

JCX-161

Bridge Navigational Watch Alarm System

INSTRUCTION MANUAL



Japan Radio Co., Ltd.

Thank you for purchasing the JRC bridge navigational watch alarm system, JCX-161.

This system monitors the activities of the navigational officer on the bridge and detects any abnormal conditions in the officer that may lead to a marine accident. If the officer cannot fulfill his duties for any reason, the system alerts the captain or other qualified personnel.

This system conforms to the performance standards of the IMO resolution MSC.128 (75) and IEC 62616.

- Please carefully read this instruction manual before using the system.
- Store this instruction manual in a secure place so that you can consult it whenever necessary.
- Consult this manual if you have questions or technical problems with the system.

Before use

Warning Symbols

The warning labels in the instruction manual and on the system use various symbols to ensure that the system is used correctly and prevent personal injury or equipment damage. The symbols and their meanings are shown below.

Before continuing, please read and understand the following symbols.



DANGER

This indication is shown where any person is supposed to be in danger of being killed or seriously injured if this indication is neglected or equipment is not operated correctly.



WARNING

This indication is shown where any person is supposed to be in danger of being killed or seriously injured if this indication is neglected or equipment is not operated correctly.



CAUTION

This indication is shown where any person is supposed to be injured or any property damage is supposed to occur if this indication is neglected or equipment is not operated correctly.

Examples



Electrical Shock

△ marks indicate CAUTION (including DANGER and WARNING). Detailed contents of CAUTION (“Electric Shock” in the example on left) are shown in the mark.



Disassembly
Prohibited

⊘ marks indicate prohibition. Detailed contents of prohibited actions (“Disassembling Prohibited” in the example on left) are shown in the mark.



About the warning label

● marks indicate a specific action that must be followed or instruction. Detailed contents of instructions (“Ensure the ground wire is connected to a grounded terminal” in the example to the left.)

The warning label is pasted on main control unit (NCK-175). Please never detach the warning label, and do damage and the modification.



 WARNING	
	Do not disassemble or modify this equipment. It may result in a fire, electrical shock, or equipment malfunction.
	Do not use a power supply voltage other than the one specified. It may result in a fire, electrical shock, or equipment malfunction.
	Turn off the power supply switch before connecting or disconnecting cables to any external equipment. Not turning it off may result in a fire or electrical shock.
	If the power supply cable is damaged, ask for an exchange from the Japan Radio Co.,Ltd (JRC) sales department, a nearby branch office, business office, or any JRC agents. The use of damaged cables may result in a fire or electrical shock.
	If water leaks into the equipment, shut off the power, disconnect the plug from the outlet, and contact the JRC sales department, a nearby branch office, business office, or any JRC agents. Continued use of water-damaged equipment may result in a fire, electrical shock, or equipment malfunction.
	Do not attempt inspections or repairs on internal parts of the equipment. Inspections or repairs by anyone other than qualified maintenance personnel may result in a fire or electrical shock. Ask for internal inspections or equipment repairs by contacting the JRC sales department, a nearby branch office, business office, or any JRC agents.
	If equipment malfunctions, shut off the power and contact the JRC sales department, a nearby branch office, business office, or any JRC agents. Continued use of the equipment may result in a fire or electrical shock.
	Do not attempt to exchange the fuse by yourself. Exchange by anyone other than qualified maintenance personnel may result in a fire, electrical shock, or equipment malfunction. For an exchange of the fuse, contact the JRC sales department, a nearby branch office, business office, or any JRC agent.

The caution on use

 WARNING	
	When disposing of this unit, abide by local laws and regulations.
	Do not insert or drop any foreign objects such as metals into air vents or orifices. A fire, electric shock or malfunction may occur.
	If a strange smell, smoke, or unusual heat is emitted from any equipment, shut off the power immediately and disconnect the power cable. Then contact the JRC sales department, a nearby branch office, business office, or any JRC agent. Continued use of the equipment may result in a fire or electrical shock.
	Do not allow any loose wires or metal objects to fall inside of equipment. This may result in a fire, electrical shock, or equipment malfunction.

 CAUTION	
	Do not install the system near to a water source or in the area with much humidity / steam / dust / oil smoke. A fire, electric shock, and/or machine failure may occur.
	Do not touch the system with a hand or glove wet with fresh water or sea water. Otherwise, an electrical shock or machine failure may occur.
	When disconnecting the power cable, make sure to grab the plug. Pulling the cable may damage the cable, resulting in a fire or electrical shock.
	Do not connect or disconnect the power cable with a wet hand. An electrical shock may occur.

 CAUTION	
	When the system is exposed to fresh water or seawater, wipe it immediately. Otherwise, a failure or malfunction may occur.
	When cleaning the system surface, do not use any organic solvent such as thinner or benzine ; these solvents damage the surface coating. To clean the surface, remove dust and debris then wipe it with a clean dry cloth.
	Connect the ground wire to a grounded terminal. Otherwise, an electric shock may occur as the result of a failure or earth leakage.
	Avoid sharing a power source with a system that generates a large amount of electronic noise (such as an air conditioner). The system may not function properly because of short - time voltage drop or noise carried from power source.
	Do not place the system on an unstable place such as a wobbly rack or incline. The system may drop or tip over, resulting in personal injuries and/or equipment failure.
	Do not place the system in a place exposed to direct sunlight. Otherwise, it may cause damage on the paint or seal on the surface.
	Do not install the equipment near any radio equipment. Otherwise, it may cause a signal reception might be affected.

The caution on use

 CAUTION	
	Do not bring the system into a warm room while it is cool. Dew condensation may occur inside, leading to a machine failure.
	Before turning on the power switch again, make sure that the screen of the LCD display unit goes out. If the power switch is turned on immediately after turning off, the equipment may be cause of malfunction.
	Do not touch the system if your hand is wet. An electrical shock may occur.
	Do not press buttons of the reset button units and the LCD display unit by unnecessary strong force. Equipment malfunction may occur.

JCX-161 Bridge Navigational Watch Alarm System External Appearance



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Chapter 1 General Outline of Equipment

1.1 Functions

The system is a Bridge Navigational Watch Alarm System (BNWAS) consisting of a control unit, a display unit, a buzzer units, and a reset devices. It is designed to prepare for any contingency in which a duty officer is disabled to fulfill his duties due to a nap, health problem, or other reason. Upon such an event, the system alerts other officers.

1.1.1 Purpose of the system

The purpose of the Bridge Navigational Watch Alarm System (BNWAS) is to monitor the motions of the duty officer in the bridge and detect any his behavior disorder that may lead to a marine accident.

To achieve the purpose, dormant period is set. If no reset operation is performed within the dormant period, the system recognizes that the duty officer cannot fulfill his duties and outputs an alarm in the bridge. If no response is given even after that, it alerts the captain or other qualified officer for its situation.

1.1.2 Operation modes

BNWAS includes the following operation modes.

1) Auto Mode (Automatic mode)

While the ship's heading control system or the track control system is active, the dormant period count down operates automatically. When their systems are not activated, the countdown will not operate.

2) Manual On

The dormant period countdown operates continuously.

3) Manual Off

The dormant period countdown does not operate.

The Manual Off only stops the dormant period countdown. It operates the emergency call, other call functions, the bridge alarm transfer function and BAM EMERGENCY CALL transfer function.

Except in anchorage or in-bay navigation, operate the unit with “Manual On”.

Chapter 1 General Outline of Equipment

1.1.3 Operation sequence of displays and alarms

Depending on the operation mode, the unit is activated and the dormant period countdown starts. When the countdown ends, the following displays and alarms are triggered.

1) Visual Indication

At the end of this dormant period, the alarm system initiates a visual indication on the bridge. The visible display is a blinking manner.

2) First Stage Bridge audible alarm (1st Stage Bridge audible alarm)

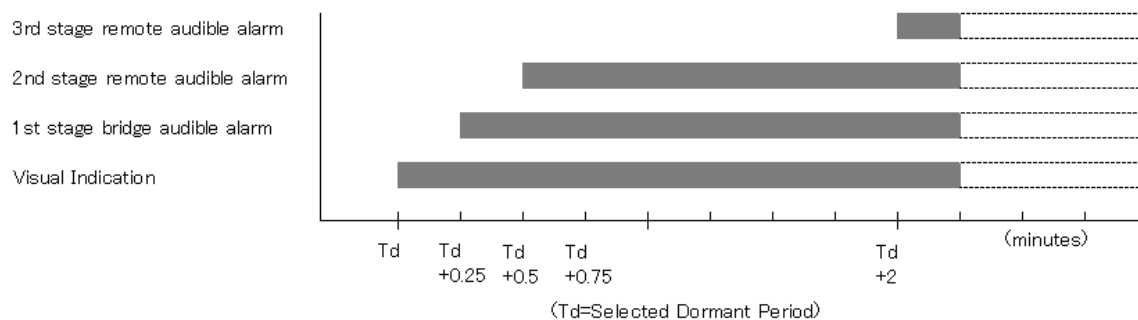
If not reset within 15 seconds since the visual indication is initiated, the BNWAS additionally sounds a 1st stage bridge audible alarm on the bridge.

3) Second Stage Remote audible alarm (2nd Stage Remote audible alarm)

If not reset within 15 seconds since the 1st stage bridge audible alarm is initiated, the BNWAS additionally sounds a 2nd stage remote audible alarm in the back-up officer's and/or Master's location.

4) Third Stage Remote audible alarm (3rd Stage Remote audible alarm)

If not reset within 90 seconds (which can be set 0s, or between 90 ~ 180s) since the 2nd stage remote audible alarm is initiated, the BNWAS additionally sounds a 3rd stage remote audible alarm at the locations of further crew members.



Alarm sequence without acknowledgements

1.2 Features

1.2.1 Versatile functions with standard configuration

1) BNWAS function

When dormant period are measured, and the confirmation is not done, warning is output with the visible display and the alarms according to the sequence of 1.1.3.

2) EMERGENCY CALL function

EMERGENCY CALL function can buzz all buzzers with one action push button. This function is offered without optional equipment.

3) Support of bridge alarm and EMERGENCY CALL from BAM transfer function

The bridge alarm and EMERGENCY CALL from BAM can be transfer with the serial interface that uses the IEC61162-1 ALR sentence.

1.2.2 Various reset devices and number of inputs

1) Reset devices

A maximum of 6 pushbutton reset devices (NCJ-895 and NCJ-896) can be provided so that the dormant period can be reset within 15 s in anywhere since the visual indication starts. The reset function is equipped also in the LCD display unit (NWZ-4650).

2) Motion sensor type reset device (option)

The motion sensor (NYG-5) which performs automatic reset by human presence and motions can be installed.

3) Reset by external navigation equipment

The system supports the reset signal from other navigational equipment. The reset signal can be input via. an IEC 61162 serial interface or a contact input.

1.2.3 Output to external equipment

1) External equipment output by contact output

The system can output the machine statuses or alarm situations to external equipment by contact output.

2) External equipment output by serial output

The system can output machine status or alarm situation to external equipment by the serial interface using the IEC61162-1 ALR sentence.

1.2.4 Remote maintenance function

When connected with a VDR provided remote maintenance from our company, the unit allows you to monitor its status from a remote place.

Chapter 1 General Outline of Equipment

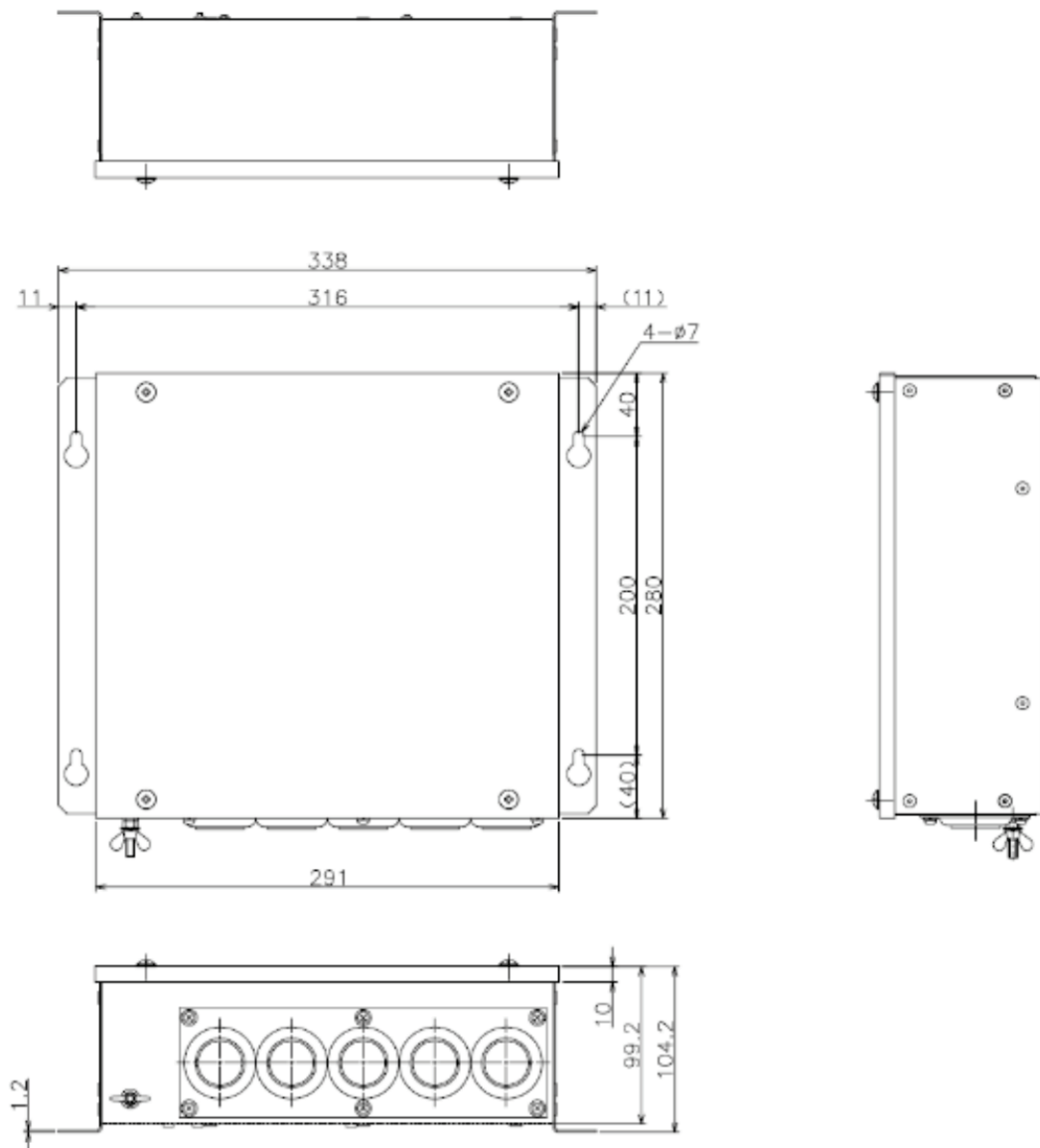
1.3 Configuration

Component list of bridge navigational watch alarm system (BNWAS)

No.	Item	Model	Q'ty (exp.)	Mass (kg)	Remarks
Standard configuration					
1	Control unit	NCK-175	1	4.5	
2	LCD display unit	NWZ-4650	1	0.6	Attached the operation card (7ZPNA4319) ,power cable(CFQ-5766B),data cable(CFQ-5951B) , Fuse (2A, 1A, 1 piece each)
3	Buzzer unit	NVS-785	8	0.2	
4	Reset button unit	NCJ-895	3	0.2	
Option					
5	Motion sensor	NYG-5	1	0.4	
6	LED warning lamp unit	NCD-2257	1	0.2	
7	Reset button unit (Waterproof)	NCJ-896	1	0.5	IP56
8	Instruction manual	7ZPNA4317	1	0.3	
9	Spare parts	7ZXNA4012	1	0.04	Fuse (2A, 1A, 1 piece each)
10	Spare parts	7ZXNA4013	1	0.04	Fuse (1A, 2piece)
11	External Navigational equipment connection cable	CFQ-5767	1	0.1	

1.4 Outline dimensions

1.4.1 Control unit (NCK-175)

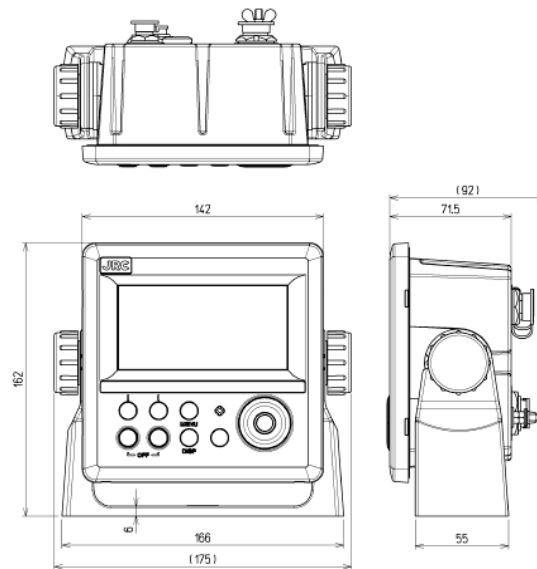


COLOR	: N4 SEMI-GLOSS
MASS	: APPROX. 4.5kg
IP SPEC	: IP22
UNIT	: mm
CATEGORY	: Protected

Control unit (NCK-175) Outline Dimensions

Chapter 1 General Outline of Equipment

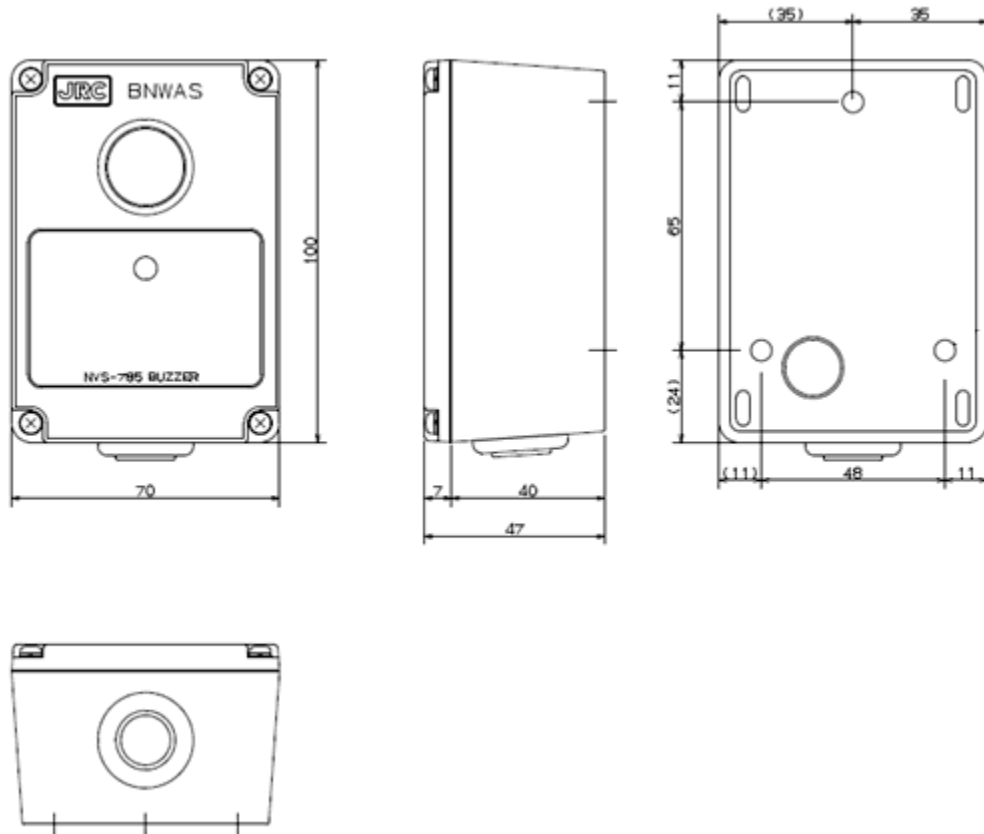
1.4.2 LCD display unit (NWZ-4650)



COLOR	: N4 SEMI-GLOSS
MASS	: APPROX. 0.6kg
IP SPEC	: IP22
UNIT	: mm
CATEGORY	: Protected

LCD display unit (NWZ-4650) Outline Dimensions (attached self-supported stand)

1.4.3 Buzzer unit (NVS-785)

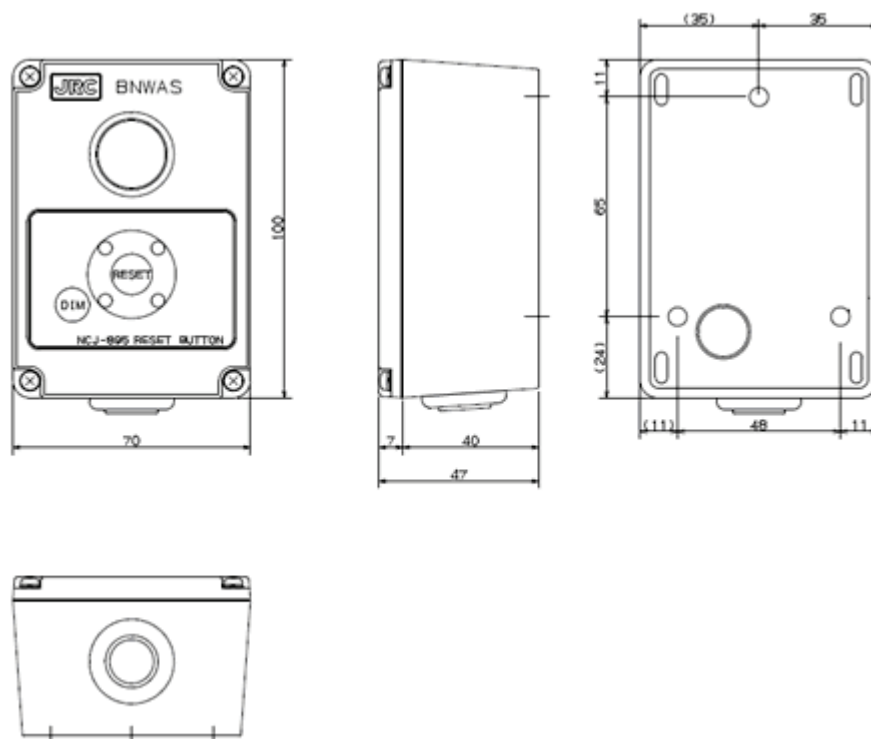


COLOR	: N4 SEMI-GLOSS
MASS	: APPROX. 0.2 kg
IP SPEC	: IP22
UNIT	: mm
CATEGORY	: Protected

Buzzer unit (NVS-785) Outline Dimensions

Chapter 1 General Outline of Equipment

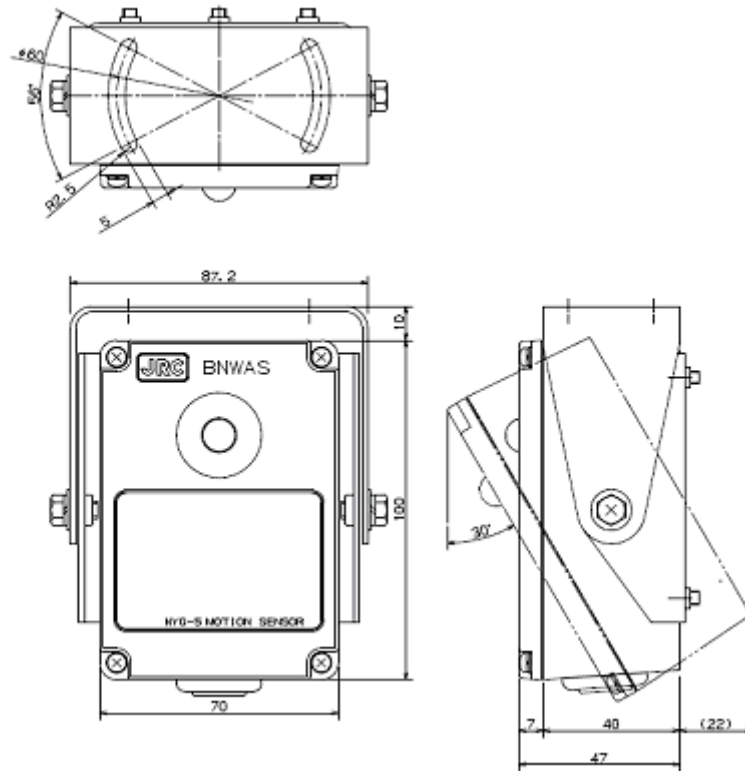
1.4.4 Reset button unit (NCJ-895)



COLOR	: N4 SEMI-GLOSS
MASS	: APPROX. 0.2 kg
IP SPEC	: IP22
UNIT	: mm
CATEGORY	: Protected

Reset button unit (NCJ-895) Outline Dimensions

1.4.5 Motion sensor (NYG-5) (Option)

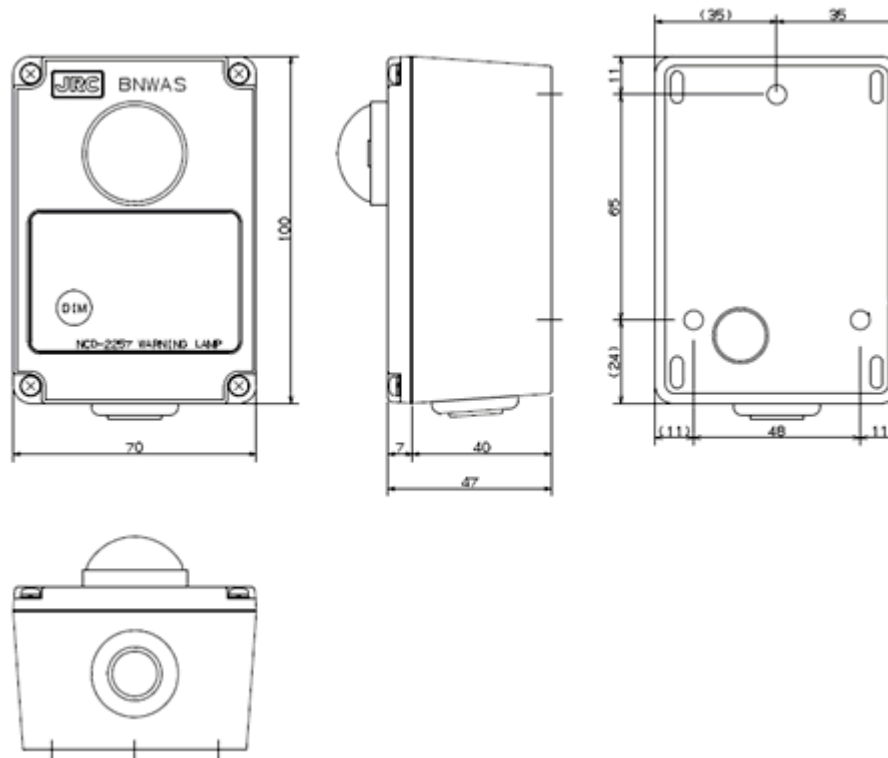


COLOR	: N4 SEMI-GLOSS
MASS	: APPROX. 0.4 kg
IP SPEC	: IP22
UNIT	: mm
CATEGORY	: Protected

Motion sensor (NYG-5) Outline Dimensions

Chapter 1 General Outline of Equipment

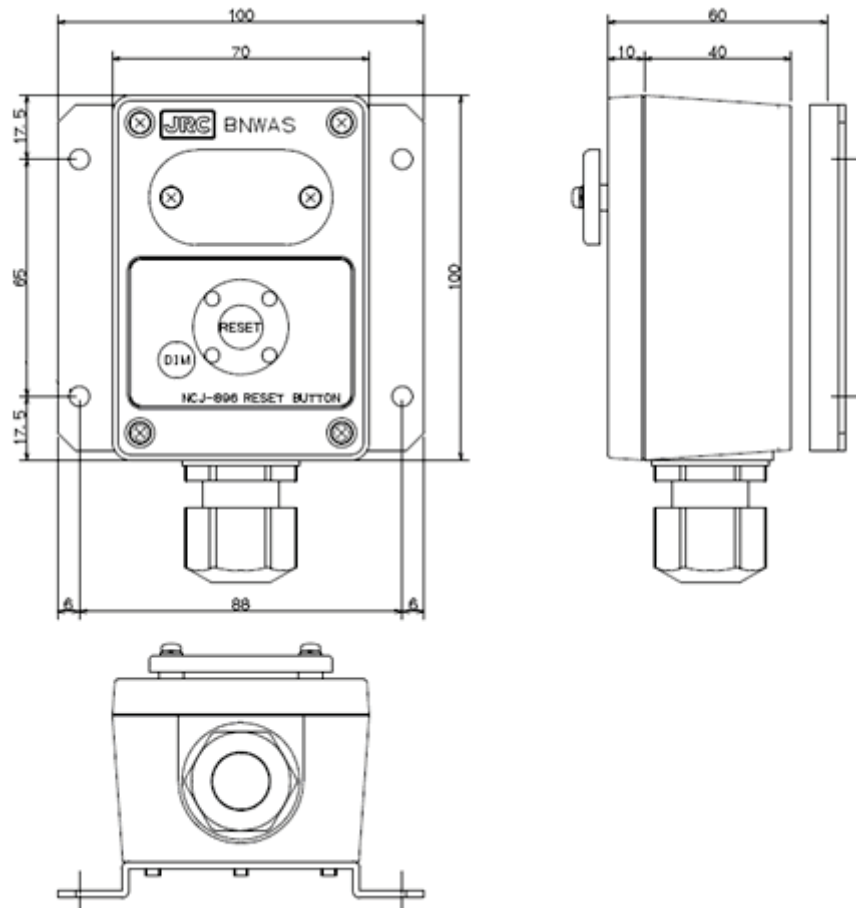
1.4.6 LED Warning lamp unit (NCD-2257) (Option)



COLOR	: N4 SEMI-GLOSS
MASS	: APPROX. 0.2 kg
IP SPEC	: IP22
UNIT	: mm
CATEGORY	: Protected

LED warning lamp unit (NCD-2257) Outline Dimensions

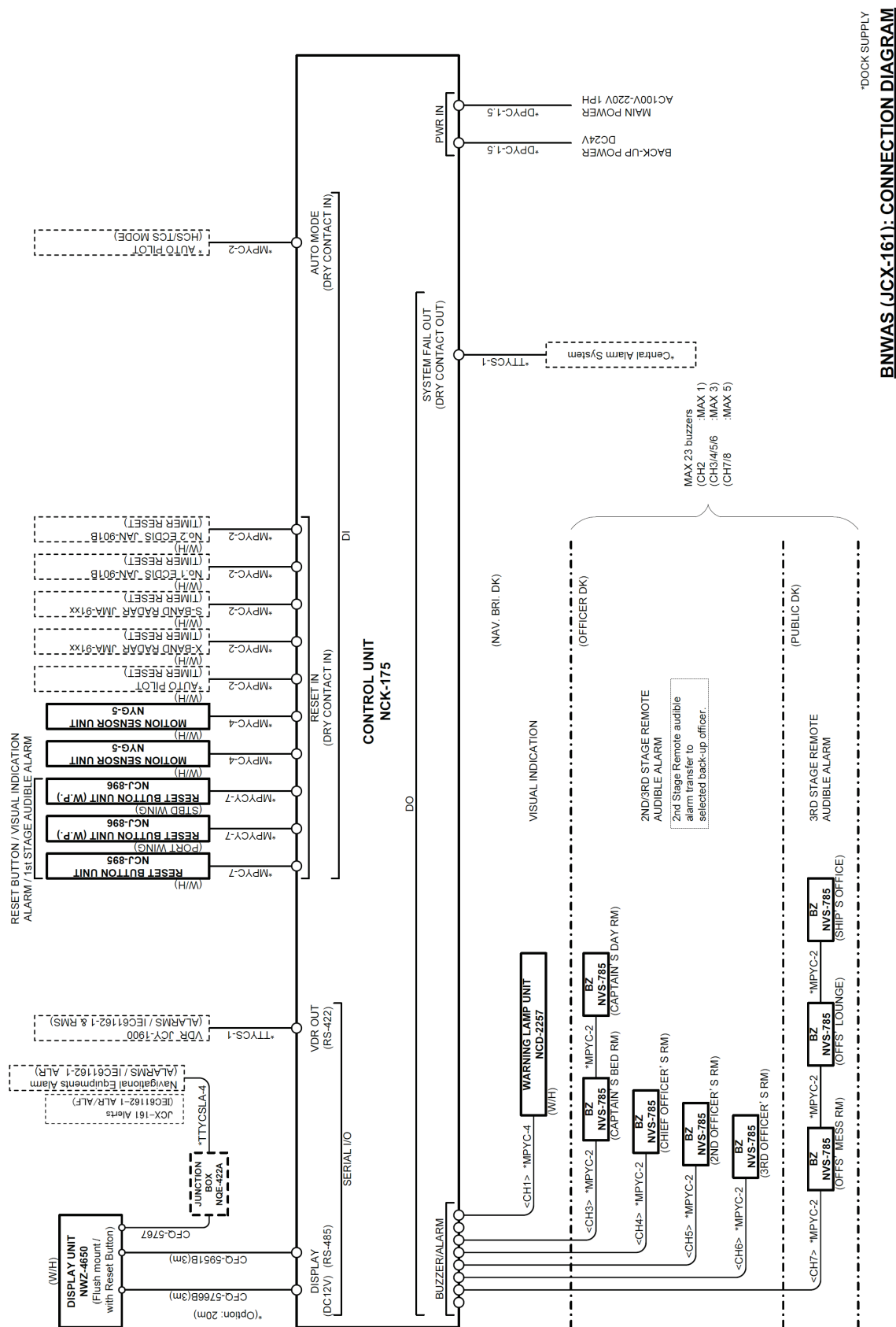
1.4.7 Reset button unit (Waterproof) (NCJ-896) (Option)



COLOR	: N4 SEMI-GLOSS
MASS	: APPROX. 0.5 kg
IP SPEC	: IP56
UNIT	: mm
CATEGORY	: Exposed

Reset button unit (Waterproof) (NCJ-896) Outline Dimensions

1.5 System diagram



Chapter 2 Names and Functions of System Components

2.1 Power switch and how to turn it on

The power source is distributed from the control unit (NCK-175) to each unit of the system, and there is no power source switch at any devices.

The power switch of the control unit is located in the chassis and using the high-voltage supply which is danger. Please do not open the cover except necessary cases.

- 1) How to open the top plate of the control unit (NCK-175)

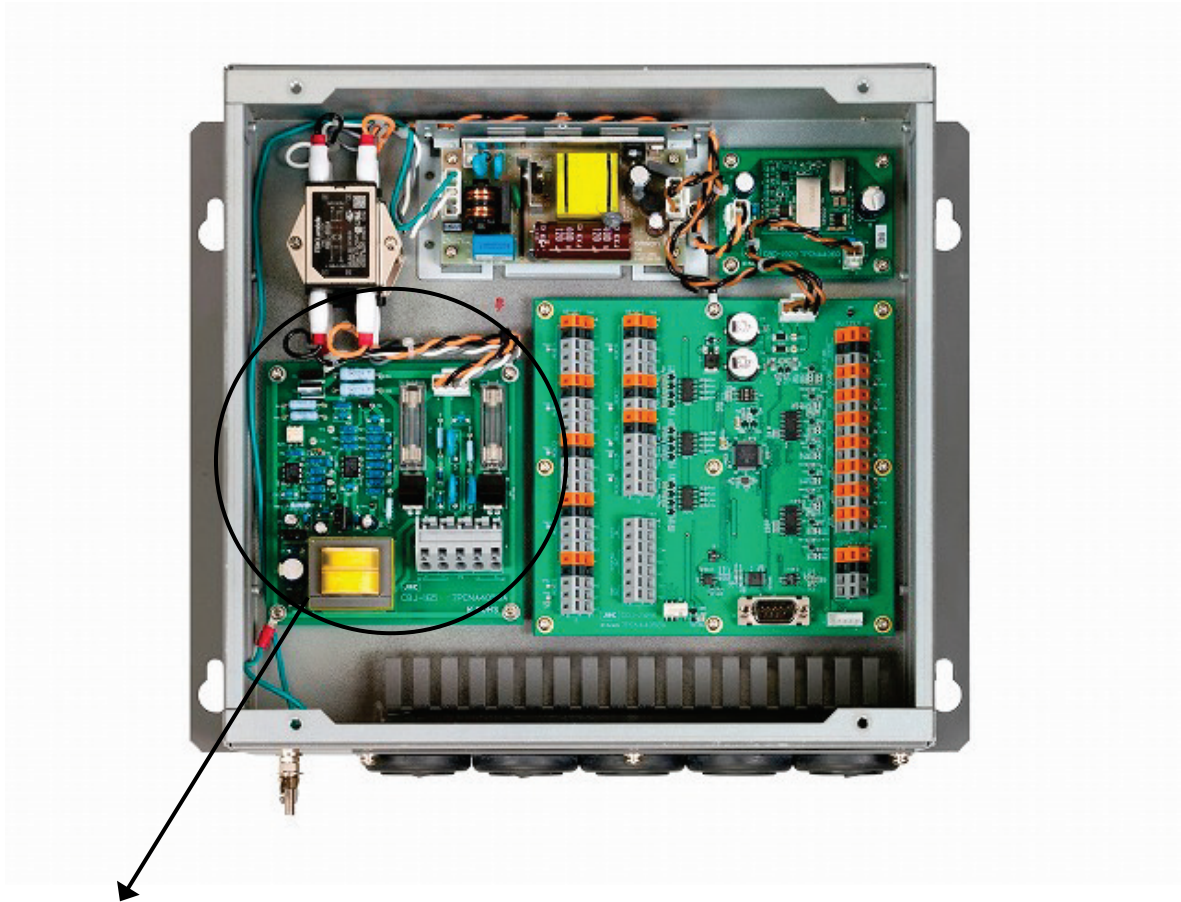
Loosen the screws (4 pieces) at the control unit.



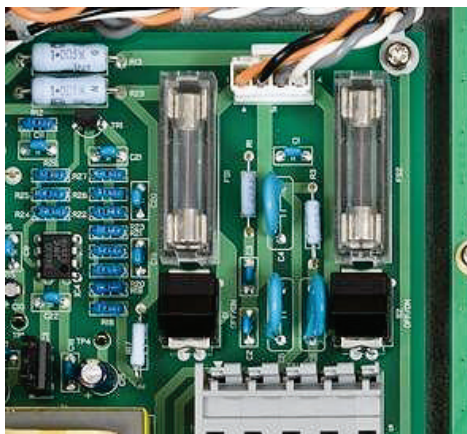
Since the cover can be separated, pull out the cover.

Chapter 2 Names and Functions of System Components

- 2) How to turn on the power.



In order to switch on the power, turn the AC switch and DC switch on.



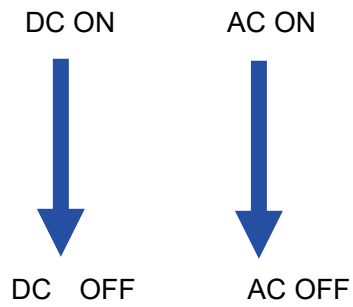
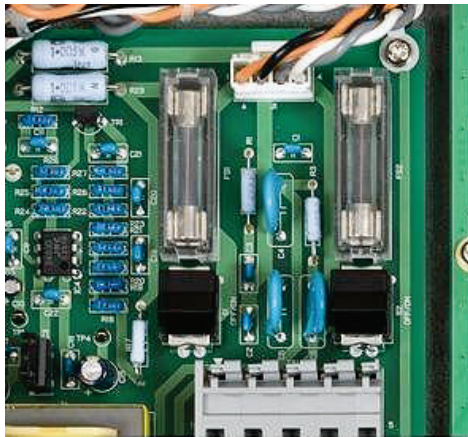
DC ON

AC ON

DC OFF

AC OFF

3) How to turn off the power



In order to turn off the power, turn the AC switch and DC switch off.

Chapter 2 Names and Functions of System Components

2.2 LCD Display unit (NWZ-4650)

The LCD display unit (NWZ-4650) can be operated variously with 9 buttons under the Liquid Crystal Display (LCD).

2.2.1 Mark and function of button



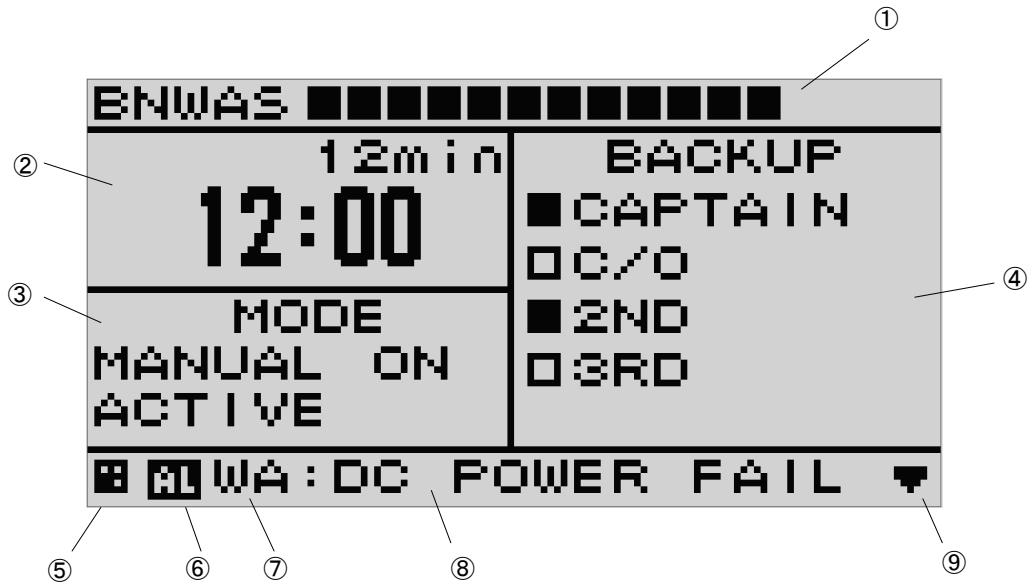
No.	Mark of button	Function of button
(1)		Contrast is adjusted.
(2)		Brightness is adjusted.
(3)		The menu mode for changing the settings etc is displayed.
(4)		The countdown screen is displayed.
(5)		Operation is canceled.
(6)		Cursor is moved.

Chapter 2 Names and Functions of System Components

No.	Mark of button	Function of button
(7)		Selections or settings are decided.
(8)		Sound of audible alarm units occurring system abnormality and bridge alarm is deactivated.
(9)		An emergency call is generated. Sound of all audible alarm units is activated.

Chapter 2 Names and Functions of System Components

2.2.2 Display and function of screen



No.	Display	Function
(1)	Countdown bar	The remaining dormant period is displayed with the bar graph.
(2)	Countdown timer	The remaining dormant period is displayed with numerical time value (min/s). Also setting time value for the dormant period is displayed in the upper part.
(3)	MODE	The current operation mode is displayed. When the power is turned on, it starts in "MANUAL ON" mode.
(4)	BACKUP OFFICER	The selected back-up officer is displayed with as ■ mark. A back-up officer's name can be changed with the setting.
(5)	System operation indicator	Rotating the system operation indicator is displayed that system is operating.
(6)	AL marker	AL marker (Alert marker) blink when alert occur and is not acknowledged. When alert is acknowledged, marker is turned on. When alert is cleared, marker is turned off. See section 3.6, 3.7 and 3.9 for more details of alerts.
(7)	priority, state	Indicates the priority and status of the highest priority alert. See section 9.2 Display alert

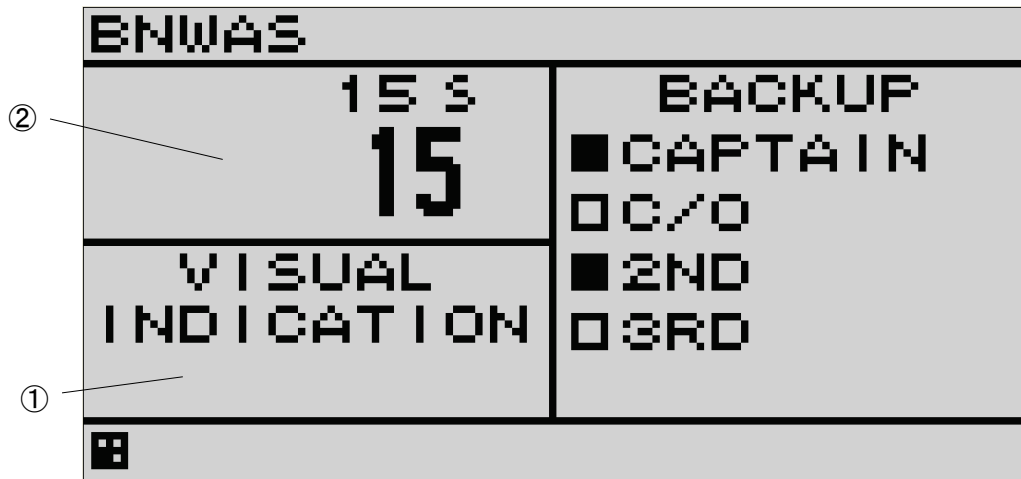
Chapter 2 Names and Functions of System Components

(8)	Highest priority alert	Displays the highest priority alert with its priority and status among those currently occurring. And when a new alert is generated, it will be displayed for few seconds.
(9)	additional alert mark	When there is an alert that is not displayed, ▼ will be displayed.

2.2.3 Display of each alarm stage

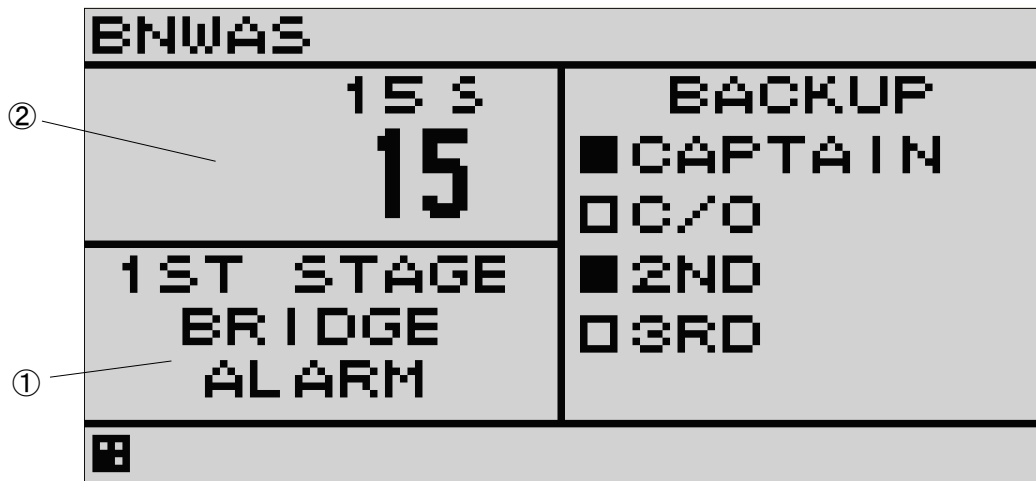
The display of the LCD screen is changes with the each alarm stage.
Also, the back light of the LCD lights up alternately with ORANGE and WHITE.

1) Display at visible indication



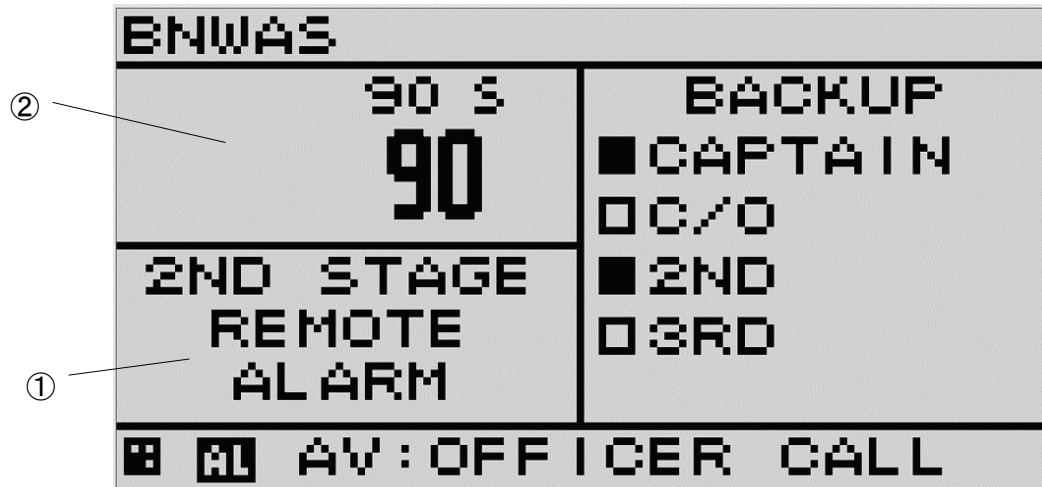
"VISUAL INDICATION" for meaning visual indication is displayed in ①, and remaining time is displayed at ② until the next alarm stage.

2) Display at First Stage Bridge audible alarm



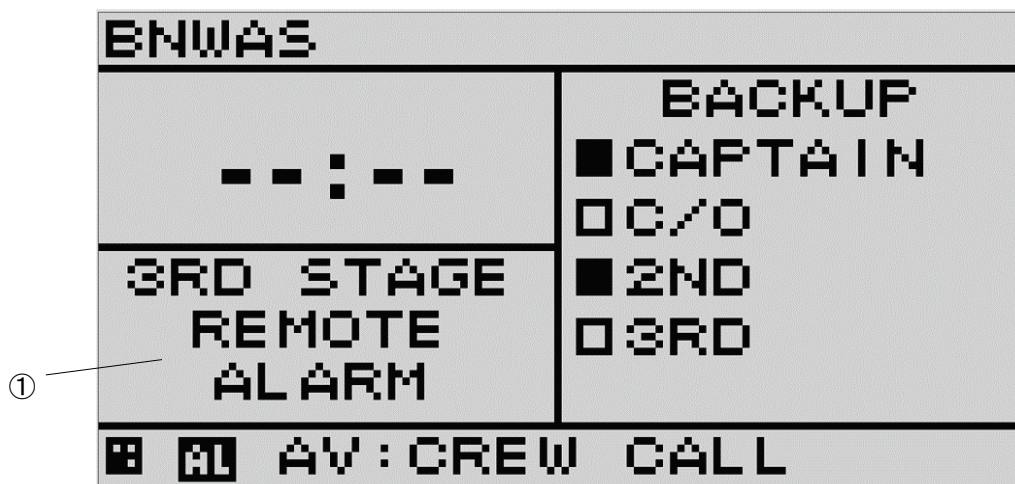
"1ST STAGE BRIDGE ALARM" for meaning the 1st Stage Bridge audible alarm is displayed in ①, and remaining time is displayed at ② until the next alarm stage.

3) Display at Second Stage Remote audible alarm



"2ND STAGE REMOTE ALARM" for meaning the 2nd Stage Remote audible alarm is displayed in ①, and remaining time is displayed at ② until the next alarm stage.

4) Display at Third Stage Remote audible alarm



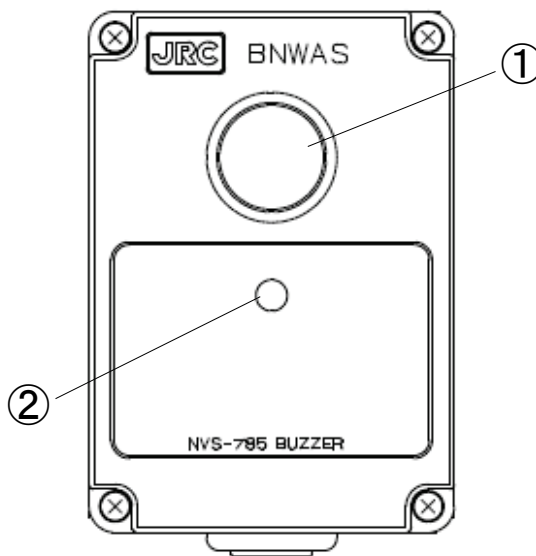
"3ND STAGE REMOTE ALARM" for meaning the 3rd Stage Remote audible alarm is displayed in ①.

Chapter 2 Names and Functions of System Components

2.3 Buzzer unit (NVS-785)

This outputs the audible signal for malfunction alerts, the 1st Stage Bridge audible alarm, the 2nd stage remote audible alarm and 3rd stage remote audible alarm from the control unit (NCK-175) by buzzer operation and LED illumination.

2.3.1 Names and functions of system components



No.	Name	Function
①	Buzzer (Audible alarm device)	This is sounded at the audible signal for the 1st Stage Bridge audible alarm, the 2nd stage remote audible alarm, 3rd stage remote audible alarm and malfunction alerts.
②	LED lamp	This is illuminated when the 1st Stage Bridge audible alarm, the 2nd stage remote audible alarm, the 3rd stage remote audible alarm and malfunction alerts is output. It remains off in normal state. The brightness cannot be adjusted at illuminating.

1) Audible alarm function of audible alarm buzzer

Normal state	Visual Indication	1st stage Bridge audible alarm	2nd stage remote audible alarm	3rd stage remote audible alarm	EMERGENCY CALL	Bridge Alarm	BAM EMERGENCY CALL	malfunction alerts
—	—	Sound/ Illuminated	Sound/ Illuminated	Sound/ Illuminated	Sound/ Illuminated	Sound/ Illuminated	Sound/ Illuminated	Sound/ Illuminated

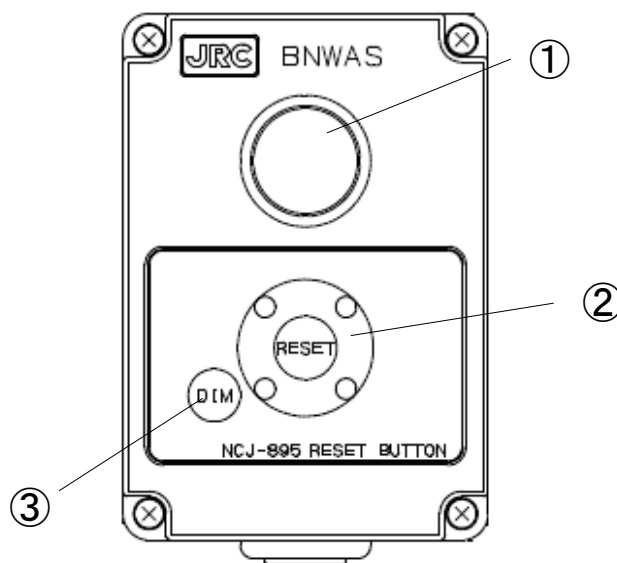
* The 2nd stage remote audible alarm operates only when it is set for the backup officer.

2.4 Reset button unit (NCJ-895)

The reset button unit NCJ-895 has the following five functions.

- 1) Report an end of the dormant period as a visual indication device.
- 2) Sound 1st stage bridge audible alarm and malfunction alerts.
- 3) Reset dormant periods as a reset device.
- 4) Stop visual indication and audible alarm.
- 5) Generate emergency call(Connect RESET1 terminal in NCK-175 only)

2.4.1 Names and functions of system components



No.	Name	Function
①	Buzzer (Audible alarm device)	This is sounded at the first stage audible alarm or the various alarms.
②	Reset button switch	This resets the dormant period, and stops the visual indication and the audible alarm. The LEDs around the reset button switch is illuminating in normal state and blinks after activated visual indication. When connect RESET1 terminal in NCK-175, 2 sec or more pushing generate emergency call.
③	DIMMER Button	This is the brightness control switch of the LED. When the button is pressed, brightness is changed to “-> bright -> medium -> dark -> bright” in the 3 steps.

Chapter 2 Names and Functions of System Components

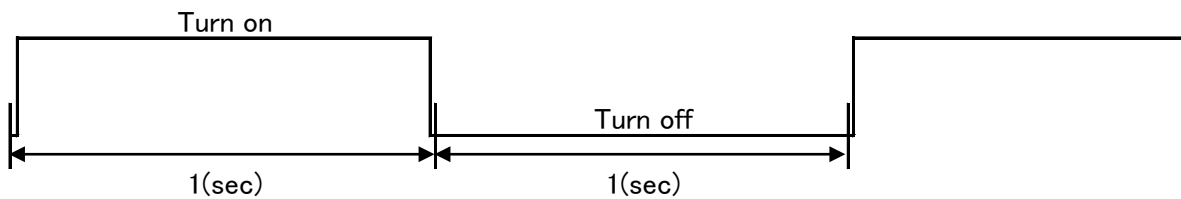
1) Visual indication function of reset button unit

Normal state	Visual Indication	1st stage Bridge audible alarm	2nd stage remote audible alarm	3rd stage remote audible alarm	EMERGENCY CALL	Bridge Alarm	BAM EMERGENCY CALL	malfunction alerts
Illuminated	Blinking	Blinking	Blinking	Blinking	Blinking	Blinking	Blinking	Blinking

The blink patterns change with alarm stages.

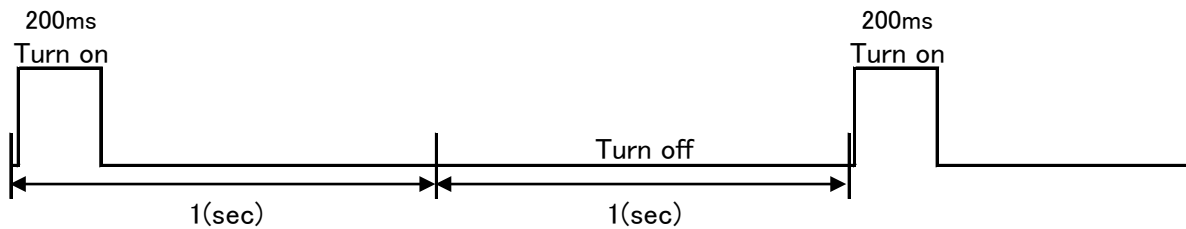
Blink pattern at visual indication

1 s turn on — 1 s turn off



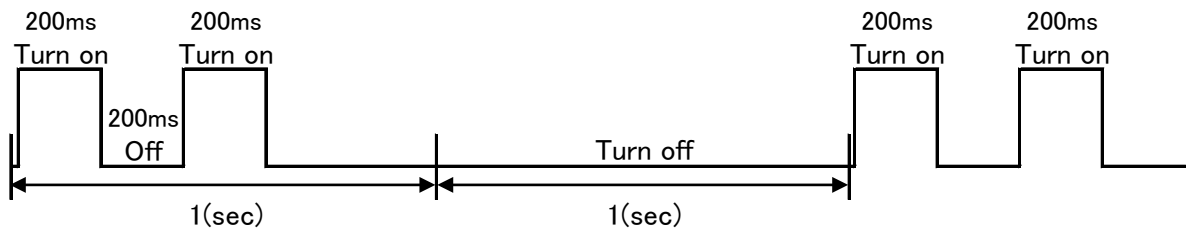
Blink pattern at first stage bridge audible alarm

1 time blink / 1 s — 1 s turn off



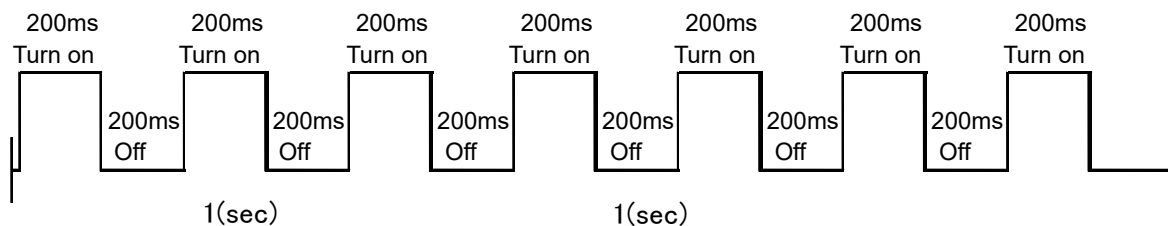
Blink pattern at second stage remote audible alarm

2 times blink / 1 s — 1 s turn off



Blink patterns at third remote audible alarm

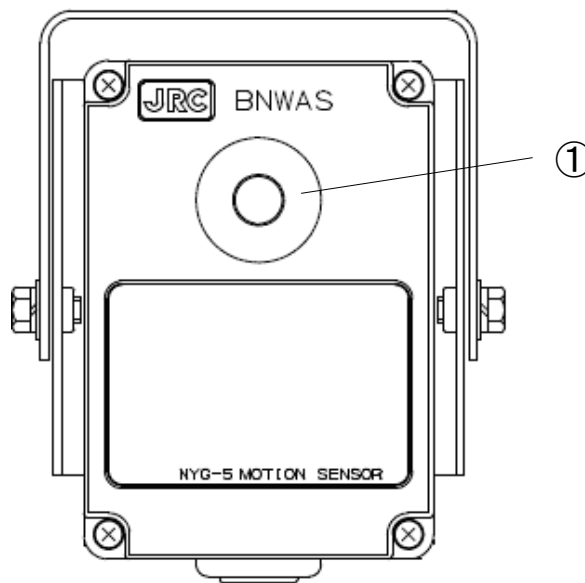
200 ms turn on — 200 ms turn off repeat



2.5 Motion sensor (NYG-5) (Option device)

The motion sensor uses the pyroelectric type infrared sensor and detects human motions by sensing the variation of infrared radiated from the human body, and resets the dormant period automatically.

2.5.1 Names and functions of system components



No.	Name	Function
①	Sensor	This is the sensing element. Do not cover this area.

1) Alarms that can be stopped

Visual Indication	1st stage Bridge audible alarm	2nd stage remote audible alarm	3rd stage remote audible alarm	Emergency Call	Bridge Alarm	BAM Emergency Call	Malfunction Alerts
○	○	×	×	×	×	×	×

○: Alarm can be stopped.

×: Alarm cannot be stopped

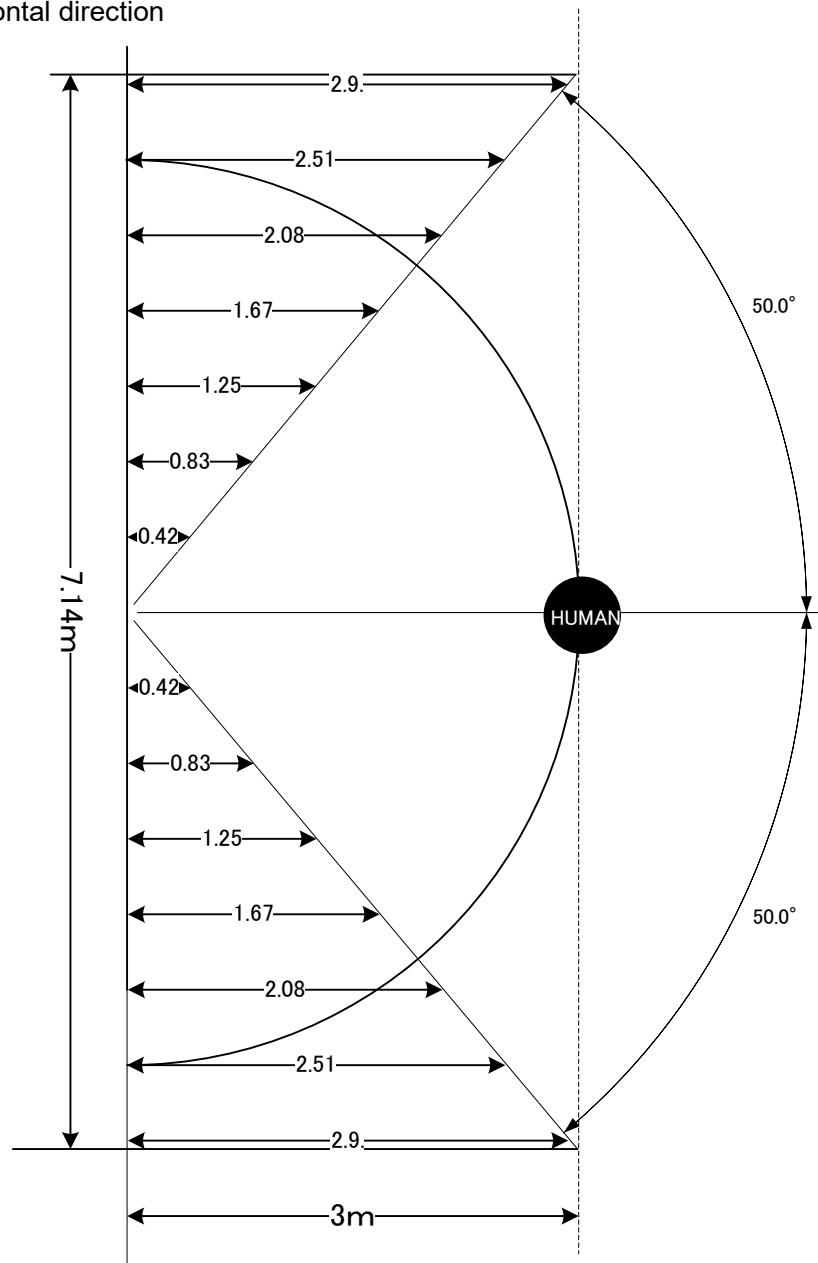
Chapter 2 Names and Functions of System Components

2) Specification of a motion sensor

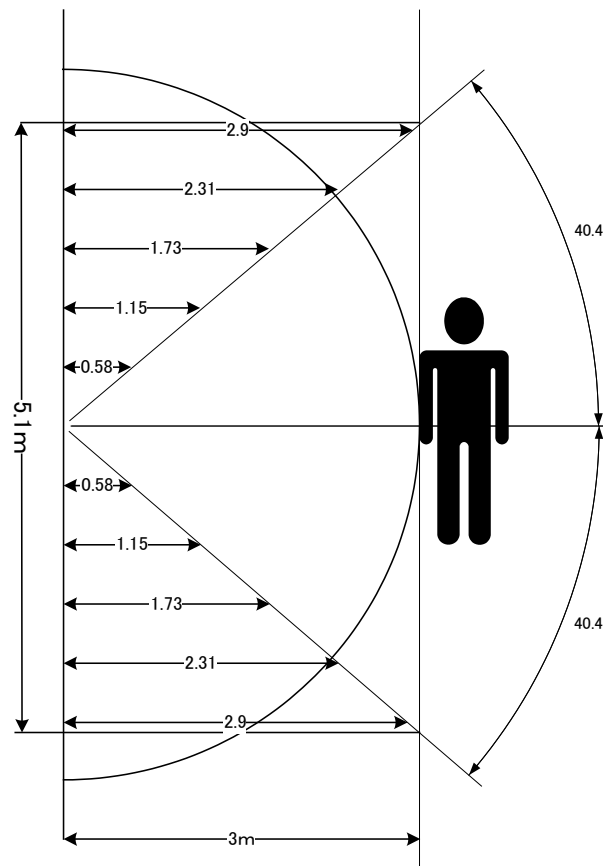
As below, the human body is detected in the range of vertical angle 81° to horizontal angle 100° , and an automatic reset is made when a person crosses (moves in) the detection zone.

This sensor must be set 2 to 4 meters away from the place where the crews perform regular works.

Horizontal direction



Vertical direction



The motion sensor reacts to infrared ray radiated from a human body. Therefore, it does not react to curtains but should not be located near a swaying incandescent lamp.

In addition, it must be noted that the sensor may react to small animals such as birds, dogs and cats because any living organism radiates infrared ray.

Do not install NYG-5 in the following rapid temperature change place. Also do not close the following heat radiating things to NYG-5:

- a) Sunlight or another light strikes the NYG-5 directly.
- b) Its installed place is above a heating appliance such as a stove, or blowing from or near a ventilation mouth of an air-conditioner.
- c) Something which causes a rapid temperature change is in detection range of NYG-5..
- d) There is swaying or moving thing (with especially a temperature change) near or in the detection range of NYG-5.
- e) 50cm or less from lighting
- f) Near radio antennas

And, once it perceives (reset), it will not be detected for about 3 seconds.

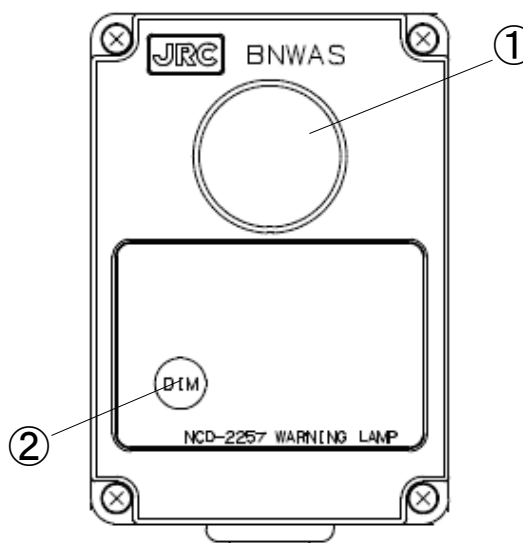
Chapter 2 Names and Functions of System Components

2.6 LED Warning lamp unit (NCD-2257) (Option device)

NCD-2257 is a lamp unit that reports a visual indication.

It remains off in normal state and blinks at the visual indication and alarm state.

2.6.1 Names and functions of system components



No.	Name	Function
①	LED lamp	Blinks after a visual indication occurs.
②	DIMMER Button	This is the dimmer adjust switch of the LED. When the button is pressed, brightness is changed to “-> bright -> medium -> dark -> bright” in the 3 steps. The LED lamp can be turned on with operating the LCD display unit. Refer to the chapter 3. 10 for its details.

1) Visual indication function of reset button switch

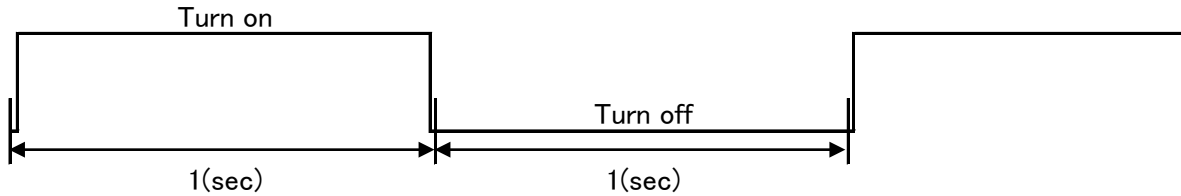
Normal state	Visual Indication	1st stage Bridge audible alarm	2nd stage remote audible alarm	3rd stage remote audible alarm	Emergency Call	Bridge Alarm	BAM Emergency Call	Malfunction Alerts
Off	Blinking	Blinking	Blinking	Blinking	Blinking	Blinking	Blinking	Blinking

Chapter 2 Names and Functions of System Components

The blink patterns change with alarm stages.

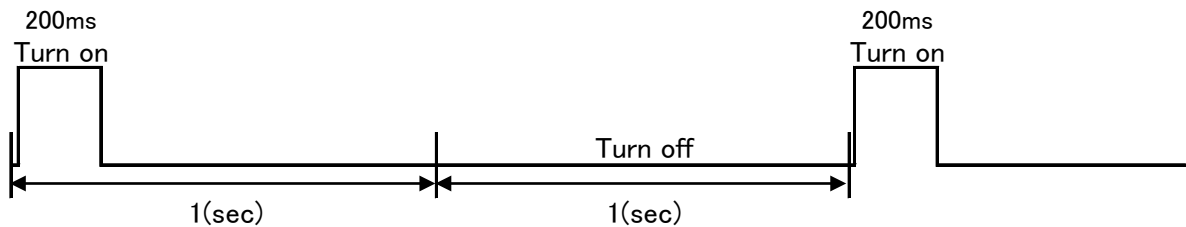
Blink pattern at visual indication

1 s turn on — 1 s turn off



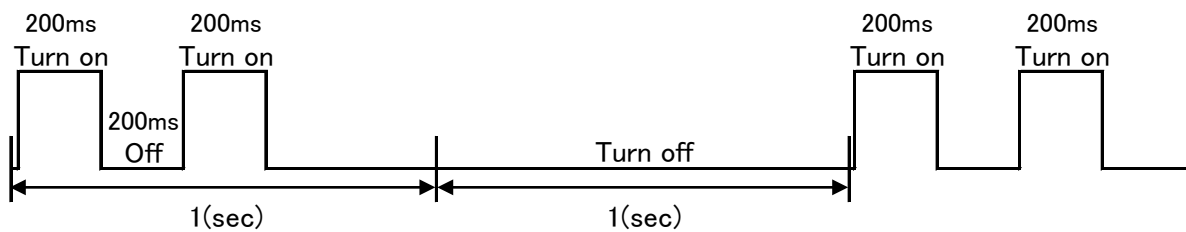
Blink pattern at first stage bridge audible alarm

1 time blink / 1 s — 1 s turn off



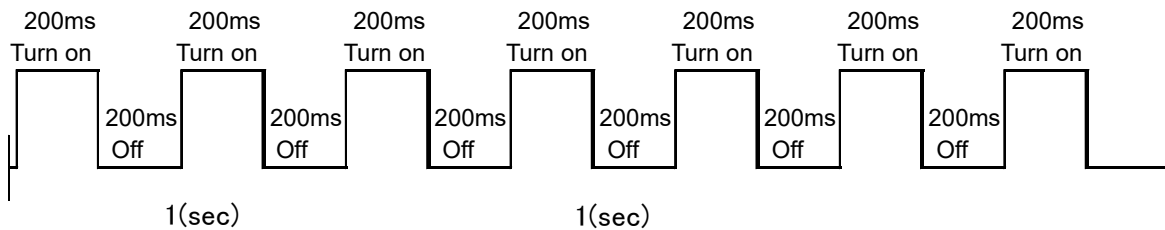
Blink pattern at second stage remote audible alarm

2 times blink / 1 s — 1 s turn off



Blink patterns at third remote audible alarm

200 ms turn on — 200 ms turn off repeat



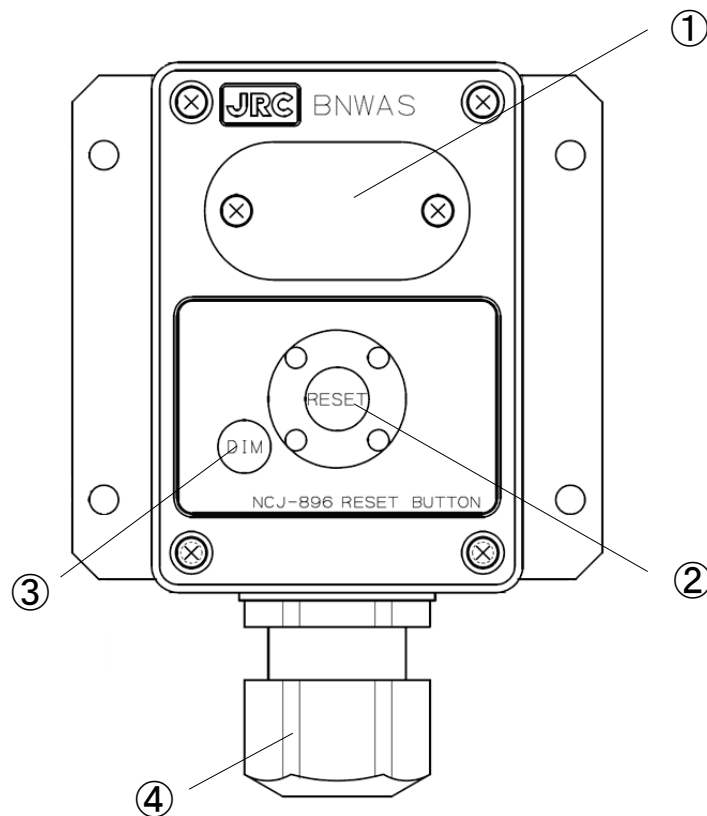
2.7 Reset button unit (Waterproof) (NCJ-896)

The reset button unit (waterproof) NCJ-896 has the following four functions.

- 1) Report an end of the dormant period as a visual indication devise.
- 2) Sound 1st stage bridge audible alarm and multifunction alerts.
- 3) Reset dormant periods as a reset device.
- 4) Stop visual indication and audible alarm.

Since it conforms to protection class IP56, it can install in the outdoors.

2.7.1 Names and functions of system components



Chapter 2 Names and Functions of System Components

No.	Name	Function
①	Buzzer (Audible alarm device)	This is sounded at the first stage bridge audible alarm or the various alarms.
②	Reset button switch	This resets the dormant period, and stops the visual indication and the audible alarm. The LEDs around the reset button switch is illuminating in normal state and blinks after activated visual indication.
③	DIMMER Button	This is the brightness control switch of the LED. When the button is pressed, brightness is changed to “-> bright -> medium -> dark -> bright” in the 3 steps.
④	Cable inlet	This is the cable inlet. It supports diameters from 13 to 18mm. Securely tighten it so that water cannot enter.

Chapter 2 Names and Functions of System Components

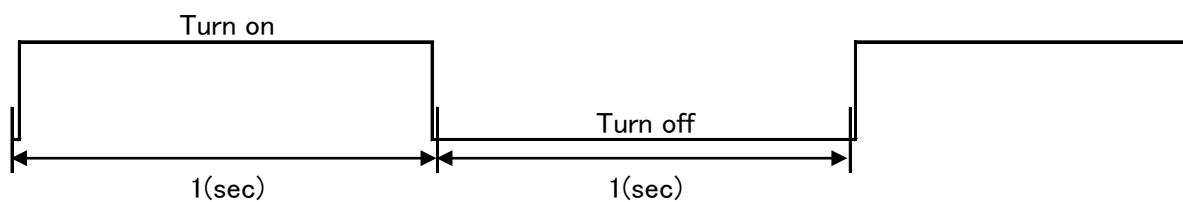
1) The visible display function of the reset button unit

Normal state	Visual Indication	1st stage Bridge audible alarm	2nd stage remote audible alarm	3rd stage remote audible alarm	Emergency Call	Bridge Alarm	BAM Emergency Call	Malfunction alerts
Illuminated	Blink	Blink	Blink	Blink	Blink	Blink	Blink	Blink

Blink patterns change with alarm stages.

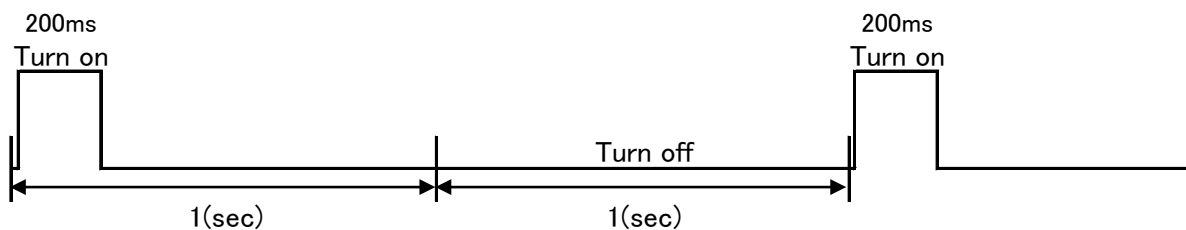
Blink pattern at visual indication

1 s turn on — 1 s turn off



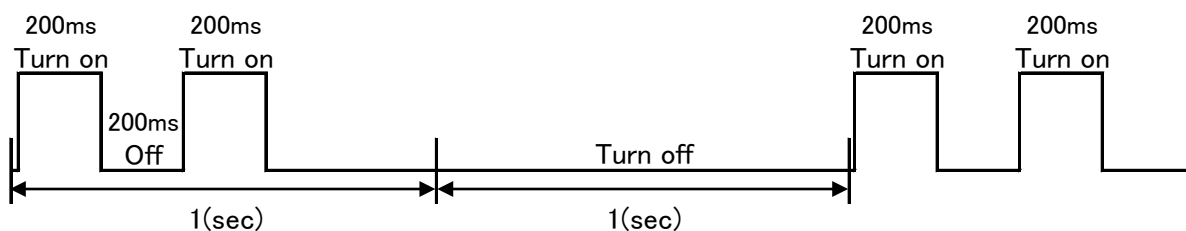
Blink pattern at first stage bridge audible alarm

1 time blink / 1 s — 1 s turn off



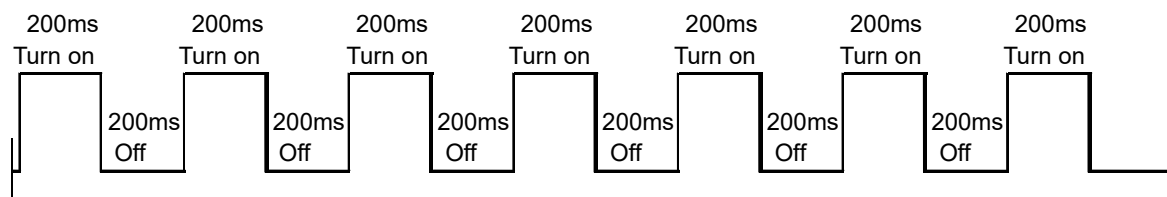
Blink pattern at second stage remote audible alarm

2 times blink / 1 s — 1 s turn off



Blink patterns at the time of the third remote audible alarm

200-millisecond lighting - Repetition of 200-millisecond putting out lights



Chapter 3 Operation

This chapter explains the operation procedure by the following composition.

The operation mode change, backup officer change, and time setting change are only allowed to the duty officer.

3.1 WATCH ALARM operation	34
3.2 Operation mode change	36
3.3 Resetting dormant period	38
3.4 Time setting	39
3.5 Backup officer setting	46
3.6 Alarm transfer from other navigational equipment	47
3.7 Emergency Call transfer from BAM or other navigational equipment	50
3.8 Operation of each call	51
3.9 Malfunction of system	53
3.10 Display of alarm history	55
3.11 Test of buzzer and LED warning lamp	56
3.12 Adjustment of LCD screen display	57

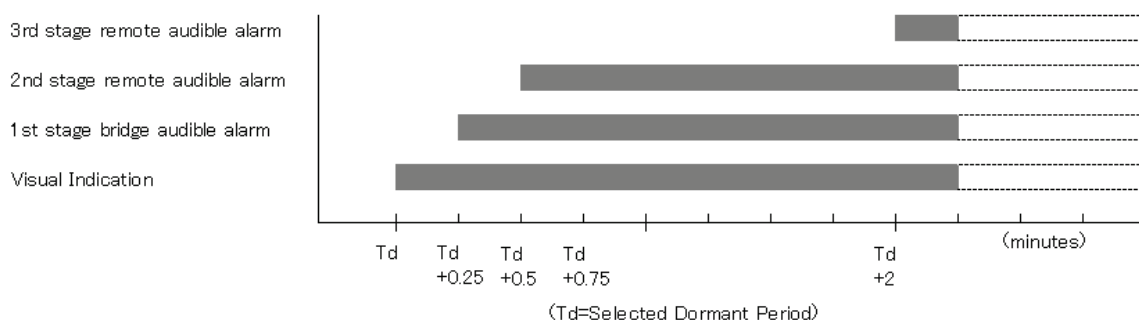
3.1 WATCH ALARM operation

If the reset function isn't activated before the end of the dormant period, alarms at each stage are activated as Visual indication, First stage bridge audible alarm, Second and third stage remote audible alarm.

3.1.1 Operation sequence of displays and alarms

Depending on the operation mode, the unit is activated and the dormant period countdown starts. When the countdown ends, the following displays and alarms are triggered.

- 1) Visual Indication
At the end of this dormant period, the alarm system initiates a visual indication on the bridge. The visible display is a blinking manner.
- 2) First Stage Bridge audible alarm (1st Stage Bridge audible alarm)
If not reset within 15 seconds since the visual indication is initiated, the BNWAS additionally sounds a 1st stage bridge audible alarm on the bridge.
- 3) Second Stage Remote audible alarm (2nd Stage Remote audible alarm)
If not reset within 15 seconds since the 1st stage bridge audible alarm is initiated, the BNWAS additionally sounds a 2nd stage remote audible alarm in the back-up officer's and/or Master's location.
- 4) Third Stage Remote audible alarm (3rd Stage Remote audible alarm)
If not reset within 90 seconds (which can be set 0s, or between 90 ~ 180s) since the 2nd stage remote audible alarm is initiated, the BNWAS additionally sounds a 3rd stage remote audible alarm at the locations of further crew members.



Alarm sequence without acknowledgements

3.1.2 Operation of each unit for every alarm

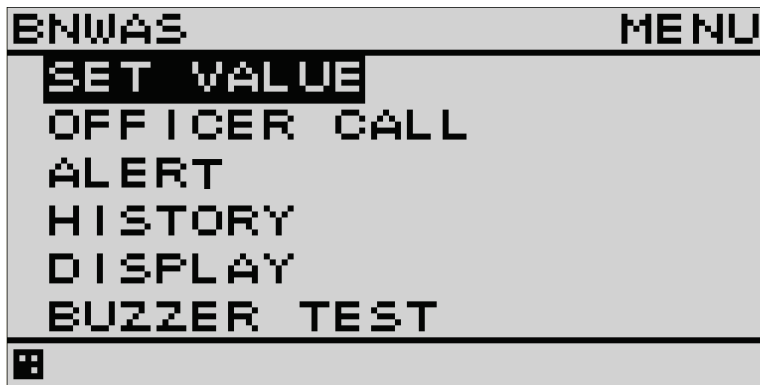
	Normal state	Visual Indication	1st stage Bridge audible alarm	2nd stage remote audible alarm	3rd stage remote audible alarm
Bridge (LCD display unit NWZ-4650)	Illuminated	Blinking	Blinking	Blinking	Blinking
Bridge (LED warning lamp unit NCD-2257)	-	Blinking	Blinking	Blinking	Blinking
Bridge (Reset button unit NCJ-895 / 896)	Illuminated	Blinking	Blinking/ Sounding	Blinking/ Sounding	Blinking/ Sounding
Backup Officer (Buzzer unit NVS-785)	-	-	-	Sounding	Sounding
Officer (Buzzer unit NVS-785)	-	-	-	-	Sounding
Public room (Buzzer unit NVS-785)	-	-	-	-	Sounding

3.2 Operation mode change

To change the operation mode, use the LCD Display unit.

3.2.1 Changing operation mode

- 1) Press , and then the menu mode is displayed.



- 2) Select [SET VALUE], and then press .



Press . Since it becomes a password input state, input your 4 digit password, and then press .

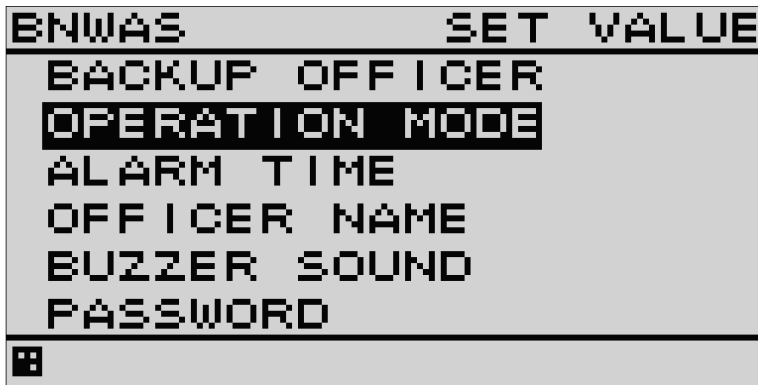
When your password is correct, the next menu screen is opened.

When your password is incorrect, "PASSWORD ERROR" is displayed, and then input your correct password again.

0000 as the default password is set.

- 3) Select a function from the menu.

Since the SET VALUE screen is displayed, select [OPERATION MODE] with , and then press .

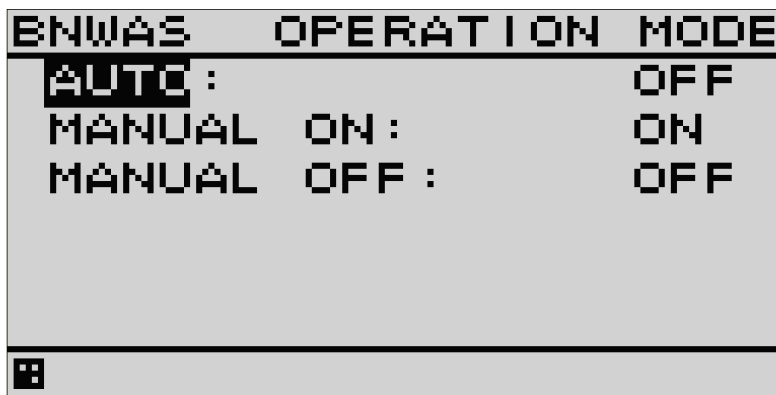


[OPERATION MODE SETTING] screen is displayed.

- 4) Select an operation mode.

Select your required operation mode with , and then press . Then the selected operation mode is turned to [ON].

When this setting change is canceled, press .



Multiple modes cannot be selected to [ON].

- 5) When press , It returns to the countdown screen and start operation with the changed setting.

Normally, operate in the [MANUAL ON] mode.

When power supply is turned on, it starts in the [MANUAL ON] mode.

A selected operation mode is not memorized.

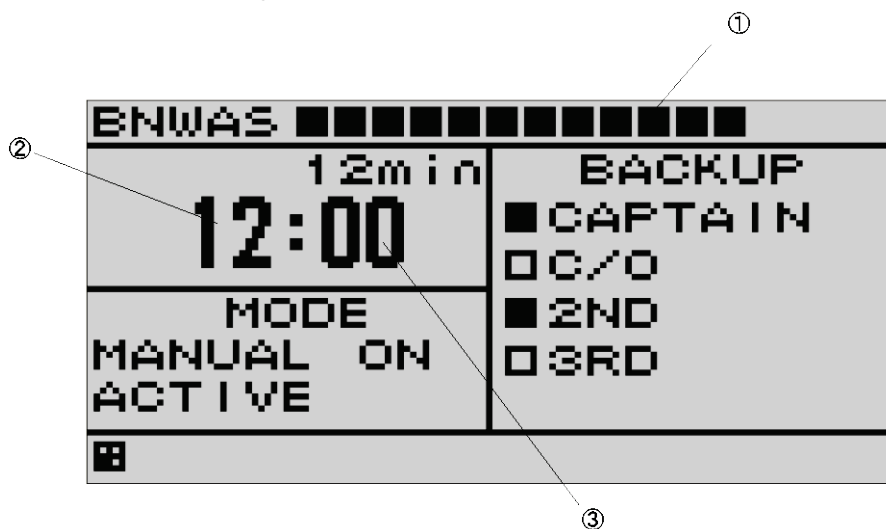
3.3 Resetting dormant period

The purpose of the bridge navigational watch alarm system (BNWAS) is to monitor the operator motions in the bridge and detect any behavior disorder.

By doing the reset operation in dormant period, this system judge that the operator is normal.

3.3.1 Checking dormant period

The dormant period is displayed with a numerical value (minutes/seconds) of the countdown timer and a bar graph of the countdown bar on the LCD display unit (NWZ-4650). ① is bar graph, of which one piece corresponds in 1 minute. A value of ② displays with minute, ③ displays with second. Before the dormant period will be 0 minute and 0 second (00:00), perform a one method of the following reset operations.



3.3.2 Reset operation

The reset operation, the following three methods are available.

- 1) Using push-button
Press any button of LCD display unit (NWZ-4650), or press a reset button switch of the reset button units (NCJ-895) or the reset button unit (Waterproof) (NCJ-896).
- 2) Automatic resetting with the motion sensor
With the motion sensor reset device (NYG-5), it is possible to reset the dormant period automatically by detecting human actions with infrared rays coming from its human bodies.
- 3) Resetting with the operation signals from other navigation equipment
It is possible to reset by inputting the operation signals (contact signal or NMEA sentences) from other navigation equipment such as RADAR, ECDIS and so on.
However, BNWAS whose software version is after V1.01 does not reset on and after 2nd stage alarm. If track balls of ECDIS / MFD are moved a little, EVE sentences may output and BNWAS reset the timer. In spite of ship crew confirmation not done, BNWAS have possibility to reset the timer. New software version BNWAS resets before 2nd stage alarm

as before version software.

The input NMEA sentences correspond with the EVE sentences.

The tag code has to be set as "BNWAS", and the event description part has to be set as "Operator activity".

Sample: \$XXEVE,,BNWAS,Operator activity*hh<CR><LF>

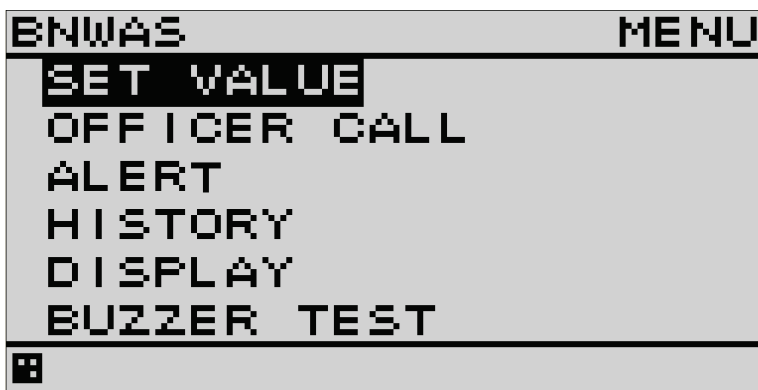
3.4 Time setting

This system can change the following the time settings.

- Setting of the dormant period
From 3 minutes to 12 minutes
- Third stage remote audible alarm transfer delay time
Alarm transfer delay time between 2nd stage remote audible alarm and 3rd stage remote audible alarm
0 second, or a desired value from 90 seconds to 180 seconds
- Bridge alarm transfer delay time
From 0 to 30 seconds

3.4.1 Call of menu mode screen

- 1) Press .
- 2) Select [SET VALUE], and then press .



- 3) Password Input



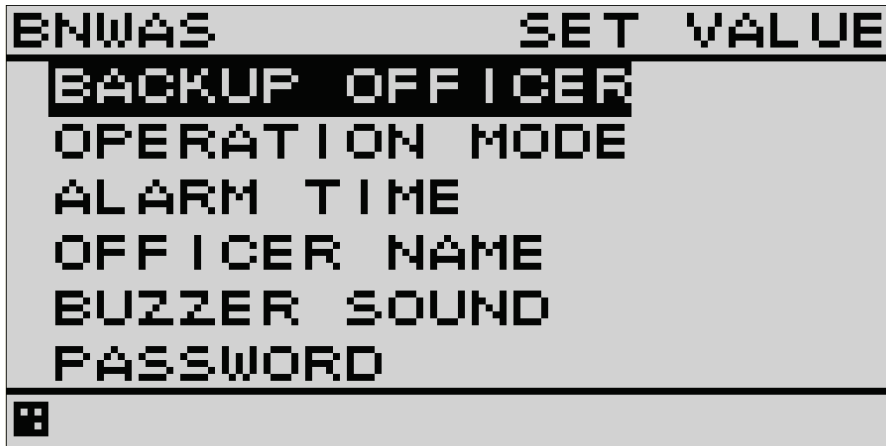
Chapter 3 Operation

Press . Since it become a password input state, input your 4 digit password, and then press .

When your password is correct, the next SET VALUE screen is opened.

When your password is incorrect, "PASS WORD ERROR" is displayed, and then input your correct password again.

0000 as the default password is set.



3.4.2 Changing dormant period setting

- 1) Call the SET VALUE screen in according to the procedure of the section "3.4.1 Call of menu mode screen" .
- 2) Select [ALARM TIME], and then press .

[ALARM TIME] screen is displayed.

- 3) Select [INTERVAL] with , and then press .



- 4) Change the dormant period.
Select your required dormant period with , and then press .
When this setting change is canceled, press .
A dormant period can be set from 3 minutes to 12 minutes.

- 5) When press , it returns to the countdown screen and start operation with the changed setting.

3.4.3 Changing third stage remote audible alarm transfer time

- 1) Call the SET VALUE screen in according to the procedure of the section “3.4.1 Call of menu mode screen” .
- 2) Select [ALARM TIME], and then press  .
[ALARM TIME] screen is displayed.
- 3) Select [3RD STAGE] with , and then press .

BNWAS		ALARM TIME	
INTERVAL :		3	min
3RD STAGE :		90	s
BRIDGE :		0	s

- 4) Change the 3rd stage remote audible alarm transfer delay time.
Select your required transfer delay time with , and then press  .
When this setting change is canceled, press  .
A transfer delay time can be set to 0 s, 90 s, 100 s, ---, 180 s.
When setting to 0 second, the 2nd stage remote audible alarm and the 3rd stage remote audible alarm are outputted simultaneously.

At passenger ship, do not set to 0 second.

- 5) Press  .
When this setting change is canceled, press .
- 6) When press , it returns to the countdown screen and start operation with the changed setting.

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3.4.4 Setting of bridge alarm transfer delay time

When an alarm is received from other navigational equipment, the bridge alarm transfer delay time is to set a delay time to transfer until the 2nd stage remote audible alarm.

- 1) Call the SET VALUE screen in according to the procedure of the section “3.4.1 Call of menu mode screen” .
- 2) Select [ALARM TIME], and then press  .
[ALARM TIME] screen is displayed.
- 3) Select [BRIDGE] with  , and then press .

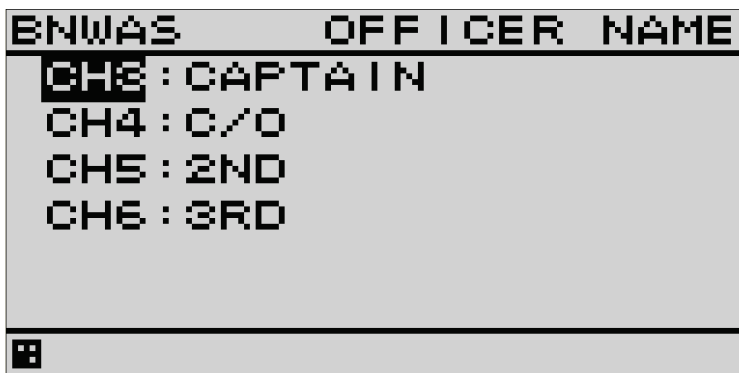


- 4) Change the bridge alarm transfer delay time.
Select your required the transfer delay time with , and then press  .
When this setting change is canceled, press  .
A delay time can be set from 0 s to 30 s.
- 5) When press , it returns to the countdown screen and start operation with the changed setting.

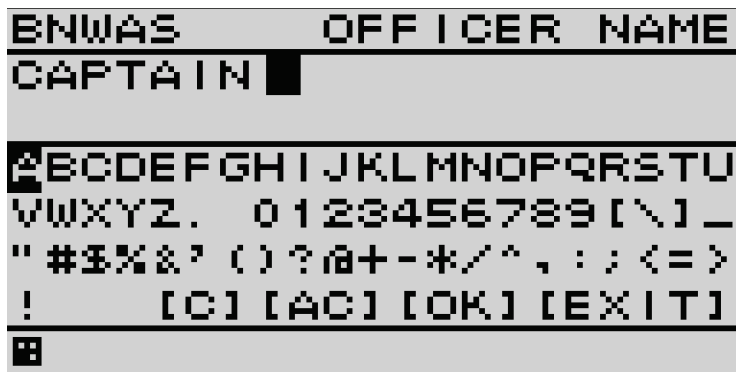
3.4.5 Changing backup officer name

Backup officer names displayed on the countdown screen can be changed.

- 1) Call the SET VALUE screen in according to the procedure of the section “3.4.1 Call of menu mode screen” .
- 2) Select [OFFICER NAME], and then press  .
[OFFICER NAME] screen is displayed.



- 3) Select an officer name for edit, and the press  .
The officer name edit screen is displayed.



- 4) Select one desirable character with , and then press  .
[C] deletes one character, [AC] deletes all characters, [OK] ends this edit, and [EXIT] cancels this edit.
Also  deletes one character.
- 5) When finished the edit, select [OK], and then press  .
Then edited character string is reflected. When edit is canceled, select [EXIT], and then press  .

Chapter 3 Operation

3.4.6 Changing buzzer sound

The buzzer sound can be set to the continuous sound or the intermittent sounds. This setting is applied to all the buzzers.

- 1) Call the SET VALUE screen in according to the procedure of the section “3.4.1 Call of menu mode screen” .
- 2) Select [BUZZER SOUND], and then press  .
[BUZZER SOUND] screen is displayed.
- 3) Select [CONTINUOUS], and then press  .



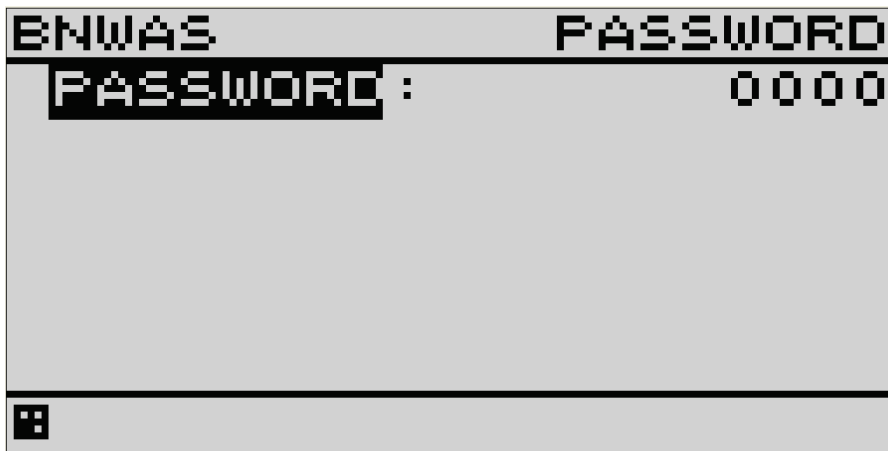
- 4) Select the continuous sound or intermittent sound.
Select ON or OFF with  , and then press  .
When this setting change is canceled, press  .
When selected to ON, the buzzers are set to the continuous sound. When selected to OFF, they are set to the intermittent sound.
- 5) When press  , it returns to the countdown screen and start operation with the changed setting.

3.4.7 Changing password

The present password can be changed.

The default password is 0000. When using the system, make sure to change the password.

- 1) Call the SET VALUE screen in according to the procedure of the section “3.4.1 Call of menu mode screen” .
- 2) Select [PASSWORD], and then press  .
[PASSWORD] screen is displayed.



- 3) Input the new password.
Press , and then input the new 4 digit password.
After inputted the new password, press  again, then its password is changed to the new password.
When this setting change is canceled, press  .
"0000" cannot be set to a password.

3.5 Backup officer setting

This section describes how to set the backup officer.

The buzzer, which is set to the backup officer, is activated when the 2nd stage remote audible alarm is initiated.

3.5.1 Setting backup officer

- 1) Call the SET VALUE screen in according to the procedure of the section “3.4.1 Call of menu mode screen” .
- 2) Select [BACKUP OFFICER], and then press  .
- 3) Select the backup officer.
Since [BACKUP OFFICER] screen is displayed, select the changing officer with  , and then press  .

BNWAS BACKUP OFFICER		
CH3 : CAPTAIN	ON	
CH4 : C/O	ON	
CH5 : 2ND	ON	
CH6 : 3RD	ON	



- 4) Select ON or OFF.
Select ON or OFF with  , and then press  .
When this setting change is canceled, press  .

The officer who is not connected is not displayed.

It is necessary to make at least one person's officer backup.

When selected to ON, the buzzers are set to the continuous sound. When selected to OFF, they are set to the discontinuous sound.

- 5) When press  , it returns to the countdown screen and start operation with the changed setting.

3.6 Alarm transfer from other navigational equipment

When this system is received an alarm signal from other navigational equipment such as radar and ECDIS, further in case its acknowledgment (ACK) operation is not performed in the specified time, its alarm is transferred to a 2nd and a 3rd stage remote audible alarms.

Since transfer of alarms requires connections and settings to other navigational equipment, request to Japan Radio Co., Ltd (JRC) sales department, a nearby branch office, business office, or JRC agent.

3.6.1 Outline

The following are explanation for the outline of the alarm transfer. The each number of ")" for the following items corresponds with the one in the right figure.

- 1) If an alarm is activated with other navigational equipment, the alarm signal is transmitted to the BNWAS.

- 2) An alarm (buzzer sound) sounds from the reset button units / reset button unit (waterproof) of BNWAS.

- 3) When a confirmation (ACK) operation is performed with the navigational equipment, an ACK signal is transmitted to the BNWAS.

- 4) When BNWAS receives the ACK signal of the navigational equipment, the buzzer sound is stopped, and it is not transferred to a 2nd and a 3rd stage remote audible alarms.

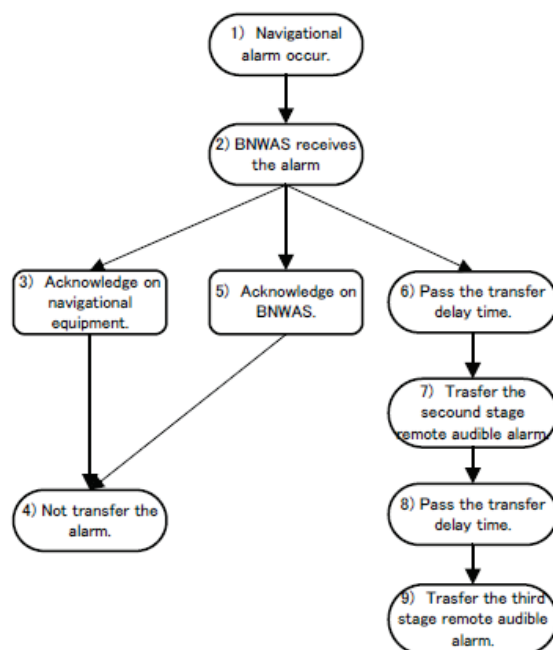
- 5) When the buzzer sound stopping operation is performed by the BNWAS, the sound of the BNWAS is stopped. Select ALERT from MENU, alarm contents are displayed on the LCD screen. Select the alarm and press **ENT**, then the ACK signal is sent to the navigational equipment. Since the alarm has been confirmed, it is not transferred to a 2nd and a 3rd stage remote audible alarms.

- 6) When the ACK operation is not performed with the BNWAS or the navigation equipment, and in case its time has reached to the bridge alarm transfer delay time, it is transferred to a 2nd stage remote audible alarm.

- 7) When the buzzer stopping operation is performed while the 2nd stage remote audible alarm is sounding, the buzzer sound in the bridge and the 2nd stage remote audible alarms are stopped. After the stop operation, in case the ACK operation is performed, it is not transferred to a 3rd stage remote audible alarm.

- 8) After sounding the 2nd stage remote audible alarm, in case its time reaches to the 3rd stage remote audible alarm transfer delay time without performed the ACK operation, it is transferred to a 3rd stage remote audible alarm.

- 9) When the buzzer stopping (ACK) operation is performed while the 3rd stage remote audible alarm is sounding, the buzzer sound in the bridge and the 2nd and the 3rd stage remote audible alarms are stopped.



3.6.2 Stopping (ACK) operation of alarm sound

- 1) Press  on the LCD display unit (NWZ-4650).
The alarm (buzzer) sound is stopped.
Select ALERT from MENU and press , alarm contents are displayed in the screen, confirm its contents.
When alarms are registered, they are displayed on two or more pages, therefore press  in order to change the pages.

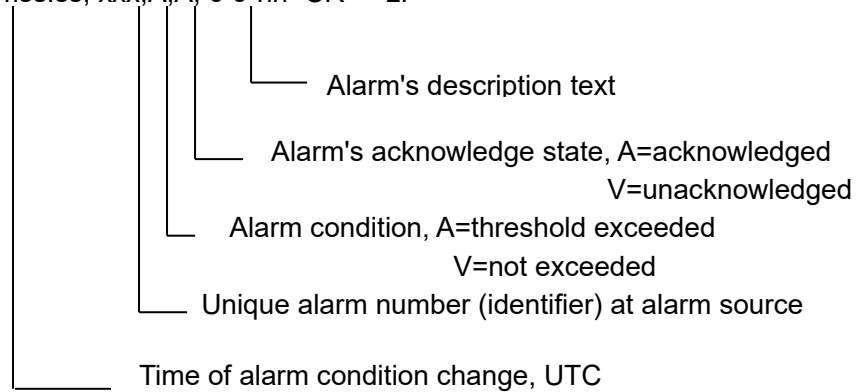


- 2) Select an alarm content with , and then press , then its alarm display is changed from blinking to lighting and simultaneously ACK signal is send back to the navigational equipment.

3.6.3 Alarm Input

Alarms from other navigational equipment can be inputted via NMEA sentences. It conforms to IEC61162-1 ALR sentences.

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



Chapter 3 Operation

3.7 Emergency Call transfer from BAM or other navigational equipment

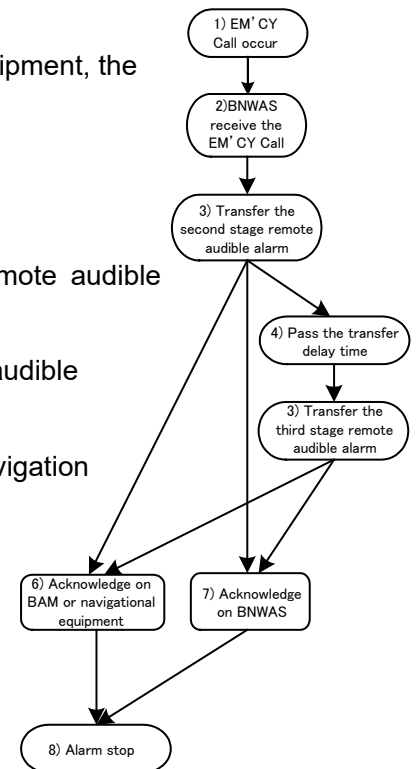
When this system is received an Emergency Call signal from BAM or other navigational equipment, it is transferred to a 2nd and a 3rd stage remote audible alarms.

Since transfer of Emergency Call are requires connections and settings to other navigational equipment, request to Japan Radio Co., Ltd (JRC) sales department, a nearby branch office, business office, or JRC agent.

3.7.1 Outline

The following are explanation for the outline of the Emergency Call transfer. The each number of ")" for the following items corresponds with the one in the right figure.

- 1) If an Emergency Call activated with BAM or other navigational equipment, the alarm signal is transmitted to the BNWAS.
- 2) BNWAS receive the signal.
- 3) Immediately, second stage remote audible alarms are generated.
- 4) Until the alarm transfer delay time is passed, second stage remote audible alarms are continued.
- 5) When the alarm transfer delay time is passed, third stage remote audible alarms are generated.
- 6) While 3)-5), the ACK operation is performed on the BAM or the navigation equipment, alarms are stopped.
- 7) Also, the ACK operation is performed on the BNWAS, alarm is stopped.(Refer to 3.6 for more details of ACK from BNWAS)
- 8) After the alarms are stopped, BNWAS return to normal operation.



3.7.2 Emergency Call input

Emergency Call from BAM or other navigational equipment can be inputted via NMEA sentences. It conforms to IEC61162-1 ALR sentences. In case of unique alarm number of ALR sentence is 260, Emergency Call is generated.

3.8 Operation of each call

This system has the following two call functions.

(1) EMERGENCY CALL

(2) OFFICER CALL

3.8.1 EMERGENCY CALL

At an emergency call, all audible alarm devices (buzzers) are sounded.

1) Execution of EMERGENCY CALL

Press  of LCD display unit (NWZ-4650) for 2 seconds or more. Or press the button for 2 seconds or more, which is allocated for emergency calls on the reset button units (NJC-895).

During an emergency call, the LCD screen display is as follows:



2) Stop method

Press .

3.8.2 OFFICER CALL

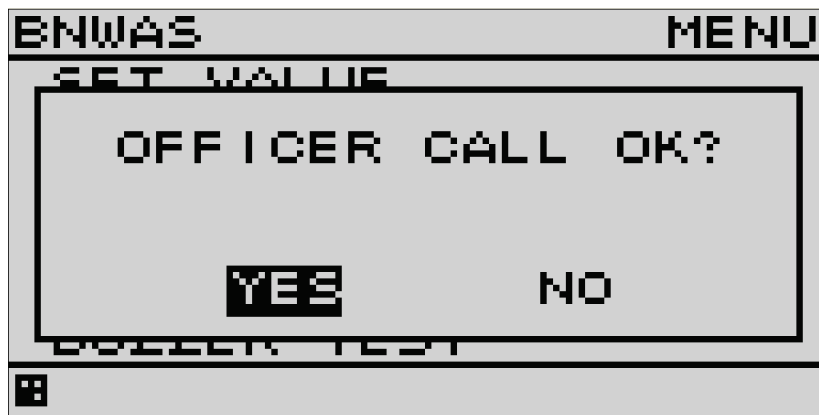
The officer set to the back-up is called with the buzzer unit's sound. It is the same places as the 2nd stage remote audible alarm. It does not transfer to the 3rd stage remote audible alarm.

1) Execution of OFFICER CALL

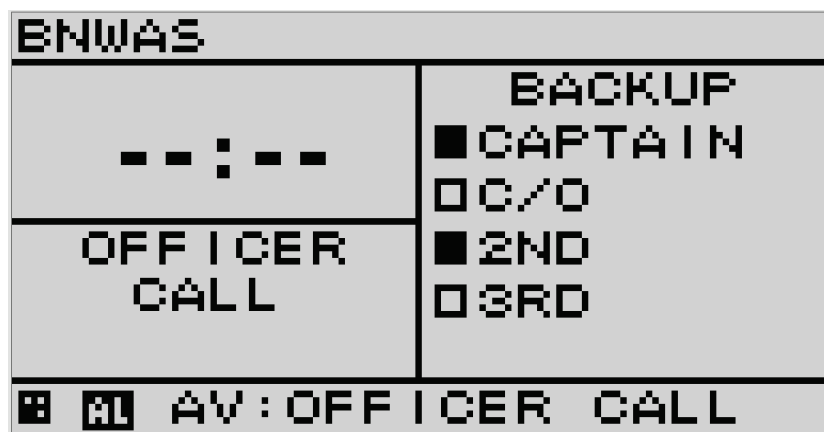
Press  on the LCD display unit (NWZ-4650).

Select [OFFICER CALL], and then press .

Since pop-up of "OFFICER CALL OK?" is displayed, select "YES" in case of execution, select "NO" in case of cancel, and then press .



During an officer call, the LCD screen display is as follows:



2) Stop method

Press .

3.9 Malfunction of system

If any problem occurs with the system, an alert is generated and the LCD screen on the LCD display unit (NWZ-4650) is displayed alert information and an alarm is generated that the warning audible alarm in the bridge and the backup officer. Its signal is not transferred to the 3rd stage remote audible alarm.

3.9.1 Display and cancel of alarm

If any problem occurs with the system, the LCD screen on the LCD display unit (NWZ-4650) is displayed the following contents and AL marker of the bottom in the screen blinks. An audible alarm (buzzer) from the reset button units and the reset button unit (waterproof) is sounded. In case of stopping the audible alarm, press , and then the audible alarm is stopped.

See section 9.2 Display alert.

- 1) When AC power is not supplied

BNWAS	
-- : --	BACKUP
AC FAIL	■ CAPTAIN
WARNING.V	□ CO/O
	■ 2ND
	□ 3RD
■ ■ WV: AC POWER FAIL	

- 2) When DC power is not supplied

BNWAS	
-- : --	BACKUP
DC FAIL	■ CAPTAIN
WARNING.V	□ CO/O
	■ 2ND
	□ 3RD
■ ■ WV: DC POWER FAIL	

Chapter 3 Operation

3) When a communication line is disconnected

When a communication error is detected between the LCD display unit (NWZ-4650) and the control unit (NCK-175), [COMM ERROR] is displayed. Also when HBT communication error is detected between LCD display unit and BAM or other navigational unit, [COMM ERROR] is displayed.

BNWAS	
-- : --	BACKUP ☒ CAPTAIN ☐ CO/O ☒ 2ND ☐ 3RD
COMM ERROR WARNING, V	
☒ ☒ WV: CONTROL - UNIT	

BNWAS	
-- : --	BACKUP ☒ CAPTAIN ☐ CO/O ☒ 2ND ☐ 3RD
COMM ERROR WARNING, V	
☒ ☒ WV: HBT FAIL	

4) When an abnormality of the system is detected

When the following abnormalities are detected, [SYSTEM FAIL] is displayed.

- Internal errors, such as RAM Read Error of the LCD display unit (NWZ-4650)

BNWAS	
-- : --	BACKUP ☒ CAPTAIN ☐ CO/O ☒ 2ND ☐ 3RD
SYSTEM FAIL WARNING, V	
☒ ☒ WV: SYSTEM FAIL	

3.9.2 Confirm of alert contents

Currently occurring some alert can be confirmed in the following procedures.

- 1) Press  on the LCD display unit (NWZ-4650).
The alarm (buzzer) sound is stopped.
- 2) Press .
- 3) Select [ALERT], and then press .
- WV, WS, AV or AS is displayed at the head of the alert content under occurring.
- 4) After alert content confirmation is finished, press , and then it returns to the countdown screen.
- 5) When the system problem is resolved, AL marker is vanished.

3.10 Display of alert history

A maximum of six alerts can be stored in the alert history list, which is displayed at the alert history screen. When the alert history screen is displayed, operate according to the following procedure:

- 1) Press .
- 2) Select [HISTORY], and then press .
- The alarm history screen is displayed.
- 3) After the alert history confirmation is finished, press  and then it returns to the countdown screen.

3.11 Test of buzzer and LED warning lamp

The buzzer and the LED warning lamp (VISUAL) functions can be operated manually in order to test. Consequently it is confirmed whether their functions are normal or not.

- 1) Press .
- 2) Select [BUZZER TEST], and then press .
- 3) Select a channel required test confirmation, and then press .

BNWAS		BUZZER TEST	
CH1	: VISUAL	-	OFF
CH2	: 1ST BUZZ	○	OFF
CH3	: CAPTAIN	○	OFF
CH4	: C/O	○	OFF
CH5	: 2ND	○	OFF
▼CH6	: 3RD	○	OFF
			

- 4) Select ON or OFF with , and then press .
- 5) When set to ON, the selected channel's buzzer or LED is operated. Simultaneously it confirms automatically whether its function is normal or not. When it is normal, "O" is displayed.
- 6) Press  in order to finish the test, and then it returns to the countdown screen.

3.12 Adjustment of LCD screen display

The LCD screen display can be adjusted the following items:

- Setting of contrast
- Setting of brightness
- Setting ON/OFF of key click sound
- Setting of back light color

3.12.1 Setting of contrast

LCD contrast can be adjusted a value from the deepest 1 to the lightest 13.

- 1) Press .
- 2) Select [DISPLAY], and then press .
- 3) Select [CONTRAST], and then press .
- 4) Select your desirable contrast value with , and then press .
- 5) Also the contrast can be adjusted in incremental steps with pressing .

3.12.2 Setting of brightness

Brightness of the LCD screen can be changed in maximum, middle, minimum of the three steps with pressing (dimmer switch) .

Also the brightness level can be set with the following operation:

- 1) Press .
- 2) Select [DISPLAY], and then press .
- 3) Select [DIMMER MAX], [DIMMER TYP], [DIMMER MIN], and then press .
- 4) Select your desirable luminosity level with , and then press .

3.12.3 Setting ON/OFF of key click sound

The click sound at pressing keys on the LCD display unit can be set to ON or OFF.

- 1) Press .
- 2) Select [DISPLAY], and then press .
- 3) Select [CLICK SOUND], and then press .
- 4) Select ON or OFF with , and then press .

3.12.4 Setting of back light color

The back light color of the LCD screen can be set with the following operation:

- 1) Press .
- 2) Select [DISPLAY], and then press .
- 3) Select [BACK LIGHT], and then press .
- 4) Select ORANGE or WHITE with , and then press .

3.12.5 Default setting value

Default setting values of LCD display are listed below.

Parameter Name	Default value
CONTRAST	5
DIMMER MAX	9
DIMMER TYP	6
DIMMER MIN	4

Chapter 4 Maintenance



WARNING



Do not attempt inspections or repairs on the internal part of the equipment by yourself. Inspections or repairs by non-qualified maintainers may cause a fire or electric shock. Ask for internal inspections or repairs of the equipment to the sales department of JRC, a nearby branch office, business office, or any agents of JRC.

4.1 Cleaning



CAUTION



When cleaning the system surface, remove dust and garbage and wipe with a cottony cloth. Do not use solid materials such as screwdriver and sandpaper.

Otherwise, it may cause damage on the paint or seal on the surface.

This system is hardly needed maintenance daily. However, to keep the system clean, clean it up regularly.

4.2 Daily inspection

Please carry out the daily inspection on the following items to make sure the normal operation of this system.

- 1) Inspection of LCD display unit (NWZ-4650)
Select [ALERT] from the menu mode screen in order to display alarms, and then confirm that [AC POWER FAIL] or [DC POWER FAIL] have not occurred.
- 2) Confirmation of reset function
Set the operation mode into MANUAL ON, and then press a reset button switch on the reset button units (NCJ-895) or the reset button unit (waterproof) (NCJ-896). Then confirm that the rest time of the dormant period is reset.
When the front of the motion sensor (NYG-5) is crossed, confirm that the dormant period is reset.
- 3) Confirmation of the visual indication function
Set the operation mode into MANUAL ON, and then set the dormant period (INTERVAL) into 3 minutes. After 3 minutes, confirm the visual indication start at the LCD display unit (NWZ-4650), the reset button units (NCJ-895), the reset button unit (waterproof) (NCJ-896), and the LED warning lamp unit (NCD-2257).
After the confirmation, turn back the dormant period setting and the operation mode.
- 4) Confirmation of buzzer function
Before inspection of the buzzer function, inform about it to the crews. Execute the emergency call of the LCD display unit (NWZ-4650). Confirm that the LCD display (NWZ-4650), the reset button units (NCJ-895), the reset button unit (waterproof) (NCJ-896), and the buzzer unit (NVS-785) are buzzed.
Press the reset button switch for more than 2 seconds on the reset button unit (NCJ-895), and then confirm that buzzer sound is stopped.

4.3 Easy trouble shootings

In case of troubles, please check the following points before contact to our service staff.

Trouble	Cause	How to recover	Ref.
The LCD on the operation panel is not displayed.	The power switch of NCK-175 has been turned off.	Turn on the power breaker.	P14
	The display has been dimmed.	Adjust the dimmer.	P57
NYG-5 reset does not work.	There are air conditioning devices around NYG-5.	Take apart the air conditioning devices from NYG-5.	P26
Visual indication does not work at NCJ-895/896.	The display has been dimmed.	Adjust the dimmer.	P23 P30
Visual indication does not work at NCD-2257.	The display has been dimmed.	Adjust the dimmer.	P28
Counting down of dormant period does not start.	The operation mode has been set at AUTOMATIC, and the track control system is not active.	Set the operation mode into MANUAL ON.	P36

Chapter 4 Maintenance

4.4 Replacement parts list

LCD display unit (NWZ-4650) parts list

Name	Model name	JRC code
LCD unit	CCN-423	CCN423
Display unit	NWZ-4650	NWZ-4650-1

Control unit (NCK-175) parts list

Name	Model name	JRC code
Power supply input board	CBJ-165	CBJ165
AC power supply unit	S8EX-N03012L	5EPSF00033
DC/DC power supply unit	CBD-1929	CBD1929
Control circuit board	CDJ-2486	CDJ2486

Reset button unit (NCJ-895) parts list

Name	Model name	JRC code
Reset button unit Membrane switch replacement kit	H-7ZZNA4111	7ZZNA4111

Reset button unit (Waterproof) (NCJ-896) parts list

Name	Model name	JRC code
Reset button unit (Waterproof) Membrane switch replacement kit	H-7ZZNA4112	7ZZNA4112

4.5 Periodic replacement part

Since the following table's parts (in this system) have lifetime, the parts are needed periodical replacement.

Their replacement rough indication periods at normal operation are also shown in the following table:

Number	Name	Type	Durable hours	備 考
1	LCD unit	CCN-423	40000 hours	When the power supply is always on.
2	Reset button unit Membrane switch replacement kit	H-7ZZNA4111	50000 hours	When it is pushed once for 3 minutes.
3	Reset button unit (Waterproof) Membrane switch replacement kit	H-7ZZNA4112	50000 hours	When it is pushed once for 3 minutes.

Please contact to the vender, the sales department of JRC, a nearby branch office, business office, or any agents of JRC about Periodic Replacement Part.

Chapter 5 Usage Environment

Note the following topics to keep the surrounding status (environment) as to ensure the correct operation of the system.

- If the system is exposed to direct sunshine, inner parts of it get an indiscernible increase in temperature. Do not put it in direct sunshine.
- The reset button unit (Waterproof) (NCJ-896) is IP56, the other units are IP22.
Please use it in the interior of a room without wind, flood and dust, except reset button unit (Waterproof) (NCJ-896).
- Please use the LCD display unit(NWZ-4650) less than 1m from user's position to installed position.

Chapter 6 After Service

If you request repairing or exchange

- If some problems are defected with normal use according to explanation and instruction in this manual, and the system is still under warranty, any agents of JRC will repair or replace them charge-free. However, when the system gets problems from wrong use, mistakes or accident such as disaster and fire, you need charge for repairing or replace them.
- When the system is out of warranty, the service is available for a fee upon request. Please contact to the vender, the sales department of JRC, a nearby branch office, business office, or any agents of JRC.
- Let us know the flowing items and fill in the form “JCX-161 Trouble Check List” on the next page.

☆ product name • type • No

☆ a condition of abnormal functioning (in detail as much as possible)

☆ your office name or agency name • address • telephone number

Ask for questions about After Service to the vender, the sales department of JRC, a nearby branch office, business office, or any agents of JRC.

Where to contact

See the view of office at the end of the document.

Chapter 6 After-sale Service

JCX-161 Trouble Check List

(request) Kindly take a few minutes, if you would like to repair the system, check and fill out the following items , send this to us.

Ship No : _____ Tel : _____ Fax : _____

JCX-161 Product No : _____

Read the following items and check a mark, "Yes" or "No", in order.

If the judgment is neither "Yes" nor "No", fill the report about problems in "Other notice".

No.	Check Items	Result	
1	"DC POWER FAIL" is displayed on NWZ-4650, and the buzzer sounds.	Yes	No
2	"AC POWER FAIL" is displayed on NWZ-4650, and the buzzer sounds	Yes	No
3	"CONTROL-UNIT" is displayed on NWZ-4650, and the buzzer sounds.	Yes	No
4	In the operation mode, a countdown timer does not count down by AUTOMATIC.	Yes	No
5	In the operation mode, a countdown timer does not count down by MANUAL ON.	Yes	No
6	After the buttons of NWZ-4650 is pressed, dormant time isn't reset.	Yes	No
7	After the reset button switch of NCJ-895 is pressed, dormant time isn't reset.	Yes	No
8	After the reset button switch of NCJ-896 is pressed, dormant time isn't reset.	Yes	No
9	After holding your hand to NYG-5, dormant time isn't reset.	Yes	No
[Other notice]			

Chapter 7 Disposal

7.1 Disposal of the system

Dispose the system according to ordinance or regulation by local government. For more information, contact the vender, a nearby branch office, or local government.

7.2 Chinese version of RoHS

形式名(Type): JCX-161

名称(Name): Bridge Navigational Watch Alarm System

部件名称 (Part name)	有毒有害物质或元素 (Toxic and Hazardous Substances and Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr ⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
控单元 (Control Unit)	○	○	○	○	○	○
LCD表示装置 (LCD Display Unit)	○	○	○	○	○	○
警报蜂鸣器 (Audible Alarm Buzzer)	○	○	○	○	○	○
重置按钮 (Reset Button)	○	○	○	○	○	○
运动传感器 (Motion Sensor)	○	○	○	○	○	○
LED报警装置 (LED Visual Alarm Unit)	○	○	○	○	○	○
防水式重置按钮 (Waterproof Reset Button)	○	○	○	○	○	○
使用说明书 (Documents)	×	×	×	×	×	×
○:表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11306-2006 标准规定的限量要求以下。 ×:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。						

Chapter 8 Specification

Note1: Maximum power consumption depends on the system configuration.

Example composition: NCK-175 x1, NWZ-4650 x1, NCJ-895x1, NCJ-896 x2, NVS-785x8

Power consumption: 12.8W (max)

AC100V 0.13A (max)

AC220V 0.06A (max)

DC24V 0.54A (max)

Note2: Ship's battery must have enough capacity to supply DC power for 6 hours after main power supply stops.

8.1 Control unit (NCK-175)

- 1) Power supply (rating) : 100-120V / 200-240V AC
24 V DC (+30%, -10%)
- 2) Power consumption: 2.5W (NCK-175 unit only)
- 3) Dimensions: Approx. 338 (W) x 105(D) x 280 (H) mm (incl. mounting bracket)
- 4) Mass: Approx. 4.5 kg (incl. frame)
- 5) Housing color: N4 SEMI-GLOSS
- 6) Operating temperature: Operating temperature range -15 °C to +55 °C
- 7) Protection class: IP22
- 8) Signal input for reset buttons: 6 ports
- 9) External Navigational equipment reset contact input: 2 ports
- 10) Motion sensor input: 2 ports (5 signal inputs for reset buttons can also be used)
- 11) AUTO MODE signal: 1 port
- 12) System Fail alarm contact output: 1 port
- 13) Emergency Call contact input: 1 port (using also as the signal input for reset buttons)
- 14) Visual Indication output: 1 port
- 15) 1st stage bridge audible alarm output: 1 port
- 16) 2nd stage remote audible alarm output: 4 ports (3 parallel connections per point)
- 17) 3rd stage remote audible alarm output: 2 ports (5 parallel connections per point)
- 18) RS-422 for VDR connection :1 port
 - NMEA Talker port
 - Baud rate 4800 bps (complying with IEC 61162-1)
 - DATA BIT: 8 (fixed)
 - STOP BIT: 1 (fixed)
 - PARITY BIT: None (fixed)
- 19) RS-485:1 port (Dedicated for connection of NWZ-4650)

Chapter 8 Specification

20) Category: Protected

21) Compass safe distance: 1m(Standard Compass) / 0.6m(Steering Compass)

8.2 LCD display unit (NWZ-4650)

1) Power supply (rating): 12 V DC (+30%, -10%)

2) Power consumption: 4W (max)

3) Dimensions: Approx. 175 (W) x 92 (D) x 162 (H) mm (incl. mounting bracket)

4) Mass: Approx. 0.6 kg (incl. mounting bracket)

5) Housing color: N4 SEMI-GLOSS

6) Operating temperature: Operating temperature range -15 °C to +55 °C

7) Protection class: IP22

8) Category: Protected

9) Compass safe distance: 0.3m(Standard Compass) / 0.2m(Steering Compass)

8.3 Buzzer unit (NVS-785)

1) Power supply (rating): 12 V DC (+30%, -10%)

2) Power consumption: 0.4W (max)

3) Dimensions: Approx. 70 (W) x 47 (D) x 100 (H) mm (excl. mounting bracket)

4) Mass: Approx. 0.2 kg (excl. mounting bracket)

5) Housing color: N4 SEMI-GLOSS

6) Operating temperature: Operating temperature range -15 °C to +55 °C

7) Protection class: IP22

8) Category: Protected

9) Compass safe distance: < 0.1m(Standard Compass) / < 0.1m (Steering Compass)

8.4 Reset button unit (NCJ-895)

- 1) Power supply (rating): 12 V DC (+30%, -10%)
- 2) Power consumption: 0.6W (max)
- 3) Dimensions: Approx. 70 (W) x 47 (D) x 100 (H) mm
- 4) Mass: Approx. 0.2 kg
- 5) Housing color: N4 SEMI-GLOSS
- 6) Operating temperature: Operating temperature range -15 °C to +55 °C
- 7) Protection class: IP22
- 8) Category: Protected
- 9) Compass safe distance: < 0.1m(Standard Compass) / < 0.1m (Steering Compass)

8.5 Motion sensor (NYG-5)

- 1) Power supply (rating): 12 V DC (+30%, -10%)
- 2) Power consumption: 0.4W (max)
- 3) Dimensions: Approx. 87 (W) x47 (D) x110 (H) mm (incl. mounting bracket)
- 4) Mass: Approx. 0.4 kg (incl. mounting bracket)
- 5) Housing color: N4 SEMI-GLOSS
- 6) Operating temperature: Operating temperature range -15 °C to +55 °C
- 7) Protection class: IP22
- 8) Category: Protected
- 9) Compass safe distance: < 0.1m(Standard Compass) / < 0.1m (Steering Compass)

8.6 LED warning lamp unit (NCD-2257)

- 1) Power supply (rating): 12 V DC (+30%, -10%)
- 2) Power consumption: 0.5W (max)
- 3) Dimensions: Approx. 70 (W) x 62 (D) x 100 (H) mm (incl. projections)
- 4) Mass: Approx. 0.2 kg (excl. mounting bracket)
- 5) Housing color: N4 SEMI-GLOSS
- 6) Operating temperature: Operating temperature range -15 °C to +55 °C
- 7) Protection class: IP22
- 8) Category: Protected
- 9) Compass safe distance: < 0.1m(Standard Compass) / < 0.1m (Steering Compass)

8.7 Reset button unit (Waterproof) (NCJ-896)

- 1) Power supply (rating): 12 V DC (+30%, -10%)
- 2) Power consumption: 0.6W (max)
- 3) Dimensions: Approx. 100 (W) x 60 (D) x 100 (H) mm (incl. mounting bracket)
- 4) Mass: Approx. 0.5 kg (incl. mounting bracket)
- 5) Housing color: N4 SEMI-GLOSS
- 6) Operating temperature: Operating temperature range -25 °C to +55 °C
- 7) Protection class: IP56
- 8) Cable opening: 13 mm to 18 mm
- 9) Category: Exposed
- 10) Compass safe distance: < 0.1m(Standard Compass) / < 0.1m (Steering Compass)

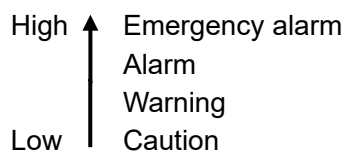
Chapter 9 Alert

9.1 About alert

The alert management architecture of JCX-161 has been designed according to IEC 62923-1. The following is an overview of the alert management architecture as defined in IEC 62923-1.

9.1.1 Priorities of alert

Alerts are categorized into four priority levels according to their degree of danger.



Alert	Description
Emergency alarm	Highest priority of an alert. Alarms which indicate immediate danger to human life or to the ship and its machinery exists and require immediate action.
Alarm	An alarm is a high-priority alert. Condition requiring immediate attention and action by the bridge team, to maintain the safe navigation of the ship.
Warning	Condition requiring immediate attention, but no immediate action by the bridge team. Warnings are presented for precautionary reasons to make the bridge team aware of changed conditions which are not immediately hazardous, but may become so if no action is taken.
Caution	Lowest priority of an alert. Awareness of a condition which does not warrant an alarm or warning condition, but still requires attention out of the ordinary consideration of the situation or of given information.

9.1.2 Categories of alert

Alerts should be separated for the alert handling into three categories of alerts.

Categories	Description
Category A	Category A alerts are specified as alerts where information at a task station directly assigned to the function generating the alert is necessary, as decision support for the evaluation of the alert-related condition, e.g.: danger of collision danger of grounding. Where category A alerts cannot be acknowledged at alert management screen, this fact should be clearly indicated to the user.

Chapter 9 Alert

Categories	Description
Category B	Category B alerts are specified as alerts where no additional information for decision support is necessary besides the information which can be presented at alert management screen.
Category C	Category C alerts are specified as alerts that cannot be acknowledged on the bridge but for which information is required about the status and treatment of the alerts, e.g., certain alerts from the engine.

9.1.3 State of alert

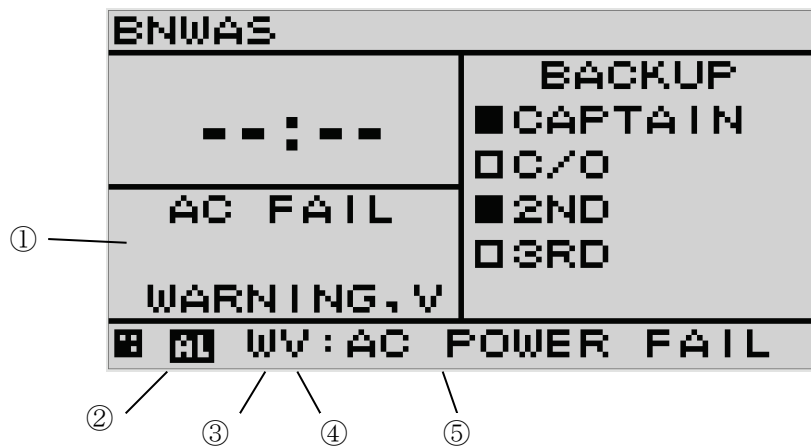
Each alerts has own state.

Alert state	Condition
active - unacknowledged	Alert condition still present, alert not acknowledged
active - silenced	Alert condition still present, alert not acknowledged but audible signals have been silenced by the operator
active - acknowledged	Alert condition still present, alert acknowledged by the operator
active - responsibility transferred	Alert condition still present, responsibility for alert notification has been transferred to another equipment
rectified - unacknowledged	Alert condition rectified, alert still unacknowledged
active	Alert condition present
normal	No alert condition present

The state of the alert is different depending on its priority.

Alert state	Emergency alarm	Alarm	Warning	Caution
active - unacknowledged		✓	✓	
active - silenced		✓	✓	
active - acknowledged		✓	✓	
active - responsibility transferred		✓	✓	
rectified - unacknowledged		✓	✓	
active	✓			✓
normal	✓	✓	✓	✓

9.2 Display alert



No.	Display	Function
(1)	New alert	New alert in JCX-161.
(2)	Alert marker	Alert marker (AL marker) blink when alert occur and is not acknowledged. When alert is acknowledged, marker is turned on. When alert is cleared, marker is turned off. See section 3.6, 3.7 and 3.9 for more details of alerts.
(3)	Priority of the highest priority alert	Priority of the highest priority alert. E = Emergency alarm A = Alarm W = Warning C = Caution
(4)	State of the highest priority alert	State of the highest priority alert. V = active - unacknowledged S = active - silenced A = active – acknowledged (as Alarm / Warning) active (as Emergency alarm / Caution) O = active - responsibility transferred U = rectified - unacknowledged
(5)	Alert title of the highest priority alert	Alert title of the highest priority alert among those currently occurring in JCX-161.

Chapter 9 Alert

9.3 Alerts on JCX-161

The following alert list shows the alerts that occur on JCX-161.

Alert title	Cause	Priority	Category	Responsibility transfer	Escalation
OFFICER CALL	Occurring 2nd stage remote audible alarm	alarm	B	not allowed	none
CREW CALL	Occurring 3rd stage remote audible alarm	alarm	B	not allowed	none
AC POWER FAIL	AC power is not supplied	warning	B	allowed	repeat as warning
DC POWER FAIL	DC power is not supplied	warning	B	allowed	repeat as warning
SYSTEM FAIL	Internal erros: RAM / ROM / Serial ports	warning	B	allowed	repeat as warning
CONTROL-UNIT	Communication error between the LCD display unit and the control unit.	warning	B	allowed	repeat as warning
HBT FAIL	Communication error between the LCD display unit and other navigational equipment	warning	B	allowed	repeat as warning

NOTE 1 : When either OFFICER CALL or CREW CALL are acknowledged, both alert will be terminated.

Appendix List of standard terms, units and abbreviations

Table A.1 List of standard terms and abbreviations

Term	Abbreviation	Term	Abbreviation
Acknowledge	ACK	Menu	MENU
Alarm	ALARM	Multi Function Display	MFD
Bridge Alert Management	BAM	National Marine Electronics Association	NMEA
Bridge Navigational Watch Alarm System	BNWAS	Radar	RADAR
Electronic Chart Display and Information System	ECDIS	Universal Time Coordinated	UTC

Table A.2 List of standard units of measurement and abbreviations

Unit	Abbreviation
centimetre	cm
degree(s)	deg or °
kirogram	kg
minute(s)	min
millimetre	mm
millisecond(s)	ms
metre	m
second(s)	sec or s

Appendix List of standard terms, units and abbreviations

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Not use the asbestos

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