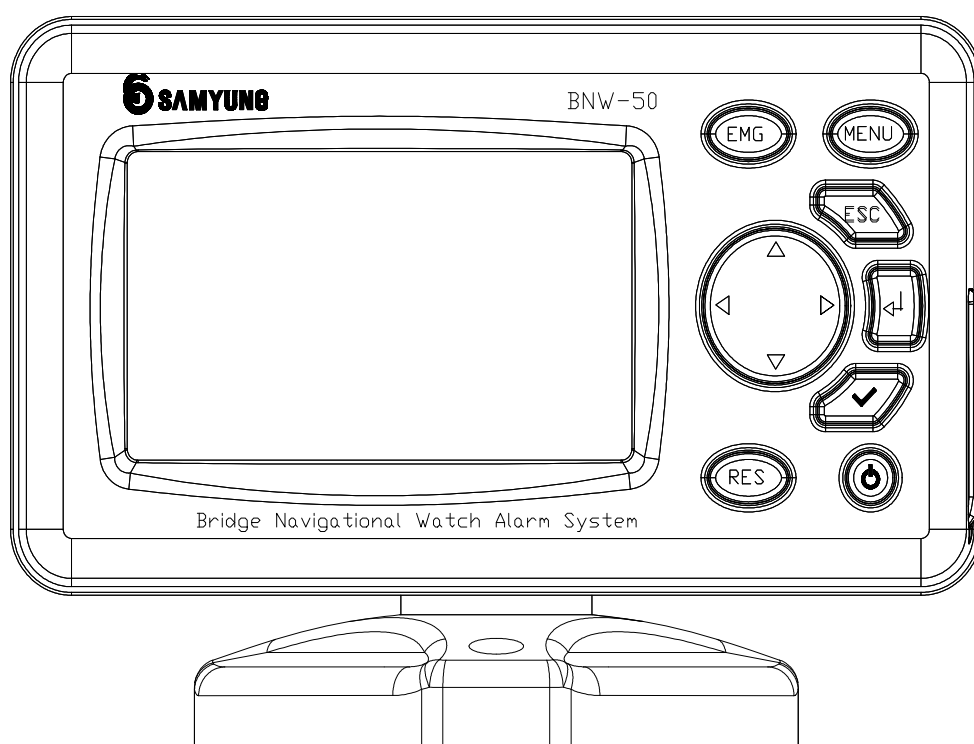


USER MANUAL

BNW - 50

Bridge Navigational Watch Alarm System



Rev. M00-0481-00

CAUTION

1. This BNWAS can be switched ON/OFF or settings can be changed with password, therefore only authorized person (captain) can change or switch ON/OFF the BNWAS.
2. Before operating the machinery, you must read and be fully aware of the safety signs and the guidelines.
3. In case of machine breakdown due to the heat exposure or use of faulty power cable which can cause a serious damage, is not covered by A/S.
4. Please do not disassemble the equipment since it is equipped with electric circuit that can be only handled by experienced technician. Exposure of the display screen to the UV light may cause life-shortening of the LCD. Avoid overheating LCD by adjusting the contrast except for the extreme dark display. The problem caused by the overheating may not be solved after the temperature has been cooled down

SIGN	DESCRIPTION
	The PCB used in this equipment is produced under protected environment of electrostatic discharge. This is because the most of the semiconductor equipment used in the PCB can be damaged easily by the electrostatic discharge.
	You must prevent from damaging the equipment when operating, as it can be easily damaged by the electrostatic discharge. Only experienced technician must work on the circuit of the equipment as it is sensitive to electrostatic discharge. Disassemble of this equipment is only allowed to the technician authorized by our company.

Cleaning of the display screen

The surface of the screen is coated with non-reflective material, therefore it is important to clean and take meticulous care when cleaning. Please follow the instructions below.

Use the cleaning spray (same as computer monitor), microfiber. Fold the tissue or the microfiber three times, and wet the edge of the fiber with the spray. Use your index finger to wipe the monitor. The screen may get damaged if the tissue is not wet enough.

When you require technical assistance, please contact the nearest SAMYUNG ENC Store or the A/S center.

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Chapter 1 ABOUT BNWAS

The purpose of a bridge navigational watch system is to monitor the bridge activity and detect operator disability which could lead to marine accidents. The system monitors awareness of the Watch officer and automatically alerts the Master or another qualified person if for any reason watch officer becomes incapable of performing watch officer's duties. This purpose is achieved by series of indications and alarm to alert first the watch officer and, if he is not responding, then to alert Master or another qualified person. Additionally, the BNWAS provide the watch officer with means of calling for immediate assistance if required. BNWAS must operate whenever heading or track control system is interlocking unless prohibited by the captain.

Maritime Safety Committee (MSC) from IMO requires BNWAS that meets the new IMO performance standard requirement.

Existing Vessel requires to install the equipment before the first inspection after the below date.

- ▷ Existing passenger ship and Vessels under 3000t: 1st JULY 2012.
- ▷ Existing vessels over 500t: 1st JULY 2013..
- ▷ Existing vessels over 150t: 1st July 2014.

New Vessel must install the equipment by:

- ▷ New Vessels over 150t, and vessels constructed after the 1st July 2011 must be equipped with Bridge Navigational Watch System (BNWAS).

The equipment complies below standards :

- IMO A.694(17) : General desired term for vessel radio equipment and electronic navigational support
- IMO A.830(19) : Code for alarm and command.
- IMO MSC. 128(75) : Performance standard for BNWAS.
- IMO MSC/Circ. 982 : Layout and guidelines for bridge equipment's ergonomic standards.
- IEC 62616 : Method to test the BNWAS' technical characteristic..
- IEC 60945 : Test method and result on marine navigation and radio communication equipment.
- IEC 62288 : Test method and result on marine navigation information display-desired terms
- IEC 61162 : Marine navigation and radio communication equipment system- digital interface..

Chapter 2 Operation of BNWAS

This BNWA's setting is only adjustable by using password, therefore only authorized person (captain) can switch ON/OFF and change the setting of the system.

However, when BNWAS is active with alarm, mode setting is not adjustable.

2.1 Operational Mode

2.1.1 MANUAL ON Mode

On this mode, BNW-50 operates constantly.

2.1.2 MANUAL OFF Mode

On this mode, BNW-50 does not operate under any circumstances.

2.1.3 AUTO Mode

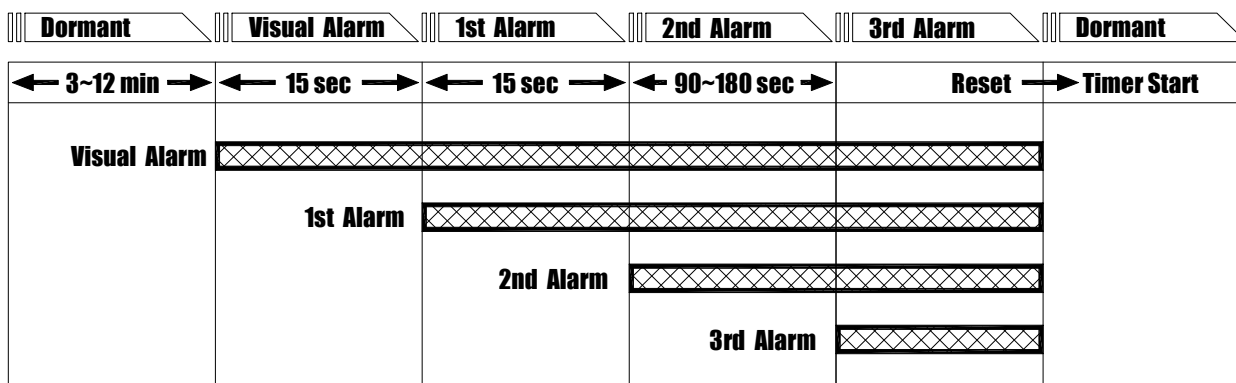
On this mode, BNWAS system operates automatically once vessel's heading or the track control system (when signal has been inputted) is operating (refer to 6.5 input terminal for remote activation).

2.2 DORMANT PERIOD SETUP

Dormant period (3~12 minutes), 2nd alarm and 3rd alarm period (90~180seconds) are adjustable. The Dormant period is always displayed on the main display unit of BNW-50.

2.3 OPERATING SEQUENCE

2.3.1 SEQUENCE OF ALARM



2.3.2 Visual Alarm

If no "RESET" button is entered during the time set (3~12 minutes), visual alarm will activate for the next 15 seconds. This gives time to "RESET" before the 1st stage audible alarm gets activated. If "RESET" button is not entered within 15 seconds, 1st stage audible alarm will activate. Timer's "RESET" can be inputted in two different ways.

- Manual way of using "RESET BUTTON" on the bridge.
- Automatic way of using 'Motion sensor" that detects the movement on the bridge.

2.3.3 1-stage Audible Alarm

This audible alarm is installed on the bridge and must be able to wake the watch officer. Visual alarm and 1st stage audible alarm will activate and can be turned off by resetting the timer by inputting "RESET". If timer is not "RESET" after 15 seconds, 2nd stage audible alarm will activate.

2.3.4 2-stage Audible Alarm

This alarm is installed in the officer's cabin or captain's cabin. 2nd stage audible alarm is triggered if timer is not "RESET" within the 15 seconds after 1st stage audible alarm is triggered. 1st stage and 2nd stage audible alarms are both triggered at this stage.

2.3.5 3-stage Audible Alarm

This alarm is installed in the crew members' cabin. If no actions are taken within 90 seconds after the 2nd audible alarm is triggered, 3rd stage audible alarm will activate. To give enough time for the back-up officer or the captain to take an action after the 2nd stage audible alarm is triggered, you can adjust the time from 90~180 seconds(3 minutes) between the 2nd stage and 3rd stage audible alarm. Also, until "RESET" is inputted, all alarms stays activated.

2.3.6 Emergency Call

BNW-50 has built-in emergency call function, and if this button is pressed down for 2 seconds, 2nd stage audible alarm is immediately triggered, and if no action is taken then 3rd stage audible alarm will activate. Watch officer can call for help using this button if needed.

You can stop the emergency alarm if you press down the button for 2 seconds.

Chapter 3 PRODUCT SPECIFICATION

3.1 DISPLAY UNIT (BNW-50)

SCREEN SIZE..... 4.3 INCH TFT COLOR LCD, 480 X 272 PIXELS

POWER CONSUMPTION 130 mA , POWER SAVE MODE 70 mA (24 V DC)

SIZE 129 x 183 x 113.5 mm (H x W x D)

WEIGHT 0.5Kg

OPERATION TEMPERATURE -15 °C ~ 55 °C

3.2 PROCESS UNIT (BNW-51)

AC POWER SUPPLY 110V / 220V AC

DC POWER SUPPLY 24V DC

POWER CONSUMPTION 130mA

SIZE 221 x 165 x 95 mm (H x W x D)

WEIGHT 1.5Kg

OPERATION TEMPERATURE -15 °C ~ 55 °C

INTERFACE Inputting reset pulse by radar.

Inputting interface of operating heading or track controller

Inputting NMEA data(Reset, alarm, etc)

Inputting DC12V power supply and reset of motion sensor and reset unit.

Outputting the alarm signal for reset and alarm unit.

Outputting the NMEA data for blackbox(VDR)

Outputting the alarm interface for machine breakdown

Outputting the interface for the external unit's alarm.

INPUT/OUTPUT DC23V power supply and RS-232 communication for display unit.

3.3 RESET UNIT (BNW-52)

POWER CONSUMPTION max 34mA / unit (24 V DC)

SIZE 126x90x30 mm (H x W x D)

WEIGHT 0.2Kg (FLUSH TYPE), 0.5Kg (DESK TYPE), 0.5Kg (WATERTIGHT TYPE)

OPERATION TEMPERATURE -15 °C ~ 55 °C

LEVEL OF WATER RESISTANCE IP67(WATERTIGHT TYPE)

LEVEL OF SOUND OVER 75 dB

FUNCTION Reset, visual alarm, 1st stage audible alarms are combined (You may choose one function if you wish to).

3.4 ALARM UNIT (BNW-53)

POWER CONSUMPTION max 30mA / unit (24 V DC)
 SIZE 126x90x30 mm (H x W x D)
 WEIGHT 0.2Kg (FLUSH TYPE), 0.5Kg (DESK TYPE)
 OPERATION TEMPERATURE -15 °C ~ 55 °C
 LEVEL OF SOUND OVER 75 dB

3.5 MOTION SENSOR (DND-300M)

POWER CONSUMPTION OPERATING = 26mA / unit , STAND-BY= 17mA / unit (12 V DC)
 DETECTION METHOD Quad-element PIR and microwave pulse Doppler
 MW frequency 10.525GHz
 SIZE 115 x 61 x 37.5 mm (H x W x D)
 WEIGHT 120g (BRACKET EXCLUDED)
 OPERATION TEMPERATURE -15°C~ 55°C
 DETECTIVE ANGLE 120°~150°
 DETECTIVE RAGE 15m (STANDARD)
 PRE-HEATING TIME 1 MINUTE

※ TOTAL POWER CONSUMPTION FOR STANDARD COMPONENTS (REFER 13.2 Installation Diagram)

Display Unit(BNW-50)		1 EA
Processor Unit(BNW-51)		1 EA
Reset Unit(BNW-52)		3 EA
Alarm Unit(BNW-53)		7 EA
Motion Sensor(DND-300M)		2 EA
TOTAL (24V DC)		APPROX 0.6A

3.6 COMPONENTS

3.6.1 BNW-50 SPECIFICATION

NO	NAME	MODEL NAME	QUANT	REMARK
1	Display unit desktop	BNW-50	1 SET	Bracket, protection cover included
1-2	Display unit installation accessory	BNW-50-A	1 SET	
1-3	USER MANUAL	BNW-50-MK	1 EA	M00-0481-00

2	Processor unit desktop	BNW-51	1 SET	
2-2	Processor unit installation accessory	BNW-51-A	1SET	

3	Reset unit desktop	BNW-52	3 SET	Additional installation available
3-2	Reset unit installation accessory	BNW-52-A	3 SET	Flush type

4	Alarm unit desktop	BNW-53	7 SET	Additional installation available
4-2	Alarm unit installation accessory	BNW-53-A	7 SET	Flush type

5	Motion sensor(installation accessory included)	DND-300M	2 SET	Additional installation available
---	--	----------	-------	-----------------------------------

3.6.2 BNW-50 OPTION SPECIFICATION

1	WATERTIGHT reset unit desktop	BNW-52W	1SET	WATERTIGHT type
2	WATERTIGHT reset unit install. accessory	BNW-52W-A	1SET	WATERTIGHT type
3	Desk type bracket	BNW-B	1SET	Desk type
4	Desk type bracket install. accessory	BNW-B-A	1SET	Desk type
5	Reset unit, motion sensor install. cable	UL2464-6C-24AWG	1SET	Optional length
6	WATERTIGHT reset unit install. cable	UL2464-6C-20AWG	1SET	Optional length
7	Alarm unit install. Cable (Small)	UL2464-2C-20AWG	1SET	Optional length
8	Alarm unit install. Cable (Large)	CVV-SB 1.25SQMM X 2C	1SET	Optional length

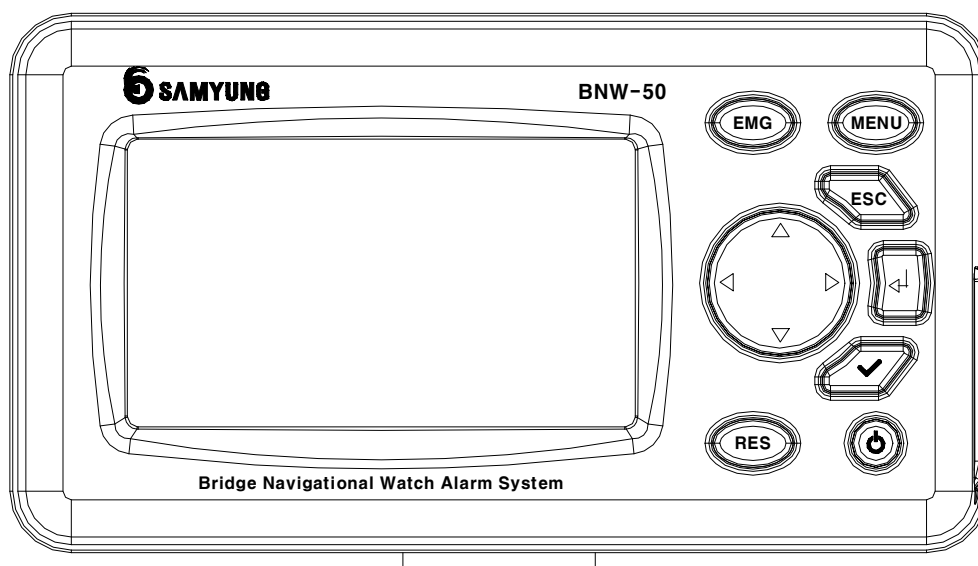
Chapter 4 BNW-50 (DISPLAY UNIT)

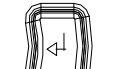
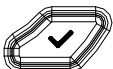
- Rated input voltage DC 24V

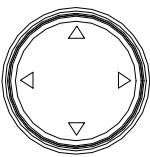


(NOTE) Program version may change without notice for performance improvement.

4.1 BUTTONS



Button	Function	Note
	Pressing down this button for 2 seconds will activate the emergency call function. By pressing down for another 2 seconds will deactivate the alarm.	EMERGENCY Call
	Used to get into the menu function and message will appear if you wish to save after the setup.	MENU
	Brings you back to the previous page.	ESCAPE
	Enter key allows you to select the menu or the individual menu.	ENTER
	Used to verify the password.	CHECK

	Reset input function activates.	RESET
	System stops operating and goes into sleep mode by pressing this button and entering the password. In order to deactivate the sleep mode, press this button again and enter the password.	Sleep mode
	- Main screen - Left, Right : Adjust the brightness of LCD - UP : Key sound ON Down : Key sound OFF - Otherwise - Used to move into the selected function or change the setting.	Control key

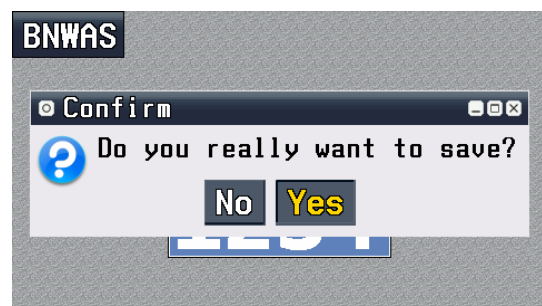
4.2 SETTING PASSWORD

Once power is connected to the equipment, this screen will show. Captain may set the password that he should only know.

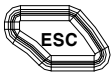
If you wish to change the password, select SYSTEM SETUP → Initialize then reset the password again on this screen. However this function will initialize all the setup. Therefore beware before using it. (Refer to 4.4.3 SYSTEM SETUP)

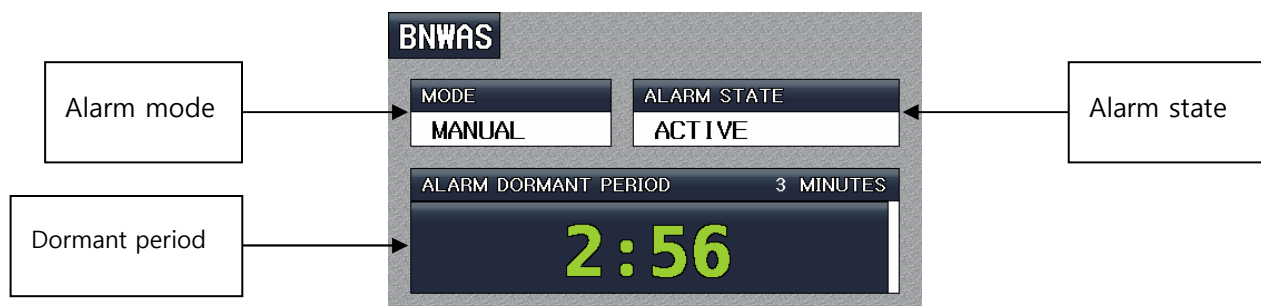


When entering password  ->  (select numbers) ->  ->  message will appear if you wish to save and press YES if you wish to save then press  again.



4.3 DISPLAY OF OPERATIONAL STATUS

BNWAS' current operational status appears on the screen. From menu, press  then will move to the operational status display.



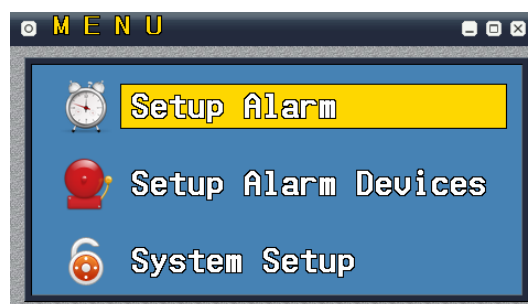
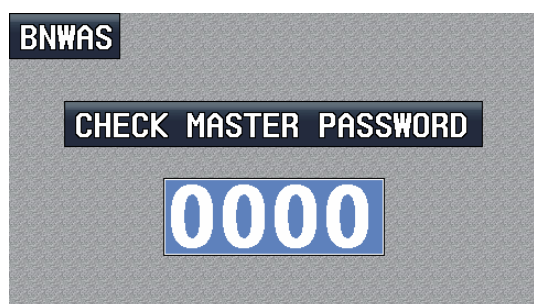
4.4 MENU

Adjusting the system of BNW-50 can be done on the Menu screen. Password is required when entering into the menu therefore adjusting the setting can be only done by authorized person (captain).

● Checking the password

In order to get to the menu, password is required.

When  is pressed "CHECK MASTER PASSWORD" appears, then use  and  to insert numbers, then  ->  leads to the main menu.



But, when the alarm is triggered, you cannot get an access into the main menu and if alarm is triggered in the middle of the setup process, it will take you to the operational status screen.

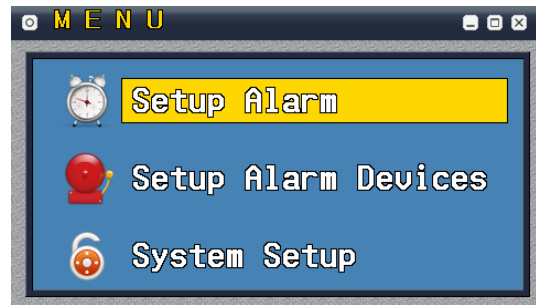
4.4.1 SETUP ALARM

You can change and save the 'alarm mode', 'dormant period', 'interval between 2nd and 3rd stage', 'use of additional reset socket', 'interval of 1st stage audible

alarm'. All functions can be changed by using

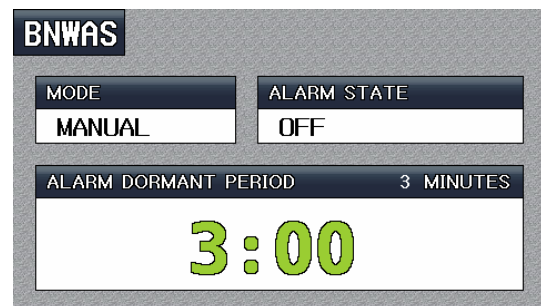
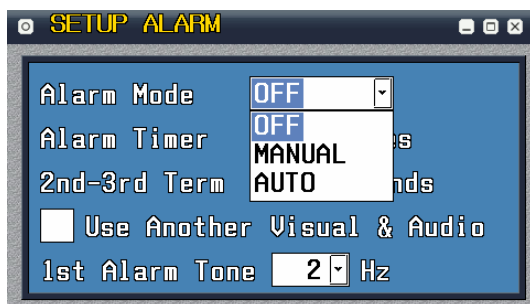


and  buttons.

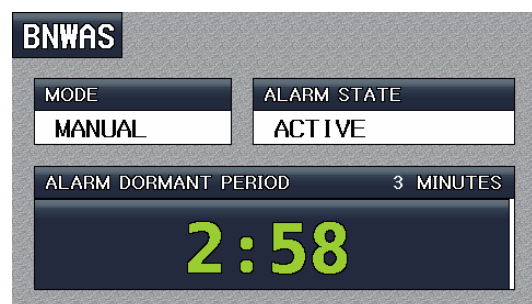
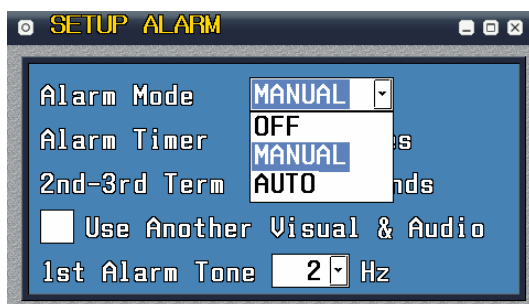


● Setting alarm mode

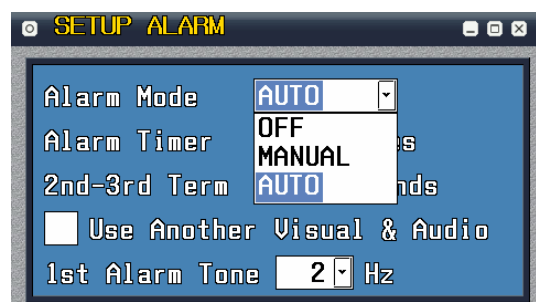
① **OFF Mode** : BNW-50 does not operate under this mode. On the operational status, it shows "MANUAL" for MODE and "OFF" for ALARM STATE



② **MANUAL Mode** : Under this mode, BNW-50 always operates. On the operational status, it shows "MANUAL" for MODE and "ACTIVE" for ALARM STATE.



③ **AUTO Mode**: Under this mode, BNWAS system is activated when vessel's heading or track control system operates. (Refer to 6.5 INPUT TERMINAL FOR REMOTE ACTIVATION)



Deactivated : Mode on the operational status display will show "AUTO", and "STANBY" for ALARM STATE as shown on the diagram below.

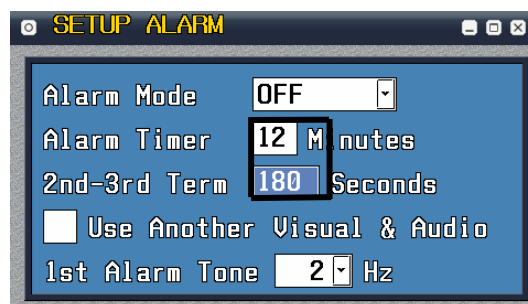
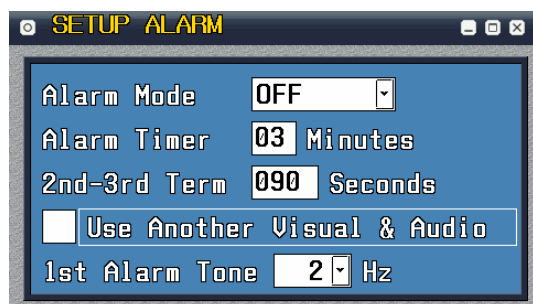
Activated : Mode on the operational status display will show "AUTO", and "ACTIVE" for ALARM STATE.



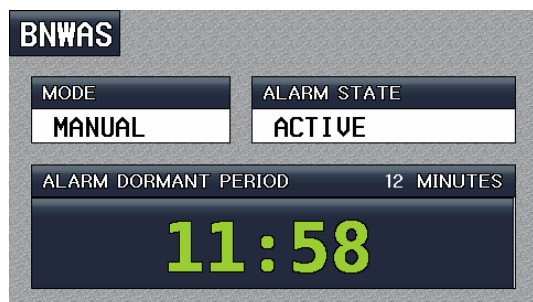
- **Setting dormant period and the period between the second and third alarm.**

You can control the Dormant period (3~12minutes) and the period between the second and third alarm (90~180 seconds).

Go onto the SETUP ALARM display by inserting the password. Then use  and  buttons to change the timer.



Also, on the operational status display of the unit(BNW-50) will always show the value of dormant period.

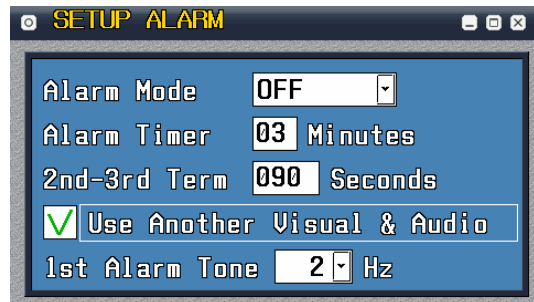
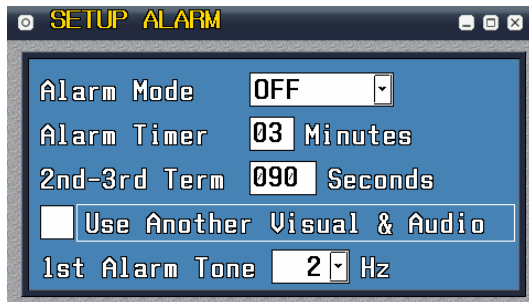


● Using the additional visual alarm and 1st stage audible alarm. (Additional reset unit)

When using the additional reset unit on this equipment, through the Alarm A & B interface terminal, you can activate the visual alarm (VIS) or the 1st stage audible alarm (AUD) same as the standard reset terminal,



Move the cursor to the wanted menu then press , then you may decide the use of additional reset unit.

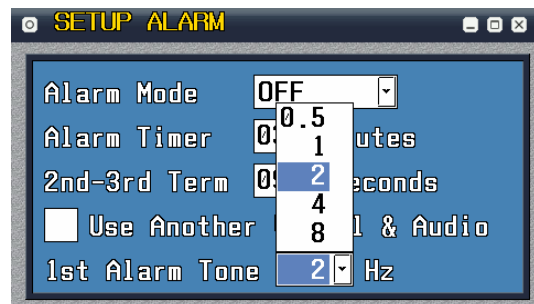


● Changing the period of the 1st stage audible alarm's warning alert.

You can change the Reset unit (BNW-52)'s interval of the 1st stage audible alarm's warning alert by using this function.



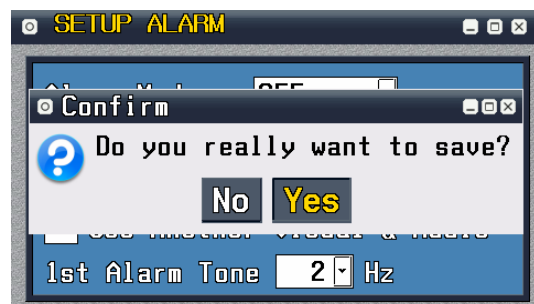
By using  and  buttons, you can change the period of the alarm.



- After changing the settings press , then you will be asked if you wish to save. Press "YES" then



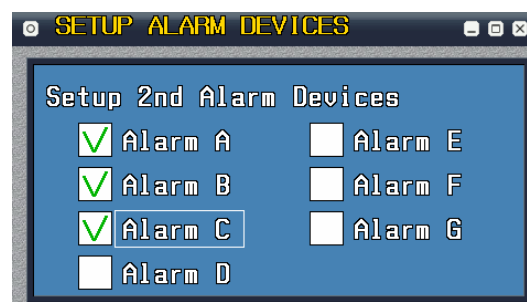
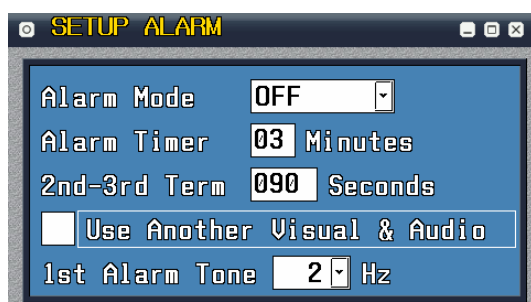
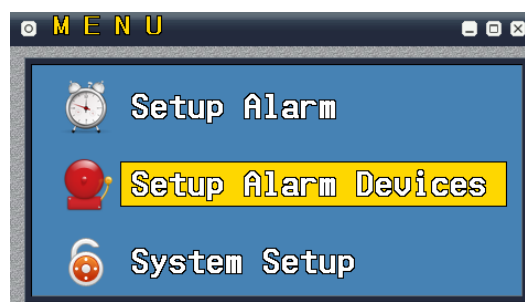
to save.



4.4.2 SETUP ALARM DEVICES

On this menu, you may turn ON/OFF the alarm of the each processor unit's interface terminal ALARM A~G by

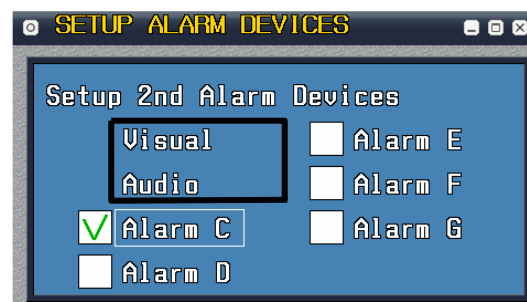
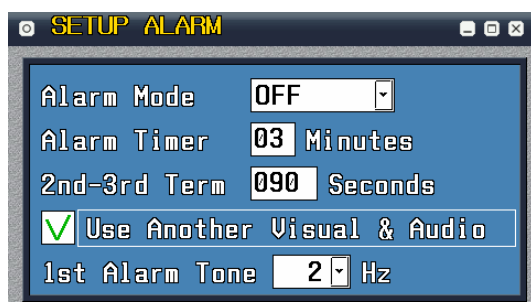
using  and . Right bottom picture with checked boxes means activating the 2nd stage audible alarm, and the rest means activating 3rd stage audible alarm. (Refer to 6.14 2nd stage audible alarms)



eg) Not using the additional visual alarm and 1st stage audible alarm

- Activate (ON) 2nd stage audible alarm : Alarm A, B, C
- Activate (ON) 3rd stage audible alarm : Alarm D, E, F, G

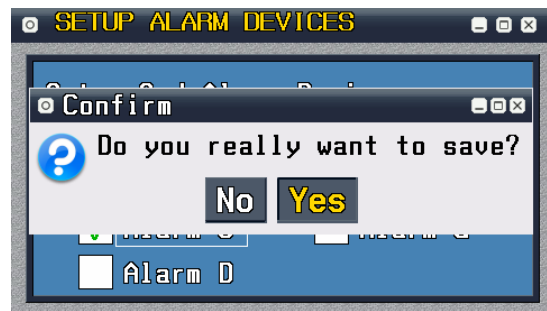
Also, by using the additional reset unit, you can activate (ON) the visual alarm(VIS) and the 1st stage audible alarm(AUD) same as the standard reset terminal, through the Alarm A & B interface terminal.



eg) Using the visual alarm and the 1st stage audible alarm.

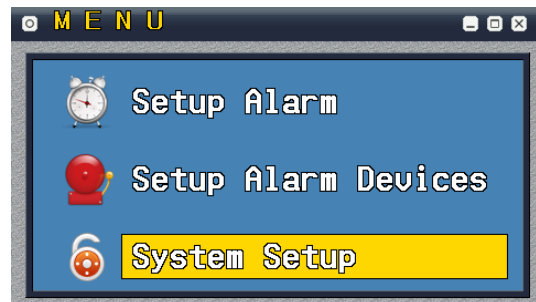
- Activate (ON) the visual alarm : A
- Activate (ON) the 1st stage audible alarm : B
- Activate (ON) the 2nd stage audible alarm : C
- Activate (ON) the 3rd stage audible alarm : D, E, F, G

- After changing all the settings press  , then you will be asked if you wish to save, press "YES" then  to save.



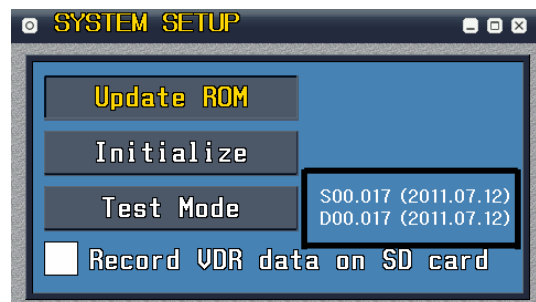
4.4.3 SYSTEM SETUP

On this menu, you may update the software, initialize the system, check the version and set the alarm test mode.



• Version update (Update ROM)

This function is used when updating the display unit version, and figures "S00.017(2011.07.12)" and "D00.017(20 11.07.12)" shown on the right side means the display unit's version of the each processor unit.



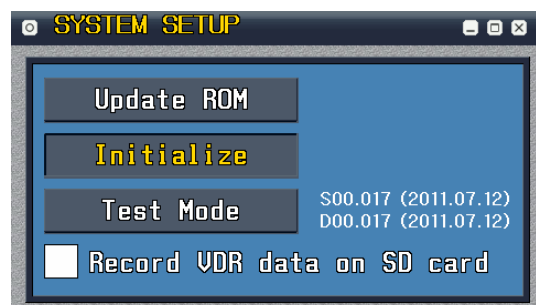
• Initialize

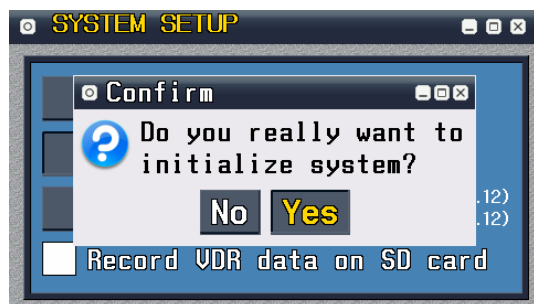
When you wish to initialize the setting, move the cursor

to "Initialize" then press  , then you will be asked if

you wish to initialize. Move to "YES" then press  .

This will initialize the system and you will be brought to the password setting screen (as shown on the picture below). **You must be aware that by using this function, all the settings will initialize.**

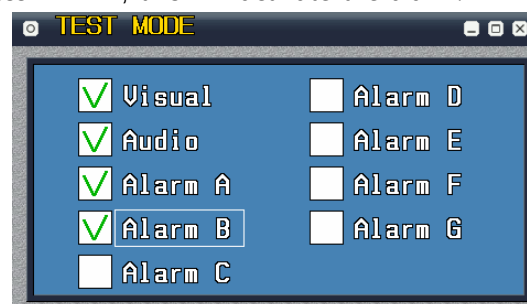
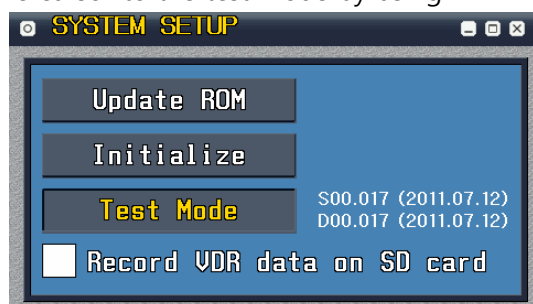




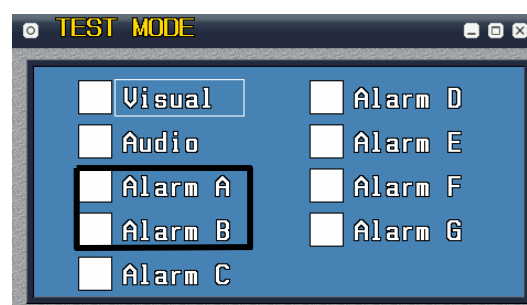
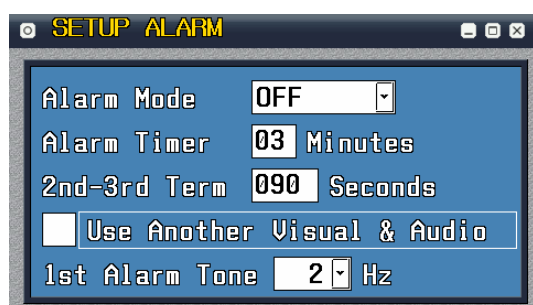
● Alarm test mode (Test Mode)

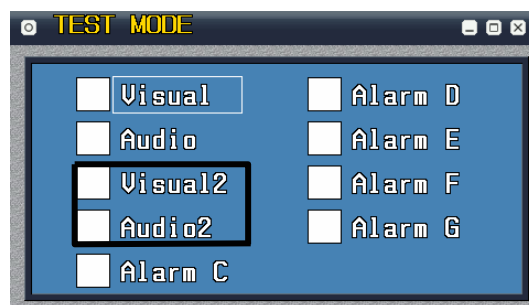
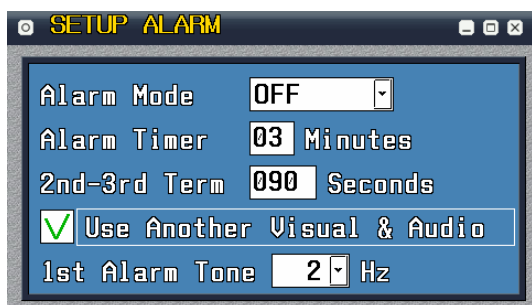
By using this function, you can check if unit operates properly after installing the reset unit and the alarm unit. You can check the visual alarm, 1st stage audible alarm and other connected alarms immediately.

Move cursor to the test mode by using  then press , this will activate the alarm.



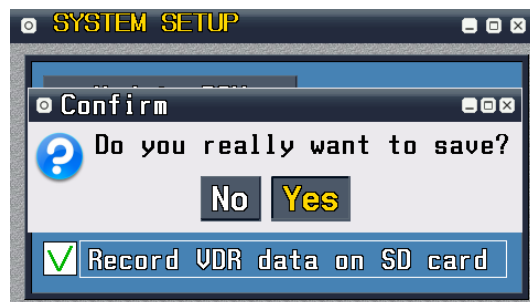
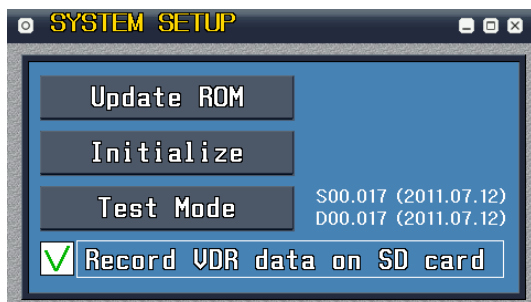
However, when setting the additional visual alarm and 1st stage audible alarm, Alarm A and B will change to the visual alarm and 1st stage audible alarm. (Refer to 4.4.2 SETUP ALARM DEVICES)



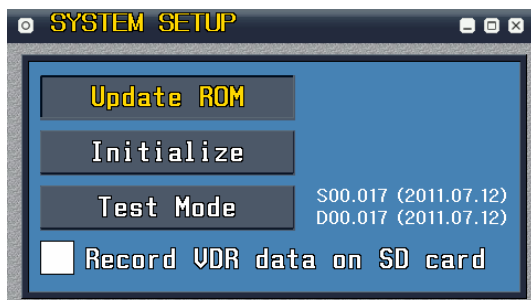
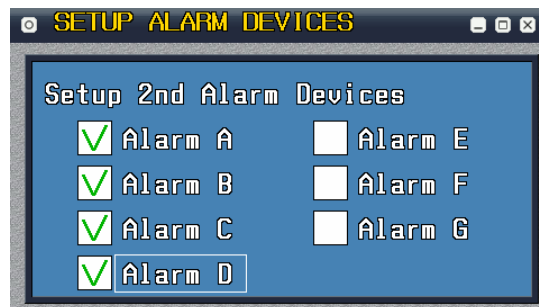
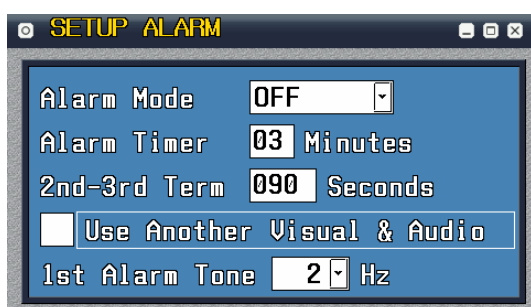


● **Saving the VDR data by using the SD card (Record VDR data on SD card)**

After inserting the SD card, by using  and , check the box and save by pressing . "BNWAS_SAMYUNGENC_VDR.txt" file will be created in the SD card and at the same time VDR data will be saved in the file.

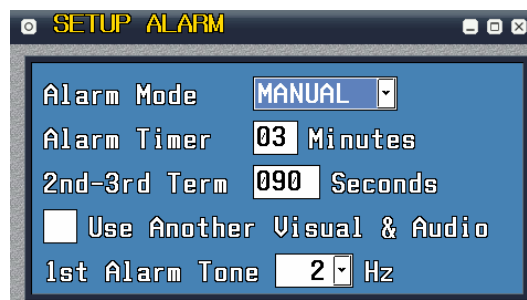


● **BNW-50's initial setup is as shown below.**



4.5 Operational display

As shown on the right, "Alarm Mode = Manual ON, Dormant period = 3 minutes, Period between the 2nd and 3rd stage alarm=90seconds", the operational display of the display unit (BNW-51) will be explained with these settings.



Refer to 2.3.1 Sequence of alarm to help you to understand further.

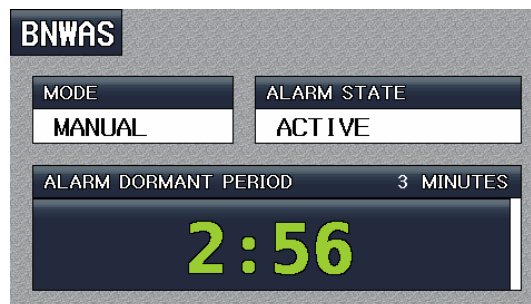
4.5.1 Dormant period

Alarm will not trigger for 3 minutes and time will decrease. If watch officer reset the timer within 3 minutes, then timer will restart.

The reset of the timer can be done in 3 different ways. For the additional reset input using additional unit, refer to 6.6~6.8.

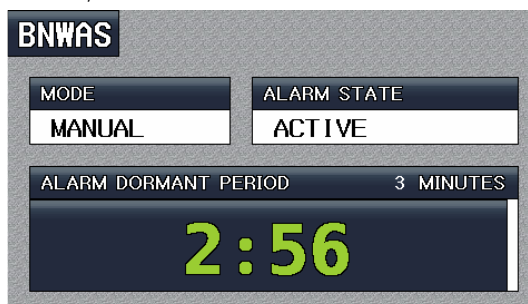
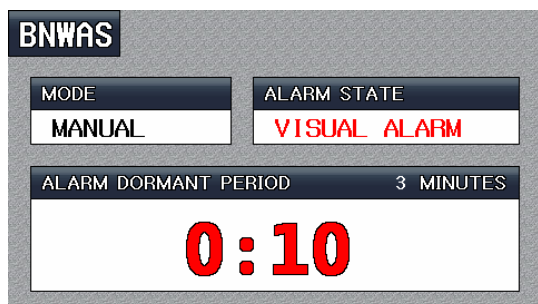


- Manual way of pressing " button" from the display unit of BNW-50.
- Manual way of using the **"RESET BUTTON"** on the reset unit of BNW-52.
- Automatic way of using **"MOTION SENSOR"** which detects the movement on the bridge floor.



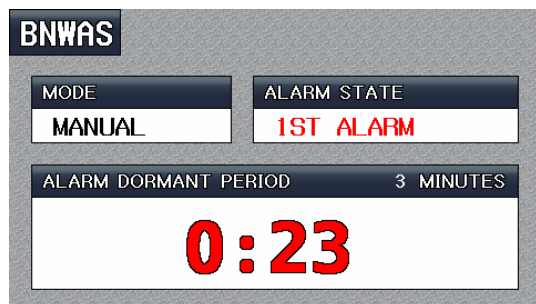
4.5.2 Visual alarm

If watch officer has not reset the timer within 3 minutes, visual alarm will activate. On ALARM STATE, "VISUAL ALARM" will be displayed and the elapsed time "0:10" will be shown in Red/Black. If timer has been reset within 15 seconds after the visual alarm activates, then the timer will restart from 3 minutes.



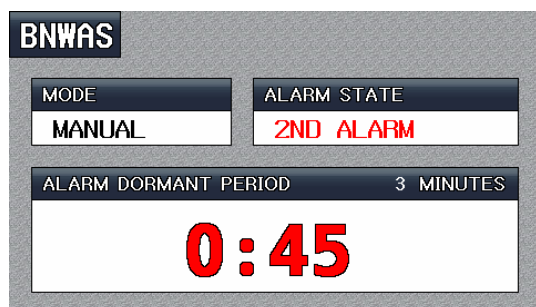
4.5.3 1st stage audible alarm

If watch officer has not reset timer within 15 seconds after the visual alarm has been activated, 1st stage audible alarm will activate. "1st ALARM" will be shown on the display under ALARM STATE, and the elapsed time "0:23" and the 1st alarm will be shown in Red/black. At this status, visual alarm and 1st stage audible alarm are activated at the same time. If reset is inputted within 15 seconds after the 1st stage audible alarm is triggered, then the timer will restart from 3 minutes.



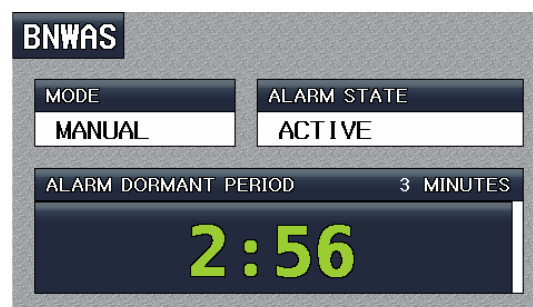
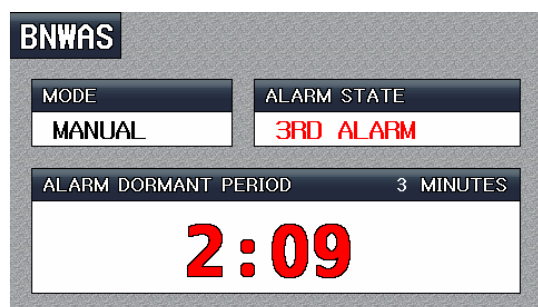
4.5.4 2nd stage audible alarm

2nd stage audible alarm will activate if timer has not been reset within 15 seconds after 1st stage audible alarm is activated. "2nd ALARM" will be shown on the ALARM STATE, and the elapsed time "0:45" and the "2nd ALARM" will be written in Red/Black. Visual alarm, 1st stage audible alarm and 2nd stage audible alarm are activated at the same time. If timer has been reset within the period set between 2nd stage and 3rd stage audible alarm (90 seconds), it will restart from 3 minutes.



4.5.5 3rd stage audible alarm

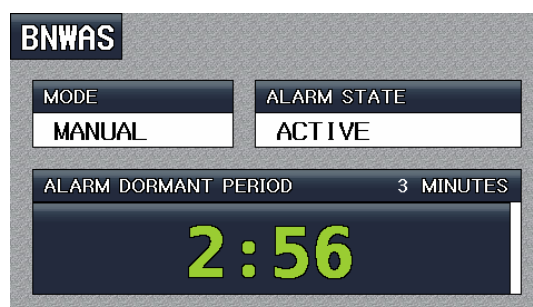
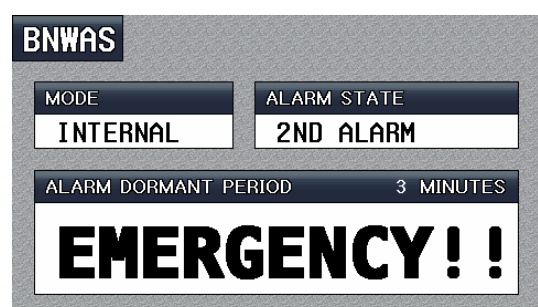
3rd stage audible alarm will activate if the timer has not been reset within 90 seconds after the 2nd stage audible alarm is activated. On the display, "3RD ALARM" will be shown under ALARM STATE and the "3RD ALARM" and the elapsed time "2:09" will be shown in red/black. On this status, all the alarms connected to the BNWAS are triggered at the same time. If timer has been reset after this, the time restarts from 3 minutes.



4.5.6 Emergency call

By pressing the button  down for 2 seconds, 2nd stage audible alarm will activate immediately. If no actions are taken then 3rd stage audible alarm will automatically activate. On the screen, "2nd Alarm" will be displayed under ALARM STATE and soon "3rd ALARM" will be shown. "2nd, 3rd ALARM" and the "EMERGENCY!!" will be written in black. After the emergency call function has been deactivated, then you must go back to the previous set up status and set the timer from 3 minutes.

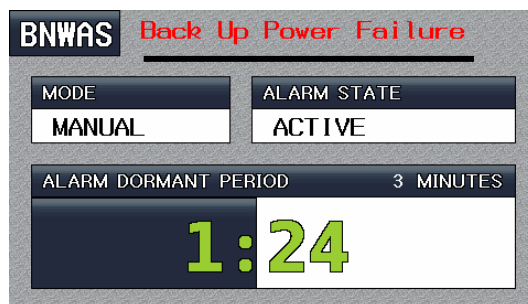
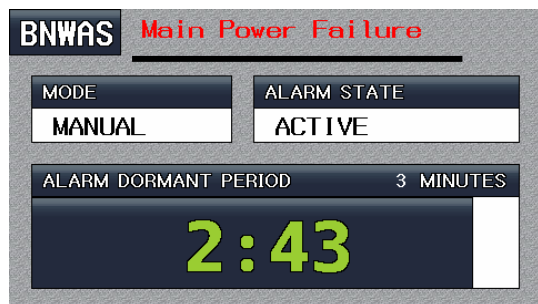
By pressing down the button for 2 seconds will deactivate the emergency call.



4.5.7 Failure indicator

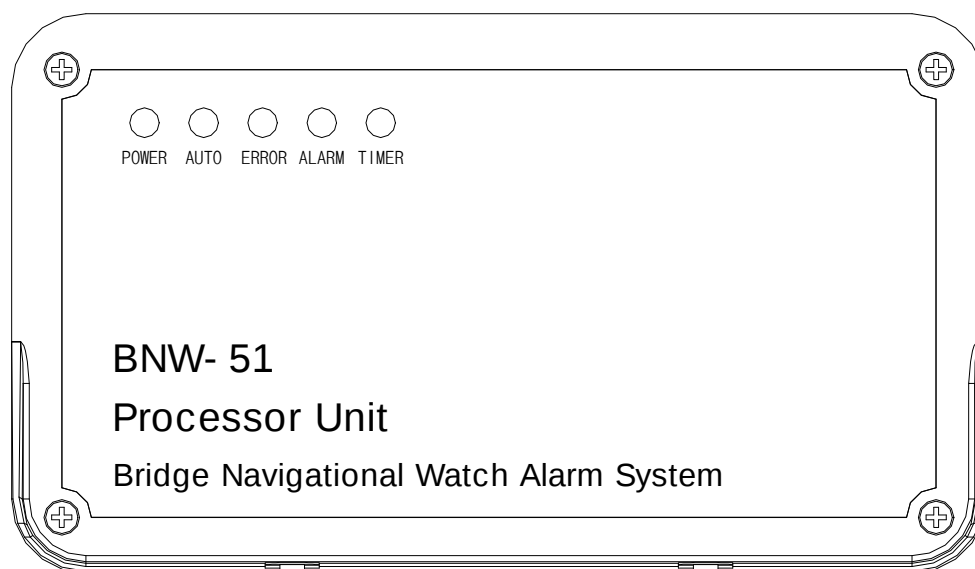
When main power(110/220V AC) or back-up power(24V DC) is not connected, "Main Power Failure" or "Back Up Power Failure" will appear on the top of the display in red/black writings.

Pictures below show Main Power Failure (Left) and Back Up Power Failure (right).



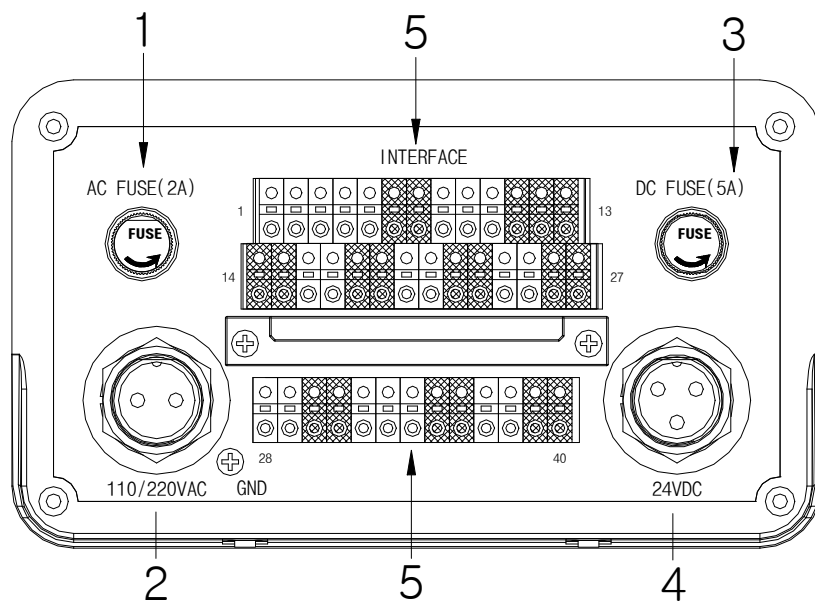
Chapter 5 BNW-51 (Processor Unit)

5.1 LED Operation (Front)



Name	Function	Color
POWER	LED lights up when power is connected	Red LED
AUTO	LED lights up when AUTO is selected from the Operational mode	Green LED
ERROR	LED lights up when the main or the back-up power is not supplied.	Red LED
ALARM	LED lights up when BNWAS' system alarm is activated.	Brown LED
TIMER	LED lights up when the BNWAS' system reset counter is activated.	Brown LED

5.2 Connector and interface socket (Back)



1. AC Fuse(2A)

2A is used as main power(AC) fuse

2. AC POWER

Main Power(110/220V AC)

3. DC Fuse(5A)

5A is used as Back-up power(DC) fuse

4. DC POWER

Back up power(24V DC)

5. INTERFACE Socket

- DC24V power supply and RS-232 communication INPUT/OUTPUT (1~5 PIN) of display unit
- DC12V Power supply and RESET INPUT (6~10 PIN) for motion sensor and reset unit.
- Alert signal output (11~27 PIN) for reset and alarm unit.
- Alert interface output (28~29 PIN) for machinery breakdown.
- Interface input (30~31 PIN) for activating track controller.
- NMEA data output (32~34 PIN) for blackbox (VDR)
- NMEA data(reset, alarm...etc) input (35~36 PIN)
- Reset pulse input (37~38 PIN) for radar.
- Interface input (39~40 PIN) for external equipment alert.

DISPLAY IN/OUT					RES2 LOW		RES1 LOW		ALARM VIS+AUD			
1	2	3	4	5	6	7	8	9	10	11	12	13
SLD	RXD	TXD	24V	GND	12V	RES	12V	RES	GND	VIS	AUD	GND

INTERFACE													
ALARM A	ALARM B	ALARM C	ALARM D	ALARM E	ALARM F	ALARM G							
14	15	16	17	18	19	20	21	22	23	24	25	26	27
24V	GND	24V	GND	24V	GND	24V	GND	24V	GND	24V	GND	24V	GND

ALARM FAIL	REMOT TRAK	NMEA TXD		NMEA RXD		RES3 PULS		EMERG EXT	
28	29	30	31	32	33	34	35	36	37
OUT+	OUT-	INP+	INP-	TXD+	TXD-	SLD	RXD+	RXD-	INP+
									INP-

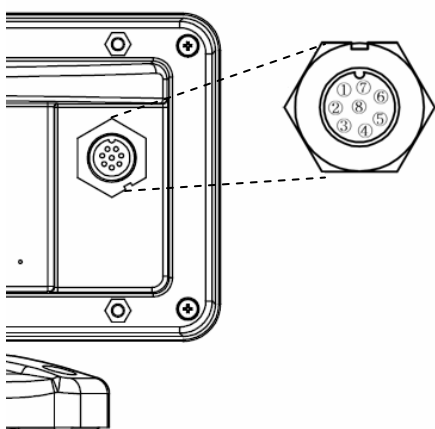
Chapter 6 Installation

6.1 Power supply

You should connect the Processor unit(BNW-51) to the Main power supply(AC 220V) using the AC cable, and DC cable should be connected to the vessel's battery(DC24V) which can produce power to the BNWAS for more than 6 hours.

6.2 Display

You may choose an installation method between bracket mounting and the flush mounting for the display unit (BNW-50). Connect the display unit (BNW-50) with the processor unit (BNW-51) with cable (Z8-2M-05) provided.



BNW-50

Power connector

DISPLAY				
IN/OUT				
1	2	3	4	5
SLD	RXD	TXD	24V	GND

BNW-51

Interface socket

Display unit (BNW-50)		Processor unit (BNW-51)	
Pin number	Color of the cable (Z8-2M-05)	Interface socket number	Function
1	Black (Shield)	1(SLD)	Shield
	Black (GND)	5(GND)	GND
2	Not in use	-	-
3	White(RS-232 Output)	2(RXD)	RS-232 Input
4	Green(RS-232 Input)	3(TXD)	RS-232 Output
5	Red(DC24 Input)	4(24V)	DC24 Output
6,7,8	Not in use	-	-

6.2.1 Bracket Mounting

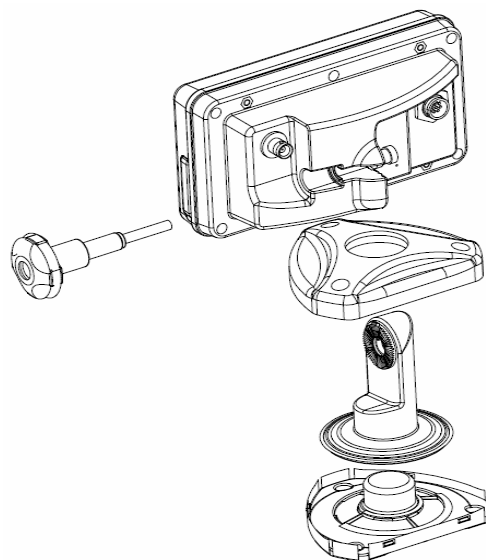
Before installing, consider the display unit's weight and search for the most convenient place for you.

Installing the display :

- 1) Hold the display and find the joint between the bracket and the display.
- 2) Push the display gently into the bracket.
- 3) Turn the knob to lock.

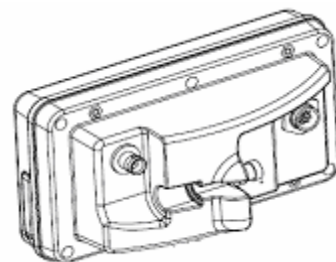
Detaching the display :

- 1) Turn the unit off.
- 2) Loosen the knob and dismantle the end of the bracket.



6.2.2 Flush mounting

- 1) Find the place to install the flush mounting.
- 2) Make a hole on the place you wish to install.
- 3) By using a saw, cut the panel
- 4) Make 4 holes for the screws
- 5) Install the screw on the display unit and put screws into the holes.
- 6) Attach the supplied hardware to the place you wish to install display unit.



Before you begin, make sure you have enough space to install the display unit.

6.3 RESET SET UP (RES1/LOW , ALARM/VIS+AUD)

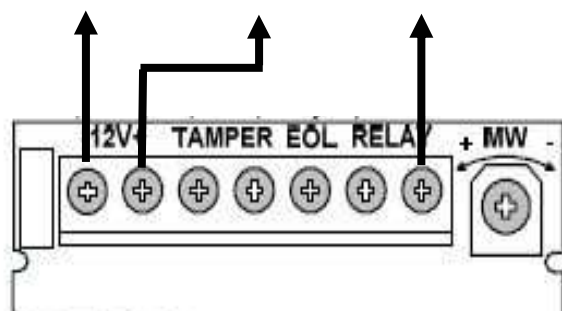
Connect the reset unit (BNW-52) to the interface socket (RES1) of BNW-51, Reset unit is usually installed near the visual alarm, however this reset unit combines the visual alarm and the 1st stage audible alarm together, therefore there is no need to install them separately.

Reset function should be installed near the approachable place from conning position, workstation for navigating and maneuvering.

Also you have installation options depending on the place you wish to install the reset unit (BNW-52). (Flush type, desk type, watertight type).

6.4 Motion Sensor

Install the dual motion sensor (DND-300M) which consists of microwave and PIR detection. Connect the 2 power supply wires to +12V and -12V. And connect one of the relay wires to the [relay] socket as shown below. When installing the motion sensor, use the standard bracket. (Refer to chapter 8. Motion Sensor.



In addition, few things need to be taken into account when deciding where to install.

- Microwave radiation can pass through the glass and nonmetallic walls, you must adjust the microwave's range so that it does not exceed the room limits. Otherwise the motion in the next room or moving traffic along the outer side of the wall will cause the MW detector to trip.
- Large reflective objects (especially metals) within the range may distort the patterns of the detective range.
- If two motion sensors are installed in the same room or on the opposite sides of a shared wall, the sensors should not face each other and there must be at least 2 m distance between them.

6.5 Input terminal for remote activation(REMOT/TRAK)

Connect the ship's heading or track control system to the remote activation input. Under the AUTO mode, two brackets (INP+ / INP-) should be in contact for BNWAS to activate.

6.6 Additional reset terminal(RES2/LOW)

You can connect additional external reset unit or the motion sensors to this unit. By setting the display unit, if ALARM A&B(one of the external alarm terminals) are used as Visual alarm (VIS) and Audible alarm (AUD), this can be same as the standard reset unit. (Refer to 4.4.2 SETUP ALARM DEVICES)

6.7 Pulse reset set up(RES3/PULS)

Connect the additional equipment that could exist on the bridge in this input, where watch officer could easily monitor. A high or low pulse will reset timer. You must be aware that periodic pulse signal may automatically reset the timer.

6.8 NMEA Input (NMEA/RXD)

You can connect the digital equipment which can output the NMEA data (reset, alert etc). Refer to the chapter 11 NMEA (IEC 61162-1) interface section.

When digital equipment which can output the GPS data gets connected, there will be time shown on the display.

- Reset data : EVE sentence
- Alarm data : ALR sentence
- GPS data : GGA, RMC sentence

6.9 NMEA Output(NMEA/TXD)

According to the IEC 61162-1, ALR sentence, connect VDR and equipment that requires BNWAS' NMEA alarm data. Alarm data can output any changes made on the BNWAS such as reset alert, dormant period time, etc. For further information on the alarm data, refer to the chapter 11 NMEA(IEC 61162-1) interface.

6.10 External damage alarm output(ALARM/FAIL)

Connect the damage alarm output to the external alarm. These two terminals are usually connected however when the display unit shows 'Damage alert' they will disconnect.

6.11 External emergency alarm input(EMERG/EXT)

Connect the two contacts of the external emergency call device to this terminal. When these two terminals(INP+/INP-) become in contact for more than 2 seconds, system's emergency call function activates. When the external emergency call's terminal gets disconnected, it will stop operating the emergency call will stop operating. It is possible to connect the alarm contact signal coming from the outside with this terminal.

6.12 Visual alarm(VIS)

You do not have to install the visual alarm separately as standard reset unit(BNW-52) is equipped with the visual alarm function. The dimming of the visual alarm can be controlled automatically, and the potentiometer (VR2:DIM) from internal PCB may also additionally adjust the dimming. Also, the visual alarm can be stopped by the internal PCB's jump pin (CN4:Lamp OFF).

6.13 1st stage audible alarm(AUD)

There is no need to install the 1st stage audible alarm separately as the standard reset unit(BNW-52) is combined with it. The volume of the alarm is controlled by the reset unit's PCB Potentiometer(VR1 : Tone vol)

The alarm tone is adjustable by moving the jump pin(CN5, CN6, CN7 : tone) within PCB, and the 1st stage alarm period can be changed from the setup menu. By using the jump pin (CN3:Tone OFF) from internal PCB, the 1st stage audible alarm can be stopped.

6.14 2nd stage audible alarm (ALARM/A~G)

Install the alarm unit (BNW-52) in the officer's room or the captain's room when there is only one backup officer. When there are more than 1 backup officer, then install the alarm unit(BNW-53) in every officers' rooms separately.

Alarm unit(BNW-53) gives you installation options(flush mounting or desk type) depending on where you are installing the unit.

Also all the alarm units'(BNW-53) alarm tone can be changed by moving the internal PCB's jump pin(CN2,4: Tone-H / CN3,5: Tone-L), volume of the alarm can be controlled by the internal PCB's potentiometer (VR1: Tone vol)

Backup officer's decision

You can ignore the sequence of the audible alarm when connecting it to ALARM/A ~ ALARM/G, as you can reassign the sequence of the connected alarm unit and the alarm type from the display unit (Refer to 4.4.2 SETUP ALARM DEVICES).

Preset value when manufactured (2nd stage audible alarm can be selected separately)

ALARM/A	: 2 nd stage audible alarm – officer's cabin 1 connection terminal.
ALARM/B	: 2 nd stage audible alarm – officer's cabin 2 connection terminal
ALARM/C	: 2 nd stage audible alarm – officer's cabin 3 connection terminal.
ALARM/D	: 2 nd stage audible alarm – officer's cabin 4 connection terminal.
ALARM/E	: 3 rd stage audible alarm - crew's quarter's connection terminal.
ALARM/F	: 3 rd stage audible alarm – crew's quarter's connection terminal.
ALARM/G	: 3 rd stage audible alarm – crew's quarter's connection terminal.

For example, you may adjust the setting as below.

ALARM/A	: Visual alarm terminal (additional function same as the standard visual alarm)
ALARM/B	: 1 st stage audible alarm terminal (additional function same as the standard 1 st stage audible alarm)
ALARM/C	: 2 nd stage audible alarm – officer's cabin 1 connection terminal
ALARM/D	: 2 nd stage audible alarm – officer's cabin 2 connection terminal
ALARM/E	: 2 nd stage audible alarm – officer's cabin 3 connection terminal
ALARM/F	: 3 rd stage audible alarm – crew's quarter's connection terminal.
ALARM/G	: 3 rd stage audible alarm – crew's quarter's connection terminal.

➤ If you install the audible alarm to ALARM/A ~ ALARM/G separately as above, you may selectively turn ON/OFF the alarm for each cabin, however this will create many wires.

➤ You can minimize the wires by tying them (distinguish between officer's cabin and the crew's quarter) if you do not have to turn ON/OFF the alarm per cabin.

6.15 3rd stage audible alarm (ALARM/A~G)

Install the alarm unit (BNW-53) in the crewmember's room who can respond to the 3rd stage alarm. At this stage, all connected alarms will activate.

Delay setup for 2nd stage alarm's timer

In large vessels, the delay between the 2nd and 3rd stage alarms may be set to a longer value when installing, from 90~180 seconds maximum. To allow enough time for the back-up officer and/or master to reach the bridge. Go to SETUP ALARM from the display unit's menu to set the time.

Chapter 7 Installation Caution

7.1 General

Follow requirements in IMO resolution MSC.128(75) concerning the installation of the BNWAS.

7.2 Location of reset unit (128/A4.1.3.1)

It shall not be possible to initiate the reset function or cancel any audible alarm from any device, equipment or system not physically installed in areas of the bridge.

7.3 Reset installation (128/A5.1.4)

Means of activating the reset function shall only be available in positions on the bridge giving proper look out and preferably adjacent to visual indications. Means of activating the reset function shall be easily accessible from the conning position, the workstation for navigating and maneuvering, the workstation for monitoring and the bridge wings.

7.4 Visual alarm (128/A5.2.2 part)

Visual alarm shall be visible from all operational positions on the bridge where the watch officer may reasonably be expected to be stationed.

7.5 1st stage audible alarm (bridge) (128/A5.2.3 part)

This alarm shall be audible from all location where watch officer may reasonably be expected to be stationed. This includes wheelhouse and the bridge wing.

Chapter 8 Motion sensor (Movement sensor)

8.1 Operating movement sensor

We have adapted Doppler radar principle so the sensor can detect the microwave (MW) and infrared rays (PIR) at the same time. It can be used under extreme environment caused by heat, temperature, noise, humidity, airflow and dust. (Be aware when using this since electromagnetic wave can go through the glass or plaster board).

The sensor's minimum detective distance is 20m, and it is small and practical sensor used for internal security. Sensor can detect the movement made from inside by 120°~150°, and is not harmful to human. By using the bracket attached to the sensor, you may install it easily on the wall or the ceiling.

Input voltage : 12 VDC ($\pm 3V$)

Power consumption : Operating= 26mA , Standby= 17mA

Detective range : 15m(standard)

Pre heating time : 1minute

Alarm period : 2 seconds (± 1 second)

Detective angle : 120°~150°

Angle control : left/right 20°

Installation height : 2~4m



Method of detection : Quad-element PIR and microwave pulse Doppler

Detection outcome : For 2 seconds, with green LED blinking, RELAY output accesses to GND (CLOSE).

LED indication:: Brown,green LED blink= Power is connected and warms up(1 min max.)

Brown LED blink= MW sensor has detected movement.

Green LED blink= PIR sensor has detected movement.

Red LED blink= RELAY is under operation for external alarm

8.2 Installing movement sensor

Microwave radiation can pass through the glass and nonmetallic walls, you must adjust the microwave's range so that it does not exceed the room limits. Otherwise the motion in the next room or moving traffic along the outer side of the wall will cause the MW detector to trip. Large reflective objects (especially metals) within the range may distort the patterns of the detective range. If two motion sensors are installed in the same room or on the opposite sides of a shared wall, the sensors should not face each other and there must be at least 2 m distance between them.

Installment place

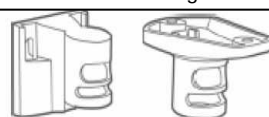
1. Avoid installing from direct sunlight
2. Install it separately from the vessel's power cable
3. Do not install it at the back of the partition
4. Avoid installing near the heat
5. Install it on the stable and hard surface
6. Avoid installing from windy environment
7. Do not install it outside.

Installation instruction

1. Remove the front cover by loosening the screw at the bottom of the sensor.
2. Loosen the binding screw of PCB and carefully remove the PCB.
3. Drill the bracket holding screw and wire hole.
4. Refer to the picture beside.
5. Pull the wire through the holes and by using the binding screw, fix the bracket and sensor together.
6. Assemble the PCB carefully.
7. Connect the wire with the right terminal and screw.(refer to 6.4 motion sensor)
8. Set the Dip switch. (refer to picture 3)
9. Assemble the front cover.
10. Fix the sensor adapter on the wall.

BRACKET INSTALLATION OPTION

- 1) Choose between ceiling or wall adapter.



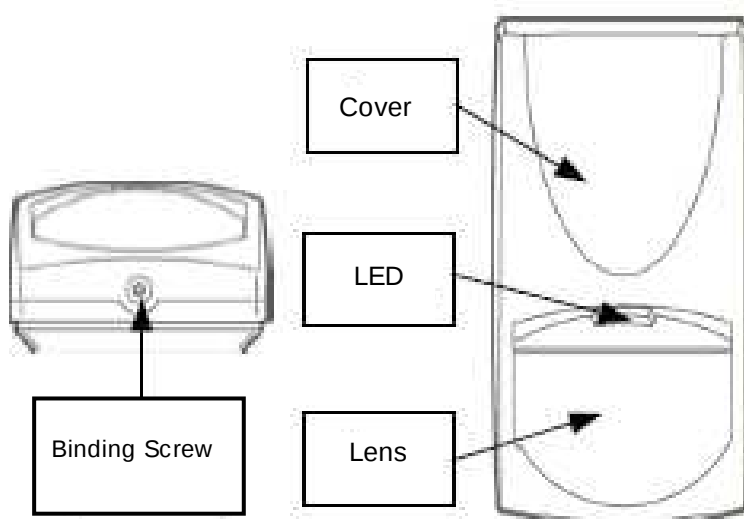
- 3) Insert the adapter below the bracket

- 2) Place nut into bracket

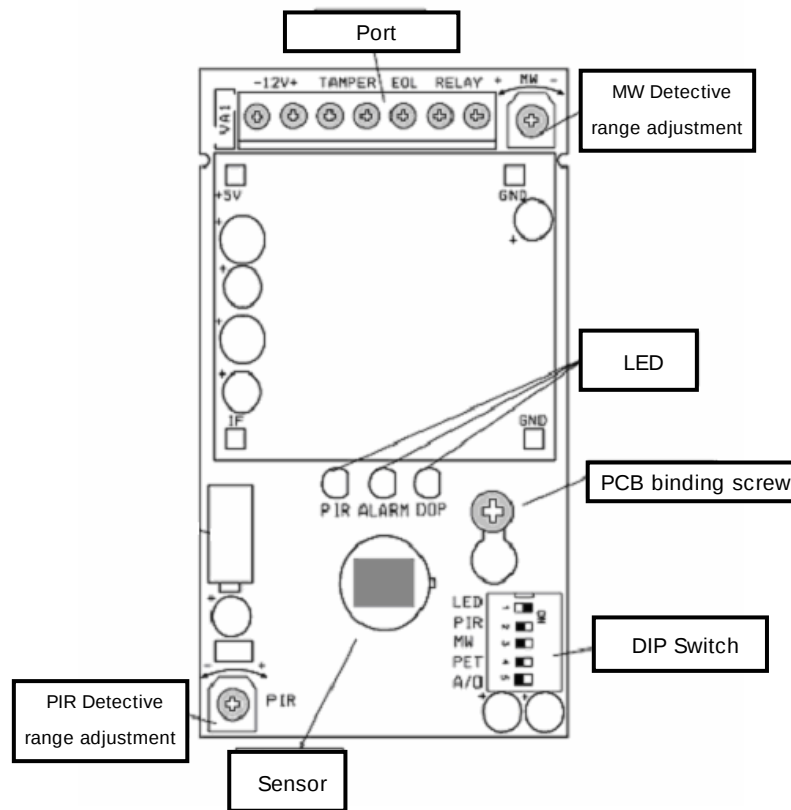
- 5) Assemble the attached bracket with detector's base

- 4) Place the wire into the bracket

- 6) Install the sensor facing to the range and tighten the bracket bolt



Picture 2 Motion sensor Exterior



Picture 3 PCB Plan

Check the operation after the installment

Move around in the detectable range after installation and check if the Green lamp (PIR), Brown lamp (MW), Red lamp (RELAY) turns on and off. If it turns on and off whenever you move around it, this is normal. If the Green lamp and Brown lamp are constantly flickering after the pre-heating time of the lamp, check if there is any shielding around it. If it is malfunctioning, reinstall the equipment.

Detailed adjustment (Should be done by professional technician if required)

Infrared ray (PIR) detectable range adjustment: Use the volume marked with PIR, to adjust the detectable sensitivity from 15% to 100% according to the ambulation test. (it is set at the minimum when manufactured). Turn the volume to (+) to increase the sensitivity and (-) to decrease.

Microwave(MW) sensitivity adjustment: Set the "MW detectable range adjustment" at its minimum, then adjust the volume slowly to the maximum until it can detect the furthest distance of the range (based on the ambulation test) . Turn the volume (MW sensitivity adjustment) to (+) to increase the sensitivity and (-) to decrease.

Chapter 9 Test after installation

Go through the check list below after the installing the equipment.

	Check list	OK
1	Turn the BNWAS on, set the timer on 3 minutes and the bridge watch mode in manual.	
2	Go to the external reset unit(BNW-52, motion sensor), then do not move for 3 minutes. After 3 minutes, check if Reset unit (BNW-52) has lighted up then check if lighting stops when you move near to the motion sensor or press the reset button.	
3	Do not move for 3 minutes. See if reset unit lights up, then check if reset unit (BNW-52) activates the 1 st stage audible alarm after 15 seconds from then.	
4	Go to the captain/master and/or the back-up officer's cabin to check if the BNW-53 activates the 2 nd stage audible alarm after 15 seconds from the 1 st stage audible alarm.	
5	Go to the crew's office and check if the 3 rd stage audible alarm activates after 90~180 seconds (adjustable) from the 2 nd stage audible alarm.	
6	Go to the bridge and reset all the alarms by pressing the reset button.	
7	Press the emergency call button for 2 seconds. Check if the 3 rd stage alarm is displayed after the 2 nd stage alarm. Turn the alarm off by pressing the emergency call button for 2 seconds..	
8	Disconnect the main power. Check if you see the Main Power Failure on the display. Connect the main power again.	
9	Disconnect the backup power. Check if you see the Back Up Power Failure on the display..	
10	If failure relay output is used, check if the equipment connected to the failure relay works properly. Then connect the backup power	
11	If pulse reset unit is used, then connect the equipment to the RES3/PULS terminal. Check if the other equipment can reset the timer.	
12	If VDR (black box) is used, check if the VDR receives data information from the Processor unit (BNW-51).	
13	If vessel's heading or the track control system is connected, set the BNWAS' alarm mode as AUTO. Check if the timer works and ACTIVE appears under ALARM STATE when the vessel's heading or track control system is operating.	

Chapter 10 System maintenance and fault diagnosis

10.1 System maintenance

Constant maintenance is required to maintain the functionality of the equipment. Maintenance means regular inspection on the equipment, software upgrade etc and table below should help you to maintain your equipment.

Content	
Connector and the sockets	Check if the connectors and the sockets are connected properly.
Cable	Check the cables. If damaged or cut then you must change it immediately.
Ground terminal and ground wire	Check the ground terminal, if it is rusted or decomposed, you must change it or clean it. You must also check the connection of the ground wire.
Clean	Use clean tissue or the soft fiber to clean the salt precipitate or dirt. Do not use the chemical liquids as it may erase the letters or peel the writings on the equipment off.

10.2 Fault Diagnosis

General fault symptoms and the solutions are described in the table below.

User should not dismantle the equipment when the solutions do not help. Unprofessional dismantle or fixing the equipment may lower the equipment's functionality and shorten its life. You should contact the professional technician.

A/S department ☎ : (82) 051-601-5570~5574

No.	Symptoms	Solutions
1	Motion sensor does not reset.	Check the interface socket [RES1/LOW] of BNW-51's socket power (pin number 9~ 10). When the motion sensor's lamp is red, power must be on LOW(0V) Double check the motion sensor's cable connection, when 5V does not convert into 0V.

2	BNWAS does not turn on	Check the AC or DC fuse.. Check the power supply of AC input power(220V) and DC input power (24V) Check the power cable's connection.
3	Reset function does not work.	Check the interface socket [RES1/LOW] of BNW-51. Socket power (pin number 9~ 10) (It should be 0V only when reset button is pressed or movement was detected). Movement detect: Socket should be 0V only when the red lamp is lighted. When power supply stays at 0V. 1. Set the BNWAS as OFF mode.(press OFF on the display). 2. Install only 1 reset unit in the terminal pin number 9. 3. Set BNWAS as MANUAL mode. 4. Check if the visual alarm activates after 3 minutes 5. Press the reset button to check if the alarm resets. 6. Set BNWAS as OFF mode. 7. Install only 1 motion sensor in the terminal pin number 9. 8. Set BNWAS as Manual mode and do not move. 9. Check if the visual alarm activates after 3 minutes. 10. Check if the alarm resets when the movement is made around. 11. Install both reset unit and motion sensor and follow the steps above to check.
4	Visual alarm, 1 st stage~ 3 rd stage audible alarm are not operating, yet is shown as activated on the display.	Check the cable. Check the DC24V power supply on the terminal of the alarm unit (BNW-53)

Chapter 11 NMEA(IEC 61162-1) Interface

BNW-50 provides the interface such as IEC 61162-1 ALR, EVE with the message below..

SETTINGS : Bit(4800), Databit(8), Paritet(N), Stop bit(1), Flow(Hardware)

11.1 VDR Interface

- **hhmmss.ss** : This will be left blank if BNWAS does not include the UTC time information.
- **xxx** : Alert or the name of the reset order, Auto mode will appear as "000".
- **A** : A = Exceeded dormant period time , V = Not exceeded dormant period time.
- **A** : A = Alert response , V = No alert response
- **c--c** : BNWAS Mode (Refer to IEC 62616 3.1.1): c1; c2; c3
 c1 = AUT or MAN or OFF
 c2 = Dormant period time by minutes, (03 -12)
 c3 = Alert stage: 1, 2 or 3. (blank = no alert)

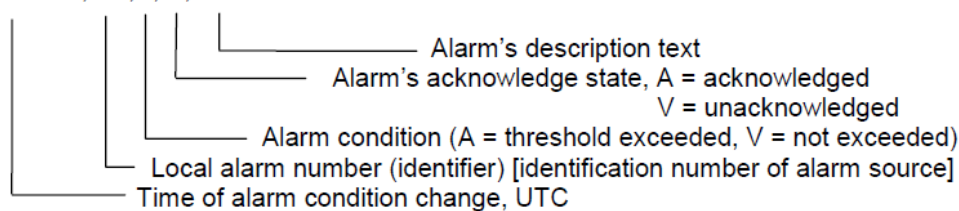
Example: \$BNALR,,000,A,V,C1=AUT;C2=03;C3=1*hh<CR><LF>

Warning message will always appear when there is a change in the set up.

11.2 External equipment alarm interface

This BNWAS will immediately activate the alarm when Unacknowledged ALR sentence is entered.

\$--ALR, hhmmss.ss, xxx, A, A, c--c*hh<CR><LF>



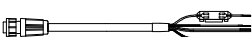
11.3 External equipment reset interface

BNWAS will reset if you enter the EVE sentence as below.

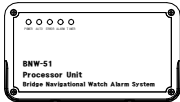
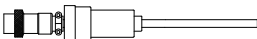
\$RAEVE,,BNWAS,Operator activity*2D

Chapter 12 PACKING LIST

12.1 BNW-50 (STANDARD)

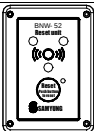
BNW-50(Display Unit Desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	Display UNIT		BNW-50		1		Bracket protection cover
			CODE NO.	E01-8800-00			
2	Manual		BNW-50-MK		1		
			CODE NO.	M00-0481-00			
BNW-50-A(Display Unit Installation Accessory)							
3	Cable Ass'y		Z8-2M-05		1	C-1	
			CODE NO.	574-0179-01			
4	Screw		Type 1 5X20 STS		3		
			CODE NO.	904-0050-00			
5	FUSE		2A/250V[30mmX6mm]		2		
			CODE NO.	527-2002-2Q			

12.2 BNW-51 (STANDARD)

BNW-51(Processor Unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	Processor UNIT		BNW-51		1		
			CODE NO.	E02-0800-00			
BNW-51-A(Processor Unit Installation Accessory)							
2	Cable Ass'y		SCN20/2-3M-02		1		AC power
			CODE NO.	574-0107-02			
3	Cable Ass'y		SCN3-3M-02		1		DC power
			CODE NO.	574-0390-01			
4	Screw		Type 1 4X16 STS		4		
			CODE NO.	904-0049-11			
5	Cable Ass'y		01-3M-D01 Cable Ass'y		1		Ground
			CODE NO.	574-0102-01			

6	Cable Tie		DACT100-2.5		10		
			CODE NO.	597-0050-1D			
7	FUSE		2A/250V[20mmX5mm]		2		AC POWER
			CODE NO.	527-2002-1Q			
8	FUSE		5A/250V[20mmX5mm]		2		DC Power
			CODE NO.	527-2005-1Q			

12.3 BNW-52 Flush type (STANDARD)

BNW-52(Reset unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	RESET UNIT		BNW-52		1		
			CODE NO.	E02-1800-00			
BNW-52-A(Reset unit installation accessory)							
2	Screw		Stain piece type1 3X12 STS		4		
			CODE NO.	904-0237-01			
3	Rubber		BNW-52 CABLE RUBBER		1		
			CODE NO.	E02-1841-00			

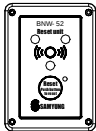
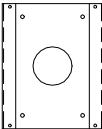
12.4 BNW-53 Flush type (STANDARD)

BNW-53(Alarm unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	ALARM UNIT		BNW-53		1		
			CODE NO.	E02-2800-00			
BNW-53-A(Alarm unit installation accessory)							
2	Screw		Stain piece type1 3X12 STS		4		
			CODE NO.	904-0237-01			
3	Rubber		BNW-52 CABLE RUBBER		1		
			CODE NO.	E02-1841-00			

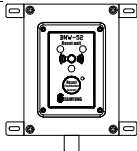
12.5 MONTION SENSOR (STANDARD)

MOTION SENSOR							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	MOTION SENSOR		DND-300M		1		Installation accessory included
			CODE NO.	557-9020-1D			

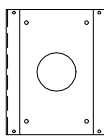
12.6 BNW-52 Desk type(OPTION)

BNW-52(Reset unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	RESET UNIT		BNW-52		1		
			CODE NO.	E02-1800-00			
BNW-B(Desk type bracket)							
2	Bracket		BNW-B		1		
			CODE NO.	E02-1811-01			
BNW-B-A(Desk type bracket installation accessory)							
3	Bolt		M3X6 STS304		4		
			CODE NO.	900-0134-02			
4	Screw		Type 1 3X12 STS		4		
			CODE NO.	904-0037-11			
5	Rubber		BNW-52 CABLE RUBBER		1		
			CODE NO.	E02-1841-00			

12.7 BNW-52 Watertight type(OPTION)

BNW-52W(Watertight reset unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	Watertight RESET UNIT		BNW-52W		1		
			CODE NO.	E02-8800-00			
BNW-52W-A(Watertight reset unit installation accessory)							
2	Screw		Type 1 5X20 STS		4		
			CODE NO.	904-0050-00			
3	Rubber		BNW-52 CABLE RUBBER		1		
			CODE NO.	E02-1841-00			

12.8 BNW-53 Desk type(OPTION)

BNW-53(Alarm unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	ALARM UNIT		BNW-53		1		
			CODE NO.	E02-2800-00			
BNW-B(Desk type bracket)							
2	Bracket		BNW-B		1		
			CODE NO.	E02-1811-01			
BNW-B-A(Desk type bracket installation accessory)							
3	Bolt		M3X6 STS304		4		
			CODE NO.	900-0134-02			
4	Screw		TYPE 1 3X12 STS		4		
			CODE NO.	904-0037-11			
5	Rubber		BNW-52 CABLE RUBBER		1		
			CODE NO.	E02-1841-00			

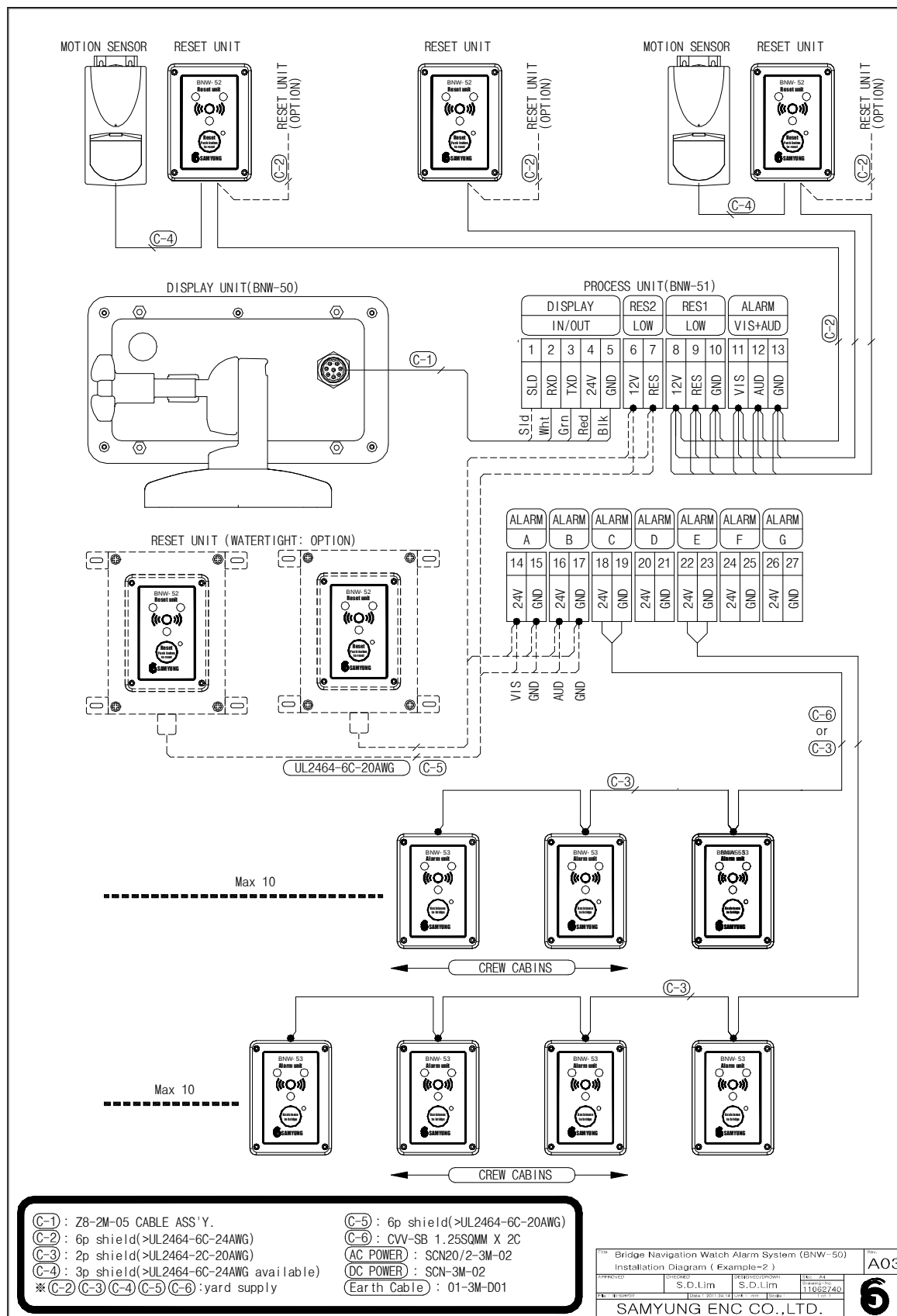
12.9 Cable(OPTION)

Reset unit and motion sensor installation cable							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	Cable		UL 2464 6C X 24 AWG			C-2	LENGTH
			CODE NO.	567-2406-1K		C-4	OPTION
Watertight type Reset Unit installation cable							
2	Cable		UL 2464 2C X 20 AWG			C-3	LENGTH
			CODE NO.	576-2002-1K			OPTION
Alarm unit installation cable (SMALL)							
3	Screw		UL 2464 6C X 20 AWG			C-5	LENGTH
			CODE NO.	567-2006-1K			OPTION
Alarm unit installation cable(LARGE)							
4	Rubber		CVV-SB 1.25SQMM X 2C			C-6	LENGTH
			CODE NO.	570-1252-1K			OPTION

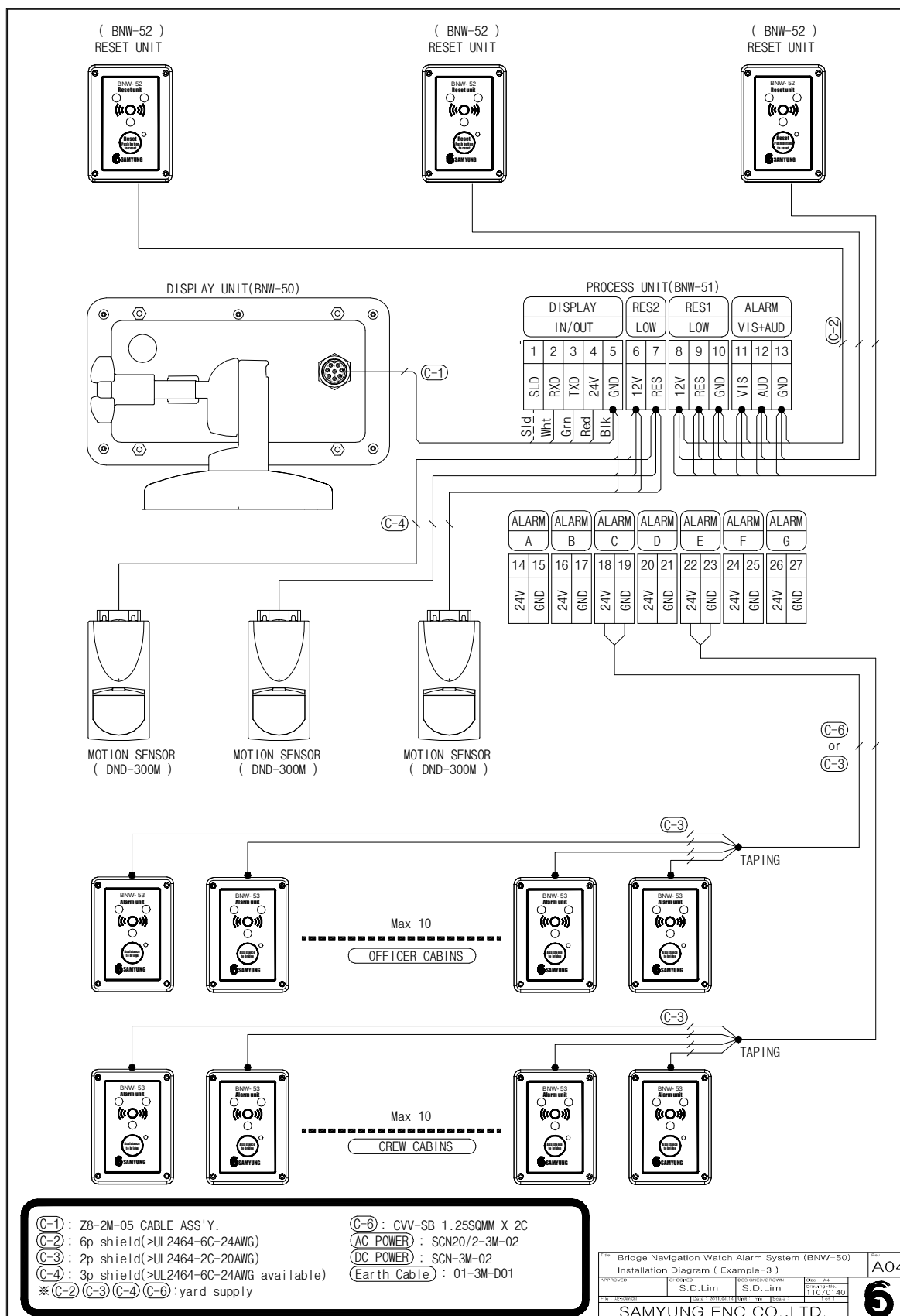
※ Recommendation when selecting the wire

When installing the alarm unit (BNW-53), if the connection cable's length for processor unit and alarm unit is longer than 50m, we recommend you to use conductor bigger than 1.25 mm².

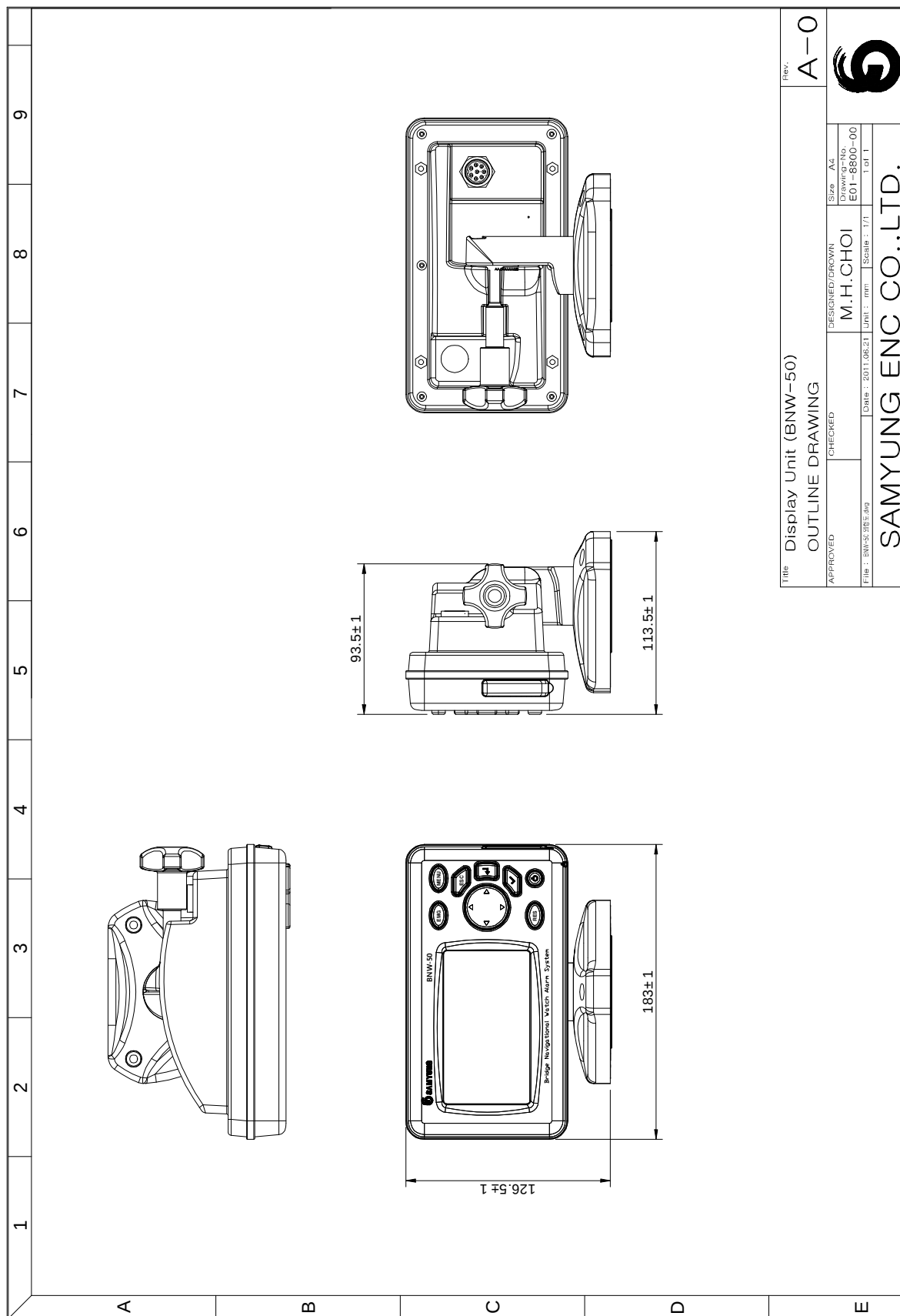
13.3 Installation Diagram (Example-2)



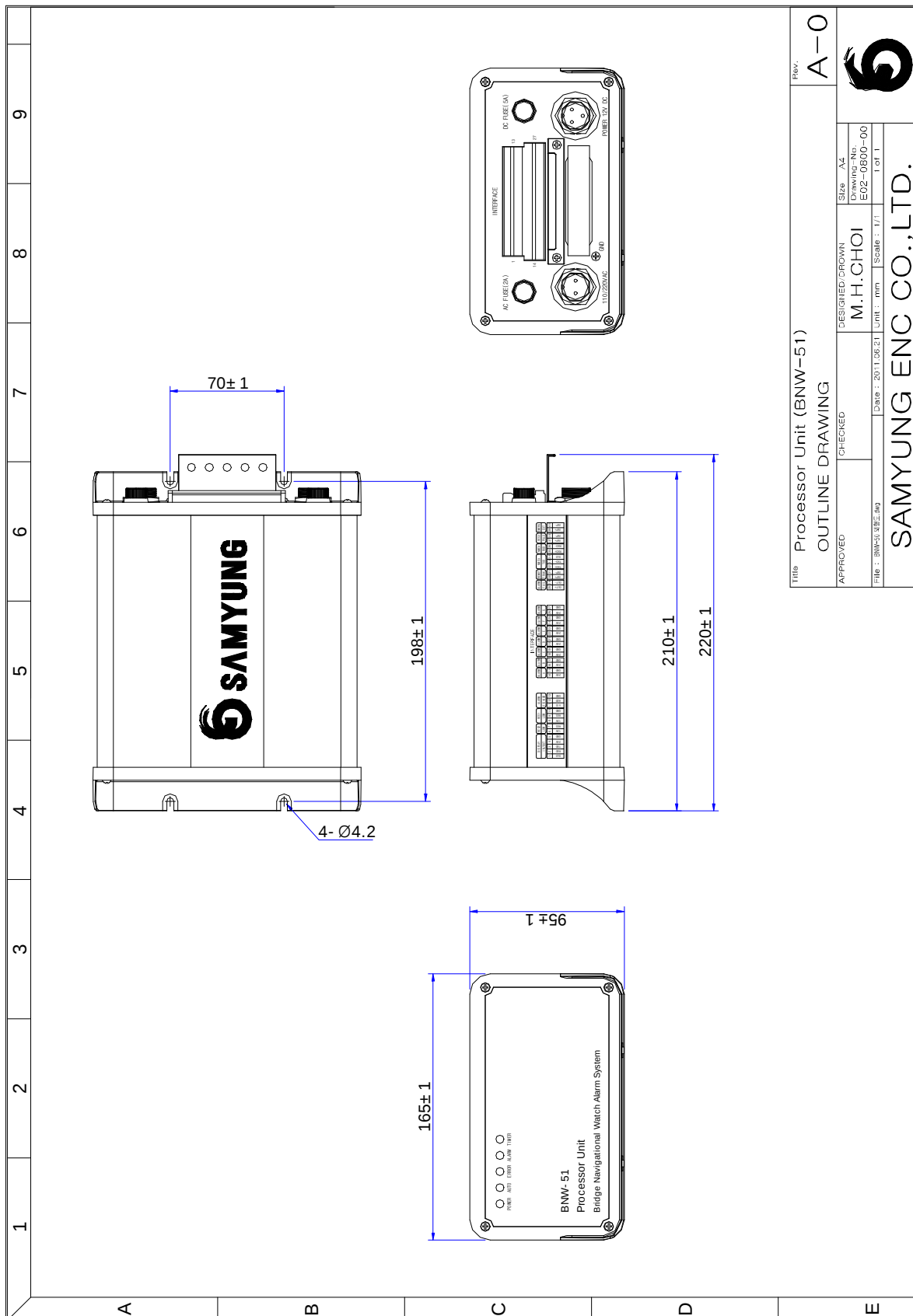
13.4 Installation Diagram (Example-3)



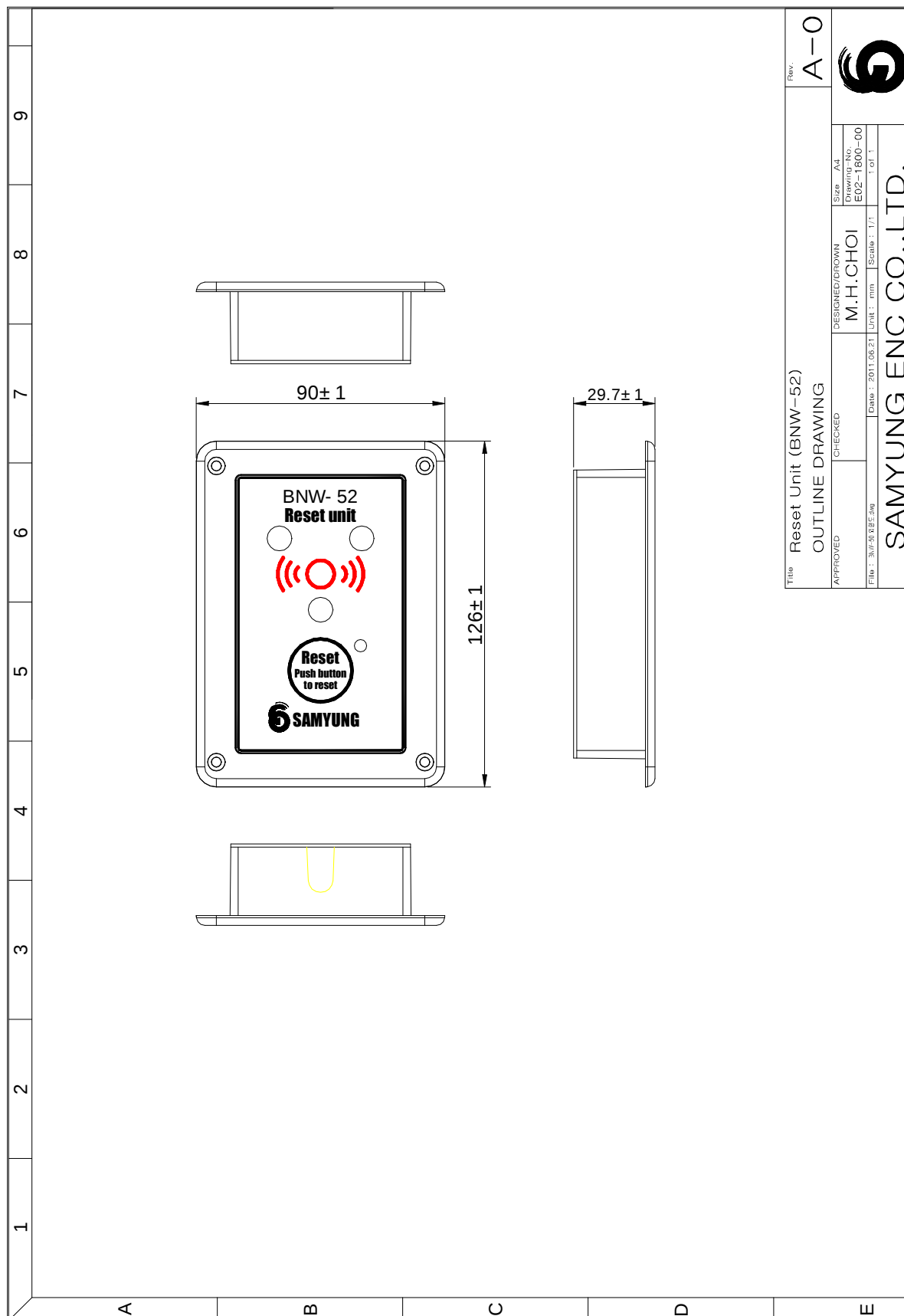
13.5 BNW-50 OUTLINE DRAWING



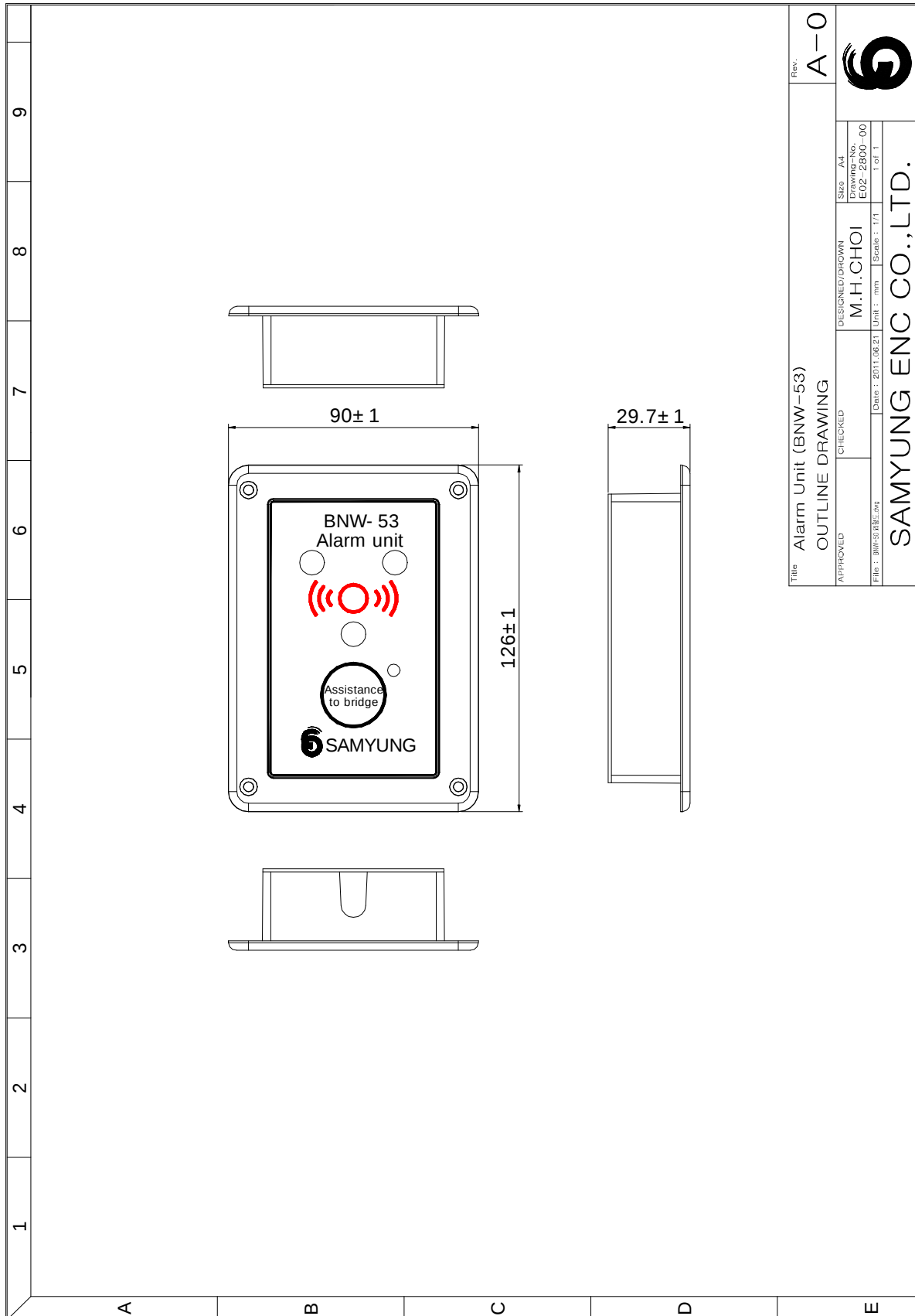
13.6 BNW-51 OUTLINE DRAWING



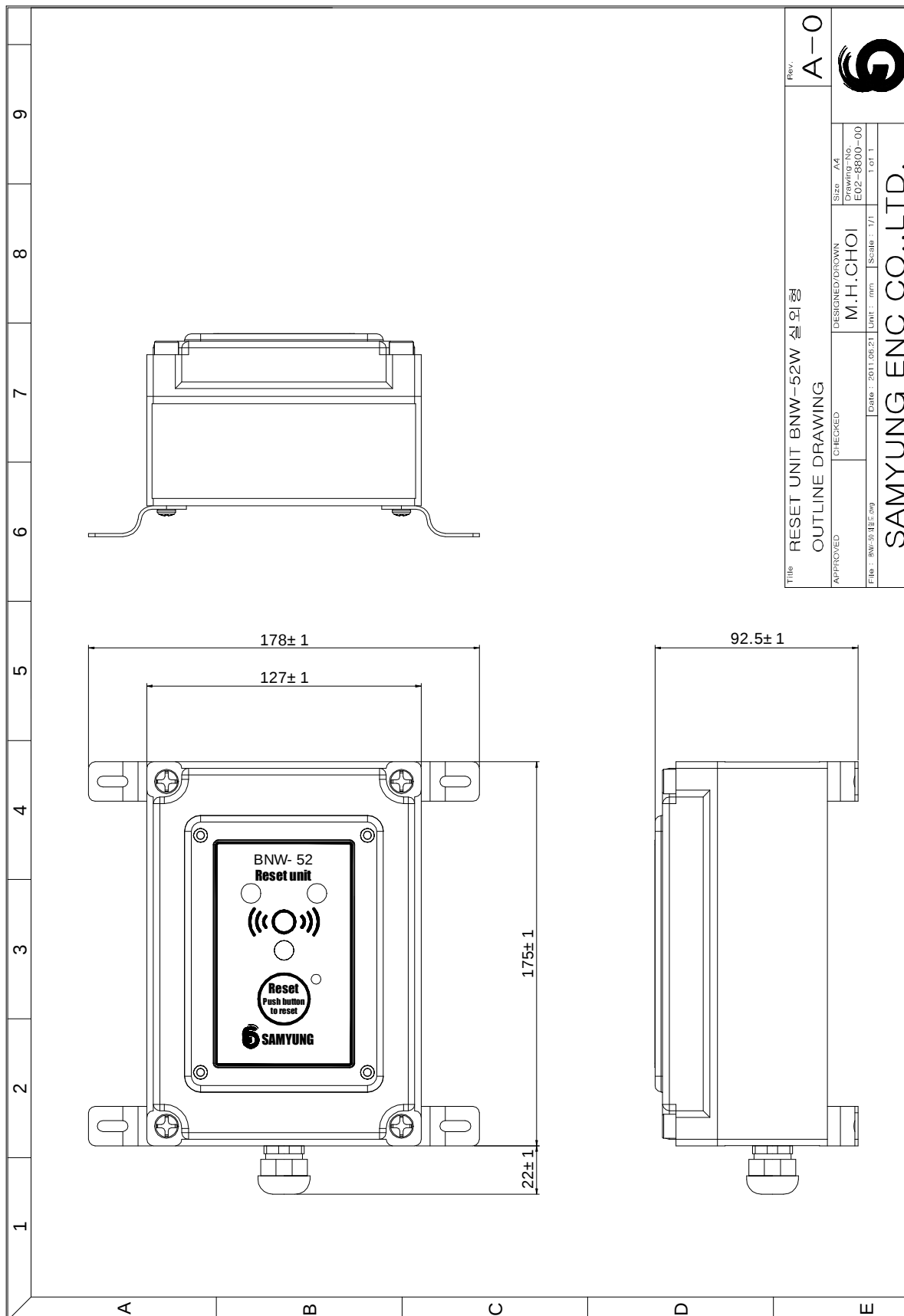
13.7 BNW-52 FLUSH TYPE OUTLINE DRAWING



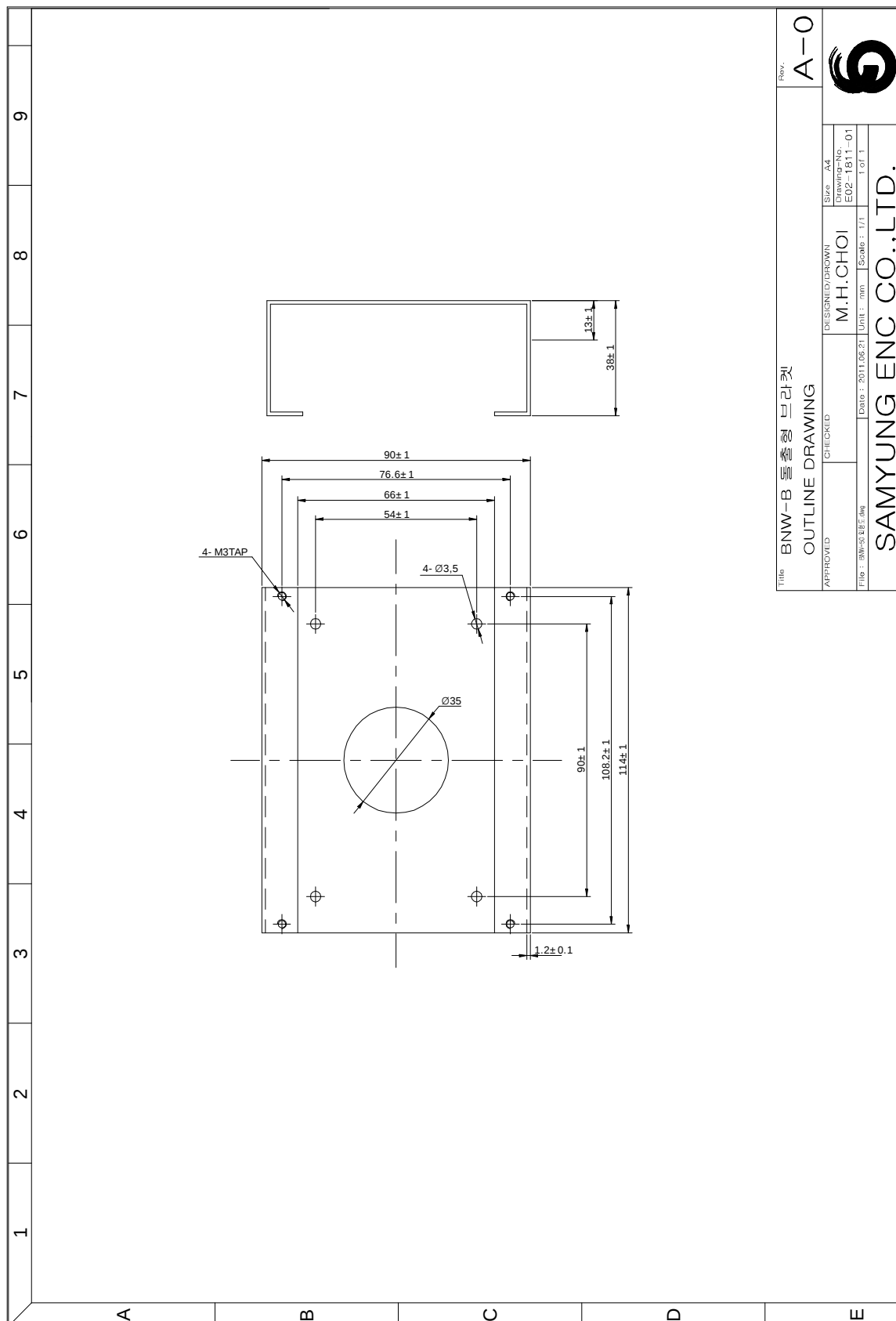
13.8 BNW-53 FLUSH TYPE OUTLINE DRAWING



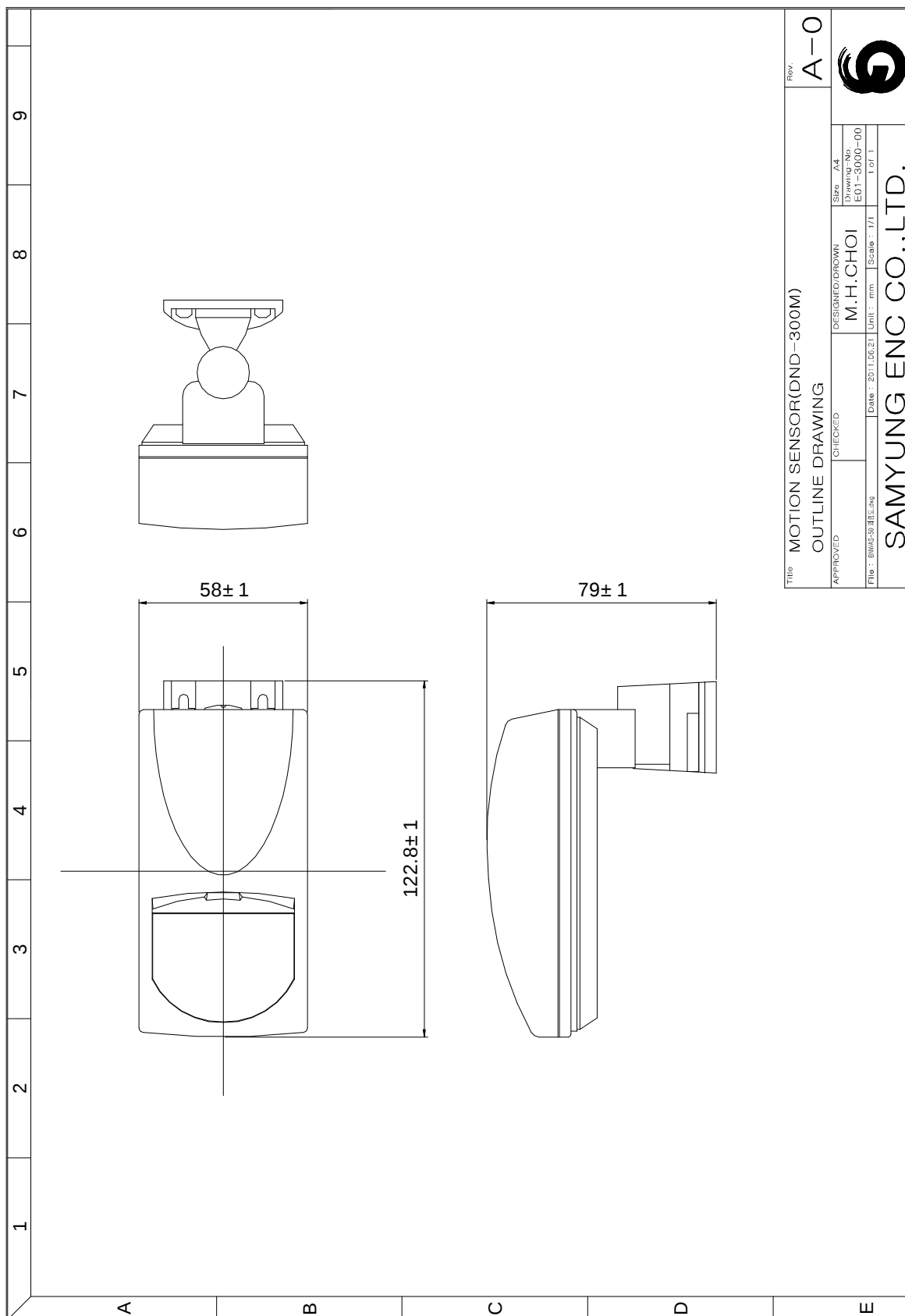
13.9 BNW-52W WATERTIGHT TYPE OUTLINE DRAWING



13.10 BNW-B FLUSH TYPE OUTLINE DRAWING (BNW-52,53)



13.11 MOTION SENSOR(DND-300M) OUTLINE DRAWING



Chapter 14 Warranty Information

Thank you for purchasing Samyung ENC LTD's BNW-50. This manual includes the proper way of operating and installing the unit and warnings. Please keep this manual in a safe place. Please pass the manual onto the new owner in case of selling or disposing it.

1 year warranty is given from the date of purchase. BUT break-down caused by the user's inappropriate use will be charged.

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CONTACT	TELEPHONE : 051-416-5516
	F A X : 051-406-5515
Please send us the model name, serial number and status over the phone or the fax, and we will respond as soon as possible.	

A/S	
NAME	
CONTACT	TELEPHONE:
	MOBILE PHONE:
Record the name and contact details of salesperson	



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