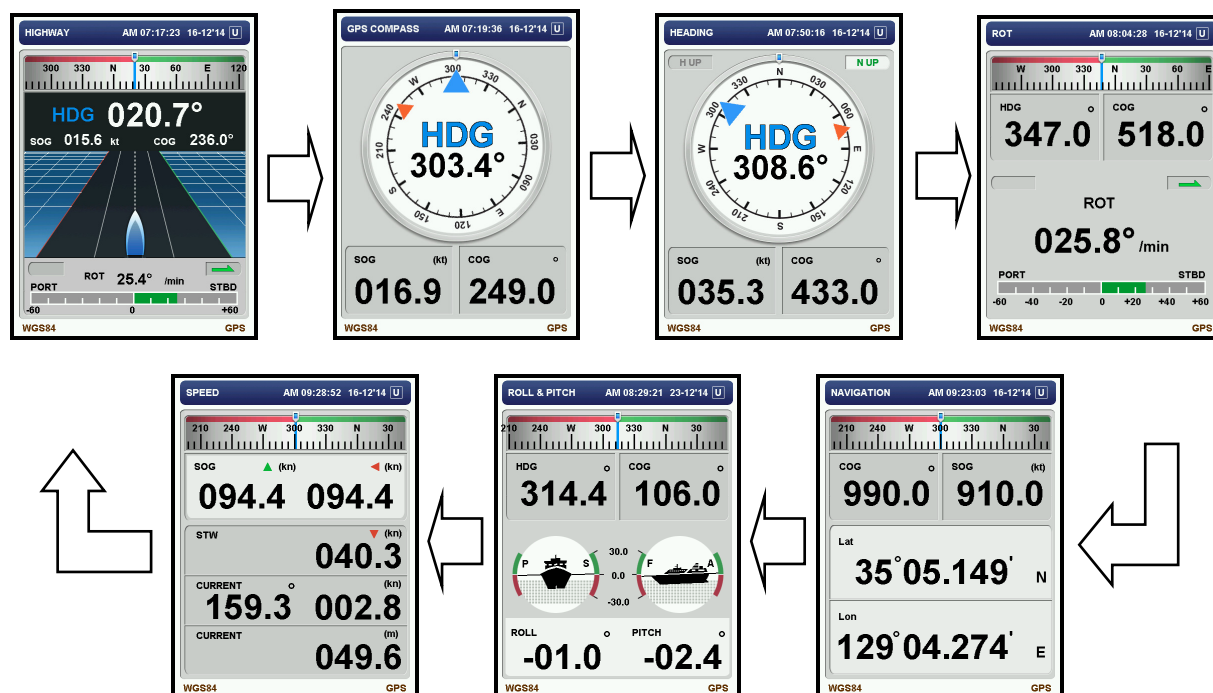
6.1 Main screen



NO	Icon name	function
①	Screen title	Indicates the title of the active screen.
②	time	Indicate time as hour, minute and second in order
③	date	Indicate year, month and day in fixed order
④	UTC	Use of UTC time /if you use the local time, it is displayed to L.
⑤	DATUM	Marks the geodetic system currently in use.
⑥	alarm	displayed when the alarm information have been updated
⑦	ANCHOR WATCH	 : locate in setting range  : locate our of setting range
⑧	Heading offset	Indicate the value of fixed heading offset
⑨	GPS mode	GPS Mode

6.2 display screen

The first time you turn on your device screen is displayed, when you press a key. **DISP** Seven kinds of display screens are switched in sequence each time



6.2.1 highway screen

Screen represents the heading information of vessels with highway background, you can check the SOG, COG ROT

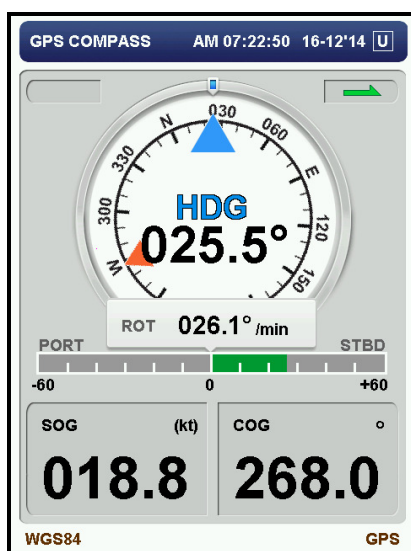


6.2.2 GPS compass screen

It shows the vessel's heading information in the form of compass, 5 kinds of screens (A, B, C, D, E) can be switched turning the key 



screen A



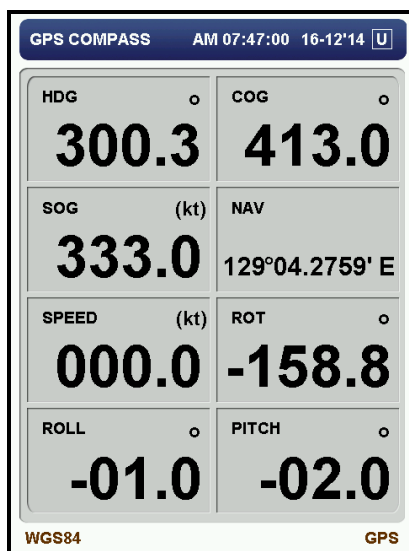
screen B



screen C



screen D



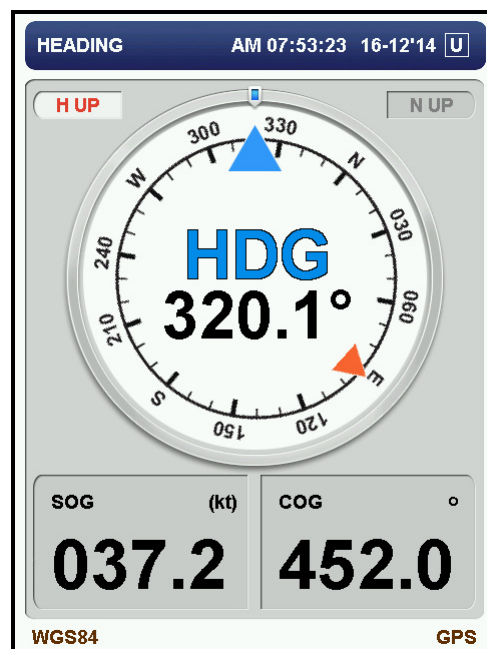
screen E

6.2.3 HEADING screen

It shows the vessel's heading information in the form of compass, True North and South direction can be switched turning the key 



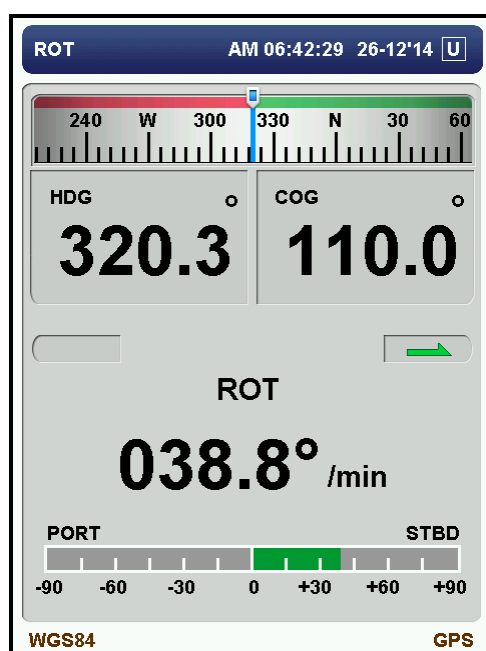
자북



진북

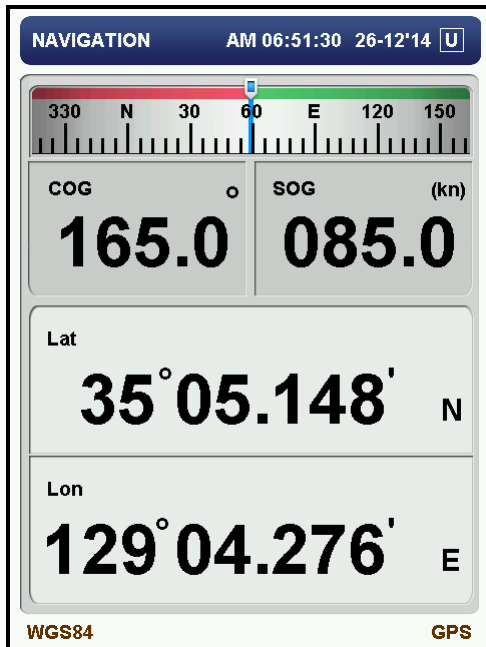
6.2.4 ROT screen

It shows vessel's ROT in the form of graph, vessel's heading information is represented upper the screen.

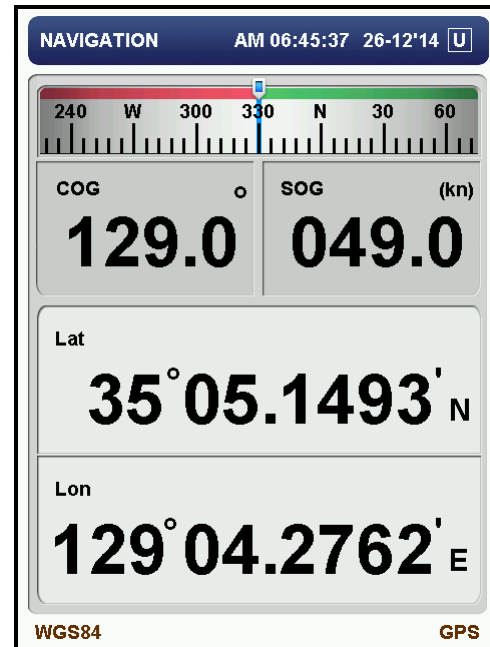


6.2.5 Navigation Screen

latitude and longitude determined by the GPS are displayed and can be switched to the 3-digit and 4-digits by rotate  key .



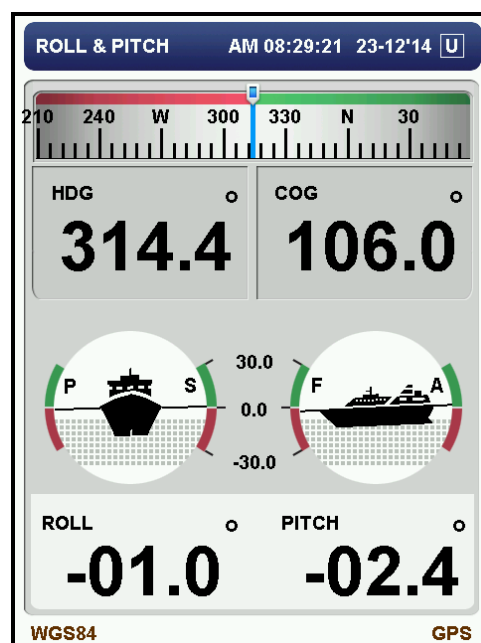
3 자리



4 자리

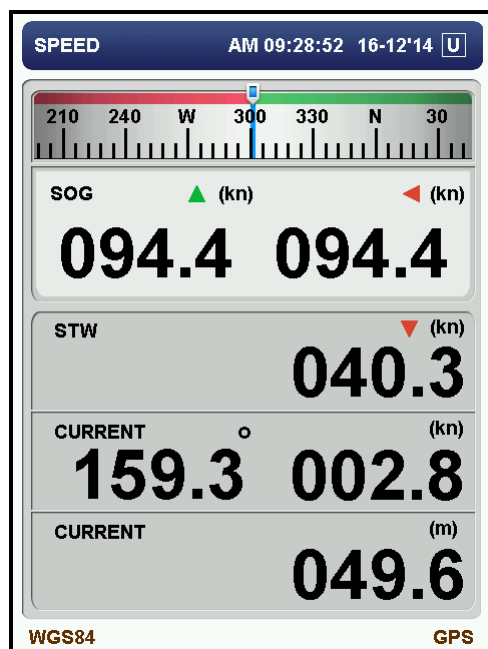
6.2.6 Roll) & Pitch Screen

Display roll and pitch of vessel and the top of the screen displays the heading information.



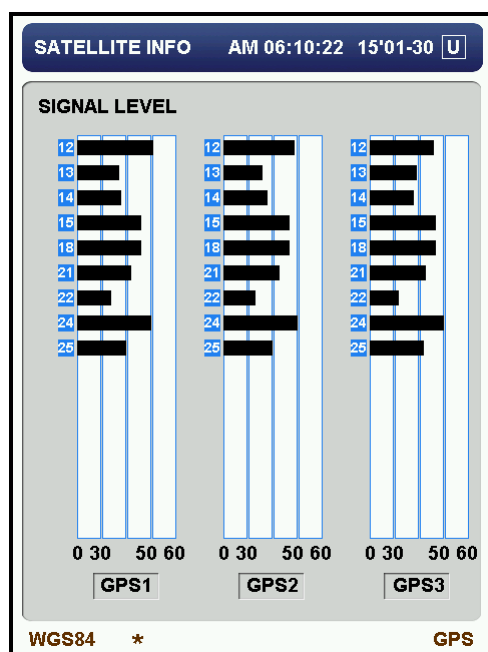
6.2.7 Speed Screen

Display the longitudinal velocity and lateral velocity of the ship. When you connect with the tidal current meter STW, CURRENT, the DEPTH is displayed.



6.3 Satellite information Screen

press of the  key to determine the satellite information and each of the screens are switched

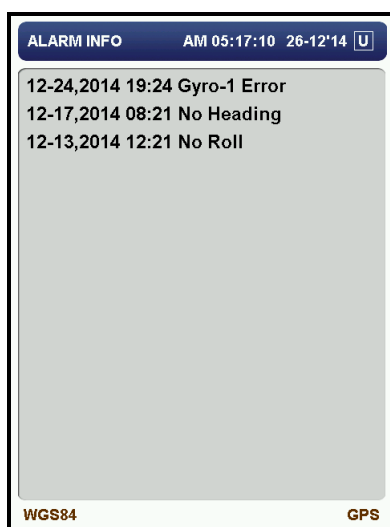


Satellite locatio

Satellite Signal Level

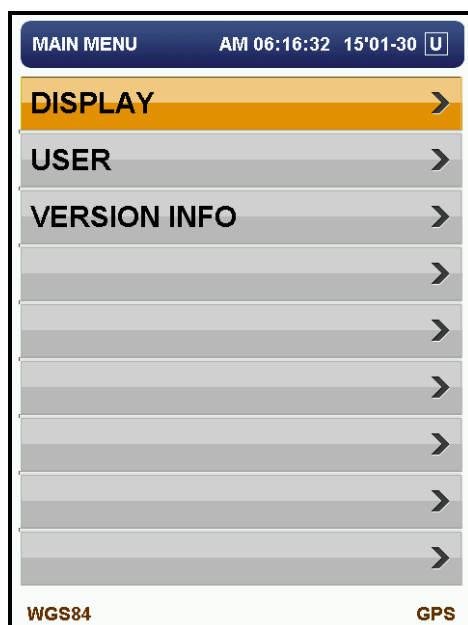
6.4 Alarm Information Screen

Press the  key to confirm the alarm history screen is switched to the alarm information. (See 8.3 Alarm and cause.) When the alarm information have been updated, the * symbol appears in the status bar. If there is no alarm then **"NO ALARMS"** is displayed and date and time information will be display as **"??-??,???? ??:??"**



6.5 Menu Screen

Press the  key from any screen to change settings, or check can go to the main menu. For more information, see "7.3 Main Menu".



Chapter 7. Operation

7.1 Basic Operation

7.1.1 On and Off

- **ON:** Press the ON / OFF switch of the process unit power ON and press  on the display unit.

After a while, the LCD screen lights up to display the highway. (See Chapter 5)

- **OFF:** Press the  key on the display for 3 seconds. the LCD is turned off by pressing the ON / OFF switch of the process unit power OFF.

※ When the process unit on: Display unit can be ON/OFF

When the process unit off state: Display Unit is always off

7.1.2 Brightness Adjustment

Press the  key to adjust the brightness of adjustment. The brightness of the screen can be set to one of 10 levels, and a brightness setting of 10 when you turn on the device. Key panel brightness is changed according to the brightness of the screen.

7.1.3 Basic Setting and Checking

Press the  key from any screen to check or change the settings you can go to the main menu.

(Please 7.3 Main Menu)

7.1.4 Detailed Settings and Maintenance

When pressing  key and  key same time for more than 3 seconds at main menu then the main menu(s) screen will be appeared. In this menu the detailed setting and performance and status of equipment can be checked. (Please see 7.4 Main Menu(S)). To return to main menu press 

Key and  key at same timem for more than 3 seconds.

7.1.5 Satellite Information Check

Each screen will be switched in sequence each time you press  key to confirm the satellite information. (6.3 satellite information, see the screen.)

7.1.6 Changing the Display Screen.

Press  key at any time to check for a header and related information display screen are switched in turn. Select the desired screen and verify the information. (Refer to 6.2 Display screen).

7.1.7 Alarm & Verification

When an alarm occurs, the window is active on the screen. The alarm can be off by pressing   key is pressed to confirm the alarm and go to the alarm information screen. In general, the position measurement stop, the orientation measurement stops, the alarm is generated by the error occurrence. (See 6.4 Alarm information display, alarm and causes 8.3.)

7.2 Menu List

7.2.1 Main Menu List

MAIN MENU		
DISPLAY	SCREEN MODE	DAY, NIGHT
	BRIGHTNESS	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
	START SCREEN	HIGHWAY, CMPS A, B, C, D, E, HEADING, ROT, NAVI, R&P, SPEED
	KEY SOUND	ON, OFF
	LAT/LON POS DIGIT	3, 4
	ROT RANGE	±30, 60, 90, 120, 150, 180, 210, 240, 270, 300, 600, 900, 1200, 1500, 1800, 2100, 2400, 2700°/min
	ROLL/PTICH RANGE	±5, 10, 15, 20, 25, 30°
	FAST DISP UPDATE	ON, OFF
USER	LANGUAGE	ENGLISH
	DATE DISP	DD-MM'YY, TT-MM-DD, MM-DD'YY
	TIME DISP	12, 24 Hour
	TIME OFFSET	-13H 00M ~ 00H 00M ~ +13H 00M
	SPEED UNIT	kn, km/h, mi/h
	ANCHOR RANGE	0.01 ~ 1.00 ~ 9.99NM
VERSION INFO		DISPLAY, PROCESSOR

7.2.2 Main Menu(S) List

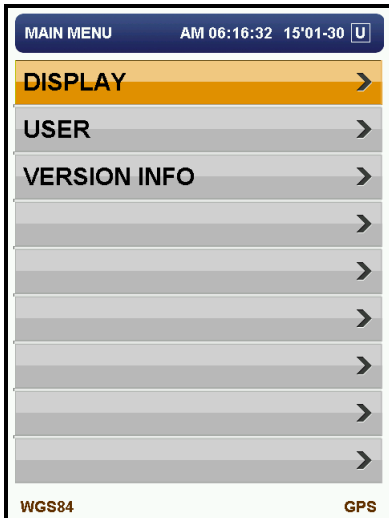
MAIN MENU(S)			
HEADING	RESTORATION		AUTO, MANUAL
	BACKUP		1, 2, 3, 4, 5
	INTERRUPT NMEA		NULL, STOP
	HEADING OFFSET		-10.0° ~ 0.0° ~ +10.0°
	OUTPUT RESOLUTION		0.1°, 0.01°
GPS	SMOOTHING	POSITION	0~10~99s
		SPEED	0~4~99s
		COURSE	0~4~99s
	DATUM		WGS84, WGS72,SWISS 1903+(LV95)
SBAS	ENABLE		ON, OFF

DATA I/O	DATA PORT1	<u>NMEA</u>	BPS	4800, 9600, <u>38400</u> , 57600, 115200
			HDT, THS, <u>ROT</u>	OFF, <u>25</u> , 50, 100, 200, 500ms, 1, 2, 3s
			ALR, DTM, GBS, GGA, GLL, GNS, GSA, GST, GSV, MSS, RMC, VTG, ZDA, ATT	<u>OFF</u> , 1s
		AD-10	DISABLE, 25, 200ms	
	DATA PORT2	<u>NMEA</u>	BPS	4800, <u>9600</u> , 38400, 57600, 115200
			HDT, THS, ROT	<u>OFF</u> , 25, 50, 100, 200, 500ms, 1, 2, 3s
			ALR, DTM, GBS, GGA, GLL, GNS, GSA, GST, GSV, MSS, RMC, VTG, ZDA, ATT	<u>OFF</u> , 1s
		AD-10	DISABLE, 25, 200ms	
	DATA PORT3	<u>NMEA</u>	BPS	4800, <u>9600</u> , 38400, 57600, 115200
			HDT, THS, ROT	<u>OFF</u> , 25, 50, 100, 200, 500ms, 1, 2, 3s
			ALR, DTM, GBS, GGA, GLL, GNS, GSA, GST, GSV, MSS, RMC, VTG, ZDA, ATT	<u>OFF</u> , 1s
		AD-10	DISABLE, 25, 200ms	
	DATA PORT4	<u>NMEA</u>	BPS	4800, <u>9600</u> , 38400, 57600, 115200
			HDT, THS, ROT	<u>OFF</u> , 25, 50, 100, 200, 500ms, 1, 2, 3s
			ALR, DTM, GBS, GGA, GLL, GNS, GSA, GST, GSV, MSS, RMC, VTG, ZDA, ATT	<u>OFF</u> , 1sec
	DATA PORT5-1	<u>NMEA</u>	BPS	4800, <u>9600</u> , 38400, 57600, 115200
			HDT, THS, ROT	<u>OFF</u> , 25, 50, 100, 200, 500ms, 1, 2, 3s
			ALR, DTM, GBS, GGA, GLL, GNS, GSA, GST, GSV, MSS, RMC, VTG, ZDA, ATT	<u>OFF</u> , 1sec
	DATA PORT5-2	<u>NMEA</u>	BPS	4800, <u>9600</u> , 38400, 57600, 115200
HDT, THS, ROT			<u>OFF</u> , 25, 50, 100, 200, 500ms, 1, 2, 3s	
ALR, DTM, GBS, GGA, GLL, GNS, GSA, GST, GSV, MSS, RMC, VTG, ZDA, ATT			<u>OFF</u> , 1sec	

SYSTEM	ROT SMOOTHING		0~ <u>10</u> ~99s
	ROLL OFFSET		-30° ~ <u>0</u> ° ~ +30°
	PTICH OFFSET		-30° ~ <u>0</u> ° ~ +30°
MAINTENANCE	ANT CHECK		
	INPUT CHECK	PORT	<u>OFF</u> , PORT4, PORT5-1, PORT5-2
	DIAGNOSIS	DISPLAY	<u>OFF</u> , START
		PROCESSOR	<u>OFF</u> , START
		LCD	<u>OFF</u> , START
	SIMULATION	SIMULATION	<u>OFF</u> , MODE 1, MODE 2, MODE 3
	GPS MODE	MODE	<u>AUTO</u> , GPS ALONE, DGPS
	FACTORY RESET	DISPLAY	<u>NO</u> , YES
		PROCESSOR	<u>NO</u> , YES
		ALL	<u>NO</u> , YES
	INSTALLATION SETUP	MOUNT	<u>WALL</u> , FLOOR, INVERT
		DIRECTION	<u>TYPE A</u> , B, C, D
	PROGRAM UPDATE	TARGET	<u>DISPLAY</u>
		BIT RATE	AUTO, 38400, 57600, <u>115200</u>

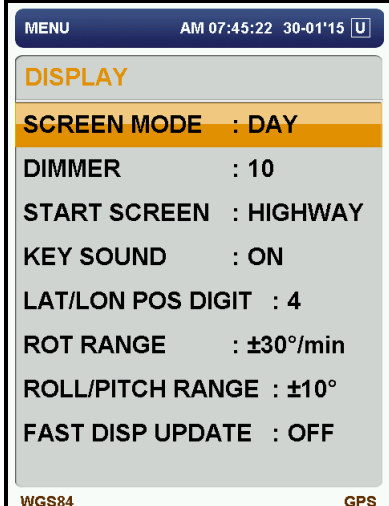
7.3 Main Menu

Go to the main menu to check or change the settings. Press  key to go to main menu at any screen. .



7.3.1 Display Setting

Screen mode, brightness, splash screen, you can change the key sound, latitude / longitude decimal places set can be set in this menu.



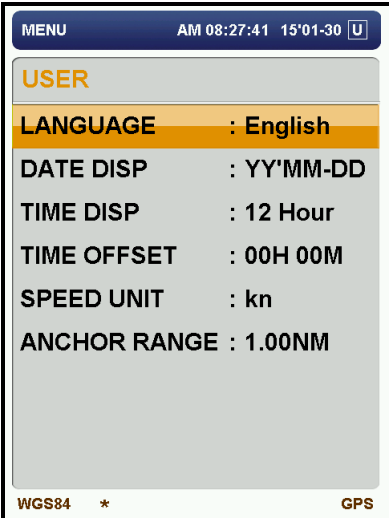
- Press  key to go to main menu.
- Move cursot to "**DISPLAY**" and press  key.
- Set screen mode using  key and  key.
- Press  key to return to previous menu.

- **SCREEN MODE** : You can change the display screen in day and night mode.
- **DIMMER** : The brightness of the LCD can be adjusted form 1 to 10 level..
- **START SCREEN** : Select one of the display screen can be set to the start screen.
(see 6.2 display screen.)

- **KEY SOUND** : Turn on or off for key tone. But it is impossible to deactivate alarm sound.
- **LAT/LON POS DIGIT** : Setting longitude and latitude value of the vessel down till 3 or 4 digit under decimal point.
- **ROT RANGE** : Please choose one number among following depends on vessel's turn rate.
(30, 60, 90, 120, 150, 180, 210, 240, 270, 300, 600, 900, 1200, 1500, 1800, 2100, 2400, 2700)
- **ROLL/PITCH RANGE** : Choose maximum value at roll/pitch under Compass Screen D. Normally a default value is 10°.
- **FAST DISP UPDATE** : ON : Setting update cycle for displaying Longitude/Latitude, SOG, COG will be carried out at every 5Hz(200msec).
OFF : Setting update cycle for displaying Longitude/Latitude, SOG, COG will be carried out at every 1 second.

7.3.2 USER Setting

Allow changing language and time information.



- Press  to go to main menu.
- Move cursor to "USER"로 then press .
- Use  and  key to choose appropriate menu.
- Press  to return to previous menu.

- **LANGUAGE** : Choose display language.
- **DATE DISP** : Choose display date, month, year among DD-MM'YY, YY-MM-DD, MM-DD'YY.
- **TIME DISP** : Choose time display by 24 hours or 12 hours.

■ **TIME OFFSET** : To display appropriate local time, please input the time leg from UTC. After setting, local time will be displayed. (Example Korea standard time is UTC +9, therefore input "+9H00M".)

■ **SPEED UNIT** : Choose vessel's speed among Kn, km/h, mi/h.

■ **ANCHOR WATCH** : Anchor watch function allow alarming, if, the vessel is out of the setting distance rage. The range can be set from 0.01 to 9.99 and distant measure unit is set speed measure unit.

Start: Press [ENT] for 2 seconds at any display mode.

During under anchor watch mode these icons will be displayed at the bottom line of the screen.

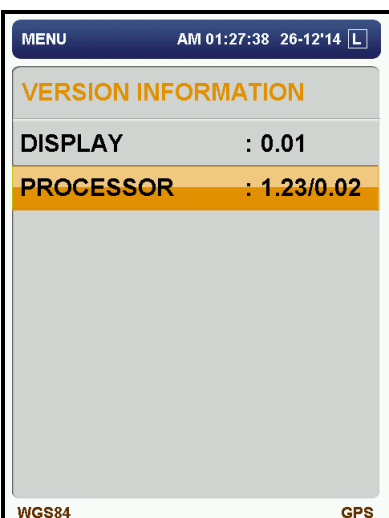
 : Vessel is within set range (radius)

 : Vessel is out of the range (radius)

Quit: Press [ENT] for 2 seconds at any display mode. (Icon will be disappeared)

7.3.3 Version information

Allow checking a version of the equipment.



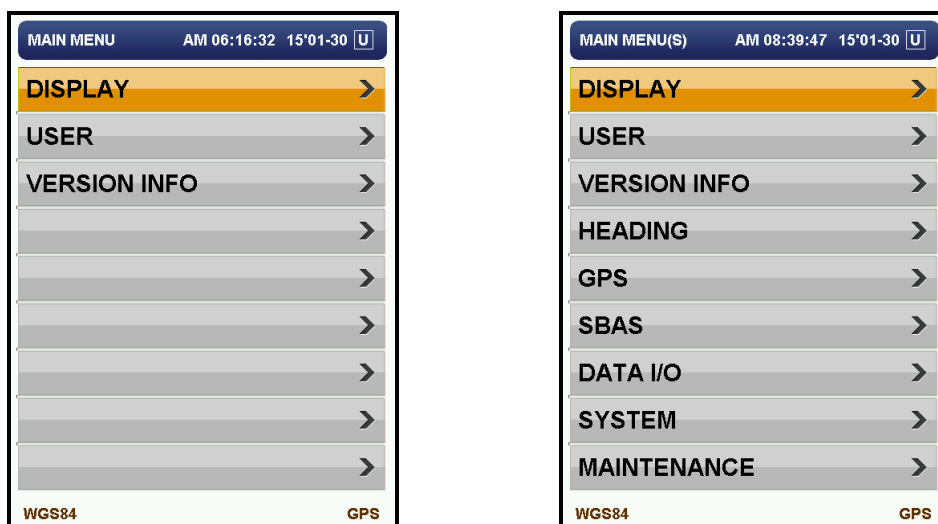
- Move cursor to "**VERSION INFO**" at main menu then press 
- Check the version.
- Go back to previous menu by pressing. 

■ **DISPLAY** : Will show display version.

■ **PROCESSOR** : Will show processor's version.

7.4 Main menu(S)

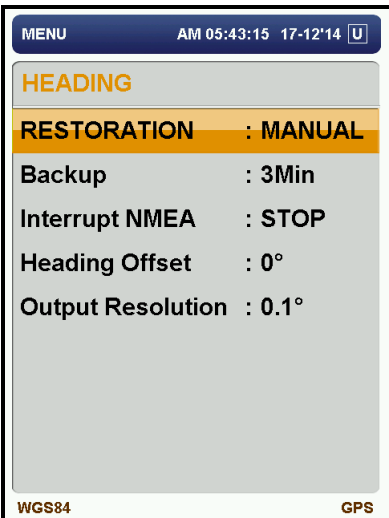
This criterion allows setting details and checking performance and condition of the equipment. This menu will be shown as following steps because users are not going to see at normal condition.



- Press  to move to menu.
- Press  and  for more than 3 seconds at the same time then menu(S) will be shown.
- Using  and  keys to set and confirm on each criteria.
- To return to main menu  and  for more than 3 seconds.

7.4.1 HEADING setting

To set vessel's stern bearing.



- Move cursor to **"HEADING"** at main menu then press. 
- To set each criteria by  and. 
- Press  to return to the main menu.

■ RESTORATION

: MANUAL : Confirmed measured heading first then the data will be printed out from connecting device. After measuring , alarm will sound, but no data will be printed out till press CLR key to stop alarm sound.

AUTO : After measuring heading, the data will be printed out automatically from connected device.

■ BACKUP

: If GPS signal is lost at any reasons, so vessel's heading is not detected, bearing will be measured by internal IMU. Users can set measuring point by 1 to 5 minutes.

■ INTERRUPT NMEA

: Setting HDT or THS sentence processing, if vessel's heading information cannot be backed up within back up time. At HDT sentence mode leave blank after \$GPHDT, or stop printing sentence.

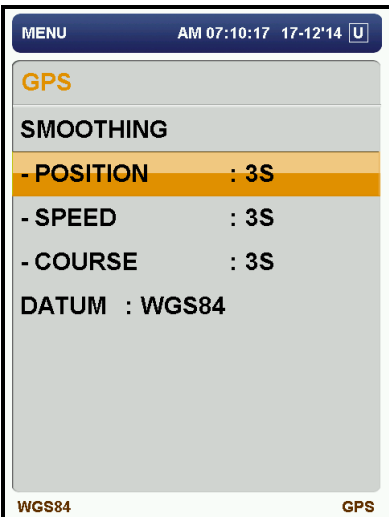
NULL: Blank after \$GPHDT(or \$GNTHS) (\$GPHDT, , ← blank)

STOP: Stop printing sentence of HDT(or THS).

- **HEADING OFFSET** : Offset heading within range of $-10.0^{\circ} \sim +10.0^{\circ}$. Also heading for printing from connected device will be offset. Sensor must be installed parallel with keel, but if this is not possible, set tolerance.
- **OUTPUT RESOLUTION** : Set resolution of HDT (THS) output sentence range from 0.1 to 0.01.
(Normally default value of 0.1 will be chosen)

7.4.2 GPS setting

Setting location, smoothing of SOG, COG, time, and standard datum.

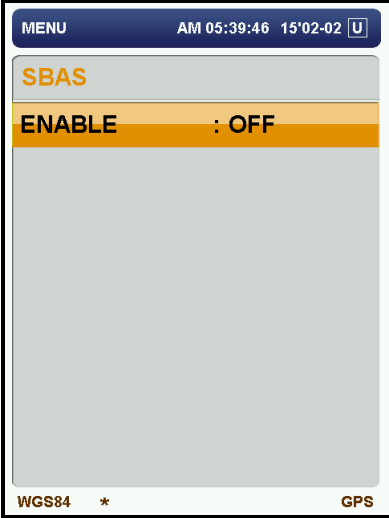


- Move cursor to "GPS" at main menu then press. 
- Setting each criteria by using  and  keys.
- Press  key to return to previous menu.

- **SMOOTHING** : POSITION : set in the range of 0~99 seconds
SPEED : set in the range of 0~99 seconds
COURSE : set in the range of 0~99 seconds
- **DATUM** : Set standard datum.

7.4.3 SBAS setting

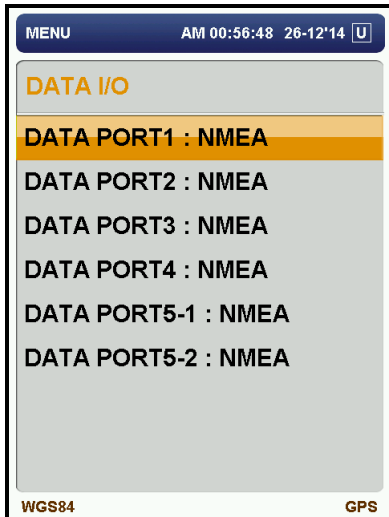
Setting whether use SBAS or not.

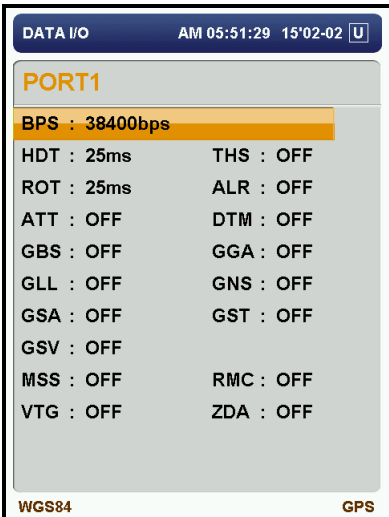


- Move cursor to the “**SBAS**” at main menu then press. 
- Setting enable disable of the function by using  and 
- Press  to go back to previous menu.

7.4.4 Data input output setting (DATA I/O)

Setting input and output for external devices.





- Move cursor to the “**DATA I/O**” at the main menu then press 
- Move cursor to each port then press 
- After choose data format by using   keys and then setting will be displayed.
- Setting transfer speed and output data interval by using   keys.

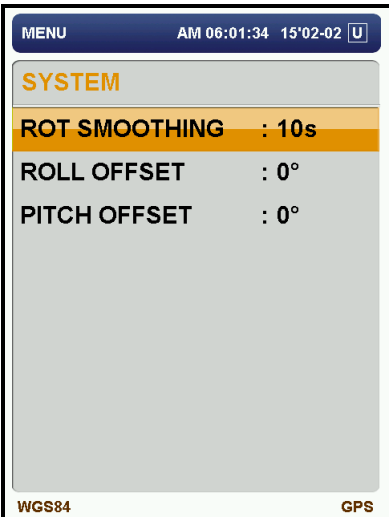
■ **DATA 1 / 2 / 3** : NMEA, AD-10

■ **DATA 4 / 5-1 / 5-2** : NMEA

- HDT and THS cannot be set at the same time due to sensors' data handling capacity.
- There is a limit for the number of sentence, therefore transfer speed (Bit rates), and the gap of printing time can be set carefully. The default values can refer from the 7.2.1 main menu list.
- For detailed connection information for external devices, please refer to the 11.1 connection diagram.

7.4.5 System setting

Setting rot and pitch offset.



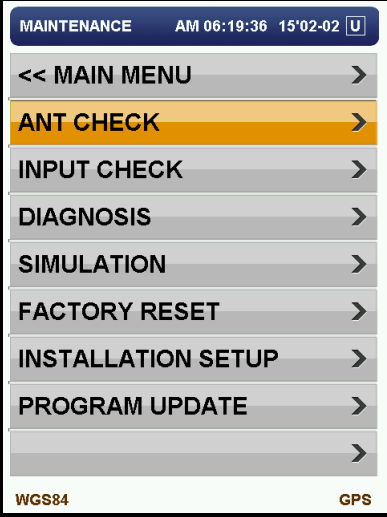
- Move cursor to the **"SYSTEM"** at the main menu then press 
- Setting each criteria by using  
- Press  to return to the previous menu.

■ **ROT SMOOTHING** : Set within the range from 0 to 99 seconds

■ **ROLL/PITCH OFFSET** : To use roll/pitch on the compass Screen D to move from the center of ⊕ symbol. (Also data will be offset at printing by external device)

7.4.6 MAINTENANCE

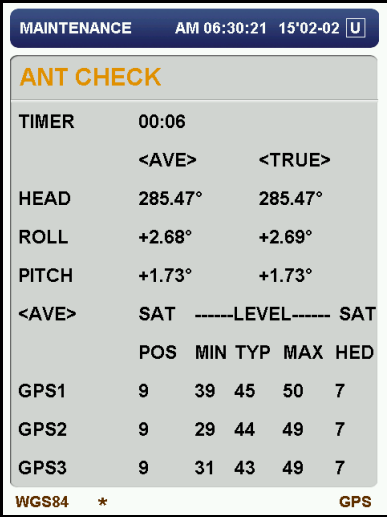
To check the equipment performance and condition.



- Move cursor to the "MAINTENANCE" at main menu 
- Setting each criteria by using.  
- Press  to return to the previous menu.

7.4.6.1 ANT CHECK

Checking signal receiving condition for antenna.



Move cursor to "ANT CHECK" by  maintenance menu then press 

- Press  to return to the previous menu.

- **TIMER** : Displaying counted time after this screen is shown.
- **HEAD** : Average stern heading (AVE) and current measured value (TRUE) will be displayed.

Please confirm displayed heading is correct.
- **ROLL** : Average roll(AVE) and measured roll (TRUE) is displaying.

Please confirm the values are equal.

■ PITCH

: Average pitch (AVE) and measured pitch (TRUE) will be displayed.

Please confirm the values are equal.

■ GPS1-3

: Displaying each GPSs' receiving condition.

SAT POS : Average number of satellite to measure location.

LEVEL : MIN (minimum), TYP (average), MAX (maximum) signal level.

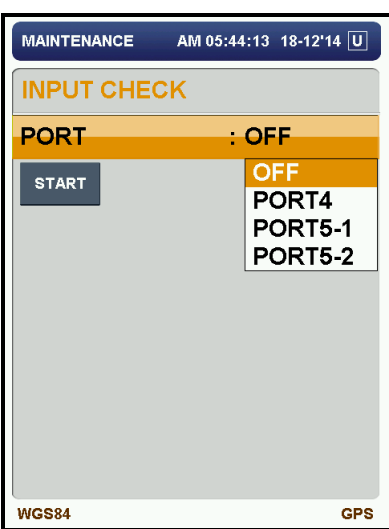
SAT HED : Average number of satellite to measure bearing.

Please confirm the values of GPS1~GPS3 are nearly same. Also confirm level (TYP) is at around 40~50.

7.4.6.2 INPUT CHECK

Confirming input current date from outside of vessel. Input ports are PORT 4, PORT 5-1, PORT 5-2.

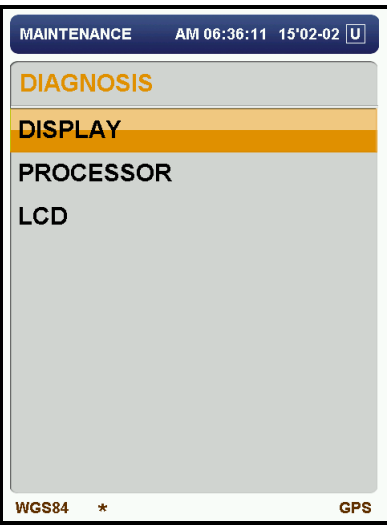
Please carry out this function after checking input and output of bit rates are the same. (Please refer to the 7.4.4 data input output setting)



- Move cursor to the "INPUT CHECK" at maintenance menu by  then press 
- Choose port by using 
- Move cursor to the "START" then press  allows displaying data on the screen.
- To input confirm, press 
- Press  to return to the previous menu.

7.4.6.3 DIAGNOSIS

In this menu, self-diagnosis can be performed



- Rotate  key in the maintenance menu and move cursor to "DIAGNOSIS". Press  key.
- Select a part to diagnosis and press  key.
- Move cursor to "START" and Press  key.
- Self-Diagnosis begins and test result will be displayed.
- Press  key to return to previous menu. .

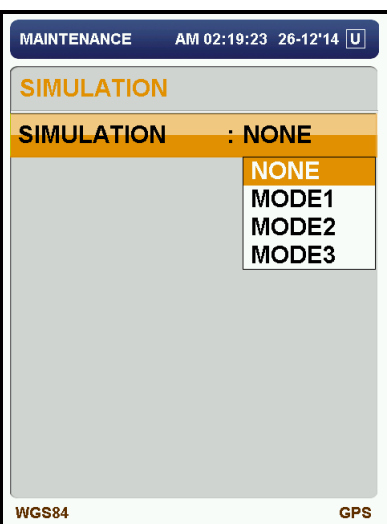
※ If there is any problem, please contact authorized service center.

■ **DIPLAY / PROCESSOR** : Display self-diagonosis result after the display and processor.

■ **LCD** : Check bad pixel of LCD.

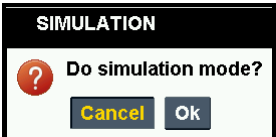
7.4.6.4 SIMULATION

In this mene, test operation can be performed.



- Rotate  in in the maintenance and move cursor to "SIMULATION" then press  key.
- Press  in simulation mode then confirmation window will pop up.
- Select "YES" and press  key to start simulation.
- To stop the simulation mode select "OFF" and press  key.
- Press  key to return to previous menu. .

※ Simulation sign will be displayed at any screen.



■ **SIMULATION :** OFF : STOP

MODE 1 : RIGHT TURN

MODE 2 : LEFT TURN

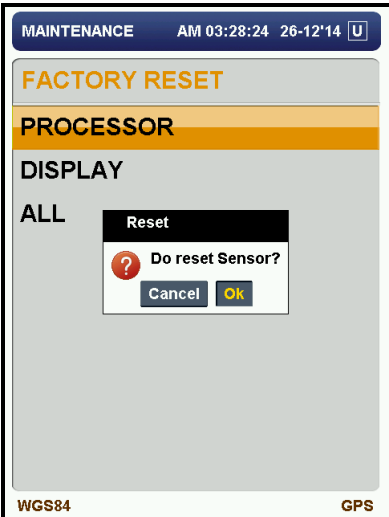
MODE 3 : RANDOM TURN



If the external device is connected, SIMULATION data is sent to external equipment

7.4.6.5 FACTORY RESET

In this menu, all setting can be return to factory default.



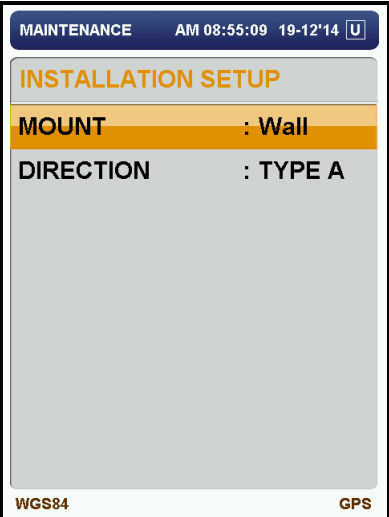
- Rotate  in the maintenance and move cursor to "FACTORY RESET" then press  key.
- Select device to rest and press  key then confirmation window will pop up.
- Select "YES" and press  et to factory reset.
- Press  key to return to previous menu. .

■ **DISPLAY / SENSOR :** Remove all internal settings of the display / processor.

■ **ALL :** Remove all internal settings of the displays and processors.

7.4.6.6 INSTALLATION SETUP

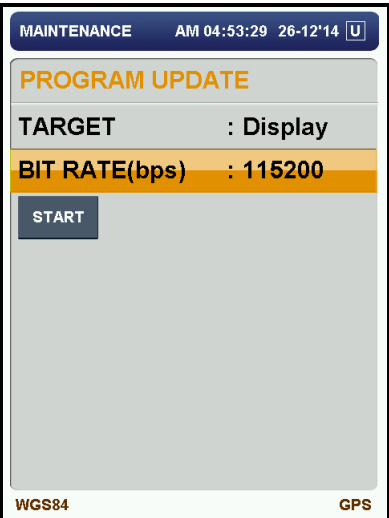
In this menu, the processor unit stores the installation location and direction, Please note that the actual installation and saved settings are not matched then calculation is different from the data. (Please see 4.2)



- Rotate  key in the maintenance and move cursor to **"INSTALLATION"** and press  key.
- Using  key and  key, set the installation location and direction.
- Press  key to return to previous menu. .

7.4.6.7 PROGRAM UPDATE

In this menu, you can update the software on the device.



- Rotate  key in the maintenance and move cursor to **"PROGRAM UPDATE"** and press  key.
- using  key and  , set device and speed
- Move cursor to **"START"** and press  activate window for update

Connect PC with equipment through serial cable for program transfer



When the Ready message is displayed, you can not return to the normal screen. If you do not intend to update the software, please reboot the system.

Chapter 8. Maintenance

8.1 General

For good performance, the regular maintenance is important. Maintenance program be established and shall contain the following information:

- Check the connector and the ground terminal on the processor unit and a display unit for tightness.
- Make sure that the earth terminal is in corrosion or clean. Please replace if necessary.
- Check for leaks in the antenna cable. If the leak trace is on cables, please replace it
- Remove the dust and dirt of the display (including LCD) and the processor unit with a soft, dry cloth.

Please carefully clean the LCD using a tissue paper and an LCD cleaner to prevent scratching.

In this case, do not use chemical cleaners - This may erase the paint.

8.2 Failure prevention and protection

Symptom	Causes	Solutions
Power doesn't turn on.	Processor unit power connector	Check the power connector has been connected firmly.
	No power on ship	Check the power cable
	Fuse cutting of the processor unit	Replace the fuse of rated capacity
Change of heading (stop)	sensor of processor unit	perform diagnostic tests
Failure of display	Failure of LCD display	Contact an authorized reseller
Not an alarm	Buzzer damage	Contact an authorized reseller
Not a reception (from processor and antenna)	Cutting of connection cable.	Check the connection cable
	Equipment failure	Contact an authorized reseller
Not a reception (from external equipment)	signal line connection failure	Check its signal line and polarity
	Bad interface match	Check interface
	Not a support of reception sentence	Check sentence contents
Not a transmission	Output data setup failure	Refer to 7.4.4 data input and output

(to external equipment)		settings
	Processor unit sensor	perform diagnostic tests
	Failure of connection on signal line	Check its signal line and polarity

8.3 Alarm and causes

When an alarm occurs, refer to "7.1.7 alarm and check". In this case, check the list below for more details. Please refer to 8.2 Failure prevention and protection as measure.

Alarm Code	Message Contents	Alarm Causes
001	THD, RAM test Error	RAM test Error
002	THD, ROM test Error	ROM test Error
003	THD, Self-Test Error	Self-Test Error
10	THD, GPS1 ANT Error	GPS1 ANT Error
11	THD, GPS2 ANT Error	GPS2 ANT Error
12	THD, GPS3 ANT Error	GPS3 ANT Error
13	THD, GPS1 lost	GPS1 Core Error
14	THD, GPS2 lost	GPS2 Core Error
15	THD, GPS3 lost	GPS3 Core Error
20	THD, Gyro-1 Error	X Axis Gyroscope Error
21	THD, Gyro-2 Error	Y Axis Gyroscope Error
22	THD, Gyro-3 Error	Z Axis Gyroscope Error
23	THD, G sensor Error	Tiltmeter Error
24	THD, Temp sensor Error	Temperature Sensor Error
25	THD, Mag Sensor Error	Magnetic Sensor Error
26	THD, Ref voltage Error	Ref voltage Error
30	THD, No Heading	Bearing Calculation Error
31	THD, No Roll	Roll Calculation Error
32	THD, No Pitch	Pitch Calculation Error
33	THD, No ROT	ROT Calculation Error
34	THD, IF disconnected	INTERFACE disconnected
50	GPS lost	GPS lost
51	Sensor disconnected	Sensor disconnected

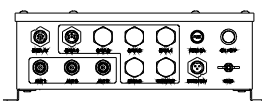
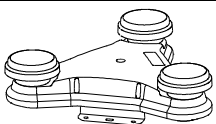
52	Flash memory Test error	Flash memory Test error
70	Sensor disconnected	Sensor disconnected
71	Anchor alarm	Exceeding the anchor watch setting range.

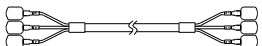
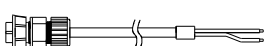
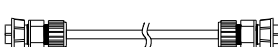
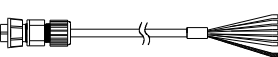
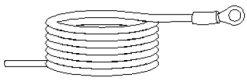
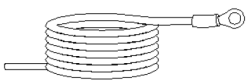
Chapter 9. NMEA0183 output sentences

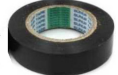
- **HDT - Heading true**
- **THS - True heading and status**
- **ROT - Rate of turn**
- **ZDA - Time and date**
- **GGA - Global positioning system (GPS) fix data**
- **VTG - Course over ground and ground speed**
- **RMC - Recommended minimum specific GNSS data**
- **GBS - GNSS satellite fault detection**
- **DTM - Datum reference**
- **GSA - GNSS DOP and active satellites**
- **GSV - GNSS satellites in view**
- **GNS - GNSS fix data**
- **MSS - MSK beacon receiver signal status**
- **GST - GNSS pseudorange noise statistics**
- **GLL - Geographic position – latitude/longitude**
- **ATT - Attitude information**
- **ALR - Set Alarm State**

Chapter 10. PACKING LIST

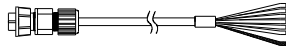
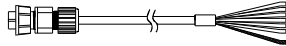
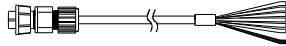
10.1 SGC-750(standard)

NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
1	DISPLAY UNIT		SGC-750D	1		
			CODE NO.			
2	PROCESSOR UNIT		SGC-750P	1		
			CODE NO.			
3	ANTENNA UNIT		SGC-750A	1		
			CODE NO.			
4	MANUAL		SGC-750-MK	1		Korean
			CODE NO.			

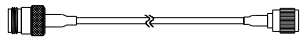
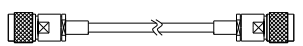
Installation materials [SGC-750-A]						
NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
1	CABLE ASSY		TNC3-15M(3D2VX3)-TNC3	1		L=15M
			CODE NO.			
2	CABLE ASSY		Z3-2M-02	1		3P
			CODE NO.			
3	CABLE ASSY		LTW8-10M-LTW8	1		L=10M
			CODE NO.			
4	CABLE ASSY		LTW6-3M-07	1		6P
			CODE NO.			
5	CABLE ASSY		D1(5mm)-3M-01	1		Process ground
			CODE NO.			
6	CABLE ASSY		01-3M-D01	1		Display ground
			CODE NO.			
7	EMI 필터		ZCAT2035-0930	1		Display cable
			CODE NO.			

NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
8	EMI 필터		GTFC-23-11-14	1		Power cable
			CODE NO.			
9	FUSE		2A/250V[20mmX5mm]	2		
			CODE NO.			
10	SCREW		1종 스텐트러스피스 5X10	8		
			CODE NO.			
11	TAPE		Rubber tape 19*5	1		
			CODE NO.			
12	TAPE		Vinyl tape 19*10	1		
			CODE NO.			
13	CABLE TIE		DACT200-4.8	10		
			CODE NO.			

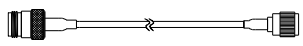
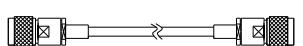
10.2 SGC-750(Optional)

Data cable						
NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
1	CABLE ASSY		LTW6-3M-07	1		6P
			CODE NO.			
2	CABLE ASSY		LTW10-3M-11	1		10P
			CODE NO.			
3	CABLE ASSY		LTW12-3M-13	1		12P
			CODE NO.			

Antenna Extension Cable [NP-30M(LMR400)-NP-A]

NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
1	CABLE ASSY		NJ-1M(3D2V)-TNCP	6		Cable for binding
			CODE NO.			
2	CABLE ASSY		NP-30M(LMR400)-NP	3		L=30M
			CODE NO.			

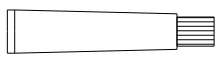
Antenna Extension Cable [NP-50M(LMR400)-NP-A]

NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
1	CABLE ASSY		NJ-1M(3D2V)-TNCP	6		Cable for binding
			CODE NO.			
2	CABLE ASSY		NP-50M(LMR400)-NP	3		L=50M
			CODE NO.			

Antenna installation plate SGC-750A-M

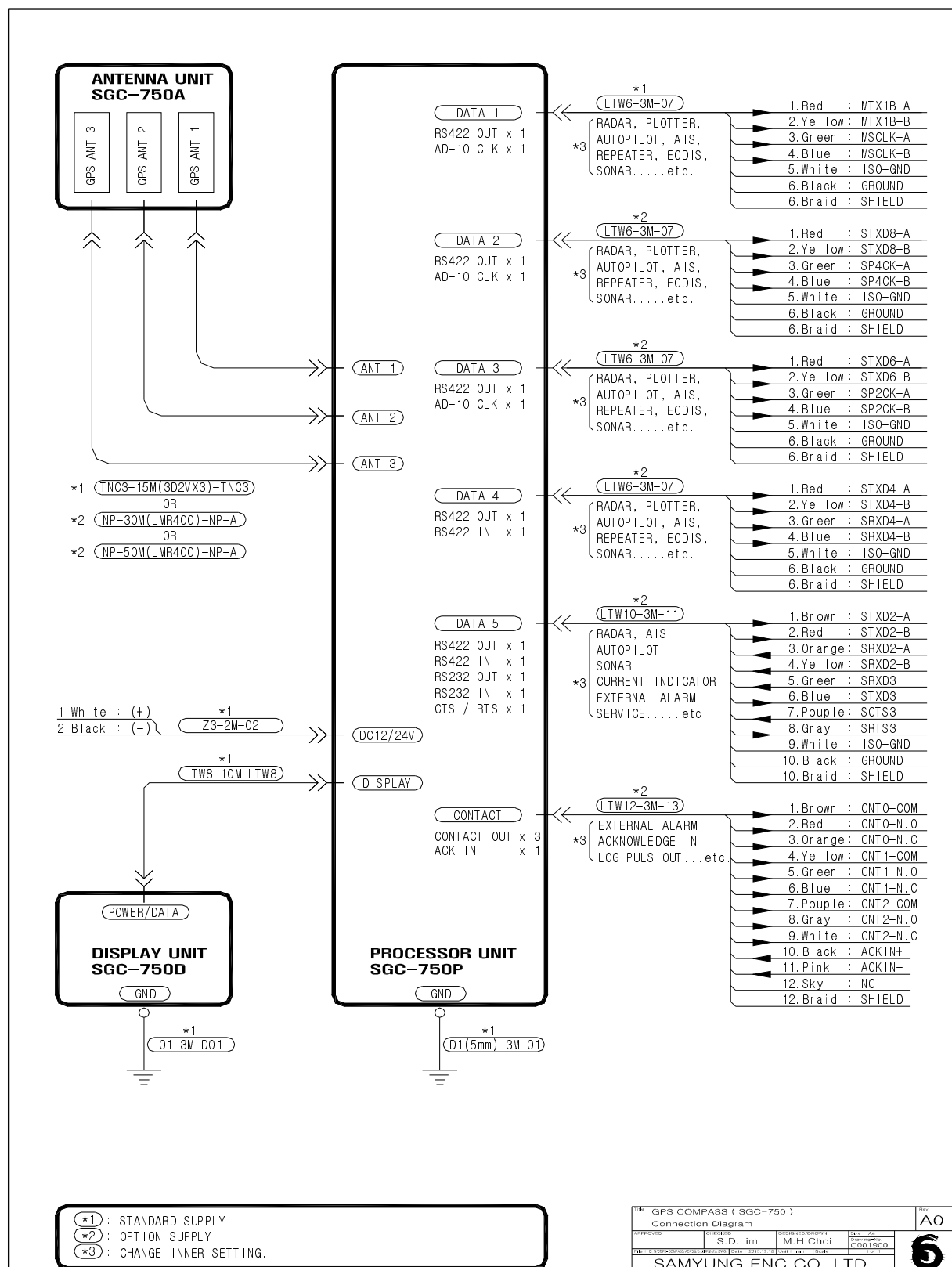
NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
1	BRACKET ASSY		SGC-750A-M	1		
			CODE NO.			

Birds prevention kits SGC-750A-BRK

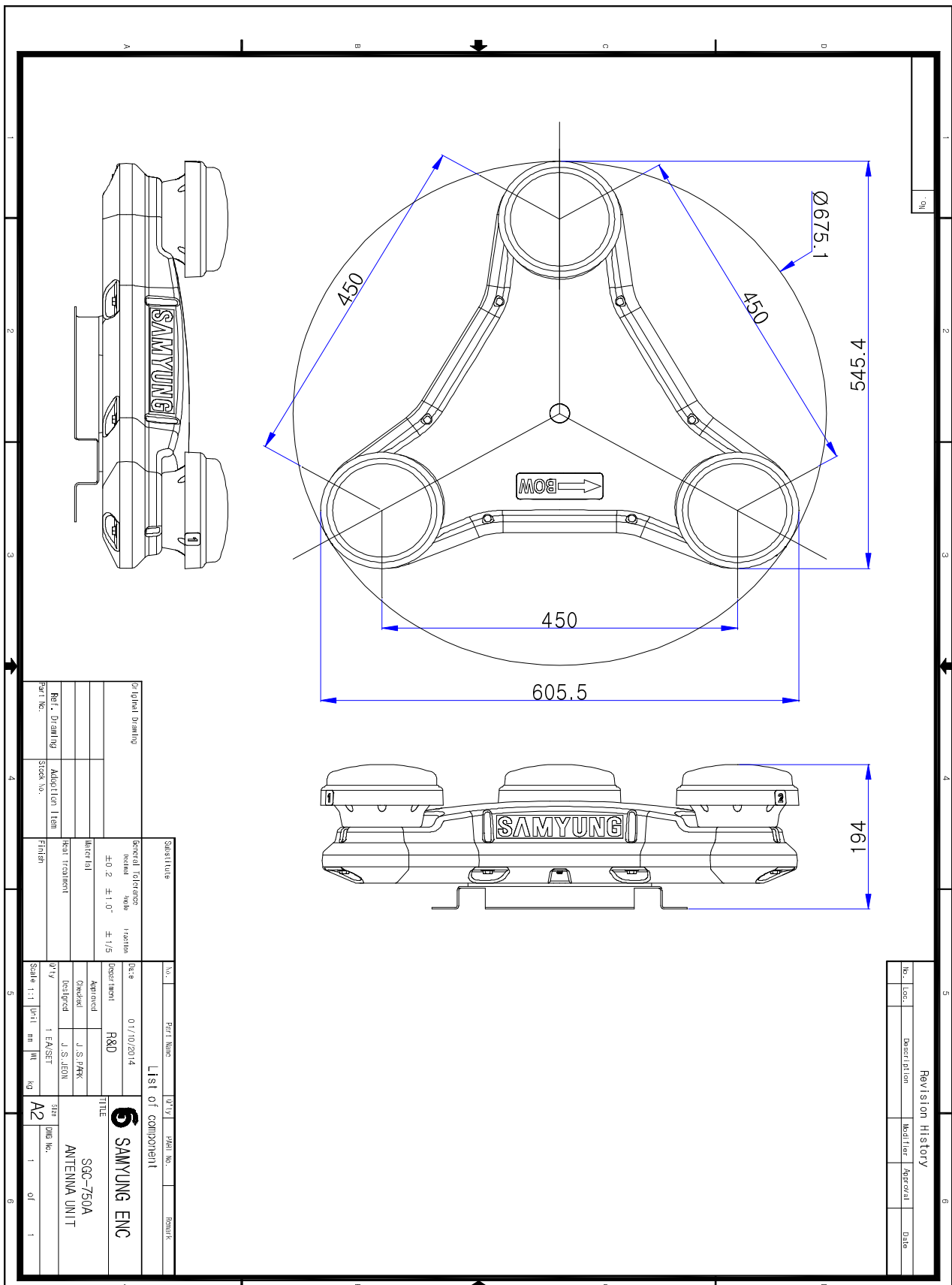
NO.	ITEM	EXTERNAL FEATURE	DESCRIPTIONS	Q'TY	CHK	REMARK
1	ASSY		SGC-750A-BRK	4		
			CODE NO.			
1	접착제		SUPER-X (20ml)	1		
			CODE NO.			

Chapter 11. Drawings

11.1 Connecting diagram



11.2 SGC-750A (ANTENNA UNIT) OUTLINE DRAWING



Chapter 12. Warranty

Thank you for your purchasing of SGC-750 by Samyung ENC. This instruction manual shows how to install for this system and correct method for installation and any cautions. I would like to request you to keep this manual book on a safe place to avoid loss or lost. Please provide this manual book to the authorized person when you sell or provide the unit to other ones. The period of warranty is for 1 year from purchasing date as a free of charge. However, the unit will be repaired as a condition out of warranty when it was damaged by inappropriate usage or non-authorized repair by users.

HQ for After-Sales-Service	
ADDRESS	84-132 Chunghak dong, Youngdo gu, BUSAN, KOREA
Department	SAMYUNG ENC. CO. LTD. (A/S CENTER)
CONTACT	A R S : 1577-0198
	F A X : 051-416-5515
We would like to request you tel, fax, name of item, serial number, working status in A/S request for more prompt reaction	

Regional After-Sales-Service	
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CONTACT	TELEPHONE :
	MOBILE :
Keep contact point of person in charge when you purchase goods	

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