USER & INSTALLATION MANUAL

BRIDGE NAVIGATIONAL WATCH ALARM SYSTEM (BNWAS)

NBW-1000

NBW-1000 UM.E 20251216-15

NOTICE TO USERS

- Thanks for your purchasing this product NBW-1000 BNWAS.

- Please read this manual carefully to ensure proper use before installation and using the NBW-1000.

- NSR will assume no responsibility for the damage caused by improper use or modification of the product or claims of loss of profit by a third party.

- The software version of your product may be some different from that described in this manual. Such differences will not affect the performance of the product. NSR reserves the right of continuous improvement on products both in software and in hardware without any prior notice.

- NSR is devoted to publishing and maintaining this user manual. As we continue to improve our products to satisfy customers' needs, the information in this document is subject to change without prior notice. NSR does not make any representations or warranties (implied or otherwise) regarding the accuracy and completeness of this document.

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- Please keep the manual for your future reference.

MODIFY RECORD

No.	Modify by	Date	Paragraph		Version	Reason
1	Q/A	2012/06/08			01	First edition
2	Q/A	2013/03/03	**1**.4, 2.6, 2.3.3		02	1. AC/DC added. 2. 2nd stage alarms separated.
3	Q/A	2013/06/04	2.6, Appendix A		03	1. 2nd stage alarms separated or combined. 2. Instruction for Motion Detector added.
4	Q/A	2018/07/07	All		04	Product upgraded
5	Q/A	2019/07/23	All		05	Generally modified
6	Q/A	2021/07/20	All		06	Generally modified
7	Q/A	2022/09/15	1.3, Appendix D		07	Generally modified
8	Q/A	2022/10/25	Alert, etc.		08	Generally modified
9	Q/A	2023/02/10	All		09	Menu tree added, etc.
10	Q/A	2023/11/24	Appendix E		10	Drawings modified
11	Q/A	2025/01/06	All		11	Some modification
12	Q/A	2025/06/17	1.4, 5.5.5, Appendix E		12	Drawing modification, etc.
13	Q/A	2025/09/01	All		13	Some modification
14	Q/A	2025/12/04	1.2, 2, Appendix E		14	Drawing modification, etc.
15	Q/A	2025/12/16	All		15	Some modification

VERSION COMPARISON TABLE

Manual Version	Program Version	Remarks
20251204_14	Control Unit: v2.08, 2025/09/01	
20251216_15	Control Unit: v2.08, 2025/09/01	

TABLE OF CONTENTS

1. SYSTEM DESCRIPTION

1.1 SYSTEM FUNCTIONS

The purpose of a bridge navigational watch alarm system (BNWAS) is to monitor bridge activity and detect operator disability which could lead to marine accidents. The system monitors the awareness of the Officer of the Watch (OOW) and automatically alerts the Master or another qualified OOW if for any reason the OOW becomes incapable of performing the OOW's duties. This purpose is achieved by a series of indications and alarms to alert first the OOW and, if he is not responding, then to alert the Master or another qualified OOW.

Additionally, the BNWAS also provides the OOW with a means of calling for immediate assistance if required. The BNWAS is operational whenever the ship's heading or track control system is engaged, unless inhibited by the Master.

The main functions of NBW-1000 include:

- Duty watch & alarms
- Emergency calls
- Alarm tests
- ON/OFF record

1.2 SYSTEM COMPONENTS

The system consists of a Control Unit, Reset Units (bridge panel), Alarm Units (cabin panel), Junction Unit and Motion Detector.

1.2.1 CONTROL UNIT

As the core of BNWAS system, the Control Unit is installed in the bridge. The Control Unit contains a 7-inch color LCD, touch screen operation with adjustable brightness, CPU and interface circuits.

The Control Unit has the functions below:

- Duty watch clock
- Setting and menu operation
- Visual and audible alarm
- Reset the alarms
- Initiate an emergency call
- Carry out regular diagnostic
- Record ON/OFF/MODE log
- Officer call

1.2.2 RESET UNIT (BRIDGE PANEL)

The Reset Unit (bridge panel) is a watertight type.
The Reset Unit (bridge panel) also covers the visual and 1st stage audible alarm. The unit consists of:

- A reset button
- An LED indicator for visual Alarm
- A buzzer for 1st stage audible alarm

1.2.3 ALARM UNIT (CABIN PANEL)

The Alarm Unit (cabin panel) is used for 2nd stage alarm or 3rd stage alarm. For 2nd stage alarm, the Alarm Units (cabin panel) are installed in the Captain's room and back-up officers' rooms. Usually, 4 Alarm Units (cabin panel) are installed for 2nd stage alarm, and one unit or several units can be selected one time from the Control Unit. For 3rd stage alarm, the Alarm Units (cabin panel) are installed in the crew's rooms and public areas. The 2nd stage alarm and 3rd stage alarm can be set as one stage. The setting can be done in the Control Unit.

1.2.4 JUNCTION UNIT

The Junction Unit is used by the Control Unit to connect with Reset Units (Bridge Panel) and Alarm Units (Cabin Panel).
The power supply of BNWAS system needs to be connected to the Junction Unit.

1.2.5 MOTION DETECTOR

The Motion Detector is used to detect human moving actions. The detection signal will reset the duty watch clock.

1.3 EQUIPMENT LIST

STANDARD			
Type	Part No.	Description	Quantity
NBW-1000	N991810	Control Unit	1 unit
NBW-1050J		Junction Unit	1 unit
NBW-1090RW		Reset Unit (Bridge Panel) (Watertight)	1-4 units
NBW-1010A		Alarm Unit (Cabin Panel)	1-10 units
		Cables & Mounting Materials	1 set
OPTIONS			
NBW-1090P	N501814	Motion Detector	
NFB700A	N561070	Flush-Mount Brackets for Control Unit	1 pc

Note: The serial number of the "Control Unit" is the serial number of the system.

1.4 SPECIFICATIONS

Reset Inputs	Control Unit	Press any key on panel	
	Reset Units (Bridge Panel)	Max 4 CH	
	Motion Detector	Max 4 CH	
	Spare Reset	Max 4 CH	
	Auto-pilot Input	1 CH	
	GNSS Input	1 CH (depending on speed)	
Alarm Outputs	Visual Alarm	Control Unit, Reset Units (Bridge Panel)	
	1st Audible Alarm	Control Unit, Reset Units (Bridge Panel)	
	2nd Audible Alarm	Max 4 Alarm Units (Cabin Panel)	
	3rd Audible Alarm	Alarm Units (Cabin Panel)	
Input / Output	BAM/INS IN, GNSS IN	IEC61162	
	BAM/INS OUT, VDR OUT	IEC61162	
	Power Alarm (Output)	Close/Open signal	
System Alarms	AC POWER FAIL		
	DC POWER FAIL		
	MALFUNCTION		
IP Grade	NBW-1000/Control Unit		IP20
	NBW-1050J/Junction Unit		IP20
	NBW-1010A/Alarm Unit (Cabin Panel)		IP20
	NBW-1090RW/Reset Unit (Bridge Panel)		IP56
	NBW-1090P/Motion Detector		IP20
Compass Safe Distance	Standard Compass: 0.55 m, Steering Compass: 0.36m		
Power Supply	DC24V, AC 100V~240V		

1.5 LIST OF ABBREVIATIONS

BNWAS	Bridge Navigational Watch Alarm System
OOW	Officer Of the Watch
AC	Alternating Current
API	Application Programming Interface
COM	Communication
CPU	Central Processing Unit
DC	Direct Current
DIM	Dimmer
DIP	DIP-switch
EEPROM	Electrically Erasable Programmable Read-only Memory
EMG	Emergency Call
EN	European Norm
GND	Ground
HCS	Heading Control System
ID	Identifier
IEC	International Electrotechnical Commission
I/O	Input/Output
IP	Ingress Protection / Internet Protocol
LED	Light Emitting Diode
MIN	Minute
RTC	Real Time Clock
RxD	Received Data
TCP	Transmission Control Protocol
TCS	Track Control System
TxD	Transmitted Data

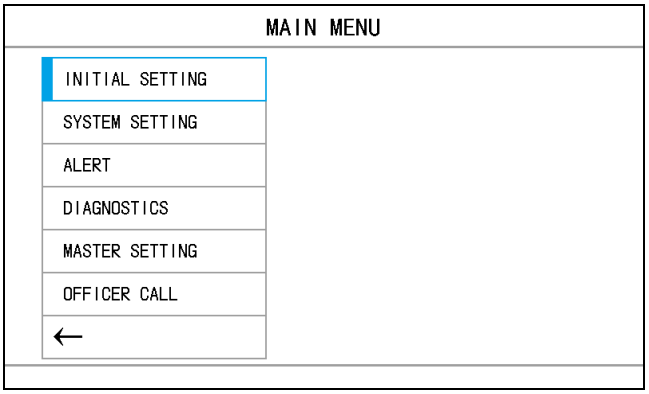
2. MENU OPERATION

2.1 KEY FUNCTIONS

Panel Button	Description
	Turn to select an item. Move the cursor. Press to confirm the selection or input.
EMG	Press and hold for 5 seconds to initiate an emergency call.
DIM	Press to change the LCD brightness.
Touch-screen Button	**Description**
MENU	Enter the main menu.
MODE	Select an operation mode.
	Change day/night mode.

Note:
Any key operation or screen touch is regarded as a reset to the duty watch clock. If no key operation or screen touch is detected within 30 seconds, LCD screen will return to the default duty watch screen and the clock will count down from the preset dormant time. If a test is underway, the screen will stay at the test screen even if no key operation or screen touch is detected.

2.2 MAIN MENU



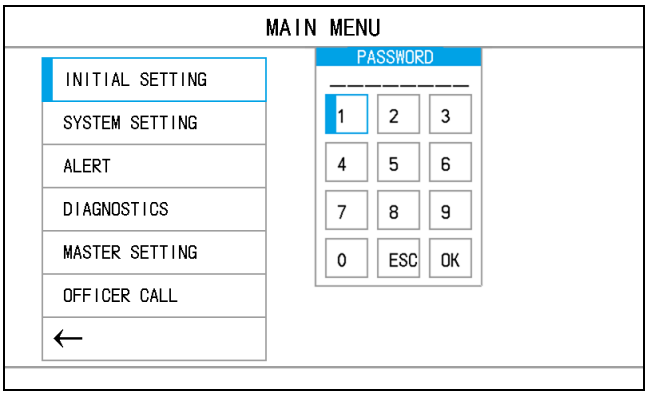
Click the **[MENU]** button to enter the MAIN MENU.

Six sub-menu items are included:

- INITIAL SETTING
- SYSTEM SETTING
- ALERT
- DIAGNOSTICS
- MASTER SETTING
- OFFICER CALL

Turn the knob to move the cursor and press the knob to enter the item or click the button directly.

2.3 INITIAL SETTING



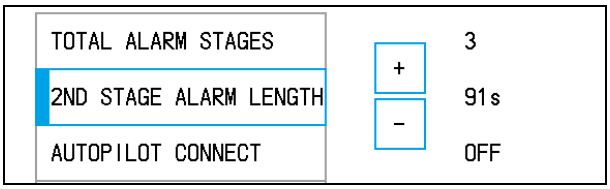
The engineer has to set certain parameters when installing the system. Password is required for such settings.
Move the cursor to select the setting items.

2.3.1 SET THE TOTAL ALARM STAGES

In vessels other than passenger vessels, the second or third stage remote audible alarms may sound at the same time. If the second-stage audible alarm is sounded in this way, the third-stage alarm may be omitted.

2.3.2 SET THE 2ND STAGE ALARM LENGTH

The default value for 2ND STAGE ALARM is 90 seconds. In larger vessels, the delay between the second and third stage alarms may be set to a longer value on installation, up to a maximum of 3 min, to allow sufficient time for the back-up officer and/or Master to reach the bridge.

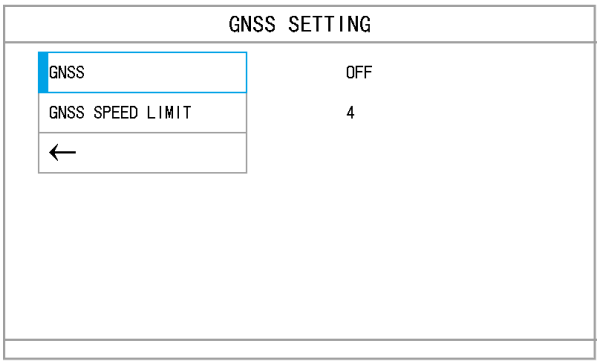


2.3.3 ENABLE THE AUTOPILOT CONNECTION

When Autopilot is connected to BNWAS, the “AUTOPILOT CONNECT” in the Initial Setting sub-menu can be set to ON. The default setting is OFF.

2.3.4 ENABLE THE GNSS CONNECTION

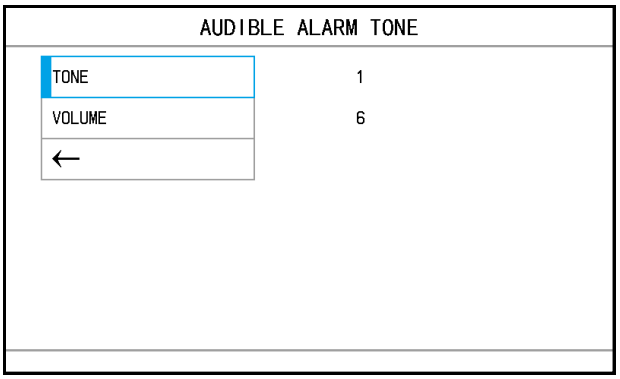
When GNSS is connected to BNWAS, the “GNSS SETTING” – “GNSS” in the INITIAL SETTING sub-menu can be set to ON. The default setting is OFF. “GNSS SPPED LIMIT” can be set between 1-10kn. The default limit is 4kn. The duty-watch timer on BNWAS only works if the current speed exceeds the set limit, otherwise the timer stops.



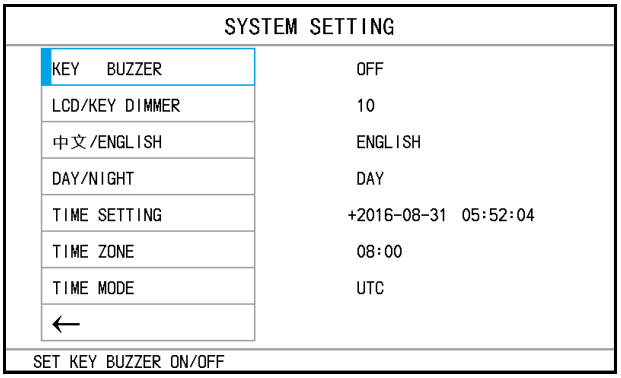
Note: GNSS data can be monitored in “NMEA IN MONITORING” of DIAGNOSTICS.

2.3.5 SET THE AUDIBLE ALARM TONE

Set the tones of the Alarm Unit. Totally four alarm tones can be selected in the system.



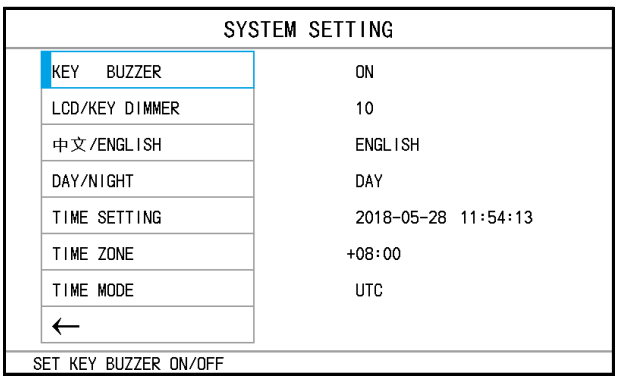
2.4 SYSTEM SETTING



Seven items are included in **[SYSTEM SETTING]**.

2.4.1 KEY BUZZER

The key buzzer can be muted so that the operation is silenced.



2.4.2 LCD /KEY DIMMER

The LCD brightness and key backlight can be adjusted by 13 steps.

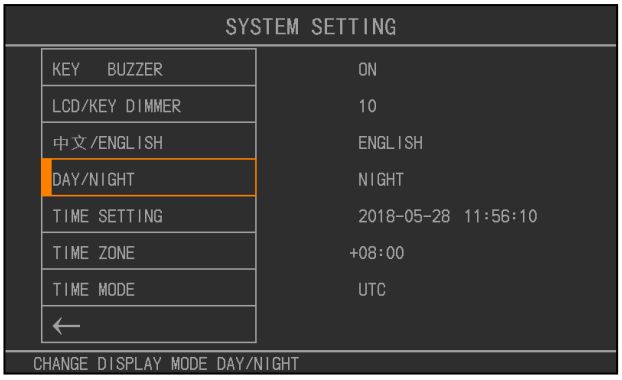
The dimmer can be adjusted either by **DIM** button or setting in the menu.

2.4.3 MENU LANGUAGE

The menu language can be in English or Chinese.
The default menu language is English.
Select **[MENU LANGUAGE]** item at the **[SYSTEM SETTING]**. Click the item button to select between **[中文]** and **[ENGLISH]**.

2.4.4 DAY/NIGHT

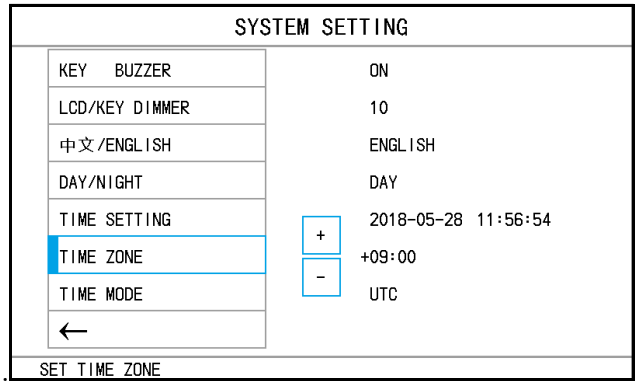
Press the icon at the upper right corner or click the **[DAY/NIGHT]** item to change the display between day mode and night mode.



2.4.5 TIME SETTING

By setting the **[TIME SETTING]**, set the current date and time.

2.4.6 TIME ZONE



2.4.7 TIME MODE

Time can be set as UTC or LMT in TIME MODE.

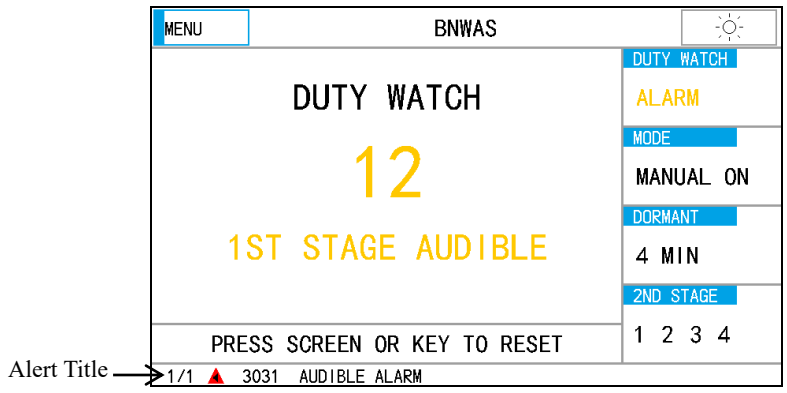
2.5 ALERT

The following is the List of alerts that could be generated:

Ins	ID	Alert Title	Cat	Prio	Escal	Resp	Alert description
1	3031	AUDIBLE ALARM	B	A	A	/	1st stage alarm escalated to 2nd stage alarm escalated to 3rd stage alarm
2	3062	MALFUNCTION	B	W	W	Yes	Lost communication with Junction Unit
3	3022	AC POWER FAIL	B	W	W	Yes	AC power supply is lost
4	3022	DC POWER FAIL	B	W	W	Yes	DC power supply is lost
5	3022	POWER FAIL*	B	W	/	/	Both AC and DC power lost

Ins: Instance of an alert.
Cat: Alert category.
Prio: Alert priority. A - Alarm, W - Warning, C - Caution.
Escal: W - An unacknowledged warning will be repeated as a warning after 4 minutes.
Resp: Transfer responsibility.
POWER FAIL*: A normally-closed relay contact (System Alarm Out) will indicate this alert. When it becomes opening, CAM needs to present this warning.

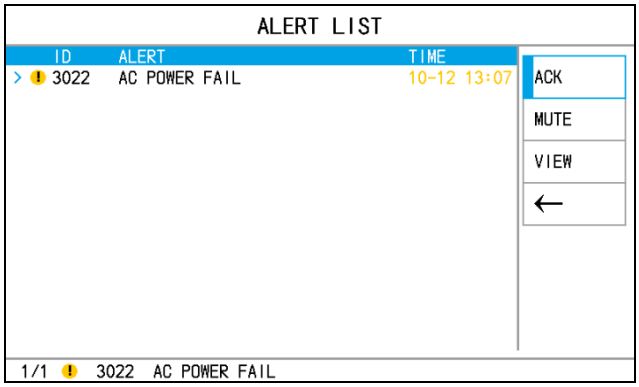
When an alert occurs, the buzzer sounds (except for caution) and the title of the alert appears at the bottom of the display. Click on the bottom to enter the alert list.



Alert icons description:

Mark	Priority	State
	ALARM	ACTIVE-UNACKNOWLEDGED
		ACTIVE-SILENCED
		ACTIVE-ACKNOWLEDGED
		ACTIVE-RESPONSIBILITY TRANSFERRED
		RECTIFIED-UNACKNOWLEDGED
	WARNING	ACTIVE-UNACKNOWLEDGED
		ACTIVE-SILENCED
		ACTIVE-ACKNOWLEDGED
		ACTIVE-RESPONSIBILITY TRANSFERRED
		RECTIFIED-UNACKNOWLEDGED
	CAUTION	ACTIVE

In the **[ALERT LIST]** screen, it shows all current alerts. Time is synchronized when GNSS is fixed, not synchronized when GNSS is not fixed. When not synchronized, the time displays orange.



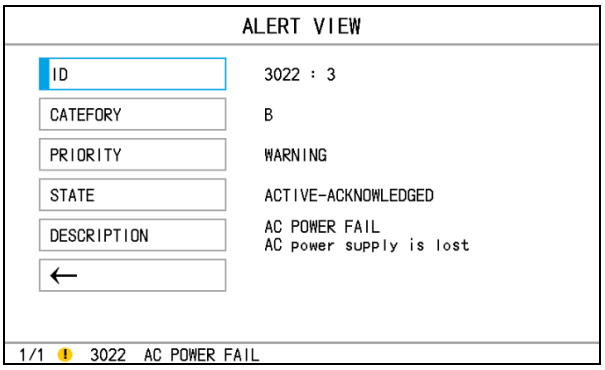
>: Point to the currently selected alert, click the alert to select.

[ACK]: Acknowledge the alert selected.

[MUTE]: Make all alerts silent for 30 seconds.

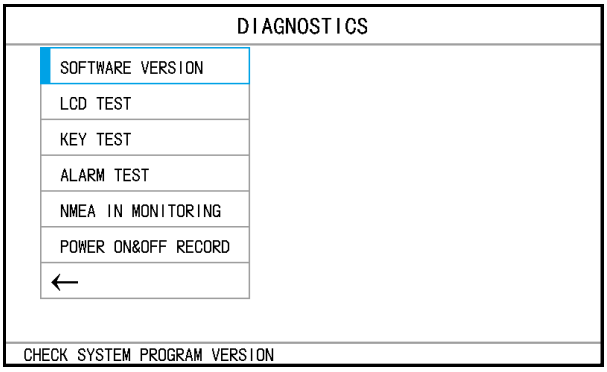
[VIEW]: View the details of the selected alert as follows.

[←]: Back to upper menu.



2.6 DIAGNOSTICS

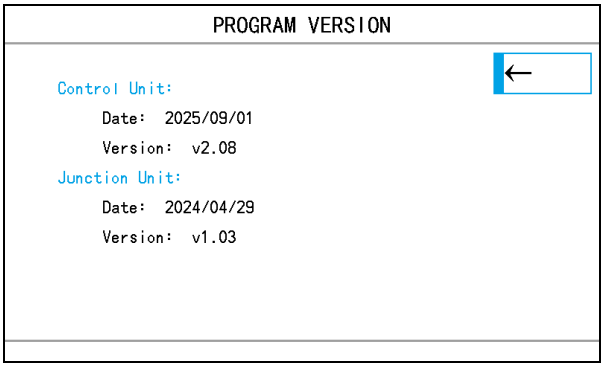
The diagnostic test is to check the software version, keypad and LCD for proper operation.



Click **[DIAGNOSTICS]** item at the **[MAIN MENU]** to enter the **[DIAGNOSTICS]**.

2.6.1 SOFTWARE VERSION

Select **[SOFTWARE VERSION]** item to check the software version.
The following screen will be displayed.

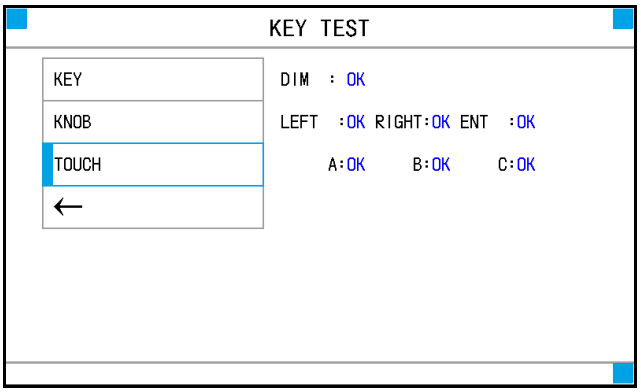


2.6.2 LCD TEST

Press **[DIM]** to test the Display Brightness.
[LCD TEST] is used for testing the screen. Turn knob continuously to test the LCD.

2.6.3 KEY TEST

It is to test the keys on the panel.
When any key is pressed, the box corresponding to the key will be filled with the blue color.
Click ← 3 times consecutively to return to a higher menu.



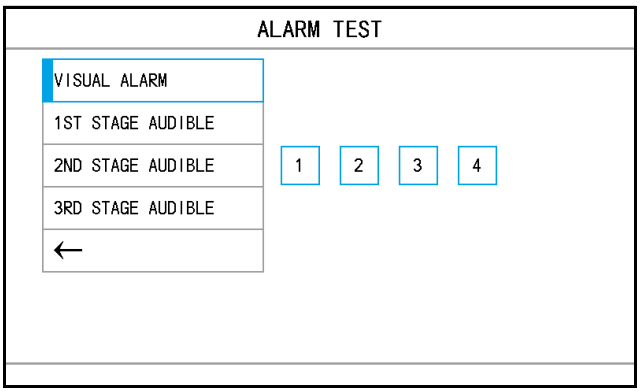
2.6.4 ALARM TEST

To keep the system in the right conditions, regular tests are important to find any problems in advance.

[ALARM TEST] is to check whether buzzers in the Control Unit, Reset Unit (bridge panel) and Alarm Unit (cabin panel) are normal, etc.

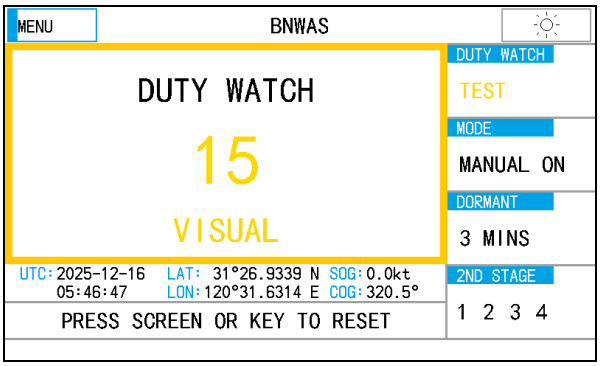
Click **[ALARM TEST]** item at the **[DIAGNOSTICS]** menu to initiate the test procedure.

Click the test items to execute the test. Click the screen or press any keys to stop the test.



Different from a real duty watch alarm, the alarm test only initiates an action on the selected item. For example, if 2ND STAGE AUDIBLE ALARM is chosen and tested, only the buzzers on 2ND Stage Alarm Unit (cabin panel) will sound while the buzzers on the Reset Unit (bridge panel) and Control Unit will keep silent.

When ALARM TEST, a sound with "TEST" Morse code can be heard: **- . ... -**.



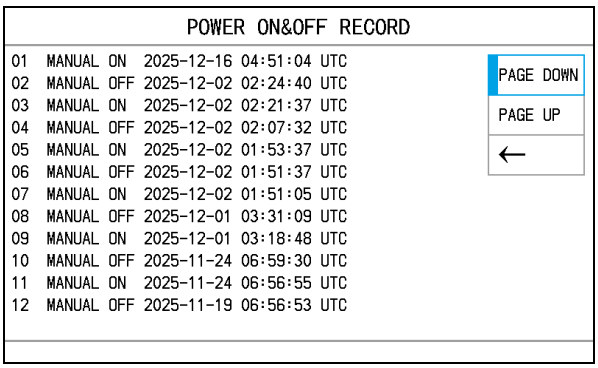
2.6.5 NMEA IN MONITORING

Monitor the data received on the NMEA IN port.

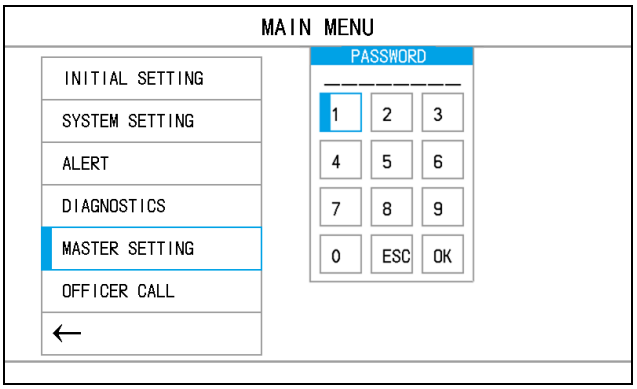
2.6.6 POWER ON/OFF RECORD

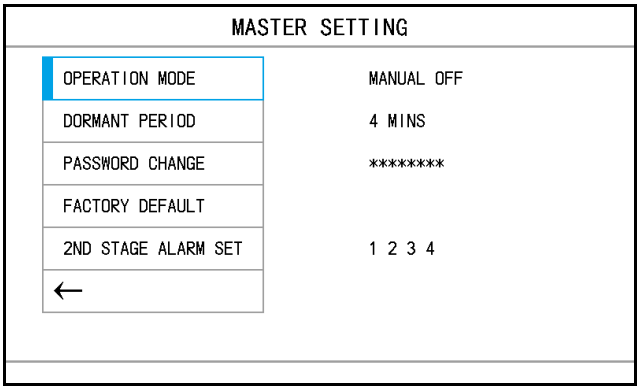
[POWER ON/OFF RECORD] is to check the history record of BNWAS operation. The latest 20 times of power ON/OFF change and Operational mode change will be stored. Click **[POWER ON/OFF RECORD]** item in the **[DIAGNOSTICS]** menu to check the stored logs.

For example:



2.7 MASTER SETTING





MASTER SETTING is designed for the captain use. A special password is required for the settings.

2.7.1 OPERATION MODE

Click **[OPERATION MODE]** item in **[MASTER SETTING]** menu to change the operation modes.

- **MANUAL ON:** In operation constantly.
- **MANUAL OFF:** Does not operate under any circumstances.

2.7.2 DORMANT PERIOD

Click **[DORMANT PERIOD]** item at **[MASTER SETTING]** to change the value between 3 and 12 minutes.

2.7.3 PASSWORD CHANGE

Click **[PASSWORD CHANGE]** item at **[MASTER SETTING]** to reset the password. The password can be a combination of 8 digits and each can be one of 0~9.

2.7.4 FACTORY DEFAULT

[FACTORY DEFAULT] is to return the system to the factory default setting.
Click **[FACTORY DEFAULT]** item in the **[DIAGNOSTICS]** menu to restore the factory default settings.

Note: The password will also be restored as factory default.

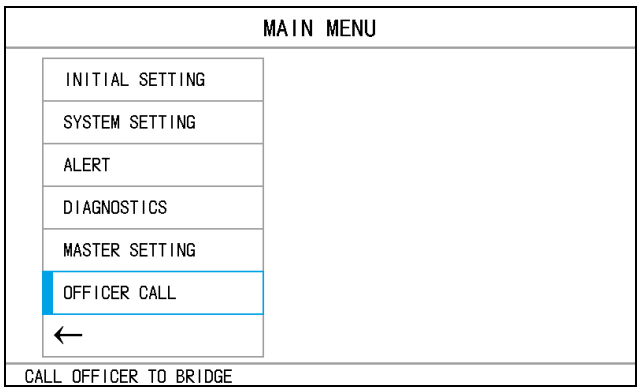
2.7.5 2ND STAGE ALARM SET

If 2nd STAGE ALARM SET is set as "1 2 3 4", the individual 1～4 Alarm Units can be selected.
If 2nd STAGE ALARM SET is set as "1=2=3=4", all four Alarm Units will be selected.

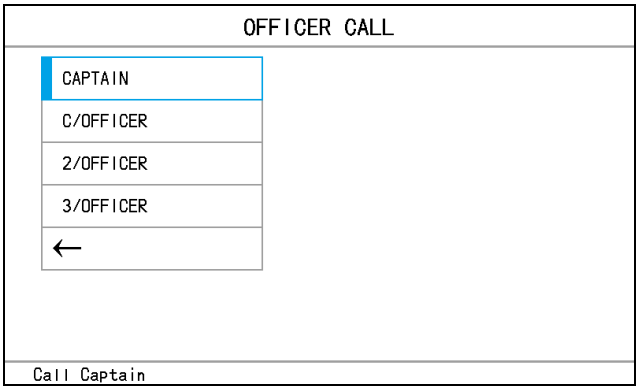
2.8 OFFICER CALL

This function is to call the corresponding crew members to the bridge by controlling the 2nd stage Alarm Units.

Note: To use this function, the 2nd stage Alarm Units must be connected individually to the Junction Unit (Please refer to Section 5.5.6.2). Do not use a cable to connect several 2nd stage Alarm Units in series.

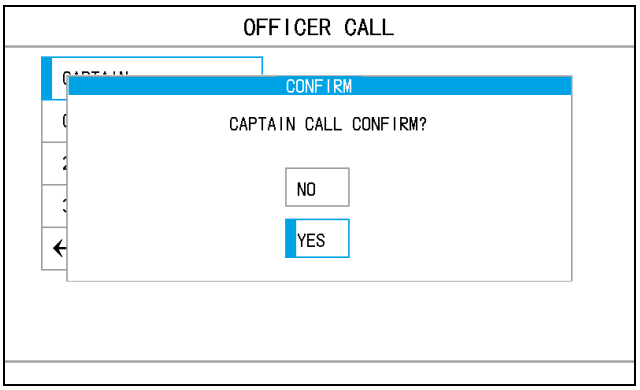


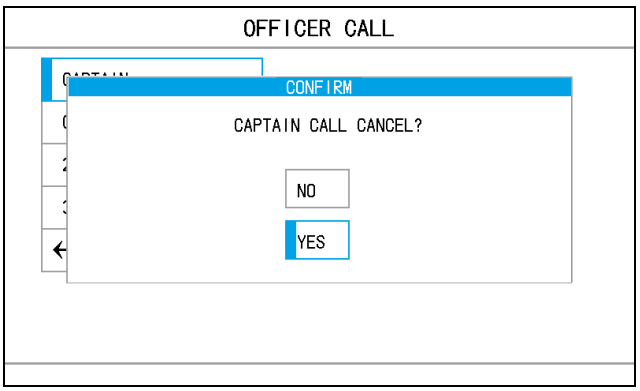
Click **[OFFICER CALL]** item at the **[MAIN MENU]**, or click the Duty Watch area on the left side of the main menu to enter the menu, and select the person to call.



CAPTAIN: Captain -- 2nd Alarm #1
C/OFFICER: Chief officer -- 2nd Alarm #2
2/OFFICER: 2nd officer -- 2nd Alarm #3
3/OFFICER: 3rd officer -- 2nd Alarm #4

After selection, please confirm the call or cancel the call as follows:

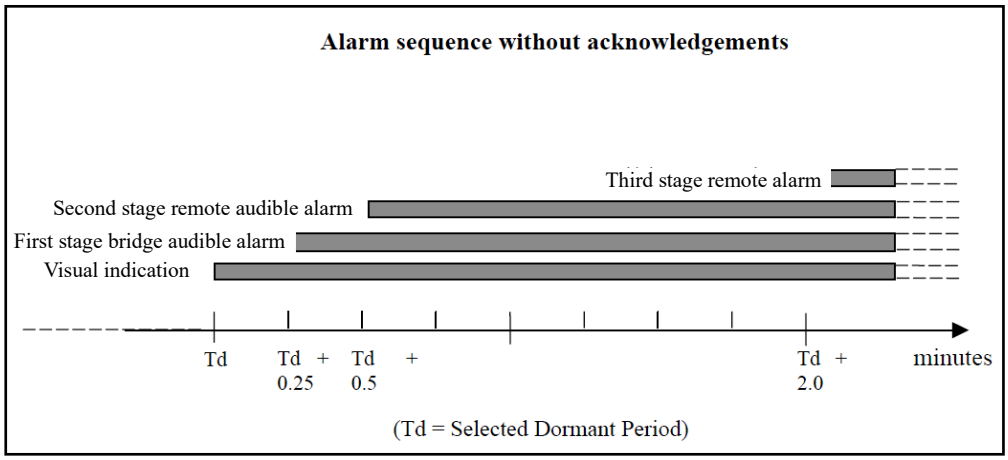




3. DUTY WATCH OPERATION

3.1 ALARM & RESET PROCEDURE

Operational sequence of indications and alarms:



- Once operational, the alarm system should remain dormant for a period of between 3 and 12 minutes (Td).
- At the end of this dormant period, the alarm system should initiate a visual indication on the bridge.
- If not reset, the BNWAS should additionally sound a first-stage audible alarm on the bridge 15 s after the visual indication is initiated.
- If not reset, the BNWAS should additionally sound a second-stage remote audible alarm in the back-up officer's and/or Master's location 15 s after the first-stage audible alarm is initiated.
- If not reset, the BNWAS should additionally sound a third-stage remote audible alarm at the locations of further crew members capable of taking corrective actions 90 s after the second-stage remote audible alarm is initiated.
- In vessels other than passenger vessels, the second or third-stage remote audible alarms may sound in all the above locations at the same time. If the second-stage audible alarm is sounded in this way, the third-stage alarm may be omitted.
- In larger vessels, the delay between the second and third stage alarms may be set to a longer value on installation, up to a maximum of 3 min, to allow sufficient time for the back-up officer and/or Master to reach the bridge.

Reset function:

- The reset function should, by a single operator action, cancel the visual indication and all audible alarms and initiate a further dormant period. If the

reset function is activated before the end of the dormant period, the period should be re-initiated to run for its full duration from the time of the reset.

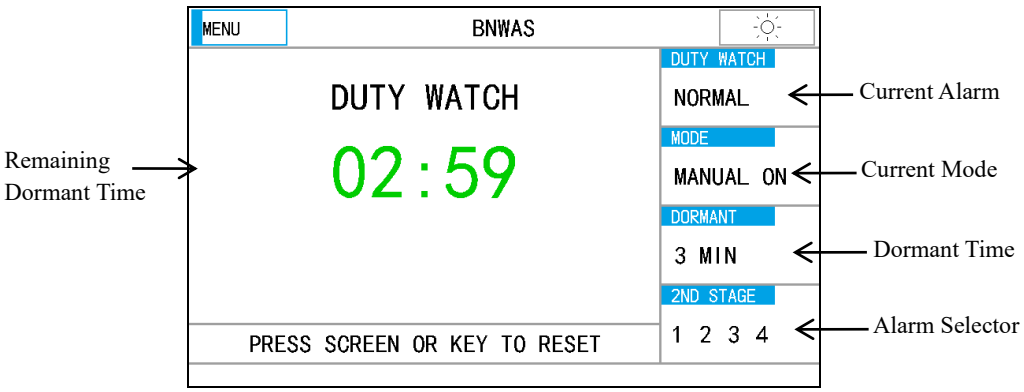
- To initiate the reset function, an input representing a single operator action by the OOW is required. In NBW-1000, the input can be in three ways: click the screen or press any key on the Control Unit, a touch-press on the reset button of the Reset Unit (bridge panel) and detection of moving activity by the Motion Detector.
- A continuous activation of any reset device will not prolong the dormant period or cause a suppression of the sequence of indications and alarms.

3.2 ALARM OUTLINE

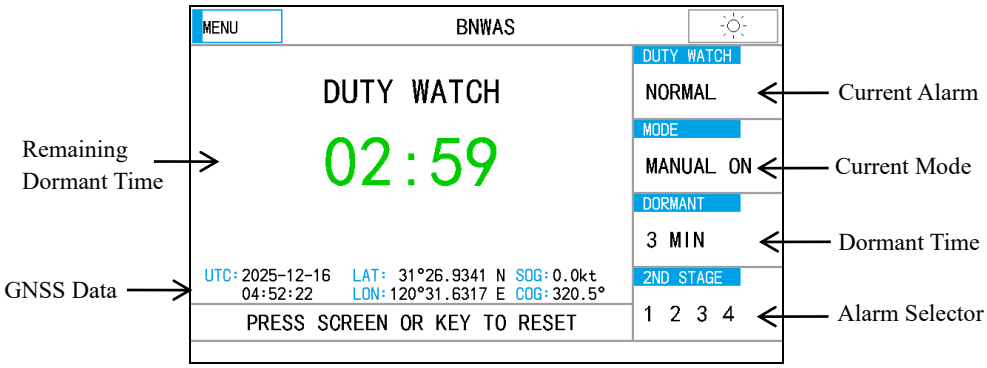
Alarm summary table:

Alarm Stage	Control Unit		Reset Unit (Bridge Panel)		2nd Alarm Unit (Cabin Panel)		3rd Alarm Unit (Cabin Panel)	
	LCD	BUZZER	LED	BUZZER	LED	BUZZER	LED	BUZZER
Visual Alarm	flash		flash					
1st Stage Audible Alarm	flash	sound	flash	sound				
2nd Stage Audible Alarm	flash	sound	flash	sound	on	sound		
3rd Stage Audible Alarm	flash	sound	flash	sound	on	sound	on	sound

3.3 DEFAULT SCREEN

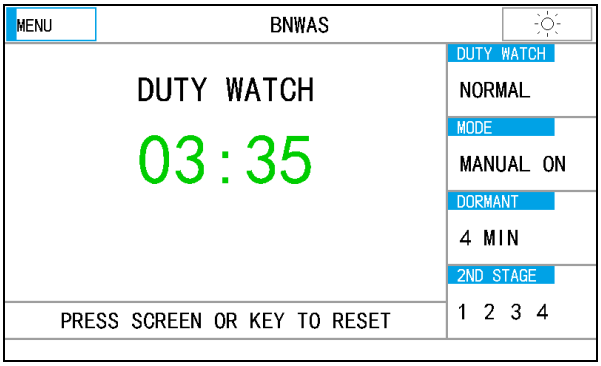


The screen is divided into two parts: the left main area for the watch clock and the right area for status indication. After connecting to GNSS, the GNSS data will be displayed in the left area, as shown in the following figure.



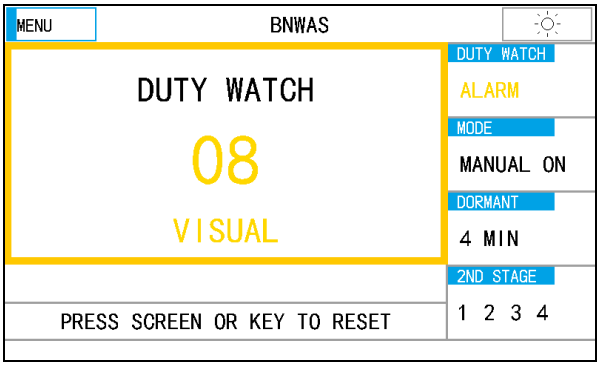
3.4 DUTY SCREEN

When the clock counts down to 0, the visual alarm will be initiated. Click the screen or press any key on the Control Unit or reset button on the Reset Unit (bridge panel) to stop the alarm and reset the clock. For example:

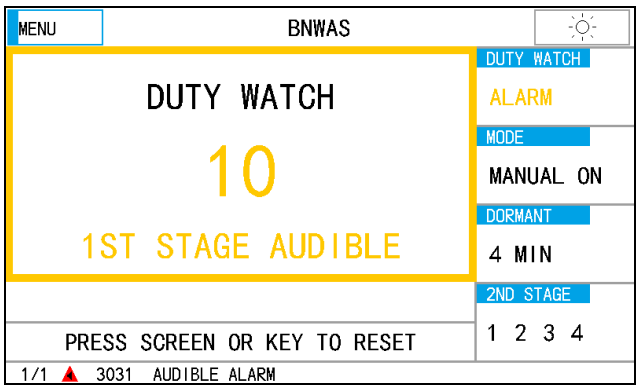


3.5 VISUAL ALARM

During the visual alarm, the LCD of the Control Unit will flash and the LED indicator on the Reset Unit (bridge panel) will flash too.
If the visual alarm is not reset in 15 seconds, the first audible alarm will be initiated.



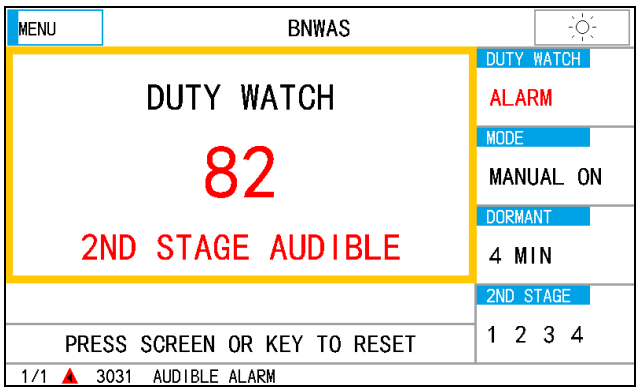
3.6 FIRST STAGE AUDIBLE ALARM



During the 1st stage audible alarm, the buzzers in the Control Unit and Reset Unit (bridge panel) will sound.
Click the screen or press any key on the Control Unit or reset button on the Reset Unit (bridge panel) to terminate the alarm.
If the alarm is not reset in 15 seconds, the 2nd audible alarm will be initiated.

3.7 SECOND STAGE AUDIBLE ALARM

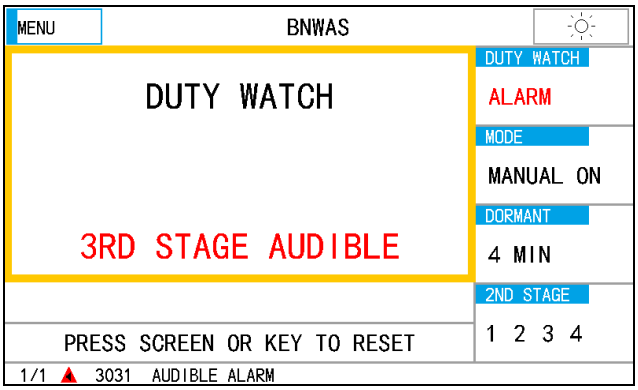
During the 2nd stage audible alarm, the buzzers in the Alarm Unit (cabin panel) in the Captain and other officers' cabins will sound. Which Alarm Unit(s) will be activated depends on the setting status of 2nd Alarm Units in MASTER SETTING.



Click the screen or press any key on the Control Unit or reset button on the Reset Unit (bridge panel) to terminate the alarm.
If the alarm is not reset in the preset period (90 ~ 180 seconds), the 3rd audible alarm will be initiated.

3.8 THIRD STAGE AUDIBLE ALARM

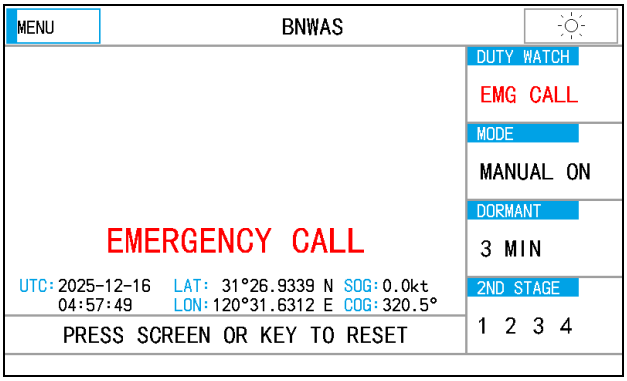
During the 3rd stage audible alarm, the buzzers in the Alarm Unit (cabin panel) in the crew's cabins and public areas will sound.



Click the screen or press any key on the Control Unit or reset button on the Reset Unit (bridge panel) to terminate the alarm.

4. EMERGENCY CALL

Press the **EMG** key and hold for 5 seconds to initiate an emergency call. Different from the duty watch, the emergency call will be transferred to all Alarm Units (cabin panel) simultaneously, while the buzzers on the Reset Unit (bridge panel) will keep silent.



Click the screen or press any key on the Control Unit to terminate the call.

5. INSTALLATION

Please refer to the installation drawings.

5.1 INSTALLATION CONSIDERATIONS

Follow the information in Appendix A of IEC 62616 and IMO MSC.128 (75).

- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well-ventilated.
- Mount the unit where shock and vibration are minimal.
- Locate the unit away from equipment that generates electromagnetic fields such as a motor or generator.
- Allow sufficient maintenance space at the sides and rear of the unit and leave sufficient slack in cables, to facilitate maintenance and servicing.
- Observe the compass safe distances to prevent deviation of a magnetic compass.

5.2 INSTALLATION OF CONTROL UNIT

The Control Unit can be installed on a table-top, on the overhead, or in a panel (optional flush mounting brackets required). Refer to the outline drawings at the end of this manual for installation instructions. When choosing a location, follow the installation considerations in Section 5.1.

5.3 INSTALLATION OF RESET UNIT (BRIDGE PANEL)

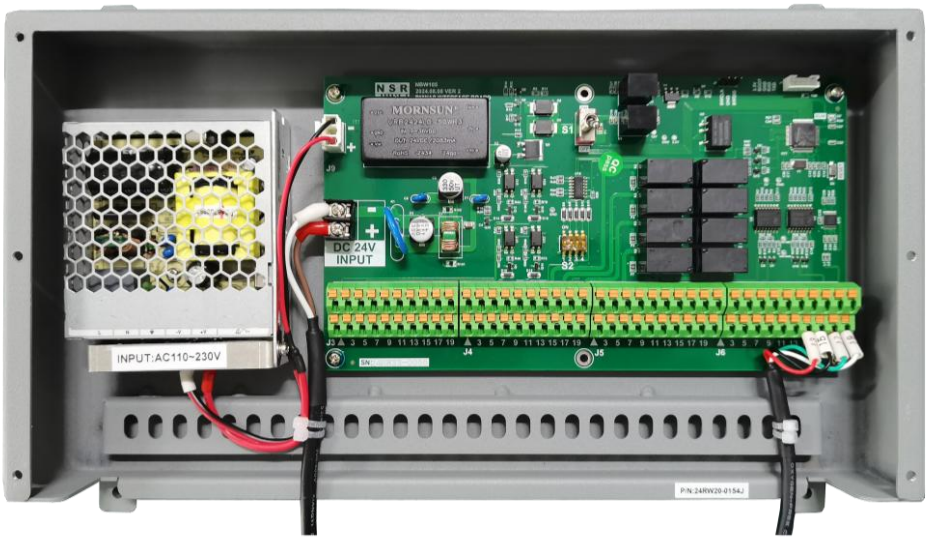
The type of Reset Unit is watertight. It shall not be possible to initiate the reset function or cancel any audible alarm from any device, equipment or system not physically located in areas of the bridge providing proper lookout.

The means of activating the reset function shall only be available in positions on the bridge giving proper lookout and preferably adjacent to visual indications. The 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.

5.4 INSTALLATION OF ALARM UNIT (CABIN PANEL)

The 2nd stage Alarm Units (cabin panel) are installed in the captain's and officers' rooms, while the 3rd stage Alarm Units (cabin panel) are installed in the crew's room or public areas.

5.5 INSTALLATION OF JUNCTION UNIT



The Junction Unit shall be mounted on the silo wall or deck. When choosing a location, follow the installation considerations in Section 5.1.
Please refer to the profile at the back of this manual for dimensions.

5.5.1 CONNECTION WITH POWER SUPPLY

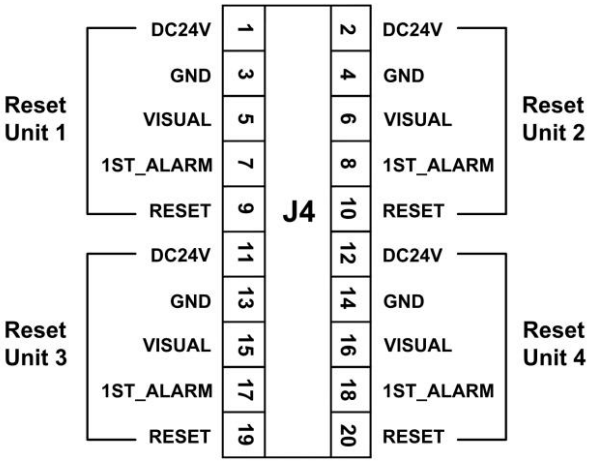
One is from the ship's emergency power source (DC 24V) and the other is from the ship's main power source. The battery should be able to provide the malfunction indication and Emergency Call facility to operate for a period of 6 h.

Description	Connection
DC24V	Ship's emergency power source
DC0V	
AC110V/220V	Ship's main power source
AC110V/220V	

5.5.2 CONNECTION WITH CONTROL UNIT

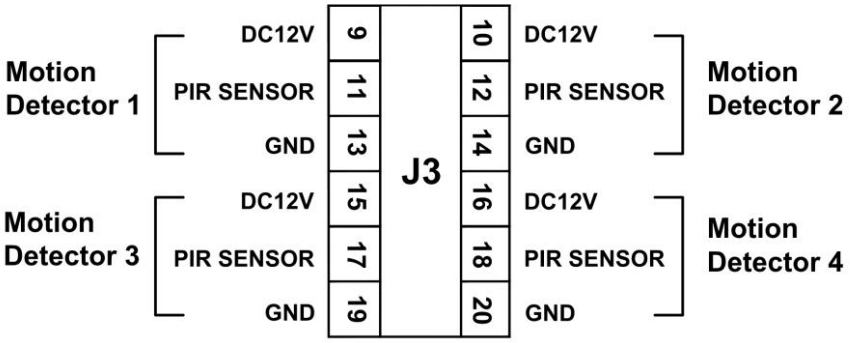
A connection cable is supplied for the connection between the Junction Unit and the Control Unit.

5.5.3 CONNECTION WITH RESET UNIT (BRIDGE PANEL)



Up to four Reset Units (bridge panel) can be connected to the Junction Unit.

5.5.4 CONNECTION WITH MOTION DETECTOR



The Junction Unit can be connected with up to four Motion Detectors.

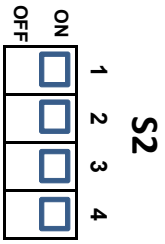
Please refer to Appendix E for detailed instructions.

Note: Motion Detector cannot reset 2nd & 3rd stage alarms.

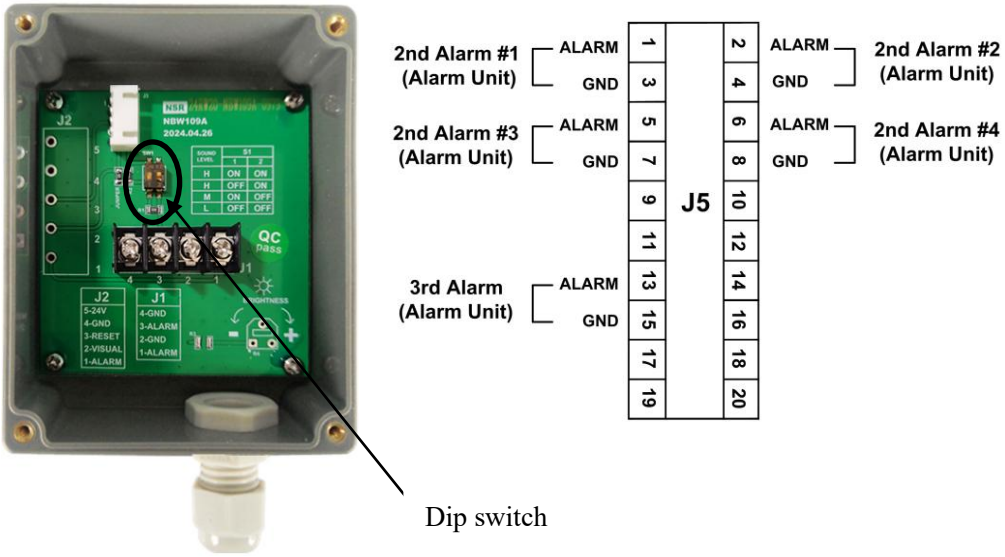
Note:

When Motion Detectors are connected to the Junction Unit, S2 inside the Junction Unit should be set. There are four dip switches on S2. Default setting is ON, while no Motion Detector connected. If a Motion Detector is connected, set the switch OFF.

For example, if Motion Detector 1 is connected, S2:1 is set OFF. All switches S2:1-4 are left ON when no Motion Detectors are connected.



5.5.5 CONNECTION WITH 2ND AND 3RD ALARM UNIT (CABIN PANEL)



The 2nd stage Alarm Unit (cabin panel) and 3rd stage Alarm Unit (cabin panel) are connected to J5 of the Junction Unit.

The sound level of Alarm Units can be set by a built-in dip-switch as below table:

DIP 1	DIP 2	SOUND LEVEL
ON	OFF	Middle
ON	ON	High
OFF	ON	High
OFF	OFF	Low

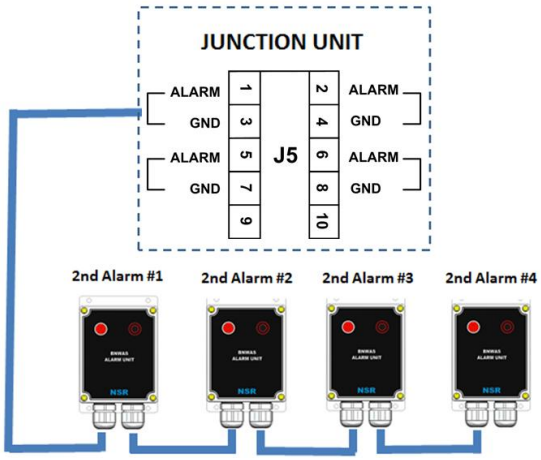
5.5.6 CONNECTION WITH 2ND STAGE ALARM UNITS IN TWO WAYS

The 2nd stage Alarm Units can be connected and operated in two different ways:

- **Connect and Operate together**
  In this case, all Alarm Units in 2nd stage alarm will sound simultaneously.
- **Connect and Operate separately.**
  In this case, only the selected Alarm Unit in 2nd stage alarm will sound.

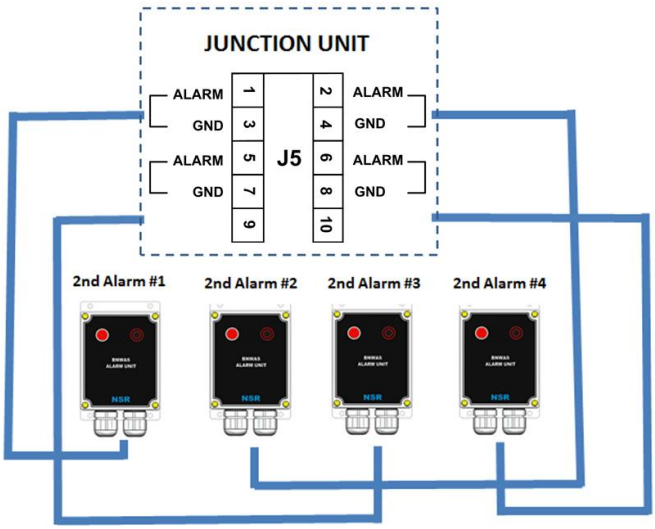
5.5.6.1 Connect Together

Four Alarm Units can be connected to one port, for example, 2nd stage Alarm #1. In this case, 2nd stage Alarm Unit Connection in 2ND STAGE ALARM SET should be set as "1=2=3=4".



5.5.6.2 Connect Separately

Four Alarm Units can also be connected separately to Port #1, #2, #3, #4. In this case, 2ND Alarm Unit Connection in MASTER SETTING should be set as "1 2 3 4".



5.5.7 AUTOPILOT CONNECTION

Autopilot output is connected to **Pin 8 & 10 on J6** of the BNWAS Junction Unit.

5.5.8 GNSS CONNECTION

External GNSS input is connected to **Pin 14 & 16 of J6** (IEC 61162-1) of the BNWAS Junction Unit. The accepted GNSS sentences include RMC and VTG.

5.5.9 VDR CONNECTION

VDR OUT is connected to **Pin 18 & 20 of J6** (IEC 61162-1) of the BNWAS Junction Unit.

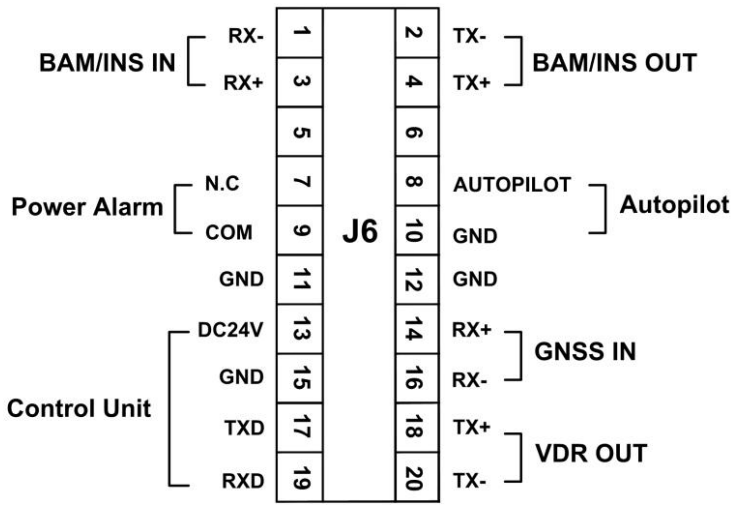
5.5.10 SYSTEM ALARM OUT CONNECTION

This is a normally-closed relay contact. When total power is lost, it will be open. Then CAM needs to present as a warning “POWER FAIL” with ID 3022 and Cat. B.

5.5.11 ALERT INTERFACE

There is one alert interface of IEC 61162-1 type. BAM/INS IN (Pin 1&3 of J6) and BAM/INS OUT (Pin 2&4 of J6) of the Junction Unit are used for the alert interface.

Note: CAM cannot reset 2nd & 3rd stage alarm.



APPENDIX A INSTALLATION CONSIDERATIONS

A.1 GENERAL

The following requirements are included in IMO resolution MSC.128(75) concerning the installation of the BNWAS.

A.2 LOCATION OF RESET FUNCTION

(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 located in areas of the bridge providing proper lookout.

A.3 RESET FACILITIES

(128/A5.1.4) Means of activating the reset function shall only be available in positions on the bridge giving proper lookout 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.

A.4 VISUAL INDICATIONS

(128/A5.2.2 part) Flashing indications shall be visible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed.

A.5 FIRST STAGE BRIDGE AUDIBLE ALARM

(128/A5.2.3 part) This alarm shall be audible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed.

A.6 SECOND AND THIRD STAGE REMOTE AUDIBLE ALARM

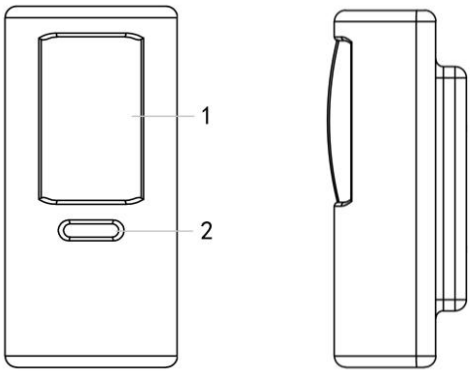
(128/A5.2.4 part) The remote audible alarm which sounds in the locations of the Master, officers and further crew members capable of taking corrective action at the end of the bridge audible alarm period should be easily identifiable by its sound and should indicate urgency.

Note: Bridge includes wheelhouse and bridge wings.

APPENDIX B INSTRUCTIONS ON MOTION DETECTOR

The Motion Detector is used to detect the movement of humans in the bridge. The detection signal will reset the duty watch clock.

B.1 PRODUCT LAYOUT

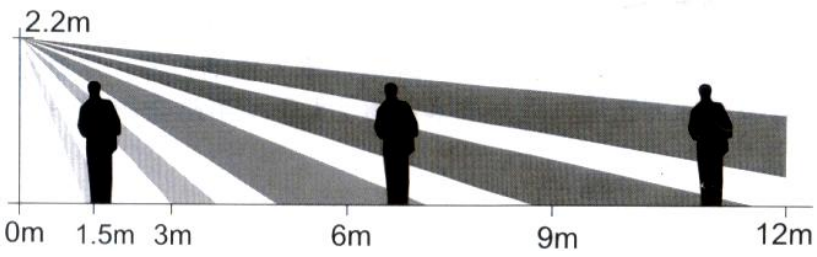


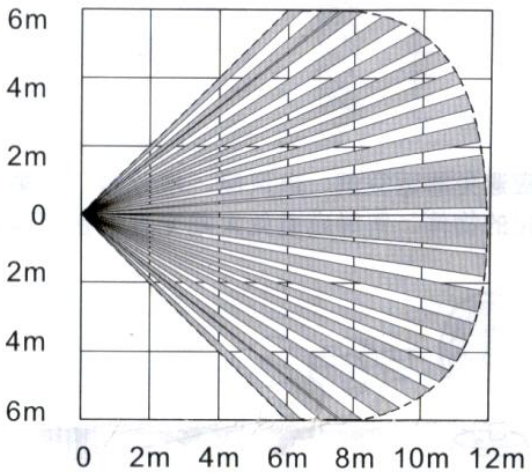
1—LENS 2--LED indicator

B.2 TECHNICAL SPECIFICATIONS

Power supply:	DC9V-16V
Current:	≤22mA (DC12V)
Detecting range:	12m
Detecting sector:	90°
Mounting type:	Wall
Mount height:	1.8～2.2m
Operating temp:	-10℃～+50℃
Size:	99mm×45mm×33mm

B.3 DETECTING AREA





B.4 OPERATION

1. When powered on, the red LED in the Motion Detector will flash. The Motion Detector is working in self-test status for 60s. The Motion Detector enters normal monitoring status as the LED is off.
2. If an object is moving in the detection area, the LED will show ON. The Motion Detector returns to normal monitoring status as the LED is off.

B.5 INSTALLATION

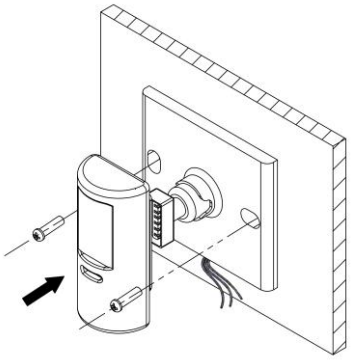
- FRONT -

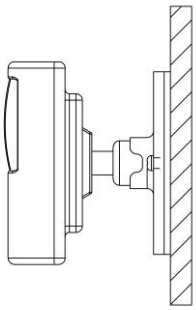
- REAR -

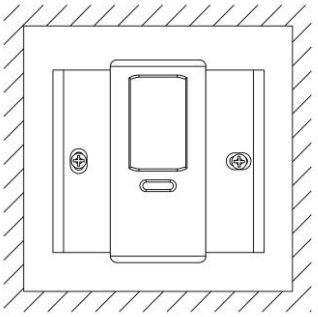
- BRACKET –

① Fix the bracket on the wall with two screws.

② **Wire the cable and mount the Motion Detector against the socket on the bracket.**



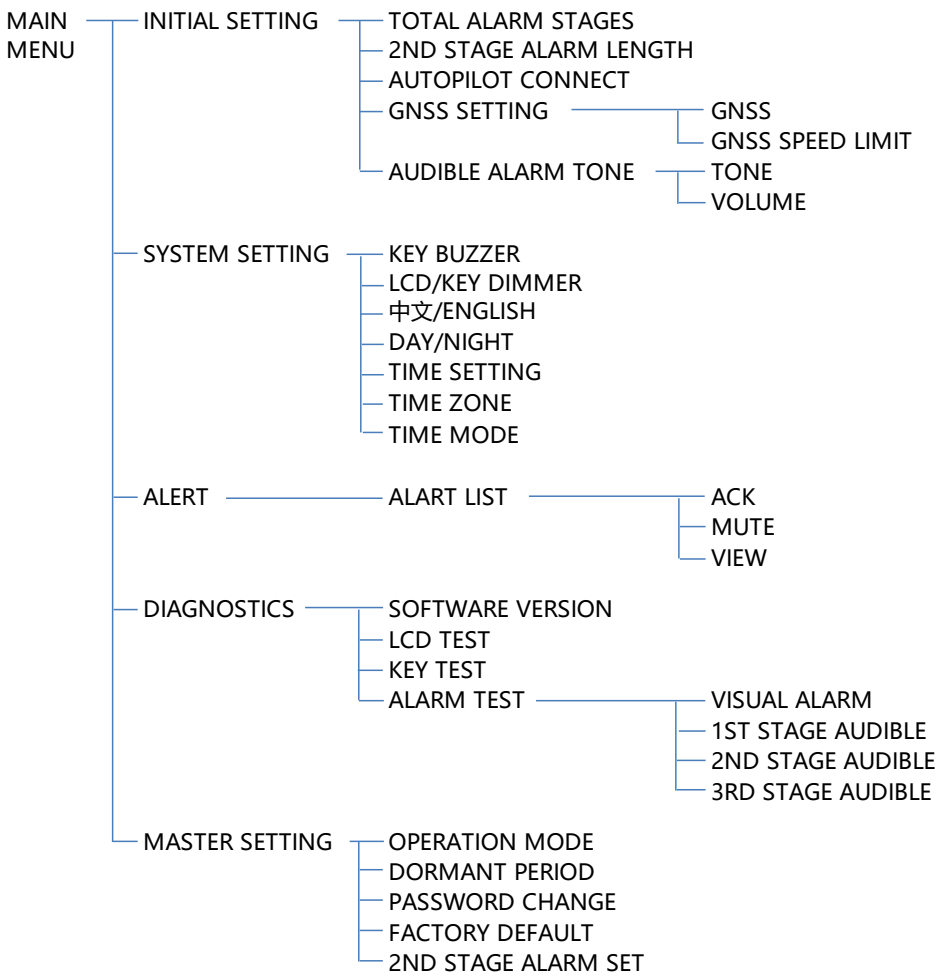




Cable wiring:

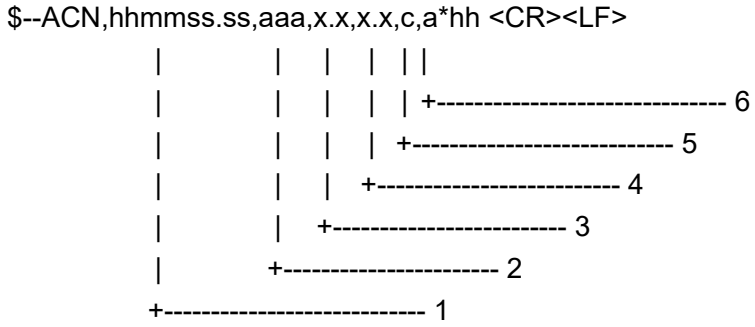
MOTION DETECTOR	**BNWAS JUNCTION UNIT**
Red: DC 12V(+)	DC 12V
Black: DC 0V(-)	GND
Yellow: Sensor	PIR SENSOR

APPENDIX C MENU TREE



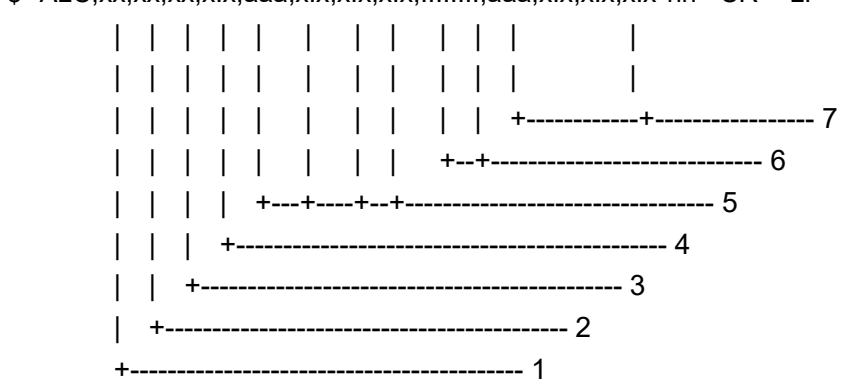
APPENDIX D SENTENCE DESCRIPTION

ACN – Alert command



1. Time
2. Manufacturer's mnemonic code
3. Alert Identifier
4. Alert Instance, 0 to 999999
5. Alert command, A, Q, O or S
6. Sentence status flag

ALC - Cyclic alert list

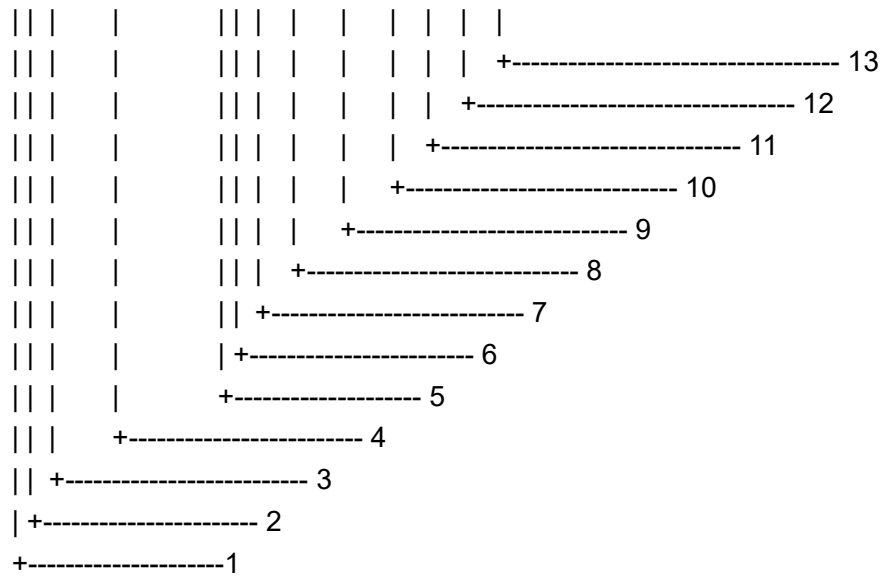


1. Total number of sentences for this message, 01 to 99
2. Sentence number, 01 to 99

3. Sequential message identifier, 00 to 99
4. Number of alert entries
5. Alert entry 1
6. Additional Alert entries
7. Alert entry n

ALF - Alert sentence

$--ALF,x,x,x,hhmmss.ss,a,a,a,aaa,x.x,x.x,x.x,x,c---c*hh <CR><LF>



1. Total number of ALF sentences for this message, 1 to 2
2. Sentence number, 1 to 2
3. Sequential message identifier, 0 to 9
4. Time of last change, see NOTE A
5. Alert category, A, B or C
6. Alert priority, E, A, W or C
7. Alert state, A, S, N, O, U or V
8. Manufacturer's mnemonic code
9. Alert identifier
10. Alert instance, 0 to 999999
11. Revision counter, 1 to 99
12. Escalation counter, 0 to 9

13. Alert text

NOTE A: If the system time is out of sync with valid ZDA sentence, this filed is NULL.

ALR – Set alarm state

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

```
               |          |   | |   |
               |          |   | |   +-------------------------- 5
               |          |   | +-------------------------- 4
               |          |   +------------------------ 3
               |          +------------------------ 2
               +------------------------------ 1
```

1. Time of alarm condition change, UTC
2. Unique alarm number (identifier) at alarm source
3. Alarm condition (A = threshold exceeded, V = not exceeded)
4. Alarm's acknowledge state (A = acknowledged, V = unacknowledged)
5. Alarm's description text

Additionally, the BNWAS provides an interface according to IEC 61162-1, ALR sentence, with the following message content:

- hhmmss.ss: This part may be left blank if the BNWAS does not include UTC time information.
- xxx: Designation of source of alarm or source of reset command. This message is designated as "000".
- A: A = Dormant period exceeded; V = Dormant period not exceeded.
- A: A = Alarm acknowledged; V = Alarm unacknowledged.
- c -- c: BNWAS mode : c1; c2; c3.
  c1 = AUT or MAN or OFF;
  c2 = Dormant period in min, (03 – 12);
  c3 = Alarm stage: 1, 2 or 3 and normal is 0.

Example: $BNALR,000,A,V,C1=AUT;C2=03;C3=1*hh<CR><LF>
$INALR,,260,A,V,Emergency Call*1C <CR><LF>

EVE – General event message

```
$--EVE,hhmmss.ss,c--c,c--c*hh<CR><LF>
          |          |     |
          |          |     +---------------------- 3
          |          +------------------- 2
          +--------------------- 1
```

1. Event time
2. Tag code used for identification of source of event
3. Event description

Example: $RAEVE,BNWAS,Operator activity*2D

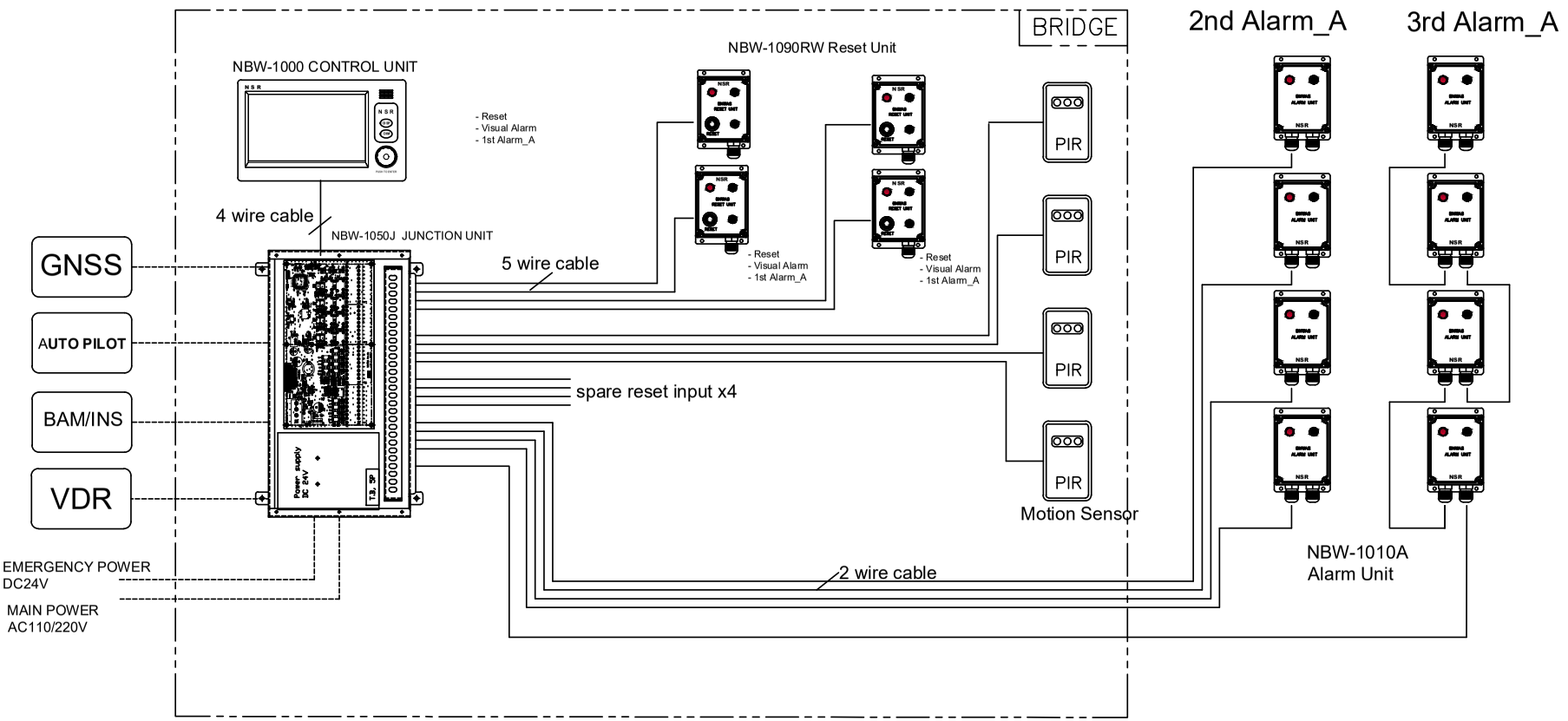
HBT – Heartbeat supervision sentence

```
$--HBT,x.x,A,x*hh<cr><lf>
         |   | |
         |   | +---------------------- 3
         |   +------------------- 2
         +------------------- 1
```

1. Configured repeat interval
2. Equipment status
3. Sequential sentence identifier

APPENDIX E INSTALLATION DRAWINGS

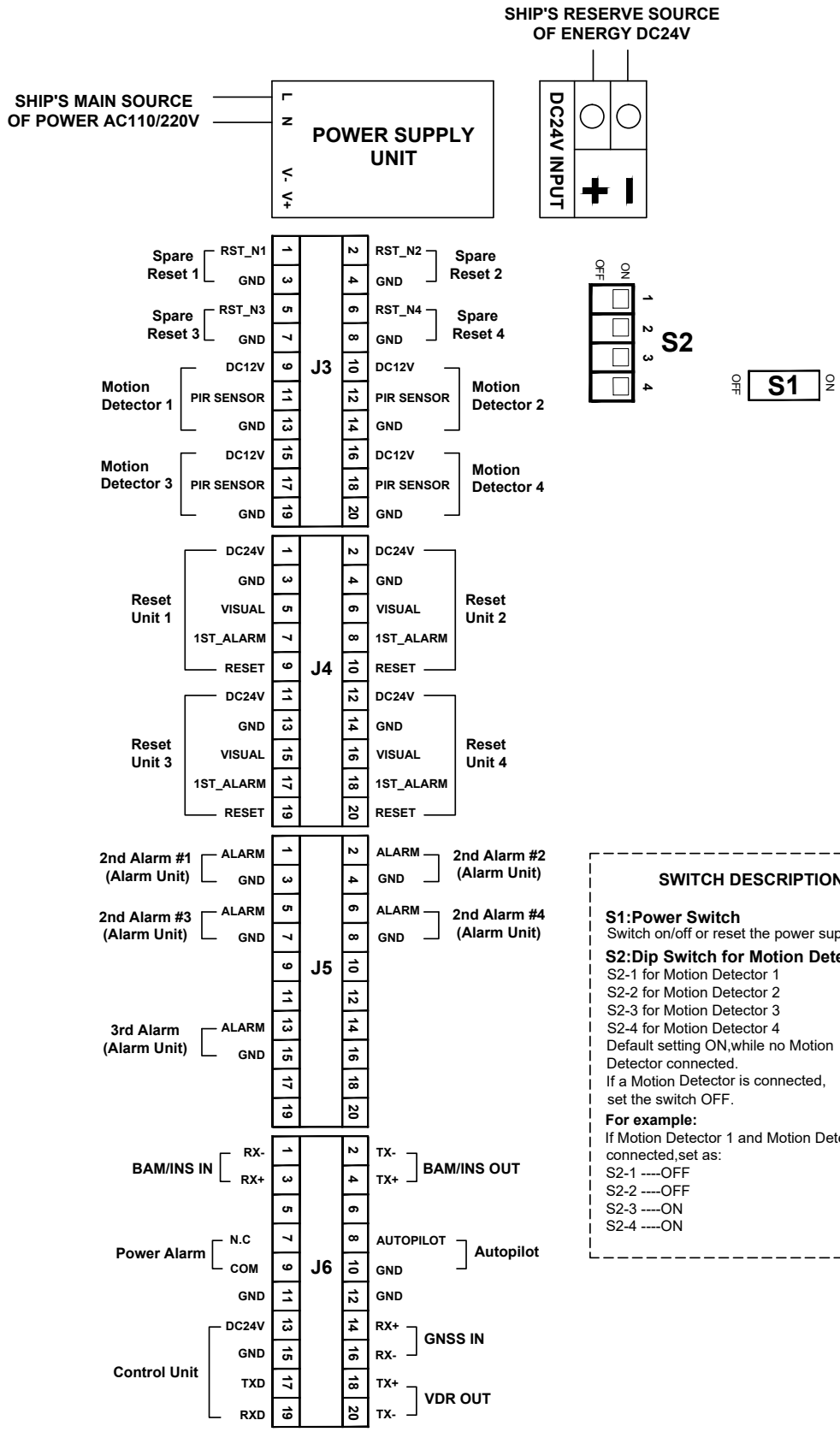
Drawing No.	Description
NBW1000-ID-001	NBW-1000 BNWAS SYSTEM DIAGRAM
NBW1000-ID-002	NBW-1000 BNWAS SYSTEM WIRING DIAGRAM
NBW1000-ID-003	BNWAS ALARM/RESET UNIT INTERFACE LAYOUT DRAWING
NBW1000-ID-004	NBW-1000C CONTROL UNIT SIZE DRAWING
NBW1000-ID-005	NBW-1000C CONTROL UNIT MOUNT DRAWING (TABLE TYPE)
NBW1000-ID-006	NBW-1000C CONTROL UNIT MOUNT DRAWING (FLUSH TYPE)
NBW1000-ID-007	NBW-1000 BNWAS JUNCTION UNIT SIZE DRAWING
NBW1000-ID-008	NBW-1000 BNWAS ALARM UNIT SIZE DRAWING
NBW1000-ID-009	NBW-1000 BNWAS RESET UNIT SIZE DRAWING
NBW1000-ID-010	NBW-1090P MOTION DETECTOR SIZE DRAWING



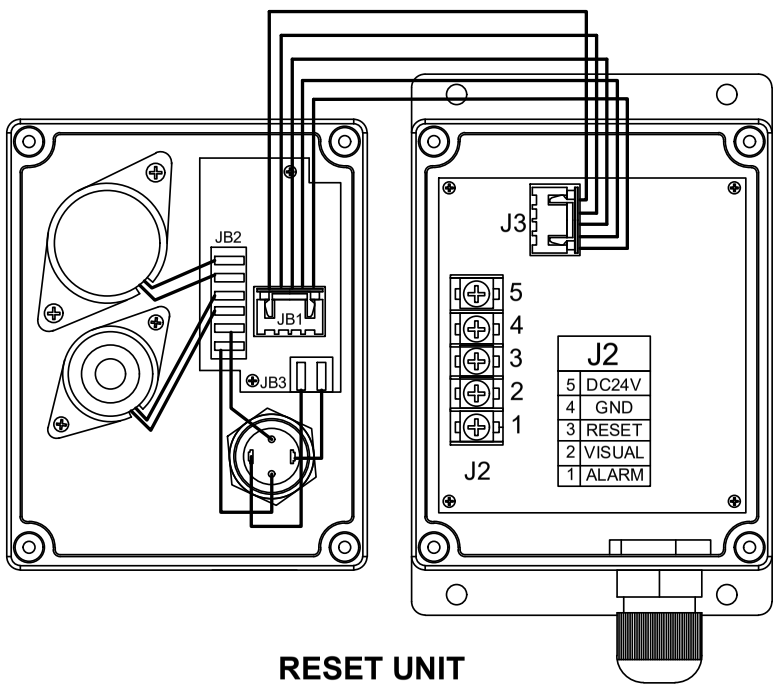
4 wire cable: 4x0.3mm²

2 wire cable: 2x1.0mm²

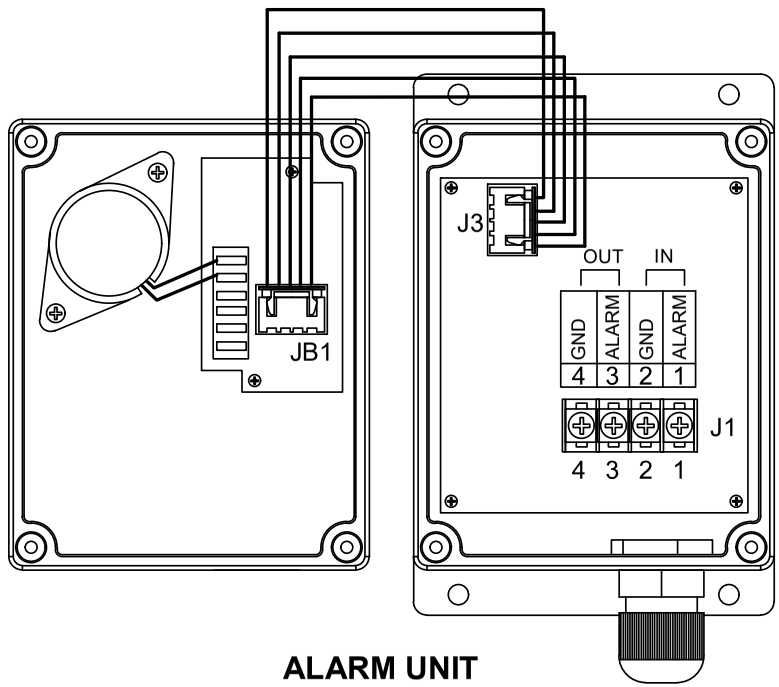
APPLICATION	NBW-1000 BNWAS SYSTEM DIAGRAM		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm	
CHECKED		NSR	NEW SUNRISE CO., LTD.
DRAWING			
DWG NO.	NBW1000-ID-001		


SHIP'S RESERVE SOURCE
OF ENERGY DC24V
SHIP'S MAIN SOURCE
OF POWER AC110/220V
L
N
V-
V+
POWER SUPPLY
UNIT
DC24V INPUT
+
-
J3
Spare Reset 1
RST_N1
GND
RST_N2
Spare Reset 2
Spare Reset 3
RST_N3
RST_N4
Spare Reset 4
Motion Detector 1
DC12V
PIR SENSOR
Motion Detector 2
Motion Detector 3
Motion Detector 4
J4
Reset Unit 1
DC24V
VISUAL
1ST_ALARM
RESET
Reset Unit 2
Reset Unit 3
Reset Unit 4
J5
2nd Alarm #1 (Alarm Unit)
ALARM
2nd Alarm #2 (Alarm Unit)
2nd Alarm #3 (Alarm Unit)
2nd Alarm #4 (Alarm Unit)
3rd Alarm (Alarm Unit)
J6
BAM/INS IN
RX-
RX+
TX-
TX+
BAM/INS OUT
Power Alarm
N.C
COM
AUTOPILOT
Autopilot
Control Unit
TXD
RXD
GNSS IN
VDR OUT
OFF
ON
S2
S1
SWITCH DESCRIPTION
S1:Power Switch
Switch on/off or reset the power supply.
S2:Dip Switch for Motion Detectors
S2-1 for Motion Detector 1
S2-2 for Motion Detector 2
S2-3 for Motion Detector 3
S2-4 for Motion Detector 4
Default setting ON,while no Motion Detector connected.
If a Motion Detector is connected, set the switch OFF.
For example:
If Motion Detector 1 and Motion Detector 2 are connected,set as:
S2-1 ----OFF
S2-2 ----OFF
S2-3 ----ON
S2-4 ----ON
APPLICATION
NBW-1000 BNWAS SYSTEM WIRING DIAGRAM
NEW SUNRISE CO., LTD.
NBW1000-ID-002
NO.
DATE
REVISION & DESCRIPTION
REVIEWED
CHECKED
SIGNATURE

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
1			



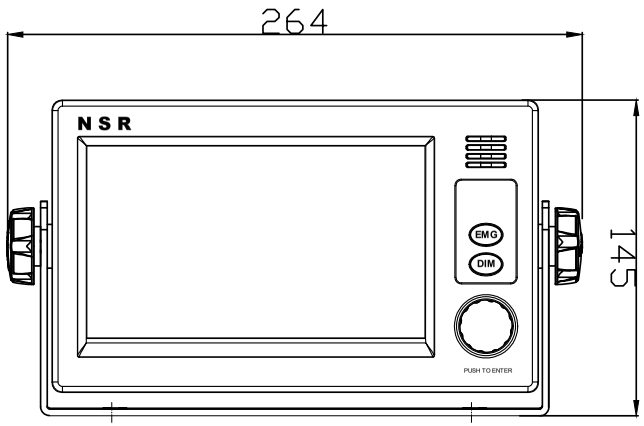
RESET UNIT
(NBW-1090RW)



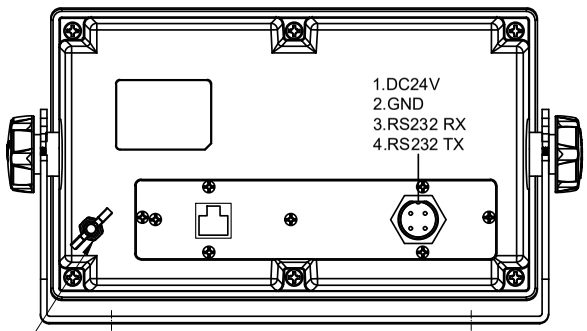
ALARM UNIT
(NBW-1010A)

APPLICATION	BNWAS ALARM/RESET UNIT INTERFACE LAYOUT DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm PROJECTION	▽▽▽▽0.8S ▽▽▽6.3S ▽▽12.5 ▽100S
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG NO.	NBW1000-ID-003		

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
1			

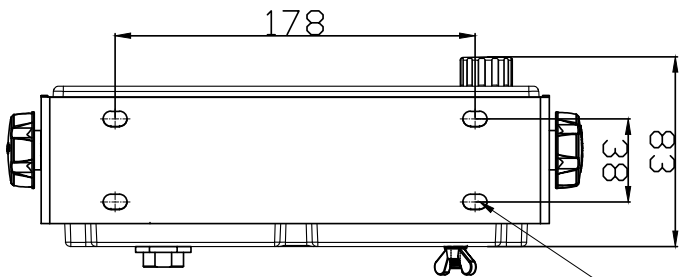


FRONT VIEW



GND TERMINAL

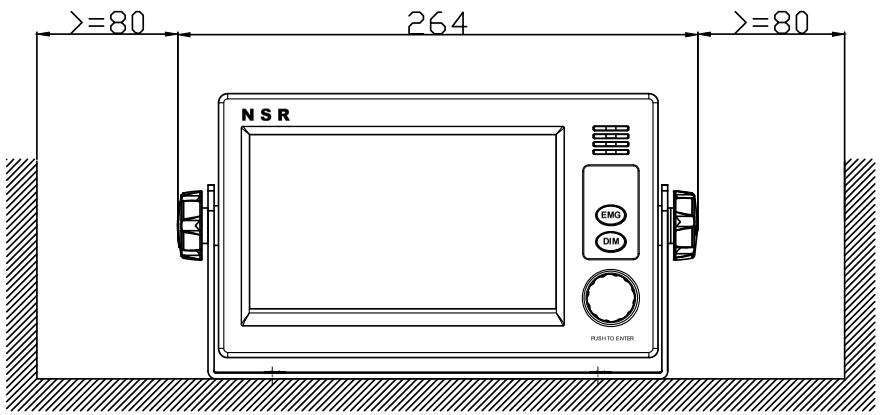
REAR VIEW

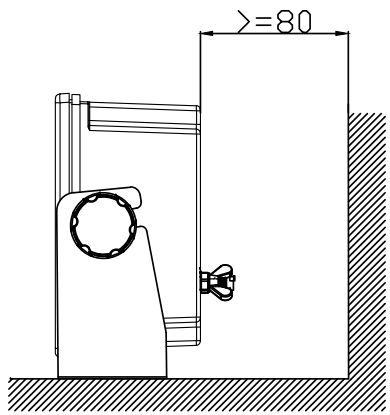


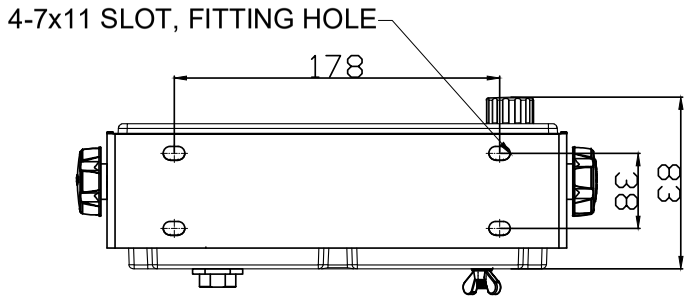
BOTTOM VIEW

APPLICATION	NBW-1000 CONTROL UNIT SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm PROJECTION	▽▽▽▽0.8S ▽▽▽6.3S ▽▽12.5S ▽100S
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG NO.	NBW1000-ID-004		

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
1			





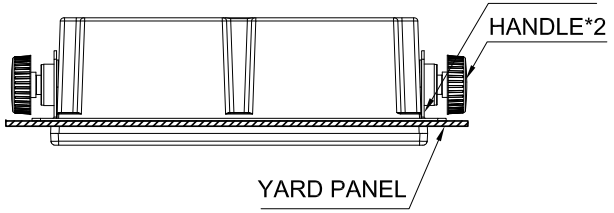


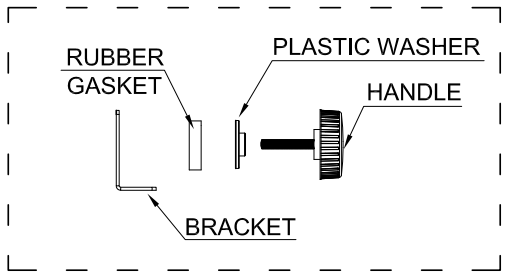
NOTE: TABLE TYPE

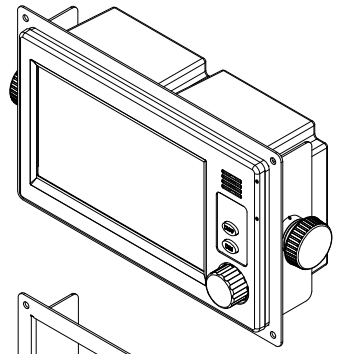
1. USE SELF-TAPPING SCREWS M5X20 FOR FIXING THE UNIT.
2. 80MM IS MINIMUM SPACE FOR OPERATION AND CABLING.

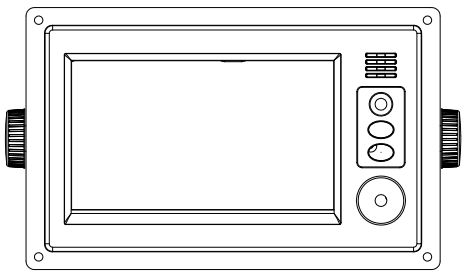
APPLICATION	NBW-1000 CONTROL UNIT MOUNT DRAWING (TABLE TYPE)		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm PROJECTION	▽▽▽▽0.8S ▽▽▽6.3S ▽▽12S ▽100S
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG NO.	NBW1000-ID-005		

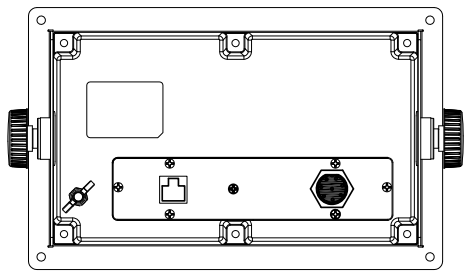
NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
1			

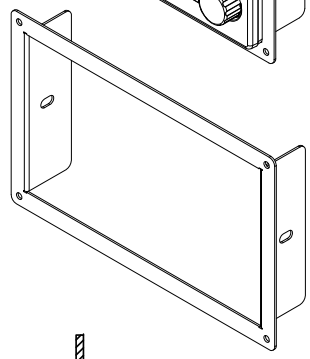


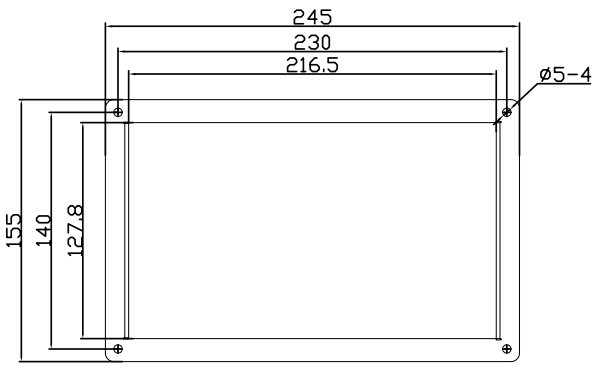




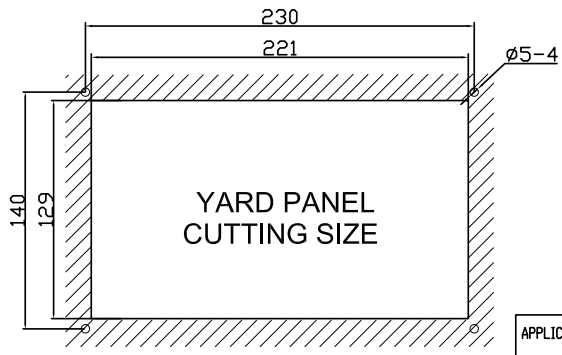


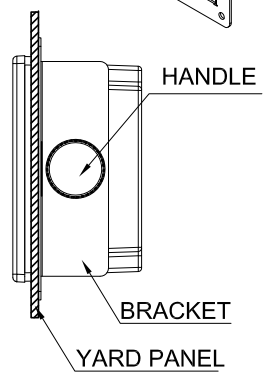






MOUNTING BRACKET SIZE

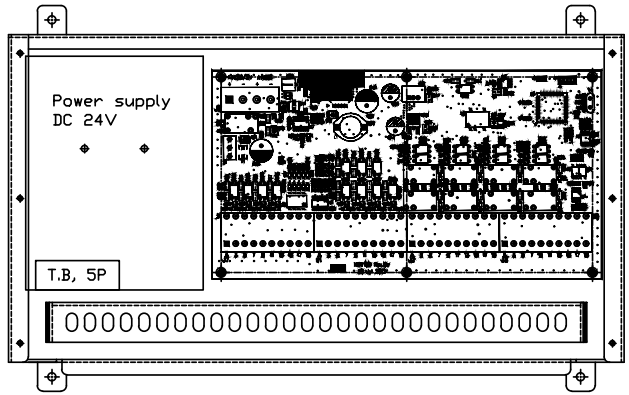


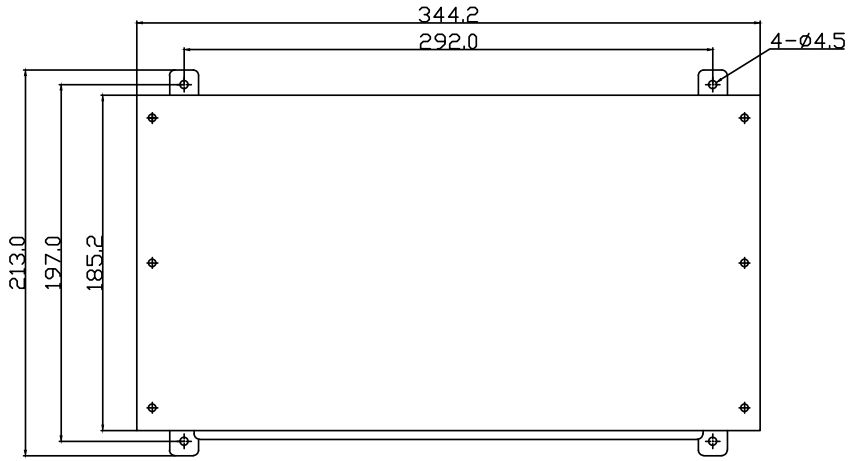


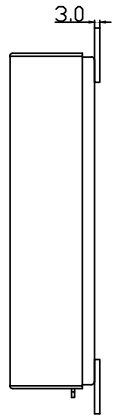
APPLICATION	NBW-1000 CONTROL UNIT MOUNT DRAWING (FLUSH TYPE)
DATE	
APPRNVAL	
CHECKED	
DRAWING	
DWG NO.	NBW1000-ID-006
ITEM	
SCALE N/S	UNIT mm
PRO-JECTION	
SIZE	A4

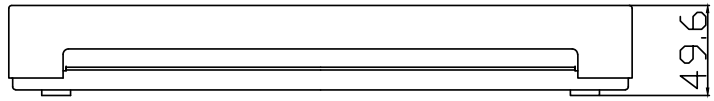
NSR marine NEW SUNRISE CO., LTD.

NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
1			SIGNATURE	





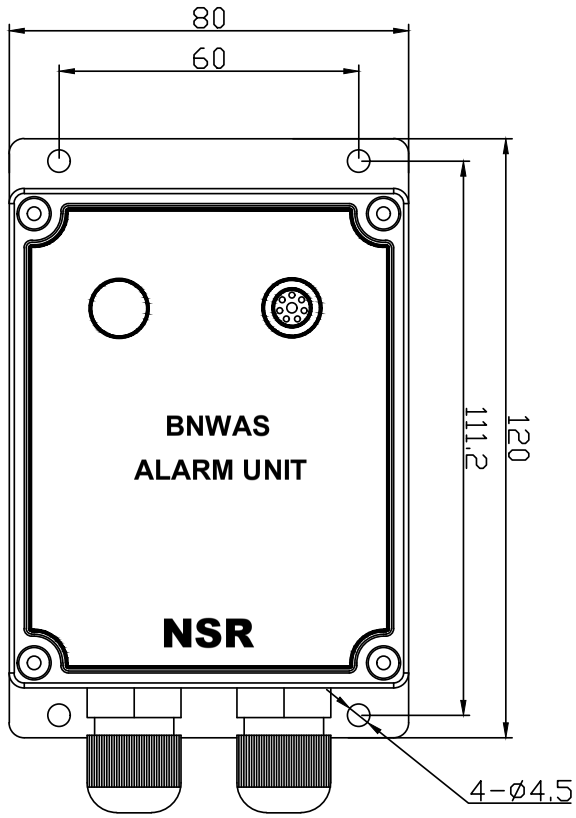


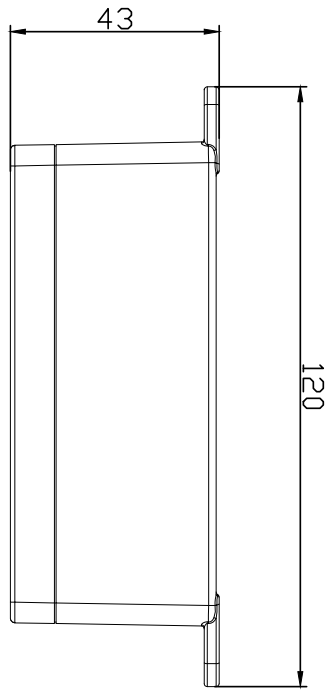


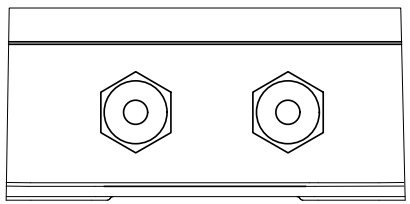
ASSY_CABLE ENTRY

APPLICATION	NBW-1000 BNWAS JUNCTION UNIT SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm PRO-JECTION	▽▽▽▽0.8S ▽▽▽6.3S ▽▽12S ▽100S
CHECKED		NSR marine	NEW SUNRISE CO., LTD.
DRAWING			
DWG NO.	NBW1000-ID-007		

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
1			

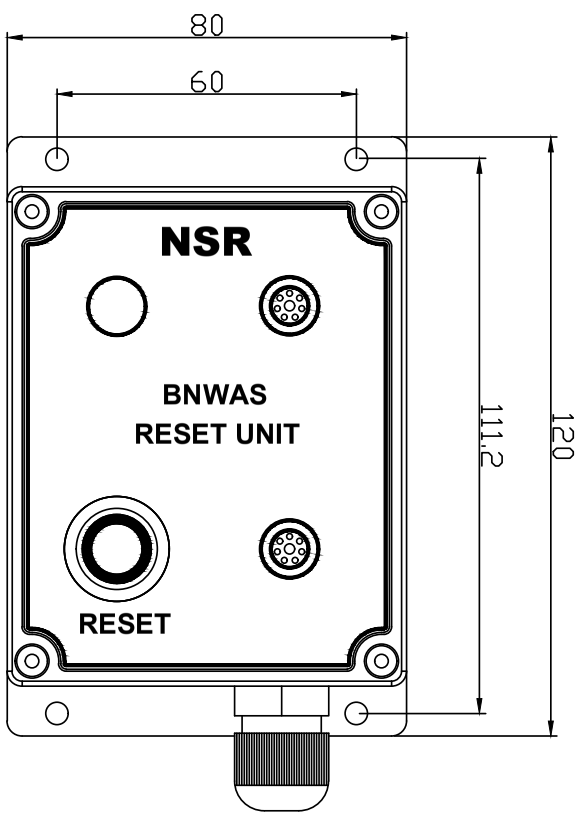


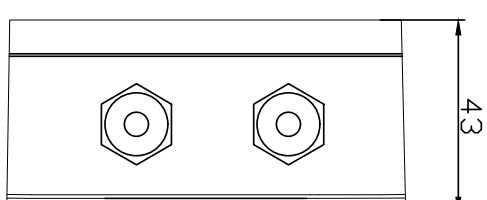


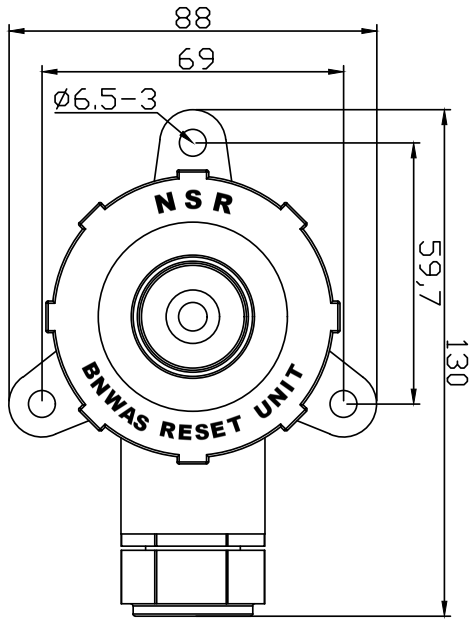


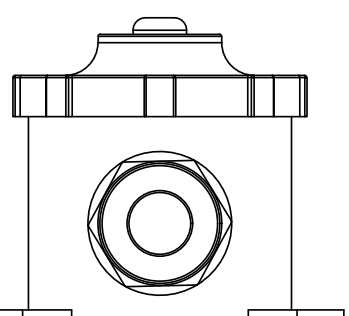
APPLICATION	NBW-1000 BNWAS ALARM UNIT SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm PRO-JECTION	▽▽▽▽0.8S ▽▽▽6.3S ▽▽12S ▽100S
CHECKED		NSR marine	NEW SUNRISE CO., LTD.
DRAWING			
DWG NO.	NBW1000-ID-008		

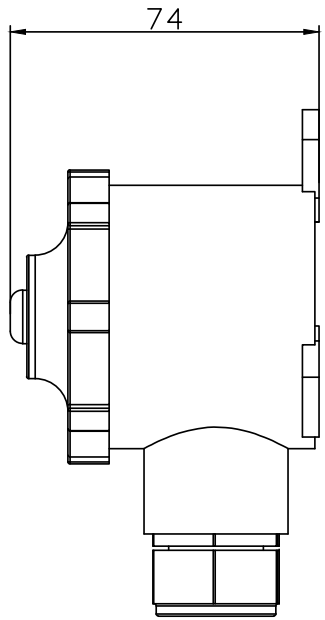
NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
1			





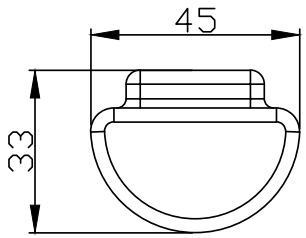




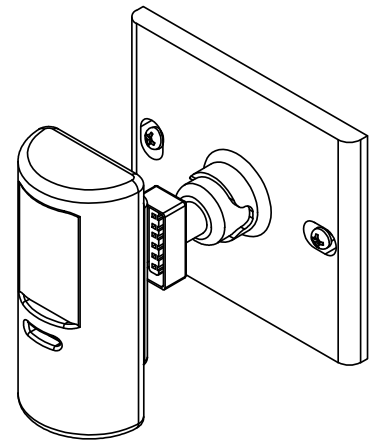


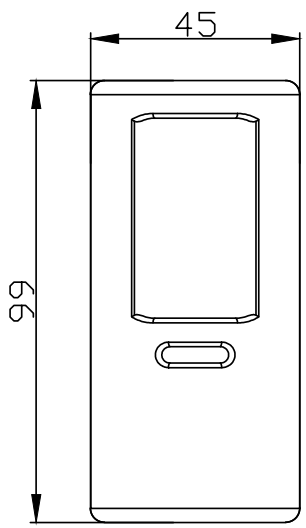
APPLICATION	NBW-1000 BNWAS RESET UNIT SIZE DRAWING				
DATE		ITEM		SIZE	A4
APPROVAL		SCALE	N/S	UNIT	mm
CHECKED		PROJECTION			
DRAWING		NEW SUNRISE CO., LTD.			
DWG NO.	NBW1000-ID-009				

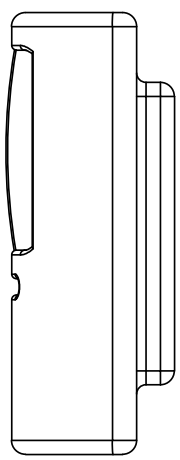
NO.	DATE	REVISION & DESCRIPTION	REVIEWED	CHECKED
1			SIGNATURE	

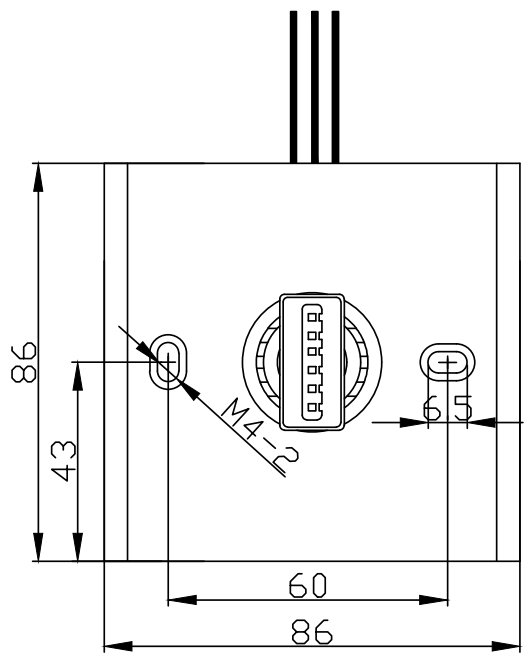


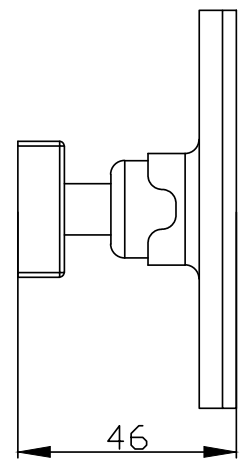
RED	DC12V(+)
BLACK	DC0V(-)
YELLOW	SENSOR











APPLICATION	NBW-1090P MOTION DETECTOR SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm PRO-JECTION	▽▽▽▽0.8S ▽▽▽6.3S ▽▽12S ▽100S
CHECKED			
DRAWING		NSR mating	NEW SUNRISE CO., LTD.
DWG NO.	NBW1000-ID-010		

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info@nsrmarine.com

December, 2025