USER MANUAL

NAVTEX RECEIVER
NVX-3000

NVX-3000 UM.E 20190506-01

NOTICE TO USERS

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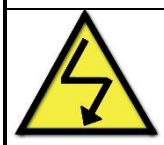
- Please read this manual carefully to ensure proper use before installation and operation of the NVX-3000.

- 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.

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

- Please keep the manual for your future reference.

SAFETY INSTRUCTIONS FOR THE OPERATOR

	**Warning** Keep away from heater source or direct sunshine.
	**Prohibition** Don't open the equipment. Only qualified personnel should work inside the equipment. Don't disassemble or try to modify the equipment.
	**Dangerous** Turn off the power immediately when smoke or fire is emitted.

SAFETY INSTRUCTIONS FOR THE INSTALLER

	**Warning** Connect the earth cord to ship's body. Observe the compass safe distance to prevent deviation of an onboard magnetic compass.
	**Prohibition** Don't open the equipment unless you have fully understood the structure and circuits of the equipment. Only qualified personnel should work inside the equipment. Don't disassemble or try to modify the equipment.
	**Dangerous** Turn off the power at power distribution board before installation.

Note: Information relating to the disposal of the unit at the end of its operational life: Do not throw away the appliance with the normal household waste at the end of its operational life, but hand it in at an official collection point for recycling. By doing this, you help to preserve the environment.

MODIFY RECORD

No.	Modify by	Date	Paragraph	Version	Reason
1	Q/A	2019/05/06		01	First edition

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1. NAVTEX SYSTEM

1.1 NAVTEX introduction

NAVTEX provides shipping with navigational and meteorological warnings and urgent information by automatic display and/or print out from a dedicated receiver.
NAVTEX is a component of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) defined by IMO Assembly resolution A.706(17), as amended, and the WMO Manual on Marine Meteorological Services, Part I*bis*, Provision of warnings and weather and sea bulletins (GMDSS application). It has been included as an element of the Global Maritime Distress and Safety System (GMDSS).
The original NAVTEX specification allowed for equipment with integral printers and precluded the fitting of equipment which relied on other ways of recording and displaying NAVTEX data.
The use of Liquid Crystal Displays and other Visual Display Units is now ubiquitous on ship's bridges and this revision of the specification allows for their use in displaying NAVTEX data.
IMO Resolution MSC.148(77) states that the equipment should comprise radio receivers, a signal processor and:
either:
a) an integrated printing device; or
b) a dedicated display device, printer output port and a non-volatile message memory; or
c) a connection to an integrated navigation system and a non-volatile message memory.

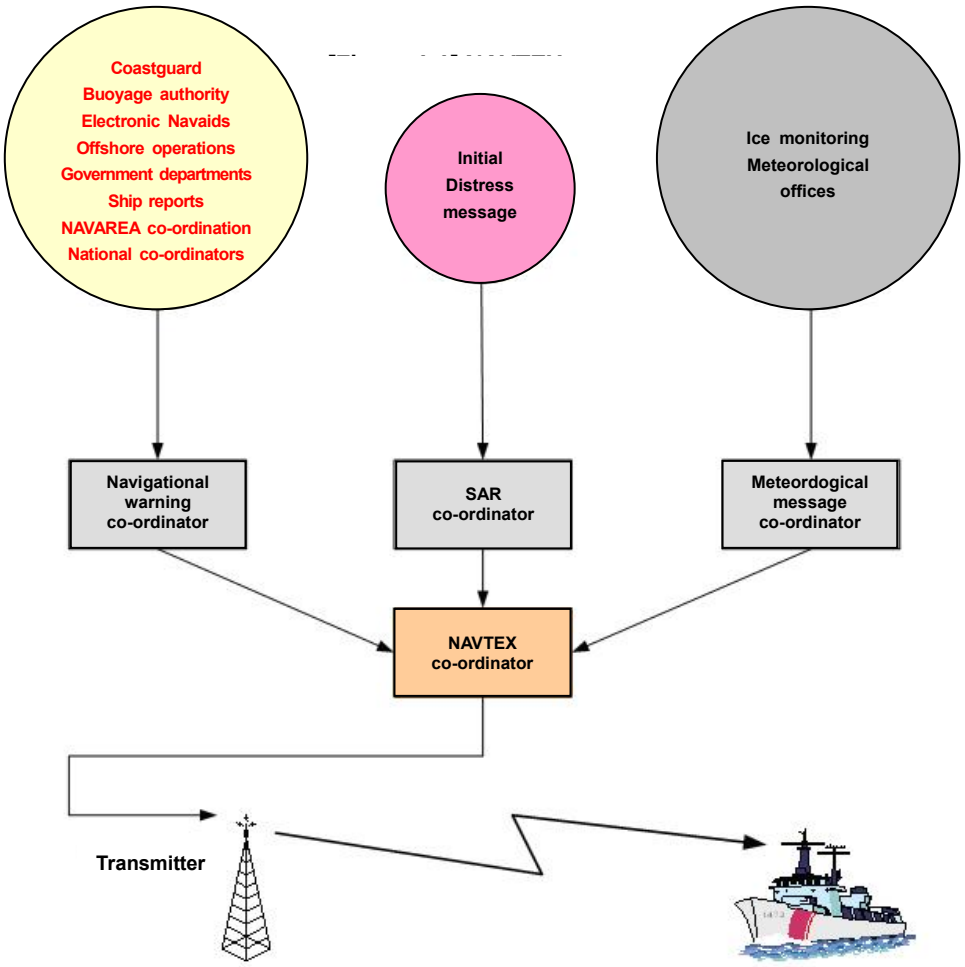
International NAVTEX services, refer to the frequency of 518kHz, and through international co-ordination to broadcast and automatically receive the maritime safety information in English language.
Domestic NAVTEX services, refer to the authority-specified frequencies 490kHz and 4209.5kHz, to broadcast and automatically receive the marine safety information in a national language.

1.2 NAVTEX principle

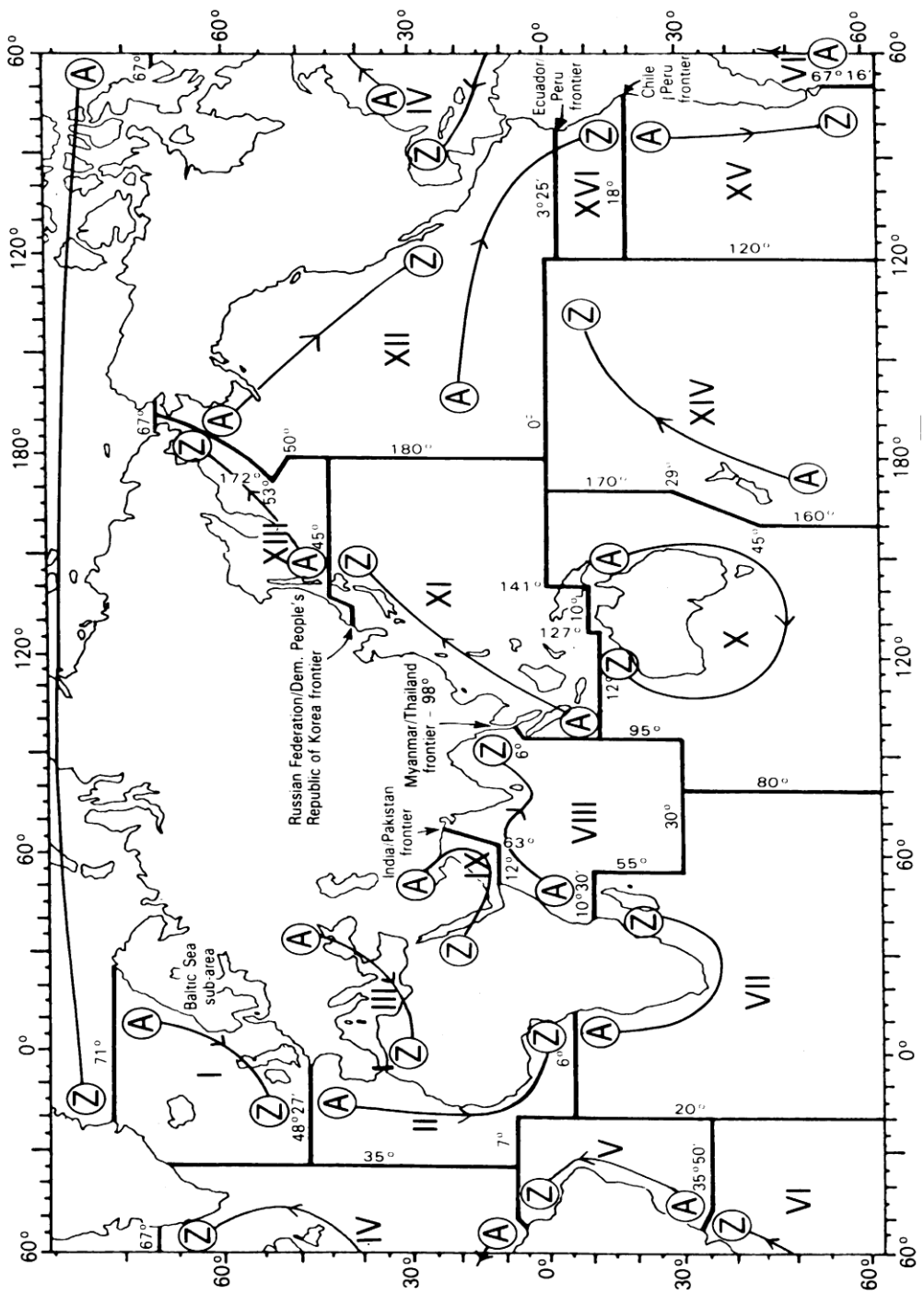
For navigation purposes, the world is divided into 16 areas as shown in the figure below. Each NAVTEX station has an identification code, from the A to Z. The frequency assigned to NAVTEX are 518 kHz , 490 kHz and 4209.5 kHz, and many stations exist in the same service coverage.

If the stations were to transmit without any rule, the system would collapse due to mutual interference. To avoid this problem, the following rules apply.

- The transmission schedule is determined so that two or more stations having a common service area may not overlap in time.
- Each station transmits with minimum required power to cover its service area (200 to 400 nautical miles nominal).



[Figure 1-1] Basic concept of the NAVTEX system



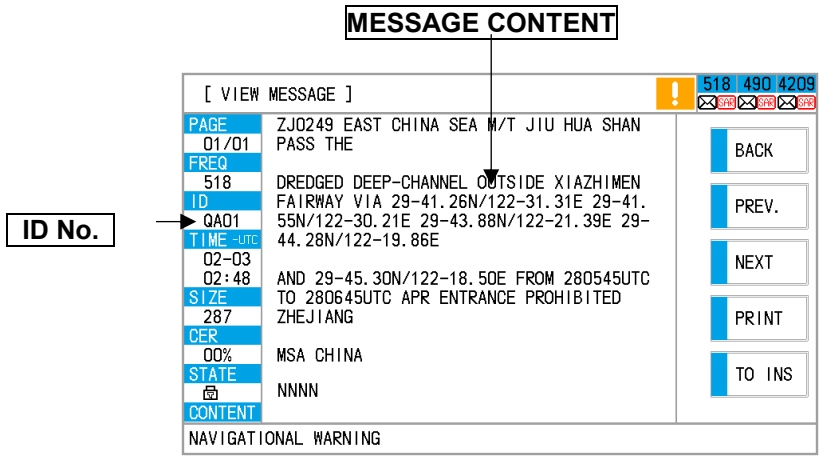
[Figure 1-2] NAVAREA of the WWNWS

1.3 NAVTEX message format

For automatic identification of NAVTEX messages, each message has its ID No which is identified as B1, B2, B3 and B4 to indicate origin, category and serial number of the message.

- Character B1 is the identification letter of the NAVTEX station “A” to “Z”.
- Character B2 indicates the type of message “A” to “Z”, as listed in **[Table 1-1]**.
- Character B3 and B4 indicate the serial number of the message. The serial numbers are counted up from “01” to “99”, and starts from “01” again. “00” is specially reserved for important emergency messages.

The end of each message is indicated by “NNNN” (four successive N’s).
General message format is summarized below.



[Figure 1-3]

Table 1-1 The message type table

Message Type (B2)	Content
A*	Navigational Warnings
B*	Meteorological Warnings
C	Ice Reports
D*	Search and Rescue information and pirate attack warnings
E	Meteorological Forecasts
F	Pilot service Messages
G	DECCA Messages
H	LORAN Messages
I	OMEGA Messages
J	SATNAV Messages
K	Other Electronic Navaid Mes-sages
L*	Navigational Warnings -Additional letter “A”
M~Y	Reserved
Z	QRY

Remark: The character marked with "*", can’t be rejected by the receiver.

1.4 NAVTEX station list

NAV area	Country/ Region	Station	Latitude	Longitude	Frequency (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
I	Belgium	Oostende	51 11 N	02 48 E	518	55	T	0310, 0710, 1110, 1510, 1910, 2310
	Estonia	Tallinn	59 30 N	24 30 E	518	250	U	0320, 0720, 1120, 1520, 1920, 2320
	Iceland	Reykjavik Radio	64 05 N	21 51 W	518	550	R	0250, 0650, 1050, 1450, 1850, 2250
					490	550	R	0318, 0718, 1118, 1518, 1918, 2318
	Ireland	Valentia	51 27 N	09 49 W	518	400	W	0340, 0740, 1140, 1540, 1940, 2340
		Malin Head	55 22 N	07 21 W	518	400	Q	0240, 0640, 1040, 1440, 1840, 2240
	France	Niton	50 35 N	01 18 W	518	270	K	0140, 0540, 0940, 1340, 1740, 2140
	Netherlands	Den Helder	52 06 N	04 15 E	518	110	P	0230, 0630, 1030, 1430, 1830, 2230
	Norway	Bodo Radio	67 16 N	14 23 E	518	450	B	0010, 0410, 0810, 1210, 1610, 2010
		Rogaland Radio	58 48 N	05 34 E	518	450	L	0150, 0550, 0950, 1350, 1750, 2150
		Vardoe Radio	70 22 N	31 06 E	518	450	V	0330, 0730, 1130, 1530, 1930, 2330
		Svalbard	78 04 N	13 38 E	518	450	A	0000, 0400, 0800, 1200, 1600, 2000
		Orlandet	63 40 N	09 33 E	518	450	N	0210, 0610, 1010, 1410, 1810, 2210
	Sweden	Bjuroklubb	64 28 N	21 36 E	518	300	H	0110, 0510, 0910, 1310, 1710, 2110
		Gislovshammar	55 29 N	14 19 E	518	300	J	0130, 0530, 0930, 1330, 1730, 2130
		Grimeton	57 06 N	12 23 E	518	300	D	0030, 0430, 0830, 1230, 1630, 2030
	United Kingdom	Cullercoats	55 02 N	01 26 W	518	270	G	0100, 0500, 0900, 1300, 1700, 2100
					490	270	U	0320, 0720, 1120, 1520, 1920, 2320
		Portpatrick	54 51 N	05 07 W	518	270	O	0220, 0620, 1020, 1420, 1820, 2220
					490	270	C	0020, 0420, 0820, 1220, 1620, 2020
		Niton	50 35 N	01 18 W	518	270	E	0040, 0440, 0840, 1240, 1640, 2040
					490	270	I	0120, 0520, 0920, 1320, 1720, 2120
		Oostende	51 11 N	02 48 E	518	150	M	0200, 0600, 1000, 1400, 1800, 2200
II	France	Cross Corsen	48 28 N	05 03 W	518	300	A	0000, 0400, 0800, 1200, 1600, 2000
					490	300	E	0040, 0440, 0840, 1240, 1640, 2040
		Niton	50 35 N	01 18 W	490	270	T	0310, 0710, 1110, 1510, 1910, 2310
	Portugal	Horta	38 32 N	28 38 W	518	640	F	0050, 0450, 0850, 1250, 1650, 2050
		Monsanto	38 44 N	09 11 W	518	530	R	0250, 0650, 1050, 1450, 1850, 2250
					490	530	G	0100, 0500, 0900, 1300, 1700, 2100
	Spain	Coruna	43 21 N	08 27 W	518	400	D	0030, 0430, 0830, 1230, 1630, 2030
		Tarifa	36 01 N	05 34 W	518	400	G	0100, 0500, 0900, 1300, 1700, 2100
		Las Palmas	28 10 N	15 25 W	518	400	I	0120, 0520, 0920, 1320, 1720, 2120

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NAV area	Country/ Region	Station	Latitude	Longitude	Frequency (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
IV	Canada	Labrador	53 42 N	57 01 W	518	300	X	0350, 0750, 1150, 1550, 1950, 2350
		Iqaluit, NU	63 43 N	68 33 W	518	300	T	0310, 0710, 1110, 1510, 1910, 2310
					490	300	S	0300, 0700, 1100, 1500, 1900, 2300
	United States	Miami	25 37 N	80 23 W	518	240	A	0000, 0400, 0800, 1200, 1600, 2000
		Boston	41 43 N	70 30 W	518	200	F	0445, 0845, 1245, 1645, 2045, 0045
		New Orleans	29 53 N	89 57 W	518	200	G	0300, 0700, 1100, 1500, 1900, 2300
		Portsmouth	36 43 N	76 00 W	518	280	N	0130, 0530, 0930, 1330, 1730, 2130
		Isabella	18 28 N	67 04 W	518	200	R	0200, 0600, 1000, 1400, 1800, 2200
		Savannah, GA	32 08 N	81 42 W	518	200	E	0040, 0440, 0840, 1240, 1640, 2040
	Netherlands Antilles	Curacao	12 10 N	68 52 W	518	400	H	0110, 0510, 0910, 1310, 1710, 2110
V	NIL							
VI	Argentina	Ushaia	54 48 S	68 18 W	518	280	M	0200, 0600, 1000, 1400, 1800, 2200
		Rio Gallegos	51 37 S	65 03 W	518	280	N	0210, 0610, 1010, 1410, 1810, 2210
		Comodoro Rivadavia	45 51 S	67 25 W	518	280	O	0220, 0620, 1020, 1420, 1820, 2220
		Bahia Blanca	38 43 S	62 06 W	518	280	P	0230, 0630, 1030, 1430, 1830, 2230
		Mar del Plata	38 03 S	57 32 W	518	280	Q	0240, 0640, 1040, 1440, 1840, 2240
		Buenos Aires	34 36 S	58 22 W	518	560	R	0250, 0650, 1050, 1450, 1850, 2250
	Uruguay	La Paloma	34 40 S	54 09 W	518	280	F	0050, 0450, 0850, 1250, 1650, 2050
					490	280	A	0000, 0400, 0800, 1200, 1600, 2000
VII	Namibia	Walvis Bay	23 03 S	14 37 E	518	378	B	0010, 0410, 0810, 1210, 1610, 2010
	South Africa	Cape Town	33 40 S	18 43 E	518	500	C	0020, 0420, 0820, 1220, 1620, 2020
		Port Elizabeth	34 02 S	25 33 E	518	500	I	0120, 0520, 0920, 1320, 1720, 2120
		Durban	30 00 S	31 30 E	518	500	O	0220, 0620, 1020, 1420, 1820, 2220
VIII	India	Mumbay	19 05 N	72 50 E	518	250	G	0100, 0500, 0900, 1300, 1700, 2100
		Madras	13 08 N	80 10 E	518	400	P	0230, 0630, 1030, 1430, 1830, 2230
	Mauritius	Mauritius Radio	20 10 S	57 28 E	518	400	C	0020, 0420, 0820, 1220, 1620, 2020
IX	Bahrain	Hamala	26 09 N	50 28 E	518	300	B	0010, 0410, 0810, 1210, 1610, 2010
	Egypt	Serapeum	30 28 N	32 22 E	518	200	X	0350, 0750, 1150, 1550, 1950, 2350
					4209.5	200	X	0750, 1150
		Kosseir	26 06 N	34 17 E	518	400	V	0330, 0730, 1130, 1530, 1930, 2330
	Iran	Bushehr	28 59 N	50 50 E	518	300	A	0000, 0400, 0800, 1200, 1600, 2000
		Bandar Abbas	27 07 N	56 04 E	518	300	F	0050, 0450, 0850, 1250, 1650, 2050

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NAV area	Country/ Region	Station	Latitude	Longitude	Frequency (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
IX	Saudi Arabia	Jeddah	21 23 N	39 10 E	518	390	H	0705, 1305, 1905
	Oman	Muscat	23 36 N	58 30 E	518	270	M	0200, 0600, 1000, 1400, 1800, 2200
	Pakistan	Karachi	24 51 N	67 03 E	518	400	P	0230, 0630, 1030, 1430, 1830, 2230
X	NIL							
XI	China	Sanya	18 14 N	109 30 E	518	250	M	0200, 0600, 1000, 1400, 2200
		Guangzhou	23 08 N	113 32 E	518	250	N	0210, 0610, 1010, 1410, 2210
		Fuzhou	26 01 N	119 18 E	518	250	O	0220, 0620, 1020, 1420, 2220
		Shanghai	31 08 N	121 33 E	518	250	Q	0240, 0640, 1040, 1440, 2240
		Dalian	38 52 N	121 31 E	518	250	R	0250, 0650, 1050, 1450, 2250
	Indonesia	Jayapura	02 31 S	140 43 E	518	300	A	0000, 0400, 0800, 1200, 1600, 2000
		Ambon	03 42 S	128 12 E	518	300	B	0010, 0410, 0810, 1210, 1610, 2010
		Makassar	05 06 S	119 26 E	518	300	D	0030, 0430, 0830, 1230, 1830, 2030
		Jakarta	06 06 S	106 54 E	518	300	E	0040, 0440, 0840, 1240, 1640, 2040
	Japan	Otaru	43 19 N	140 27 E	518	400	J	0130, 0530, 0930, 1330, 1730, 2130
		Kushiro	42 57 N	144 36 E	518	400	K	0140, 0540, 0940, 1340, 1740, 2140
		Yokohama	35 14 N	139 55 E	518	400	I	0120, 0520, 0920, 1320, 1720, 2120
		Moji	34 01 N	130 56 E	518	400	H	0110, 0510, 0910, 1310, 1710, 2110
		Naha	26 05 N	127 40 E	518	400	G	0100, 0500, 0900, 1300, 1700, 2100
	Korea, Republic of	Chukpyong	37 03 N	129 26 E	518	200	V	0330, 0730, 1130, 1530, 1930, 2330
					490	200	J	0130, 0530, 0930, 1330, 1730, 2130
		Pyongsan	35 36 N	126 29 E	518	200	W	0340, 0740, 1340, 1540, 1940, 2340
					490	200	K	0140, 0540, 0940, 1340, 1740, 2140
	Malaysia	Penang	05 26 N	100 24 E	518	350	U	0320, 0720, 1120, 1520, 1920, 2320
		Miri	04 28 N	114 01 E	518	350	T	0310, 0710, 1110, 1510, 1910, 2310
		Sandakan	05 54 N	118 00 E	518	350	S	0300, 0700, 1100, 1500, 1900, 2300
	Singapore	Singapore	01 25 N	103 52 E	518	400	C	0020-0030, 0420-0430, 0820-0830, 1220-1230, 1620-1630, 2020-2030
	Thailand	Bangkok Radio	13 43 N	100 34 E	518	200	F	0050, 0450, 0850, 1250
	United States	Guam	13 29 N	144 50 E	518	100	V	0100, 0500, 0900, 1300, 1700, 2100

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NAV area	Country/ Region	Station	Latitude	Longitude	Frequency (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
XI	Vietnam	Ho Chi Minh City	10 47 N	106 40 E	518	400	X	0350, 0750, 1150, 1550, 1950, 2350
		Haiphong	20 44 N	106 44 E	490	400	W	0340, 1540
					4209.5	400	W	0230, 0630, 1030, 1430, 1830, 2230
		Danang	16 05 N	108 13 E	518	400	K	0140, 0540, 0940, 1340, 1740, 2140
	Taiwan	Kaohsiung	22 29 N	120 25 E	518	216	P	0230, 0630, 1030, 1430, 1830, 2230
	Associate Member of IMO	Hong Kong	22 13 N	114 15 E	518	400	L	0150, 0550, 0950, 1350, 1750, 2150
XII	Canada	Prince Rupert	54 20 N	130 20 W	518	300	D	0030, 0430, 0830, 1230, 1630, 2030
		Tofino	48 55 N	125 35 W	518	300	H	0110, 0510, 0910, 1310, 1710, 2110
	United States	San Francisco	37 55 N	122 44 W	518	350	C	0400, 0800, 1200, 1600, 2000, 2400
		Kodiak	57 46 N	152 34 W	518	200	J	0300, 0700, 1100, 1500, 1900, 2300
		Honolulu	21 22 N	158 09 W	518	350	O	0040, 0440, 0840, 1240, 1640, 2040
		Cambria	35 31 N	121 03 W	518	350	Q	0445, 0845, 1245, 1645, 2045, 0045
		Astoria	46 10 N	123 49 W	518	216	W	0130, 0530, 0930, 1330, 1730, 2130
XIII	Russian Federation	Kholmsk	47 02 N	142 03 E	518	300	B	0010, 0410, 0810, 1210, 1610, 2010
		Murmansk	68 46 N	32 58 E	518	300	C	0020, 0420, 0820, 1220, 1620, 2020
		Arkhangelsk	64 51 N	40 17 E	518	300	F	0050, 0450, 0850, 1250, 1650, 2050
		Astrakhan	45 47 N	47 33 E	518	250	W	0340, 0740, 1140, 1540, 1940, 2340
XIV	NIL							
XV	Chile	Antofagasta	23 40 S	70 25 W	518	300	A H	0400, 1200, 2000 0000, 0800, 1600
		Valparaiso	32 48 S	71 29 W	518	300	B I	0410, 1210, 2010 0010, 0810, 1610
		Talcahuano	36 42 S	73 06 W	518	300	C J	0420, 1220, 2020 0020, 0820, 1620
		Puerto Montt	41 30 S	72 58 W	518	300	D K	0430, 1230, 2030 0030, 0830, 1630
		Punta Arenas	53 09 S	70 58 W	518	300	E L	0440, 1240, 2040 0040, 0840, 1640
		Isla de Pascua	27 09 S	109 25 W	518	300	F G	0450, 1250, 2050 0050, 0850, 1650
XVI	Peru	Paita	05 05 S	81 07 W	518	200	S	0300, 0700, 1100, 1500, 1900, 2300
		Callao	12 03 S	77 09 W	518	200	U	0320, 0720, 1120, 1520, 1920, 2320
		Mollendo	17 01 S	72 01 W	518	200	W	0340, 0740, 1140, 1540, 1940, 2340

Note: The list shows the stations listed at Longwave Navtex Broadcasts (Oct. 2004).

2. CONFIGURATION

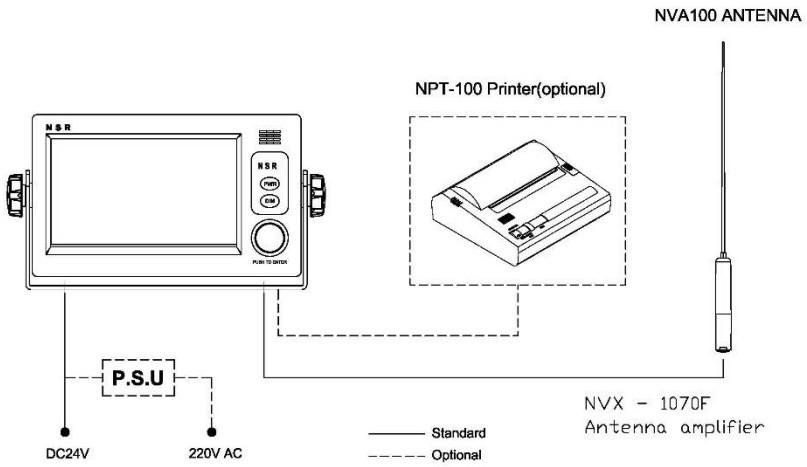
2.1 Outline

NVX-3000 NAVTEX receiver conforms to the following international standards:

- IMO:M148(77) [2003]
- IMO: A.694(17) [1991]
- IMO: COMSAR Circ.32
- ITU-R M540-2 (06/90) [2000]
- ITU-R M.625-4 (03/12)
- IEC: 60945 [2002] incl Corr. 1 [2008]
- IEC: 61162 series
- IEC: 61097-6 [2012]
- IEC: 611620 serial

2.2 Configuration

NVX-3000 system consists of the main unit, antenna amplifier and whip antenna, power supply unit (Option), etc.



[Figure 2-1] System configuration of NAVTEX receiver

2.3 Supply scope

Table 2-1 Supply scope of NVX-3000

Standard Supply Scope			
No.	**Name**	**Quantity**	**Description**
1	NVX-3000 Main Unit	1	
2	NVX-1070F/Antenna Amplifier	1	20 meters RG58 cable, TNC connector
3	NVA100//Whip Antenna	1	
4	Installation materials		
4.1	Steel Tie	2	
4.2	Screws	4	M5X20mm
4.3	Rubber Tape	1	
4.4	Cable Tie	10	300mm
4.5	Cable Tie	10	100mm
4.6	Earth cord	1	1m
4.7	Pin Terminal	5	
4.8	Back Tube	5	Red 2、white3
Option			
5	NPT-100 (Printer)	1	Thermal Printer
6	Paper	1	Thermal sensitive paper
7	Power Supply Unit	1	DC 24V Output

Remark: Unless additionally ordered , optional items not included in the standard supply scope.

3. SPECIFICATIONS

3.1 Software characteristics

3.1.1 B1 and B2 characters

The B1 characters identifying the different transmitter coverage areas and the B2 characters identifying the different types of messages are defined by IMO and chosen from table I of ITU-R Recommendation M.625, combination numbers 1-26.

a) NVX-3000 is capable of automatically rejecting unwanted information using character B1.
b) NVX-3000 is capable of disabling display of selected types of messages using character B2 with the exception of messages with B2 characters A, B, D and L.

3.1.2 B3 and B4 characters

B3 B4 is a two-character serial number, starting with 01 except in special cases where the serial number 00 is used.

3.1.3 Preamble

Message store is only being activated if the preamble B1 B2 B3 B4 is received without errors.

3.1.4 Repetition of display

Facilities are provided to avoid printing, storage or display of the same message several times on the same ship, when such a message has already been satisfactorily received.
The necessary information for these measures is deduced from the sequence B1 B2 B3 B4.

3.1.5 Mandatory display

A message shall always be stored and displayed if B3 B4 = 00 and if it is transmitted by a coast station that the equipment is programmed to select. The characters ZCZC B1 B2 B3 B4 need not be displayed.

3.1.6 Reception of messages with character errors

3.1.6.1 Messages with character error rate of > 4% and ≤ 33 %

NVX-3000 stores the message, but will allow the message to be replaced if it is subsequently received with lower error rate.
NVX-3000 will display the test messages indicating a character error rate of ≤ 33 %.

3.1.6.2 Messages with character error rate of > 33 %

NVX-3000 will not store messages if the received character error rate > 33%.

3.1.7 Alarms

The receipt of search and rescue information (B2 = D) will give an alarm from NVX-3000. It is only be possible to reset this alarm manually.
NVX-3000 contains an integral alarm buzzer or/and a pair of relay contacts for the provision of an external sounder.
The alarms provided at NVX-3000 indicate, A\B\L messages and any messages, and it can be suppressed by setting in menu.

3.1.8 Test facilities

NVX-3000 is provided with a facility to test that the radio receiver, the display device and non-volatile message memory are functioning correctly.

3.2 Hardware Specifications

1）RF receiving part

- Receiving Frequencies： 518kHz, 490kHz & 4209.5kHz, Two channels at the same time to receive
- Sensitivity： Better than -107dBm
- Selectivity： ≧300Hz （6dB bandwidth）
  ≦2kHz （60dB bandwidth）
- Leakage emission： ≦4nW （50Ω DUMMY antenna）
- Protection of input circuit： Withstanding 30Vrms of RF signal
- Self-diagnosis function： Frequencies generator
  518kHz ±85Hz, 490kHz ±85Hz, 4209.5kHz ±85Hz

2） Environmental condition

- Operating temperature： -15℃～+55℃
- Humidity： Up to 93% RH at 40℃ temperature
- Vibration： Up to 1G at 50Hz, tallying IEC60945
- Waterproof grade： IP22 (main unit)
- Compass safe distance： 1.15m (standard)

3） Power supply

- Rating input voltage： DC＋24V (DC＋12V～38V, 10Watts average)

4） Antenna amplifier and whip antenna

- Type： Whip antenna (NVA100), antenna amplifier (NVX-1070F)
- Frequency： 518kHz, 490kHz, 4209.5kHz
- Input protection： Withstanding 30Vrms of RF frequency
- Temperature range： For operation －25℃ ～ +60℃
- Wind strength： 60m/s

5） LCD

- Features： 7 inch, color LCD, touch screen operation with adjustable brightness
- Resolution： 800*480
- Character number： English 40 Characters /line
  Chinese 20 Characters /line
- Dimension： 154(W)×87(H) mm

6） Interface

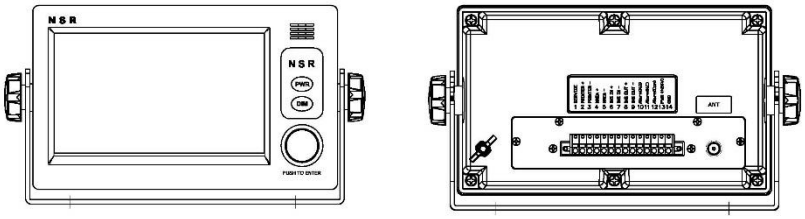
- Input sentences of NMEA IN port： ZDA, RMC
- Input sentences of INS port： NRM, CQR, ACK, ACN
- Output sentences of INS port： ALR, NRX, NRM, ACN, ACK, ALF, ALC, ARC, HBT

7） Weight： About 2.3Kg

4. HOW TO OPERATE

4.1 Outline

4.1.1 Outline of main unit



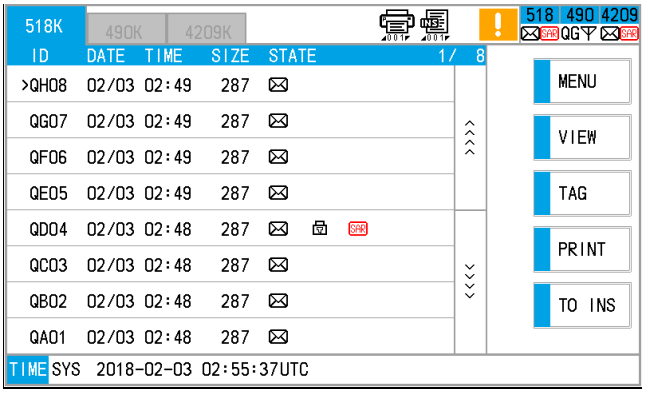
- **Front View** - - **Rear View** -

[Figure 4-1]

NVX-3000 can operated by touch-screen or key & knob on panel.

4.1.2 Power On / Off

By pressing **PWR** key to switch on the NVX-3000 receiver. The start-up window **[MSG LIST]** will appear on the screen.

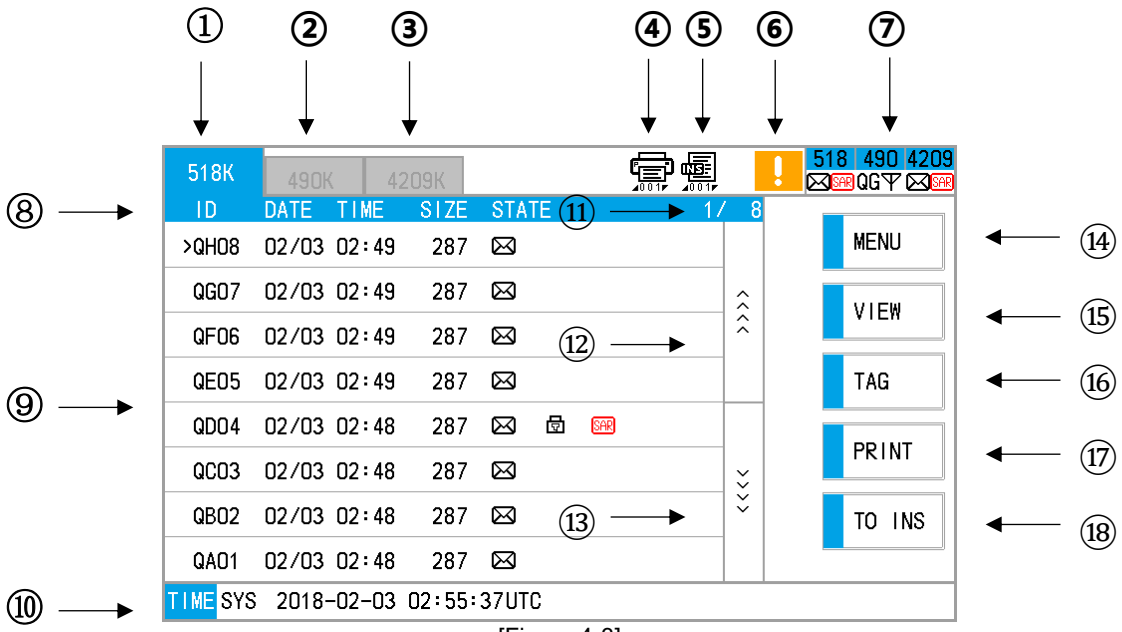


[Figure 4-2]

If it's the first time to power on or the power has been switched off more than 72 hours, no messages will appear in the list except those locked before.

Hold down the **PWR** key 3 seconds to power off.

4.1.3 The default screen and control keys
The default display is **[MSG List]**, as below.



[Figure 4-3]

①	518K	NAVTEX receiving frequency
②	490K	NAVTEX receiving frequency
③	4209K	NAVTEX receiving frequency
④		Current PRINT quantity
⑤		Current TO INS quantity
⑥		Having alarms
⑦	518 490 4209	Having Search and Rescue information in different frequency the antenna indication means the signal is being received on the frequency
⑧	ID：	Message ID
	DATE：	Date when the message was received
	TIME：	Time when the message was received
	SIZE：	Character number of the message
	STATE：	New message，not read yet TAG message SAR message, the second character of ID No. is “D” which means Search and Rescue
⑨	Message list	Message list
⑩	TIME SYS	Time source, system time or GPS time

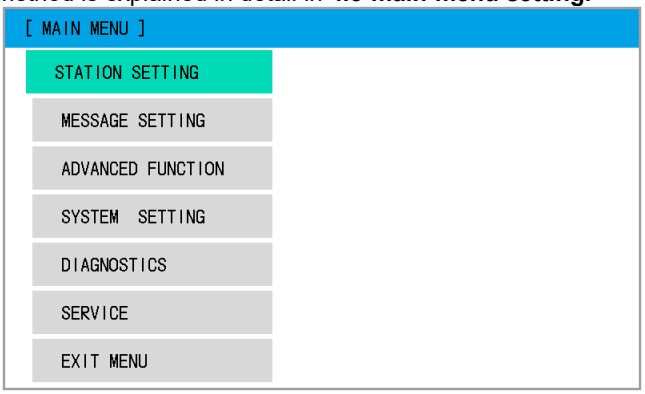
⑪	1/ 8	sequence number / Message quantity
⑫		Page up
⑬		Page down
⑭	MENU	To **[MAIN MENU]**
⑮	VIEW	To [MSG VIEW]
⑯	TAG	To tag the selected message
⑰	PRING	To print the selected message
⑱	TO INS	To INS the selected message

The available keys are as follows.

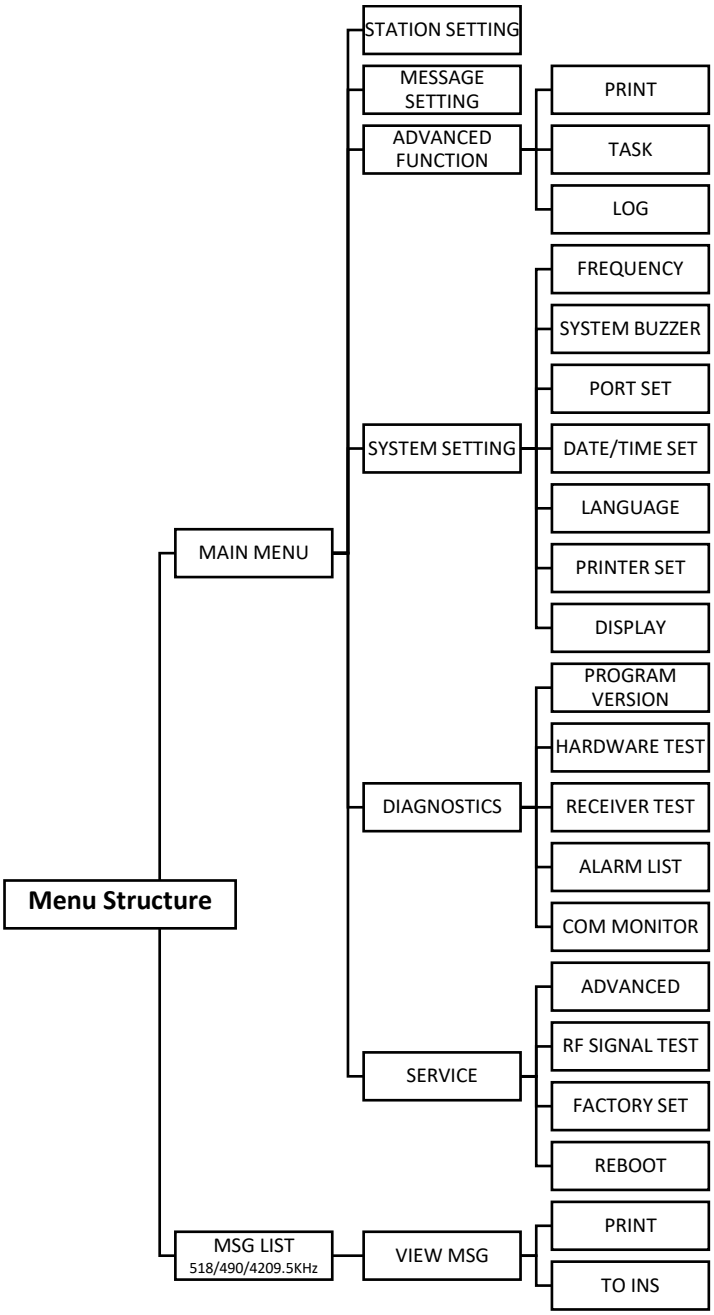
Panel Button	Description
	Turn to select an item. Press to confirm the selection or input.
PWR	Power ON/OFF. To power OFF, press and hold this key more than 3 seconds.
DIM	Press to change the LCD brightness which can be adjusted by “1~13”

4.1.4 Main Menu structure

Click the **MENU** in **[MSG LIST]**, the following screen will be displayed.
The specific setup method is explained in detail in **4.3 main menu setting.**



[Figure 4-4]



[Figure 4-5] Menu structure

4.2 Message operation

4.2.1 Message list

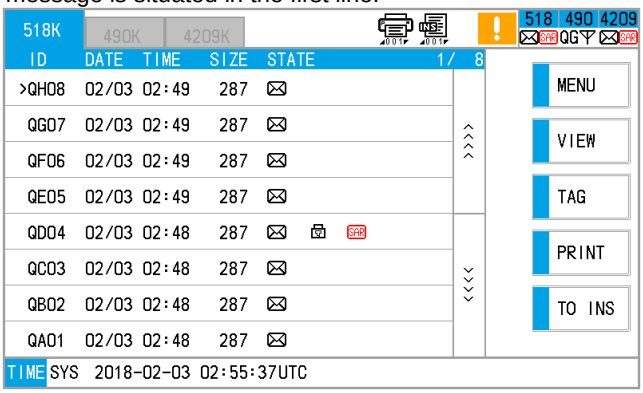
NVX-3000 receives the maritime safety information on 518kHz, international NAVTEX frequency 490kHz and 4209.5kHz, national NAVTEX frequencies.

- When a message is received and stored, a message line will be added into the message list.
- If the antenna indication is flickering upper the screen, the signal is being received on the frequency
- In the message line, the message ID [QH08] is displayed together with date/time/size/state.

The ID format is explained in **[1-3 NAVTEX message format]**.

In the screen, totally 8 messages have been received.

The latest received message is situated in the first line.

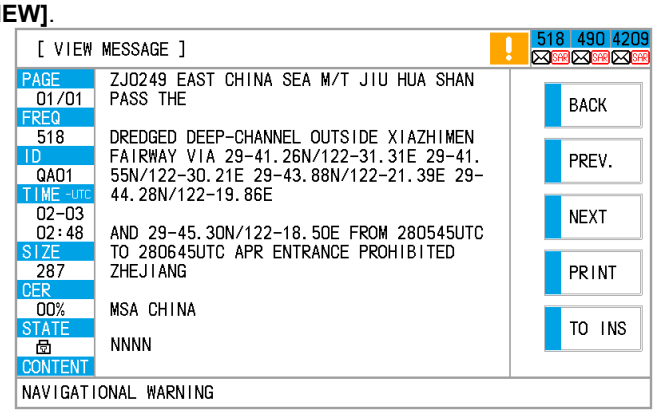


[Figure 4-6]

In the **[MSG LIST]** offers five sub items：MENU, VIEW, **TAG**, **PRINT** and **TO INS**

4.2.2 Message view

In the [**MSG LIST**], click the message you select, an arrow will appear. And click the message again, then enter the **[MSG VIEW]**. Or when the arrow points to the message, click the **VIEW** and then enter the **[MSG VIEW]**.



[Figure 4-7]

Click **BACK** to return to **[MSG LIST]**.

4.2.3 Message tag

In the [**MSG List**], when the arrow points to the message，click the **TAG**, **you** can Lock and save

a message permanently. click the **TAG** **again to release the lock of message.**
In NVX-3000, after 72 hours since a message was received (including the shutdown time), the message will be automatically deleted.
Even within 72 hours, the message will also be deleted if the total memory is overloaded, maximum 200 messages for a single frequency.
While **[TAG]**, the message can be locked to retain, free from 72-hour and 200-message capacity constraints. While **[TAG]**, ╒ appears in [STATE] column in **[MSG LIST]** screen. Also, ╒ appears at the left of **[MSG VIEW]** screen.

4.2.4 Message print
In NVX-3000, you can print the messages in two ways:

- **Automatic printing**
  In the **[STATION SETTING]** and **[MESSAGE SETTING]** menu, you can choose D_1 and D_2 to define specific messages to be automatically printed out while a printer is connected.

*For **[automatic printing]**, please refer to 4.4 **[STATION SETTING]** and **[MESSAGE SETTING].***

- **Manual printing**
  In the **[MSG LIST]** and **[MSG VIEW]** screen, click **PRINT** to print out the current message contents displayed.

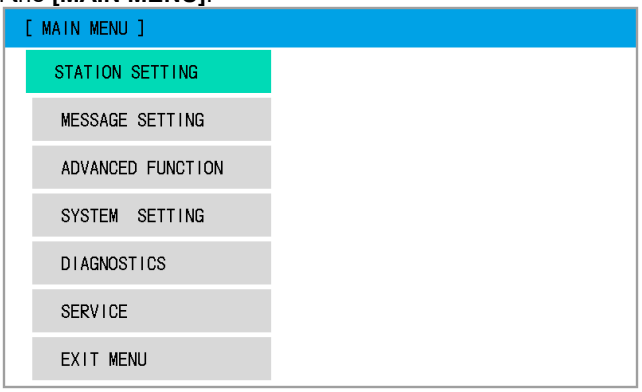
  In addition to printing the message which is being browsed, NVX-3000 also offers **[ADVANCED function]** features, including:
  - PRINT
  - TASK
  - LOG

All the messages to be printed should be those messages which have been received and stored in the memory.

4.2.5 Message to INS
In the **[MSG LIST]** and **[MSG VIEW]** screen, click **INS** to output the current message.

4.3 Main Menu setting

From the **default screen [MSG List]**, click the **MENU**, **[Main Menu]** will be displayed. There are six function items in the **[MAIN MENU]**.

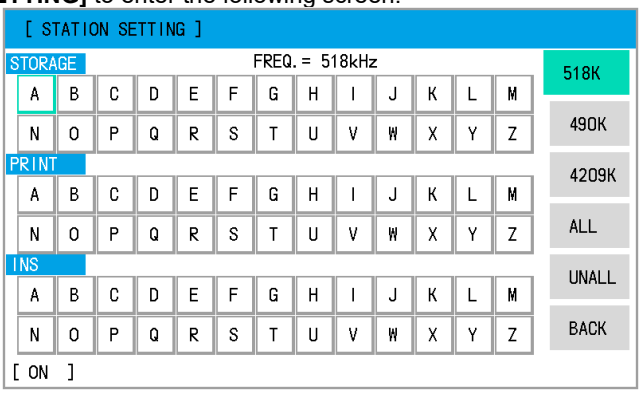


[Figure4-8] the default screen **[MSG List]**

4.3.1 Station Setting

It's to select certain stations to reject the messages broadcasted.

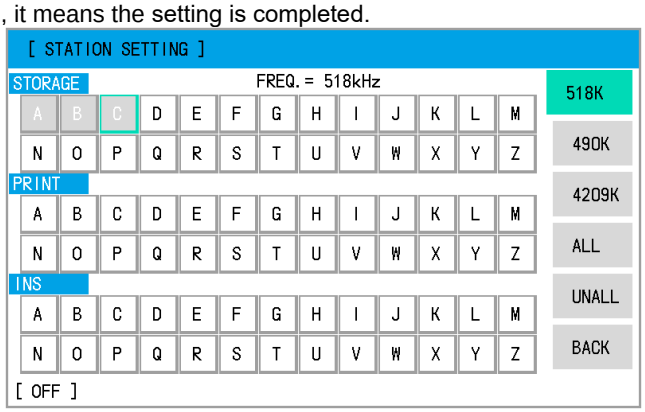
Click [STATION SETTING] to enter the following screen.



[Figure4-9]

On each frequency, a station ID can be set for receiving rejection, automatic printing and output to INS.

By clicking to select or cancel the character, when the character turn grey and the bottom change from [ON] to [OFF], it means the setting is completed.



[Figure4-10]

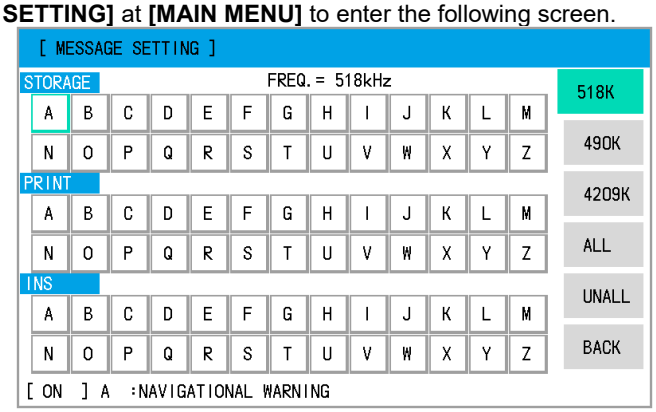
After finishing all settings for each frequency, click the **BACK** to escape to previous menu.

The default setting is like that all stations are not rejected to receive while all automatic printing and output to INS are disabled.

4.3.2 Message Setting

Messages received from the stations not rejected as preset in **[STATION SETTING]** will be saved or not saved in the memory depending on **[MESSAGE SETTING].**
Only those message types selected in **[MESSAGE SETTING]** will be properly stored.

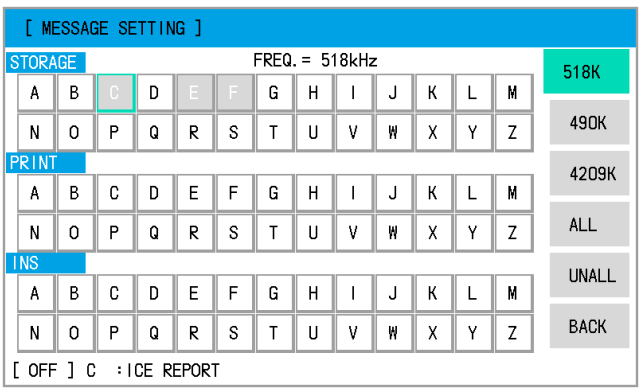
Click **[MESSAGE SETTING]** at **[MAIN MENU]** to enter the following screen.



[Figure4-11]

On each frequency, a message type ID can be set for saving rejection, automatic printing and output to INS.
By clicking to select or cancel the character, when the character turn grey and the bottom change from [ON] to [OFF], it means the setting is completed.

In the message type, A/B/D/L can not be rejected. It's compulsory for NVX-3000 to store A/B/D/L messages.



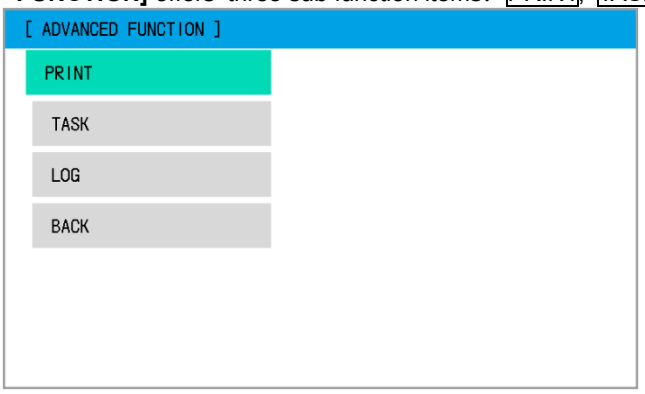
[Figure4-12]

After finishing all settings for each frequency, click the **BACK** to escape to previous menu.

The default setting is like that all message types are not rejected to store while all automatic printing and output to INS are disabled.

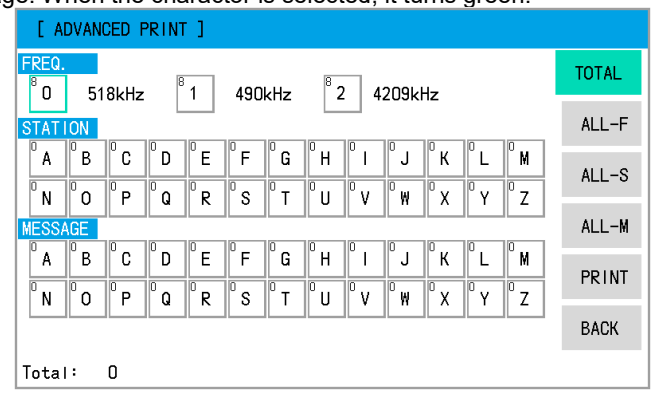
4.3.3 Advanced function

Click **[ADVANCED FUNCTION]** at **[MAIN MENU]** to enter the following screen.
In the **[ADVANCED FUNCTION]** offers three sub function items：PRINT, TASK, **LOG**.

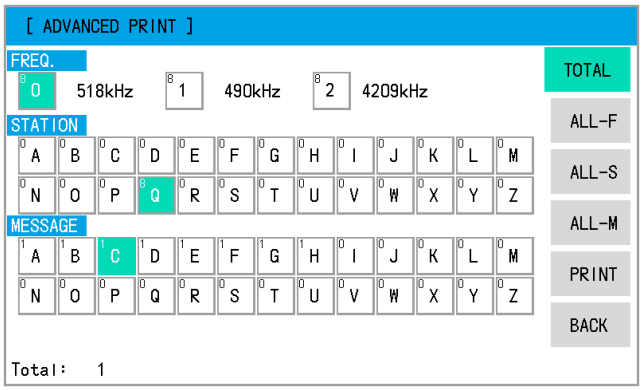


[Figure4-13]

Click PRINT to enter [ADVANCED PRINT]. It's to print all messages sent by selected frequency, station and message. When the charactor is selected, it turns green.

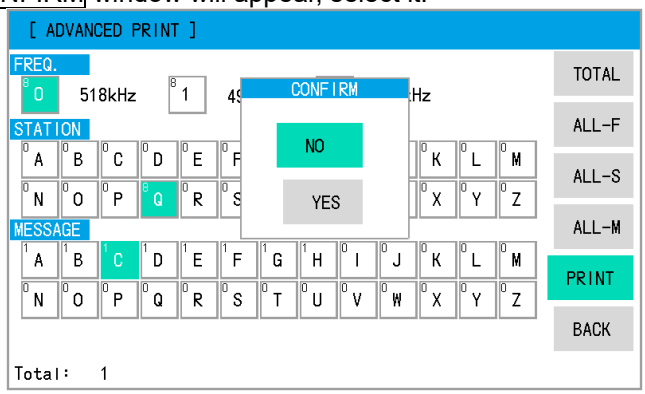


[Figure4-14]



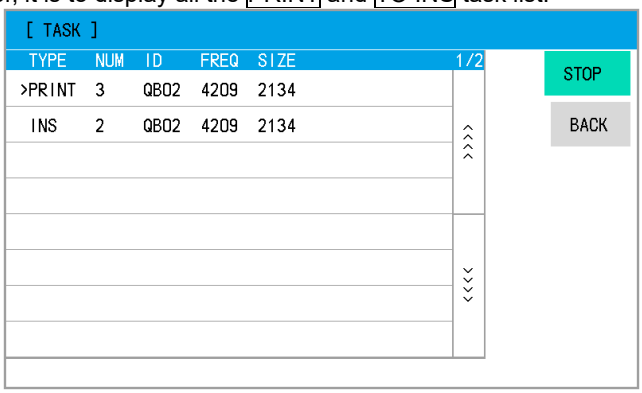
[Figure4-15]

Click PRINT, CONFIRM window will appear, select it.



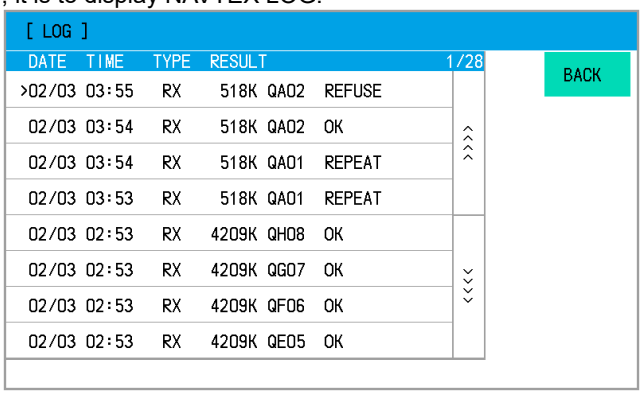
[Figure4-16]

Click TASK to enter, it is to display all the PRINT and TO INS task list.



[Figure4-17]

Click LOG to enter, it is to display NAVTEX LOG.

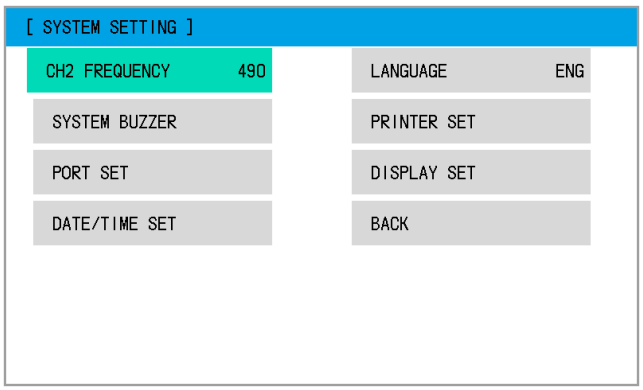


[Figure4-18]

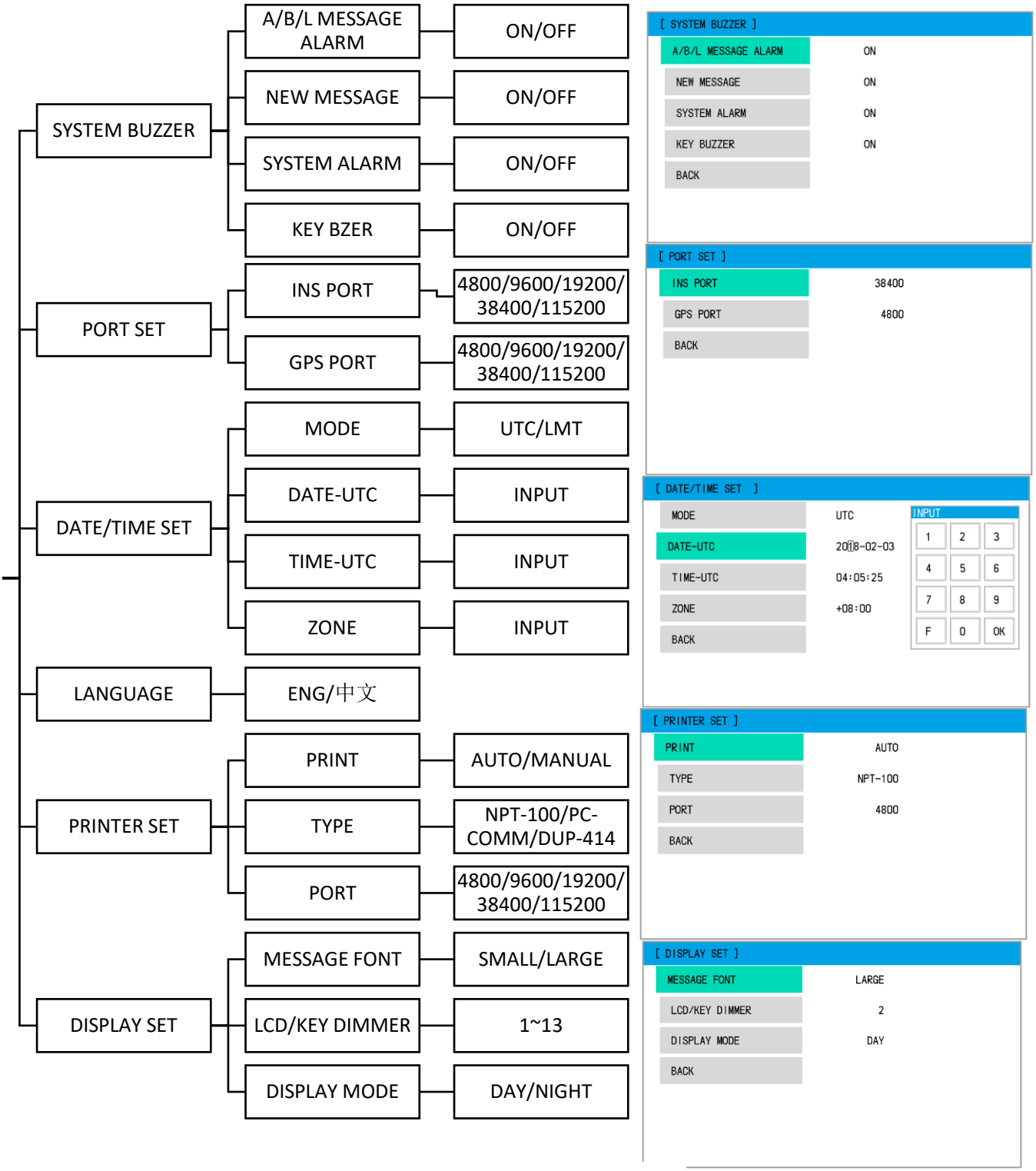
4.3.4 System Setting

NVX-3000 contains six system setting items as follows:

The CH2 FREQUENCY 490 is to display CH2 frequency, it cannot set.



[Figure4-19]


SYSTEM BUZZER
A/B/L MESSAGE ALARM
ON/OFF
NEW MESSAGE
ON/OFF
SYSTEM ALARM
ON/OFF
KEY BZER
ON/OFF
PORT SET
INS PORT
4800/9600/19200/ 38400/115200
GPS PORT
4800/9600/19200/ 38400/115200
DATE/TIME SET
MODE
UTC/LMT
DATE-UTC
INPUT
TIME-UTC
INPUT
ZONE
INPUT
LANGUAGE
ENG/中文
PRINTER SET
PRINT
AUTO/MANUAL
TYPE
NPT-100/PC-COMM/DUP-414
PORT
4800/9600/19200/ 38400/115200
DISPLAY SET
MESSAGE FONT
SMALL/LARGE
LCD/KEY DIMMER
1~13
DISPLAY MODE
DAY/NIGHT
[SYSTEM BUZZER]
A/B/L MESSAGE ALARM
ON
NEW MESSAGE
ON
SYSTEM ALARM
ON
KEY BUZZER
ON
BACK
[PORT SET]
INS PORT
38400
GPS PORT
4800
BACK
[DATE/TIME SET]
MODE
UTC
DATE-UTC
2018-02-03
TIME-UTC
04:05:25
ZONE
+08:00
BACK
INPUT
1 2 3
4 5 6
7 8 9
F 0 OK
[PRINTER SET]
PRINT
AUTO
TYPE
NPT-100
PORT
4800
BACK
[DISPLAY SET]
MESSAGE FONT
LARGE
LCD/KEY DIMMER
2
DISPLAY MODE
DAY
BACK

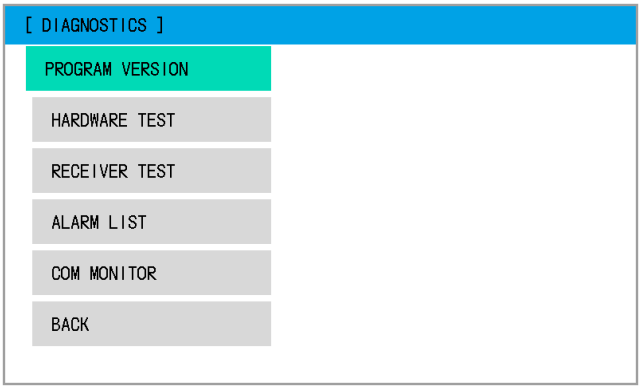
[Figure4-20]

A list of user settings that are non-volatile.

1 Station Setting: B1 for Store, Print and INS in 518KHz, 490KHz and 4209.5KHz
2. Message Setting: B2 for Store, Print and INS in 518KHz, 490KHz and 4209.5KHz
3 MENU LANGUAGE
4. A/B/L MESSAGE ALARM ON or OFF
5 NEW MESSAGE ON or OFF
6 SYSTEM ALARM ON or OFF
7. KEY BUZZER ON or OFF
8 PRINT MODE AUTO or MANUAL
9 PRINTER TYPE PC-COMM/DUP414/NPT-100
10 PRINTER PORT 4800/96//38400/115200
11 INS PORT 4800/96//38400/115200
12 GPS PORT 4800/96//38400/115200
13 MESSAGE FONT LARGE/SMALL
14 LCD/KEY DIMMER 1-13
15 TIME DISPLAY MODE UTC/LMT
16 TIME DATE
17 TIME ZONE

4.3.5 Diagnostics

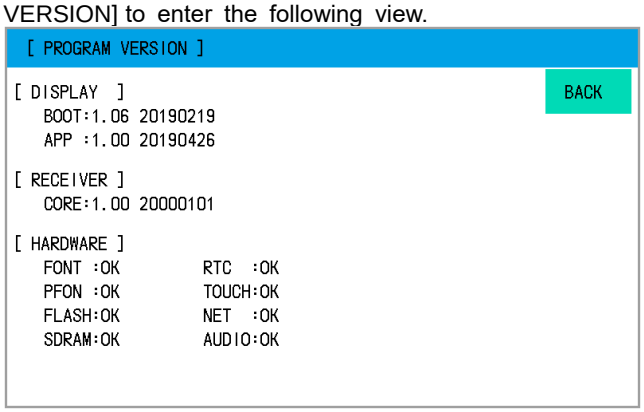
NVX-3000 diagnostics include 5 items as follows:



[Figure4-21]

4.3.5.1 PROGRAM VERSION

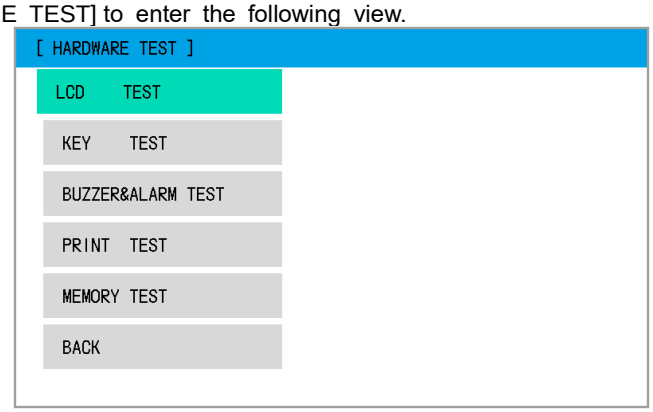
Click [PROGRAM VERSION] to enter the following view.



[Figure4-22]

4.3.5.2 HARDWARE TEST

Click [HARDWARE TEST] to enter the following view.



[Figure4-23]

➢ LCD TEST

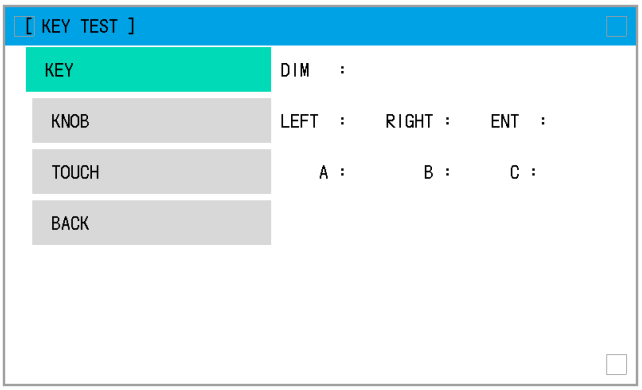
LCD TEST is designed to test whether the LCD is working or not.
Click [**LCD TEST**] to enter the test screen, turn knob **c**ontinuously to test the LCD.
Press the knob to exit

➢ KEY TEST

KEY TEST is designed to test whether the key, knob and touch-screen are working or not.
Click [KEY TEST**] to enter the following view.**

KEY test: press the DIM.
KNOB test: turn the knob to left and right, then press it.
TOUCH test: touch the screen anywhere three times.

If everything is good, OK icon will appear



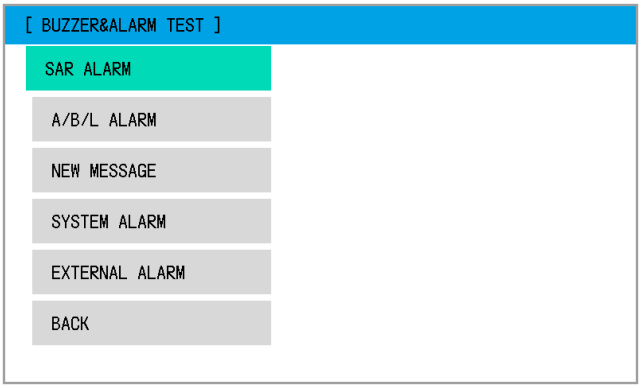
[Figure4-24]

➢ BUZZER&ALARM TEST

BUZZER&ALARM TEST is designed to test whether the buzzer is working or not. Built-in buzzer will sound when new message is received or an alarm is occurred.

Click [BUZZER&ALARM TEST**] to enter the following view.**

Click the icon, it will make different sound



[Figure4-25]

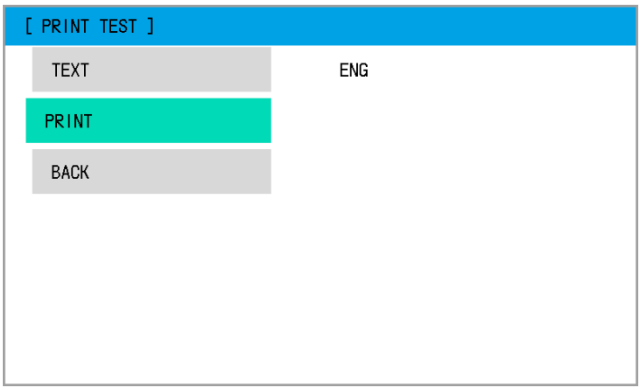
➢ PRINT TEST

PRINT TEST is designed to test whether the printer is working or not.

External printer is to be connected before this test function is carried out.

Click [PRINT TEST**] to enter the following view.**

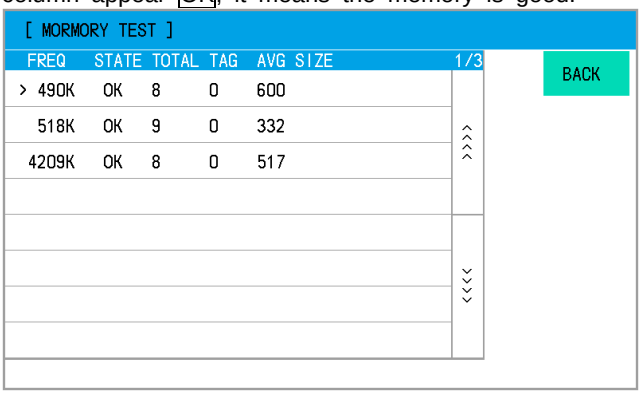
Click PRINT, the printer will operate.



[Figure4-26]

➢ MEMORY TEST

[MEMORY TEST]is designed to test whether the memory is working or not.
Click [MEMORY TEST**] to enter the following view.**
when the STATE column appear OK, it means the memory is good.

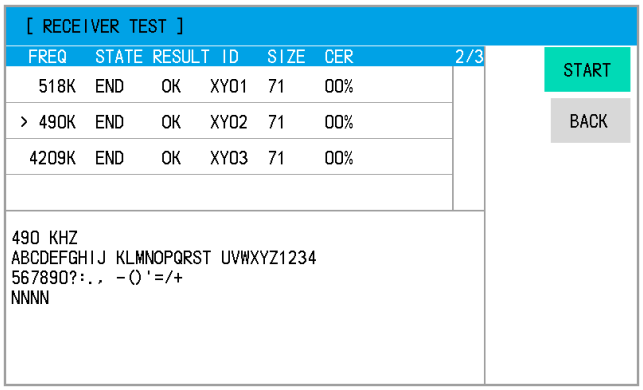


[Figure4-27]

4.3.5.3 RECEIVER TEST

Click [RECEIVER TEST] to enter the following screen.
[RECEIVER TEST] is to test the receiving performance with a built-in mini-transmitter.
The test order is 518kHz, 490kHz, 4209kHz. And the test output includes the reception state (STATE), ID, the characters number (SIZE) and error rate (CER).
When the receiver test is underway, the antenna icon twinkles on LCD screen.
The test will result in three states - OK, ERROR and FAIL as shown above.

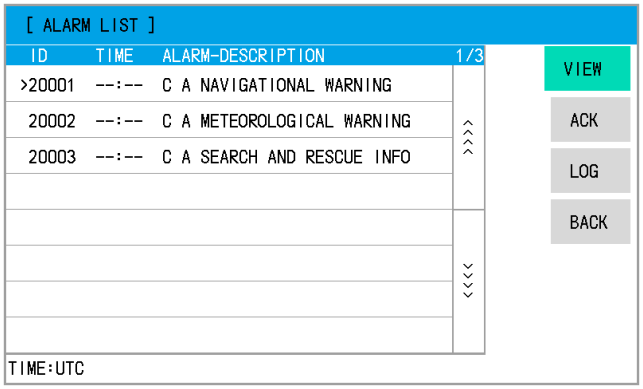
- **OK**: message received properly without any errors or the error rate less than 4%
- **ERROR**: message received at the error rate less than 33%
- **FAIL**: message not received or received message at the error rate more than 33%



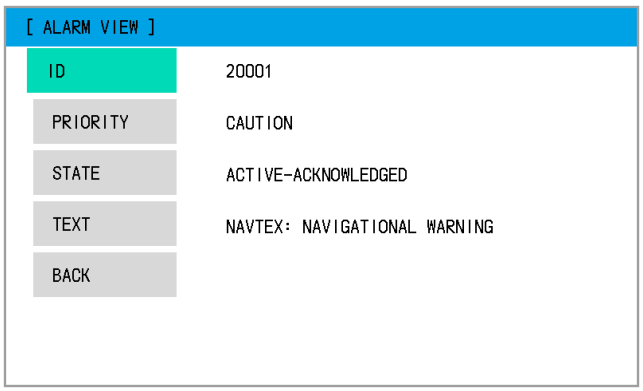
[Figure4-28]

4.3.5.4 ALARM LIST

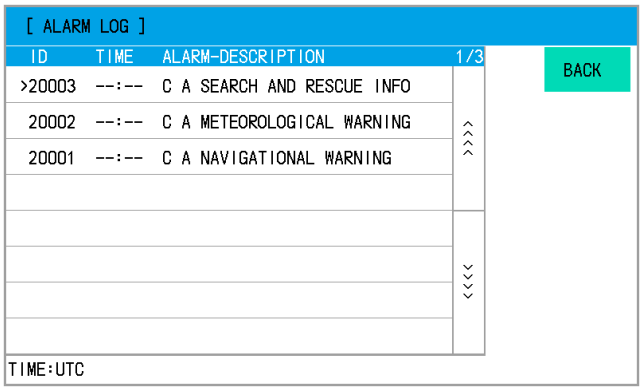
Click [ALARM LIST] to enter the following view.
[ALARM LIST] is to to check alarms
In the **[ALARM LIST]**, there is three sub item: to view the alarm, acknowledge and check the log.



[Figure4-29]



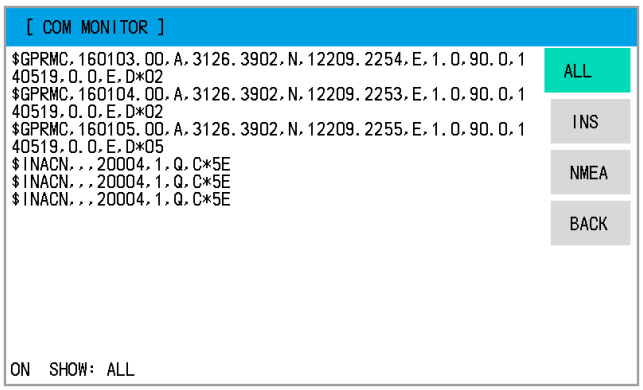
[Figure4-30]



[Figure4-31]

4.3.5.5 COM MONITOR

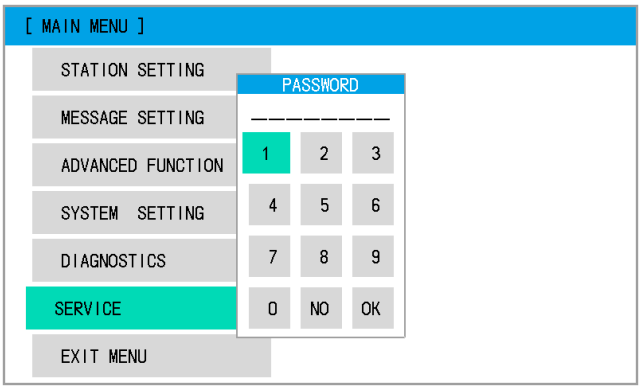
Click [COM MONITOR] to enter the following view.
It's to check the sentence from INS and NMEA



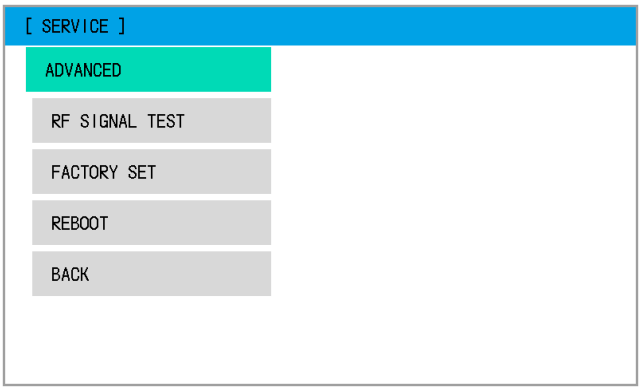
[Figure4-32]

4.3.6 Service

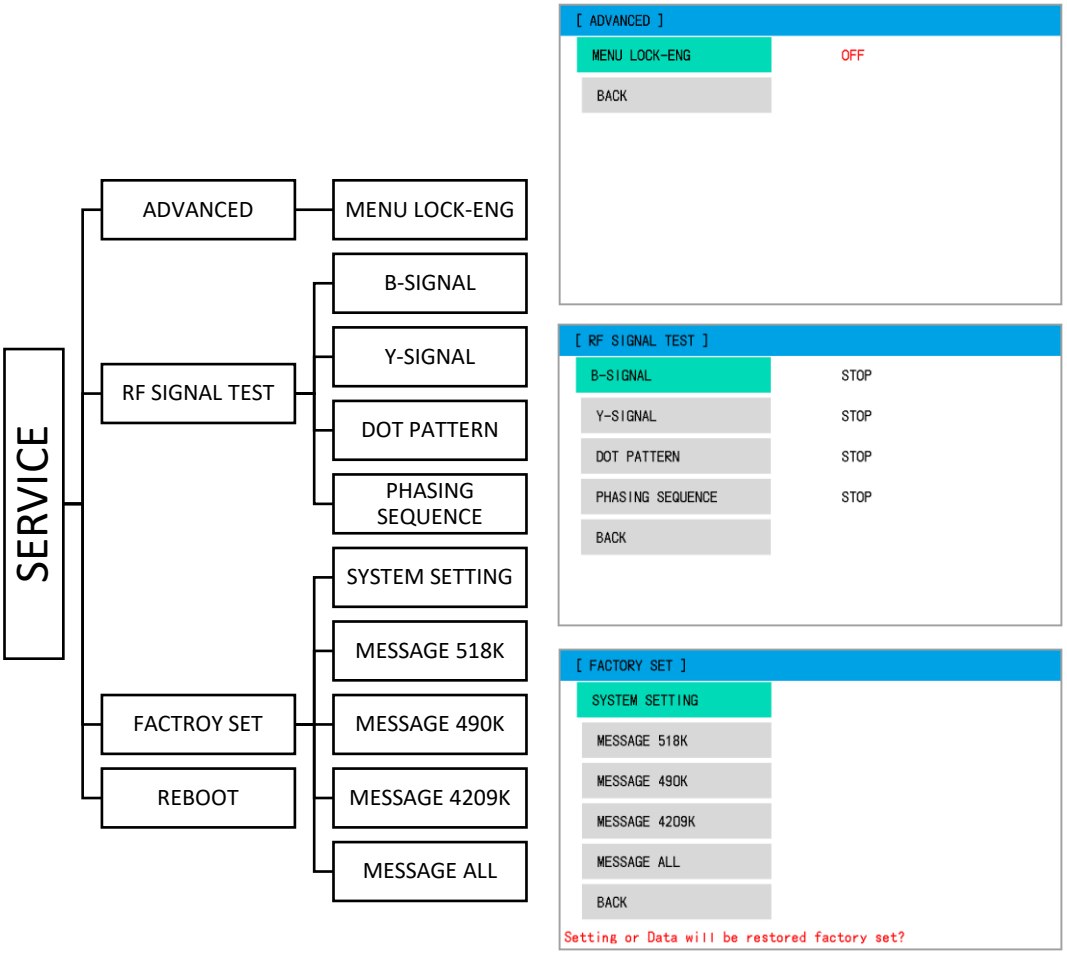
Click **SERVICE** item at [**MAIN MENU**].input the password to enter the [SERVICE] screen



[Figure4-33]



[Figure4-34]



[Figure4-35]

5. INSTALLATION

5.1 Antenna

The NVA100 whip antenna connected to NVX-3000, should be kept away from other transmitting elements to avoid damage although NVX-3000 might withstand 30 volts of RF high voltages. Generally the NAVTEX antenna should be 6 meters away from the MF/HF antenna, and 1 meter from VHF antenna.
Working on MF, NVA100 antenna does not need to be installed on high place. The ground cable on the antenna amplifier should be connected to the hull.
The NVX-1070F antenna amplifier can be mounted on a pole with steel tiles supplied. The grounding cable on the amplifier should be connected to ship's hull. The amplifier is supplied with a RG-58 cable of 20m.
After the antenna amplifier installed, tighten the whip antenna and seal the antenna base with watertight rubber adhesive tape.

5.2 Main Unit

NVX-3000 could be mounted on the table, on the wall, the bulkhead using the bracket supplied. For flush-type mount, refer to cutting drawing in this manual.
Select proper place to install the receiver to avoid sea water and don't be exposed to direct sunlight.

5.3 External alarm

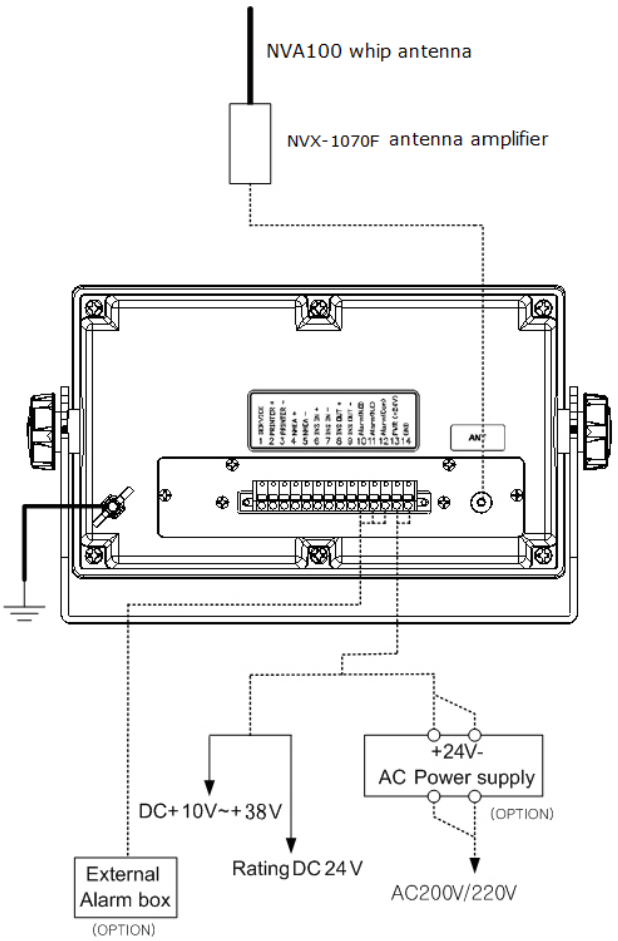
NVX-3000 can be connected to external alarm system. When connected, the external alarm can play the same role as built-in buzzer to indicate the incoming messages.

Pin No.	Description
10	External Alarm (Normal Open)
11	External Alarm (Normal Close)
12	External Alarm (Common)

5.4 Power supply connection

The power supply to NVX-3000 is +24VDC. The allowed range is between +10VDC ~ +38VDC. The shield cable is recommended to connect the NVX-3000 to ship's power source.

Pin No.	Description
13	+ 24V
14	0V



[Figure 5-1] Connection wiring diagram

5.5 Printer connection

As an optional device, NPT-100 is recommended as the printer used for NVX-3000.

- Model No. : **NPT-100**
- Rating : **DC6.5V 15W**

NVX-3000			**NPT-100 plug （RS232，9 pins）**	
Description	**Pin No.**		**Pin No.**	**Description**
PRINTER （+）	2	----------	3	RXD
PRINTER （-）	3	----------	5	GND

[Figure5-2] Printer Connection

Necessary settings are needed for NPT-100 before properly working with NVX-3000. Please refer to the manual supplied by the printer maker. The settings include the following parameters:

- **Serial port setting**
  The output of NPT-100 should be set as SERIAL.
- **Baud rate setting**
  NPT-100's baud rate can be 75,110,150,300,600,1200,2400,4800,9600,19200 bps. For NVX-3000, the acceptable rate includes 4800, 9600, 19200, 38400, 57600, 115200 bps. The default rate for NVX-3000 is 4800bps. If other rate except 4800bps is set for the printer, NVX-3000 has to be set for the same rate in **[SERVICE]** menu.

5.6 Digital interface

Digital interface sentence -- IEC 61162-1

Input sentences of NMEA IN port	: ZDA, RMC
Input sentences of INS port	: NRM, CQR, ACK, ACN
Output sentences of INS port	: ALR, NRX, NRM, ACN, ACK, ALF, ALC, ARC, HBT

APPEDIX ALARM SOLUTION

No.	ALARM	SOLUTION
1	Navigation alarm	NAVTEX MESSAGE notification, non-product failure, no need to dispose
2	Weather warning	NAVTEX MESSAGE notification, non-product failure, no need to dispose
3	Search and rescue alarm	NAVTEX MESSAGE notification, non-product failure, no need to dispose
4	Receiver failure	Restart it 1-3 times, If it fails to return to normal contact the manufacturer
5	Receiver self-test error	Restart it 1-3 times, If it fails to return to normal contact the manufacturer
6	Display hardware failure	Check the software version interface, contact the manufacturer

APPEDIX DIGITAL INTERFACE

Input sentences of NMEA IN port	: ZDA, RMC
Input sentences of INS port	: NRM, CQR, ACK, ACN
Output sentences of INS port	: ALR, NRX, NRM, ACN, ACK, ALF, ALC, ARC, HBT

APPEDIX DRAWING