FURUNO

OPERATOR'S MANUAL

NAVTEX RECEIVER

Model　　NX-900

FURUNO ELECTRIC CO., LTD.

www.furuno.com

IMPORTANT NOTICES

General

- This manual has been authored with simplified grammar, to meet the needs of international users.
- The operator of this equipment must read and follow the descriptions in this manual. Wrong operation or maintenance can void the warranty or cause injury.
- Do not copy any part of this manual without written permission from FURUNO.
- If this manual is lost or worn, contact your dealer about replacement.
- The contents of this manual and equipment specifications can change without notice.
- The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.
- Save this manual for future reference.
- Any modification of the equipment (including software) by persons not authorized by FURUNO will void the warranty.
- The following concern acts as our importer in Europe, as defined in DECISION No 768/2008/EC.
  - Name: FURUNO EUROPE B.V.
  - Address: Siriusstraat 86, 5015 BT, Tilburg, The Netherlands
- The following concern acts as our importer in UK, as defined in SI 2016/1025 as amended SI 2019/470.
  - Name: FURUNO (UK) LTD.
  - Address: West Building Penner Road Havant Hampshire PO9 1QY, U.K.
- All brand and product names, trademarks, registered trademarks, and service marks belong to their respective holders.

How to discard this product

Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (http://www.eiae.org/) for the correct method of disposal.

How to discard a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery, see the chapter on Maintenance. If a battery is used, tape + and - terminals of the battery before disposal to prevent fire, heat generation caused by short circuit.

In the European Union
The crossed-out trash can symbol indicates that all types of batteries must not be discarded in standard trash, or at a trash site. Take the used batteries to a battery collection site according to your national legislation and the Batteries Directive 2006/66/EU.
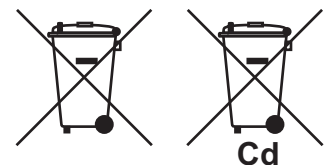
In the USA
The Mobius loop symbol (three chasing arrows) indicates that Ni-Cd and lead-acid rechargeable batteries must be recycled. Take the used batteries to a battery collection site according to local laws.
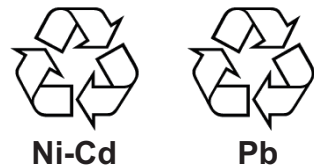
In the other countries
There are no international standards for the battery recycle symbol. The number of symbols can increase when the other countries make their own recycle symbols in the future.

⚠ SAFETY INSTRUCTIONS

The operator and installer must read the applicable safety instructions before attempting to operate or install the equipment.

⚠ **WARNING**	Indicates a condition that can cause death or serious injury if not avoided.
⚠ **CAUTION**	Indicates a condition that can cause minor or moderate injury if not avoided.

⚠ Warning, Caution	🚫 Prohibitive Action	❗ Mandatory Action

Safety Instructions for the Operator

⚠ WARNING

**ELECTRICAL SHOCK HAZARD
Do not open the equipment.**

Only qualified personnel should work inside the equipment.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Immediately turn off the power at the switchboard if the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.

About the TFT LCD

The TFT LCD is constructed using the latest LCD techniques, and displays 99.99% of its pixels. The remaining 0.01% of the pixels may drop out or blink, however this is not an indication of malfunction.

⚠ CAUTION

Keep heater away from equipment.

A heater can melt the equipment's power cord, which can cause fire or electrical shock.

Use the proper fuse.

Fuse rating is shown on the equipment. Use of a wrong fuse can result in damage to the equipment.

Do not operate the equipment with wet hands.

Electrical shock can result.

Warning Label

A warning label is attached to the AC-DC power supply. Do not remove the label.
If the label is missing or damaged, contact a FURUNO agent or dealer about replacement.

⚠ WARNING ⚠
To avoid electrical shock, do not remove cover. No user-serviceable parts inside.
⚠ 警 告 ⚠
感電の恐れあり。 サービスマン以外の方はカバーを開けないで下さい。内部には高電圧部分が数多くあり、万一さわると危険です。

Unit: PR-241 Power Supply
Name: Warning Label (1)
Type: 86-003-1011-3
Code No.: 100-263-233-10

Safety Instructions for the Installer

⚠ **WARNING**

Do not open the cover unless totally familiar with electrical circuits and service manual.

Improper handling can result in electrical shock.

Turn off the power at the ship's mains switchboard before beginning the installation. Post a warning sign near the switchboard to ensure that the power will not be applied while the equipment is being installed.

Serious injury or death can result if the power is not turned off, or is applied while the equipment is being installed.

⚠ **CAUTION**

Ground the equipment to prevent mutual interference.

Confirm that power supply voltage is compatible with the voltage rating of the equipment.

Connection to the wrong power supply can cause fire or equipment damage. The voltage rating appears on the label at the rear of the equipment.

Observe the following compass safe distances to prevent interference to a magnetic compass:

Unit	Standard compass	Steering compass
NX-900	TBD	TBD
PP-900	TBD	TBD
IF-900	TBD	TBD
NX-9HE	TBD	TBD
PR-241	0.85 m	0.55 m

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FOREWORD

A Word to NX-900 Owners

Congratulations on your choice of the FURUNO NX-900 NAVTEX Receiver. We are confident that you will enjoy many years of operation with this fine piece of equipment.

Since 1948, FURUNO Electric Company has enjoyed an enviable reputation for quality and reliability throughout the world. Our extensive global network of agents and dealers furthers this dedication to excellence.

The NX-900 is just one of the many FURUNO developments in the field of marine radio communication. The NX-900 provides cost-effective price, high sensitivity and simple operation in one compact and light-weight unit. In addition to its fundamental function of receiving NAVTEX broadcasts, this unit can also function as nav data display when connected to navigation equipment.

This unit is designed and constructed to ensure the user many years of trouble-free operation. To obtain full performance from the equipment, however, you should carefully read and follow the recommended procedures for installation, operation and maintenance. No machine can perform its intended functions unless it is installed and maintained properly.

Thank you for considering and purchasing FURUNO equipment.

Features

NAVTEX (Navigational Telex) is a worldwide coastal telex broadcasting system. Coastal NAVTEX broadcasting stations with specific ID's transmit Navigational warnings, Meteorological warnings, Search and Rescue (SAR) information and other navigational information for NAVTEX receiver-equipped vessels sailing in coastal waters.

The FURUNO NX-900 NAVTEX receiver receives NAVTEX messages and automatically displays them together with station ID and message category information.

If ship's position data is fed from navigation equipment, the NX-900 automatically decides in which NAVAREA the vessel is navigating, and selects stations. (NAVAREAs are geographical zones defined by the International Maritime Organization.)

Program No.

0850202-01.**
** denotes minor modifications.

CE/UKCA Declaration

With regards to CE/UKCA declarations, please refer to our website (www.furuno.com), for further information about RoHS conformity declarations.

Disclosure of Information about China RoHS

With regards to China RoHS information for our products, please refer to our website (www.furuno.com).

SYSTEM CONFIGURATIONS

ANTENNA
UNIT
NX-9HE

———— : Standard supply

·········· : Optional or local supply

10/20/30/40/50 m

MAIN UNIT
NX-900

PRINTER
PP-900

Grounding
IV-1.25sq.

2 or 5 m

Grounding
IV-1.25sq.

ECDIS (AMS)
INS

Max. 100 m

3 m

12-24 VDC

3.5 or 5 m

JUNCTION BOX
IF-900

12-24 VDC

ECDIS (AMS)
INS
GPS
(IEC61162-1)
Alarm Unit IC-350

PR-241

100-230 VAC
1Ø, 50/60 Hz
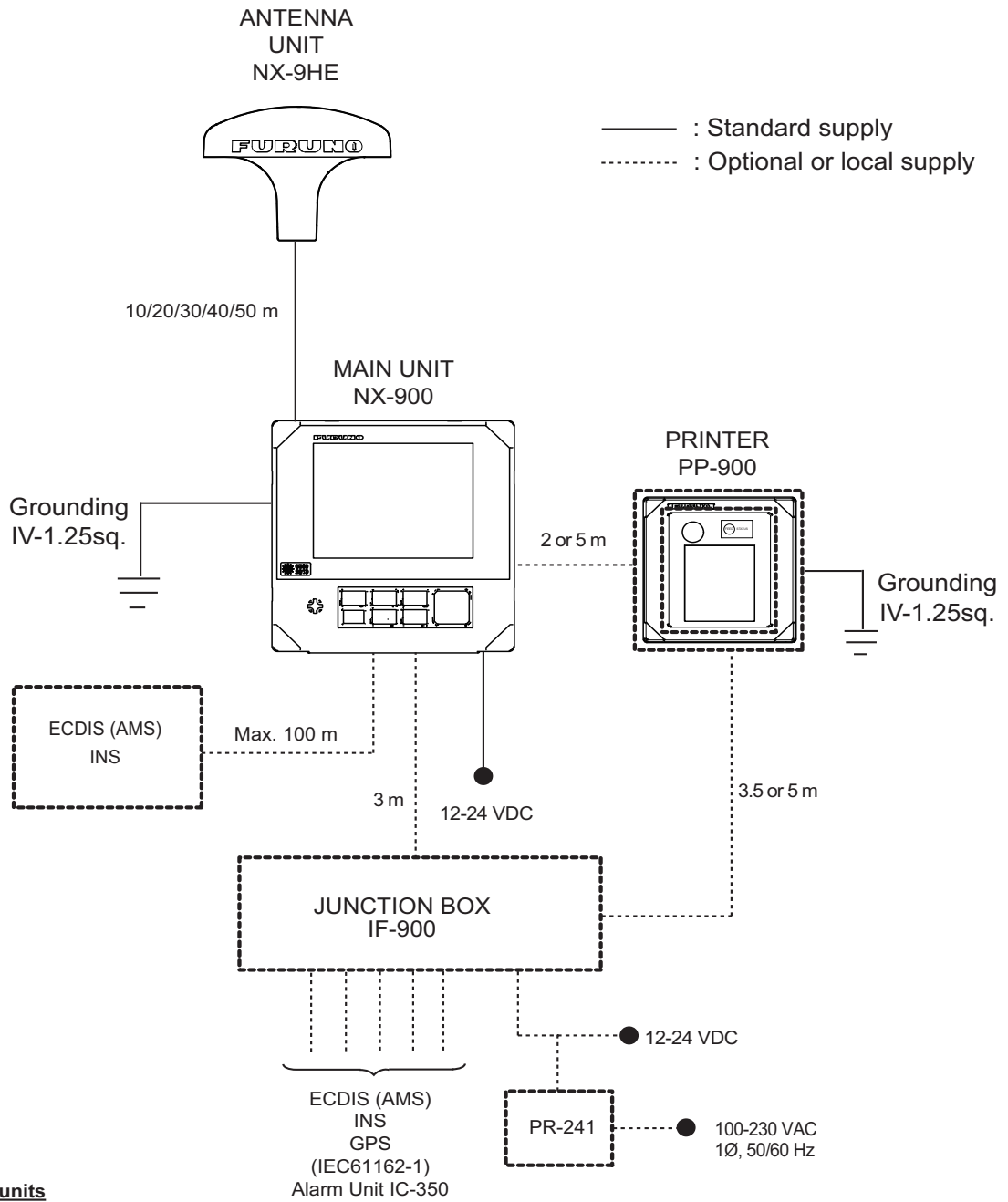
Category of units

Antenna unit	Exposed to the weather.
Others	Protected from the weather.

EQUIPMENT LISTS

Standard Supply

Name	Type	Code No.	Remarks
Main Unit	NX-900	-	Including bracket and knob bolts.
Antenna Unit	NX-9HE	-	-
Accessories	T.B.D	T.B.D	
Spare Parts	T.B.D	T.B.D	
Installation Materials	T.B.D	T.B.D	

Optional Supply

Name	Type	Code No.	Remarks
Printer	PP-900	-	
Printer Bracket	T.B.D	T.B.D	For PP-900
Cable Assembly	MJ-A6SPF0021A-***+	T.B.D	For PP-900, 2 m or 5 m
Printer Power Cable	MJ-A3SPF0013A-***C	T.B.D	For PP-900, 3.5 m or 5 m
Junction Box	IF-900	-	
Main Unit Cable Assy.	T.B.D	T.B.D	5 m or 10 m
AC-DC Power Supply	PR-241	-	100-230 VAC, 1ϕ, 50/60 Hz
Thermal Paper	TP058-30CL	001-097-110	Width: 57 mm, Roll: 30 m
Flush Mount Kit	T.B.D	T.B.D	For Main unit/ Printer
Mast Mounting Kit	CP20-01111	004-365-780	For Antenna Unit (NX-9HE)
Armored Coaxial Cable	RG-10/U-Y	001-234-860	10/20/30/40 or 50 m
		001-234-870	
		001-234-880	
		001-234-890	
		001-234-900	
Coaxial Cable	TNCP-TNCP-3DHR-L**M	T.B.D	10/20/30/40 or 50 m
Coaxial Connector Exchange Cable	TNCP-MJ-3DHR-L01M	T.B.D	1 m
Coaxial Connector Adapter	TNCP-MJ	000-199-749-10	
Coaxial Connector	GSC-100/MP-7	001-519-370	For Armoured Coaxial Cable RG-10/U-Y
Twisted Pair Cable	COSPEVVSBC 2PX0.2LF	001-240-460	2 pair, 10/20/30/40/ or 50 m
		001-240-480	
		001-240-450	
		001-240-500	
		001-240-490	
LAN Cable Assembly	MOD-WPAS0001-030+	001-588-860	Including waterproof cap, 3 m
Operator's Manual	OME-57150	000-199-979	

1. PRINCIPLE OF NAVTEX SYSTEM

1.1 How NAVTEX Works

NAVTEX is an acronym meaning Navigational Telex, and as its name shows, it is a kind of narrow band radio teletype system for sending (by frequency shift keying) text messages expressed in a 7-unit code. The difference is that a NAVTEX transmitter transmits nine control characters (header code) ahead of the main message, so that the receiver can identify the station, message type and serial number automatically.

1.2 NAVTEX System Operation

For navigation purposes, the world is divided into 21 areas (called Navareas). Each Navarea has multiple NAVTEX stations and each NAVTEX station has an identification code, from "A" to "Z". The frequency assigned to NAVTEX is 518 kHz (some stations use 490 or 4209.5 kHz also), and many stations exist in the same Navarea, 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).

1.3   Message Format

For automatic identification of messages, each message starts with nine control characters, called "Header codes".

The first five characters are always "ZCZC_" and common to all messages. This part is used for message synchronization. The latter four characters are designed as B1, B2, B3 and B4 indicate origin, category and serial number of the message.

Character B1 is the identification letter of the Navtex station "A" thru "Z". Character B2 indicates the type of message. "A" thru "Z", as listed below. 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. Number "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.

```
                    Header code
              ┌──────────────────────┐
        ZCZC  B1 B2 B3 B4      main message      NNNN
        ───   ──┬─┬─┬──┬──    ─────────────     ─────
        Start code │ │ │         Main message   Termination code
        (sync)     │ │ │
                   │ │ └── Serial number
                   │ │      "00":   Emergency message
                   │ │      "01" - "99": Normal message
                   │ │
                   │ └──── Type of message
                   │        "A" - "Z"
                   │        (See the list below.)
                   │
                   └────── Station ID
                            "A" - "Z"
```
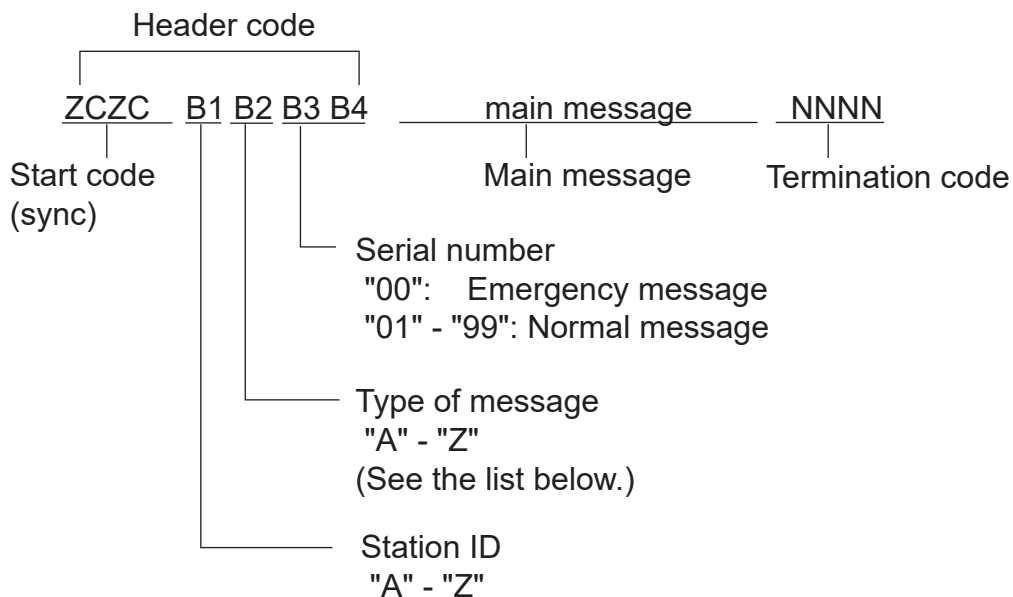
[Type of message (category)]

A:	navigational warning	I:	reserved presently not used
B:	meteorological warning	J:	SATNAV message
C:	ice report	K:	other electronic navigational aid system message
D:	search and rescue information/ piracy and armed robbery	L:	navigational warning (additional)
E:	meteorological forecast	M to Y:	reserved presently not used
F:	pilot message		
G:	AIS service message		
H:	LORAN-C message	Z:	QRU (no message on hand)

1.4 NAVTEX Station Map
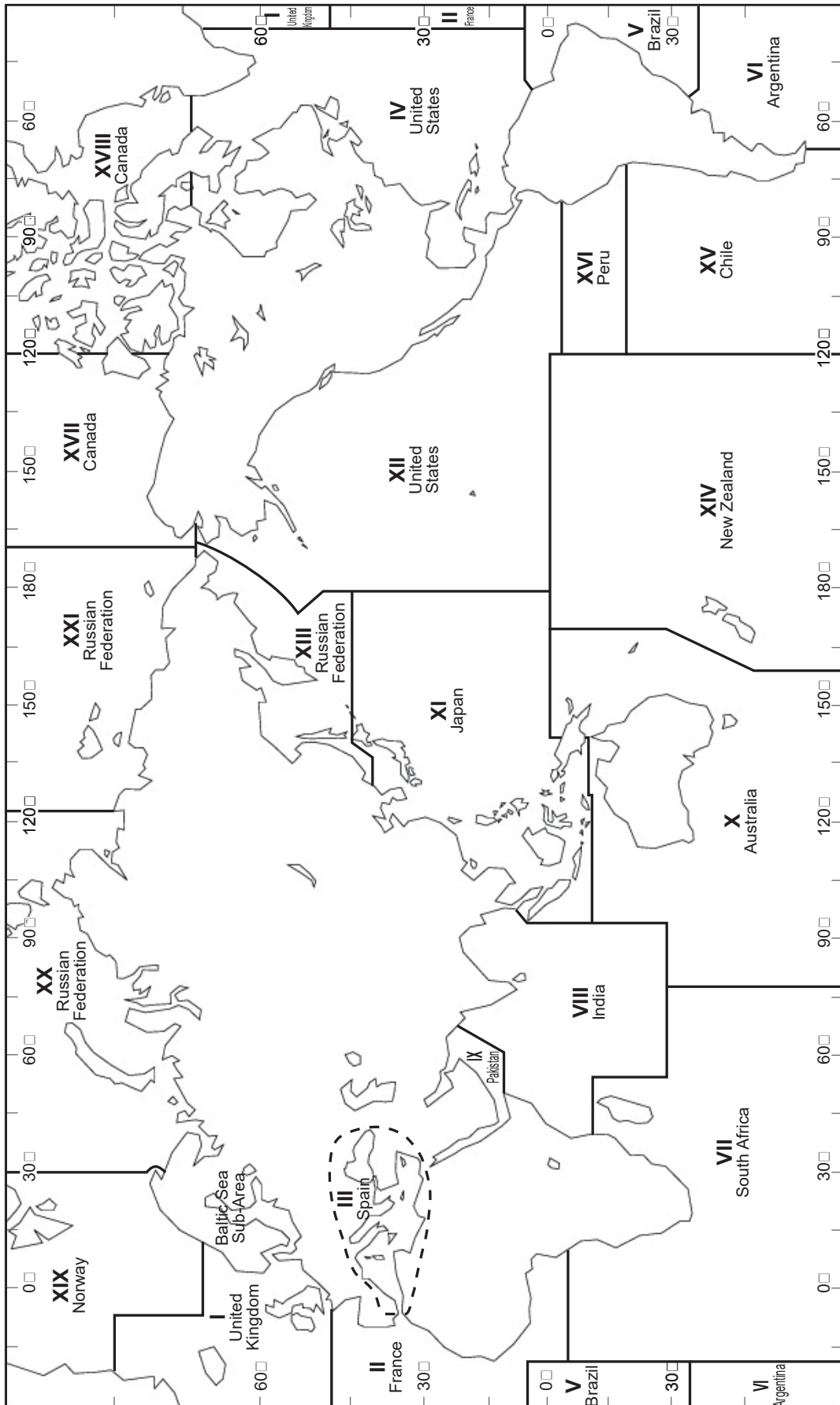
1.5   NAVTEX Station List

NAV area	Country	Station	Latitude	Longitude	Freq. (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
I	Belgium	Oostende	51° 11' N	002° 48' E	518	55	V	0330, 0730, 1130, 1530, 1930, 2330
							T	0310, 0710, 1110, 1510, 1910, 2310
					490		B	0010, 0410, 0810, 1210, 1610, 2010
	Estonia	Tallinn	59° 28' N	024° 21' E	518	250	U	0320, 0720, 1120, 1520, 1920, 2320
	Foroyar (Denmark)	Torshavn	62° 01' N	006° 48' W	518	250	D	0030, 0430, 0830, 1230, 1630, 2030
	Germany	Hamburg	53° 40' N	009° 48' E	518	400	S	0300, 0700, 1100, 1500, 1900, 2300
					490		L	0150, 0550, 0950, 1350, 1750, 2150
	Iceland	Grindavik	63° 47' N	022° 31' W	518	550	X	0350, 0750, 1150, 1550, 1950, 2350
					490		K	0140, 0540, 0940, 1340, 1740, 2140
		Reykjavik Radio	64° 05' N	021° 51' W	518	550	R	0250, 0650, 1050, 1450, 1850, 2250
					490		R	0320, 0720, 1120, 1520, 1920, 2320
		Saudanes	66° 11' N	018° 57' W	490	550	E	0040, 0440, 0840, 1240, 1640, 2040
	Ireland	Valencia	51° 56' N	010° 21' W	518	400	W	0340, 0740, 1140, 1540, 1940, 2340
		Malin Head	55° 22' N	007° 21' W	518	400	Q	0240, 0640, 1040, 1440, 1840, 2240
	Netherlands	Den Helder	52° 06' N	004° 15' E	518	110	P	0230, 0630, 1030, 1430, 1830, 2230
	Norway	Rogaland Radio	58° 48' N	005° 34' E	518	450	L	0150, 0550, 0950, 1350, 1750, 2150
		Orlandet	63° 40' N	009° 33' E	518	450	N	0210, 0610, 1010, 1410, 1810, 2210
		Tjome (Jeloya)	59° 26' N	010° 34' E	518	450	M	2000, 0600, 1000, 1400, 1800, 2200
	Sweden	Bjuroklubb	64° 28' N	021° 35' E	518	300	H	0110, 0510, 0910, 1310, 1710, 2110
		Gislovshammar	55° 29' N	014° 19' E	518	300	J	0130, 0530, 0930, 1330, 1730, 2130
		Grimeton	57° 06' N	012° 23' E	518	300	I	0120, 0520, 0920, 1320, 1720, 2120
	United Kingdom	Cullercoats	55° 02' N	001° 26' W	518	270	G	0100, 0500, 0900, 1300, 1700, 2100
					490		U	0320, 0720, 1120, 1520, 1920, 2320
		Portpatrick	54° 51' N	005° 07' W	518	270	O	0220, 0620, 1020, 1420, 1820, 2220
					490		C	0020, 0420, 0820, 1220, 1620, 2020
		Niton	50° 35' N	001° 18' W	518	270	E	0040, 0440, 0840, 1240, 1640, 2040
							K	0140, 0540, 0940, 1340, 1740, 2140
					490		I	0120, 0520, 0920, 1320, 1720, 2120
							T	0310, 0710, 1110, 1510, 1910, 2310

NAV area	Country	Station	Latitude	Longitude	Freq. (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
II	Cape Verde	Sao Vicente	16° 51' N	025° 00' W	518	250	U	0320, 0720, 1120, 1520, 1920, 2320
					490		P	0310, 0710, 1110, 1510, 1910, 2310
	France	Corsen	48° 28' N	005° 03' W	518	300	A	0000, 0400, 0800, 1200, 1600, 2000
					490		E	0040, 0440, 0840, 1240, 1640, 2040
	Morocco	Casablanca Radio	33° 36' N	007° 38' W	518	400	M	0200, 0600, 1000, 1400, 1800, 2200
	Portugal	Horta	38° 32' N	028° 38' W	518	640	F	0050, 0450, 0850, 1250, 1650, 2050
					490		J	0130, 0530, 0930, 1330, 1730, 2130
		Monsanto	38° 44' N	009° 11' W	518	530	R	0250, 0650, 1050, 1450, 1850, 2250
					490		G	0100, 0500, 0900, 1300, 1700, 2100
	Senegal	Dakar	14° 46' N	017° 21' E	518	200	C	0020, 0420, 0820, 1220, 1620, 2020
					490		M	0200, 0600, 1000, 1400, 1800, 2200
	Spain	Coruna	43° 21' N	008° 27' W	518	400	D	0030, 0430, 0830, 1230, 1630, 2030
					490		W	0340, 0740, 1140, 1540, 1940, 2340
		Las Palmas	28° 10' N	015° 25' W	518	400	I	0120, 0520, 0920, 1320, 1720, 2120
					490		A	0000, 0400, 0800, 1200, 1600, 2000
		Tarifa	36° 01' N	005° 34' W	518	400	G	0100, 0500, 0900, 1300, 1700, 2100
					490		T	0310, 0710, 1110, 1510, 1910, 2310
III	Algeria	Algiers	36° 44' N	003° 10' E	518	250	B	0010, 0410, 0810, 1210, 1610, 2010
					490		V	0330, 0730, 1130, 1530, 1930, 2330
	Bulgaria	Varna	43° 04' N	027° 46' E	518	350	J	0130, 0530, 0930, 1330, 1730, 2130
	Croatia	Split	43° 30' N	016° 29' E	518	85	Q	0240, 0640, 1040, 1440, 1840, 2240
	Cyprus	Cyprus	35° 03' N	033° 17' E	518	200	M	0200, 0600, 1000, 1400, 1800, 2200
	Egypt	Alexandria	31° 12' N	029° 52' E	518	350	N	0210, 0610, 1010, 1410, 1810, 2210
	France	La Garde	43° 06' N	005° 59' E	518	250	W	0340, 0740, 1140, 1540, 1940, 2340
					490		S	0300, 0700, 1100, 1500, 1900, 2300
	Greece	Iraklion	35° 20' N	025° 07' E	518	280	H	0110, 0510, 0910, 1310, 1710, 2110
		Kerkyra	39° 37' N	019° 55' E	518	280	K	0140, 0540, 0940, 1340, 1740, 2140
		Limnos	39° 52' N	025° 04' E	518	280	L	0150, 0550, 0950, 1350, 1750, 2150
	Iran	Now Shahr	36° 42' N	052° 33' E	490	250	J	0130, 0530, 0930, 1330, 1730, 2130
	Israel	Haifa	32° 49' N	035° 00' E	518	200	P	0020, 0420, 0820, 1220, 1620, 2020

NAV area	Country	Station	Latitude	Longitude	Freq. (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
III	Italy	La Maddalena	41° 13' N	009° 23' E	518	400	R	0250, 0650, 1050, 1450, 1850, 2250
					490		I	0120, 0520, 0920, 1320, 1720, 2120
		Sellia Marina	38° 52' N	016° 43' E	518	400	V	0330, 0730, 1130, 1530, 1930, 2330
					490		W	0340, 0740, 1140, 1540, 1940, 2340
		Mondolfo	43° 44' N	013° 08' E	518	400	U	0320, 0720, 1120, 1520, 1920, 2320
					490		E	0040, 0440, 0840, 1240, 1640, 2040
		Tunis	36° 53' N	010° 11' E	518	400	T	0310, 0710, 1110, 1510, 1910, 2310
	Malta	Malta	35° 49' N	014° 32' E	518	400	O	0220, 0620, 1020, 1420, 1820, 2220
	Romania	Constanta	44° 06' N	028° 37' E	490	400	L	0550, 0950, 1350, 1750, 2150, 0150
	Russia	Astrakhan	45° 47' N	047° 33' E	518	250	W	0340, 0740, 1140, 1540, 1940, 2340
		Novorossiysk	44° 36' N	037° 58' E	518	300	A	0300, 0700, 1100, 1500, 1900, 2300
	Spain	Valencia	38° 43' N	000° 09' E	518	300	X	0350, 0750, 1150, 1550, 1950, 2350
					490		M	0200, 0600, 1000, 1400, 1800, 2200
	Turkey	Istanbul	41° 04' N	028° 57' E	518	300	D	0030, 0430, 0830, 1230, 1630, 2030
					490		B	0010, 0410, 0810, 1210, 1610, 2010
		Samsun	41° 17' N	036° 20' E	518	300	E	0040, 0440, 0840, 1240, 1640, 2040
					490		A	0000, 0400, 0800, 1200, 1600, 2000
		Antalya	36° 53' N	030° 42' E	518	300	F	0050, 0450, 0850, 1250, 1650, 2050
					490		D	0030, 0430, 0830, 1230, 1630, 2030
		Izmir	38° 21' N	026° 35' E	518	300	I	0120, 0520, 0920, 1320, 1720, 2120
					490		C	0020, 0420, 0820, 1220, 1620, 2020
	Ukraine	Kerch	45° 22' N	036° 29' E	518	120	G	0100, 0500, 0900, 1300, 1700, 2100
					490		U	0320, 0720, 1120, 1520, 1920, 2320
		Odessa	46° 29' N	030° 44' E	518	280	C	0230, 0630, 1030, 1430, 1830, 2230
					490		X	0350, 0750, 1150, 1550, 1950, 2350
IV	Bermuda (UK)	Bermuda	32° 23' N	064° 41' W	518	280	B	0010, 0410, 0810, 1210, 1610, 2010
	Canada	Riviere-au-Renard	50° 11' N	066° 07' W	518	300	C	0020, 0420, 0820, 1220, 1620, 2020
					490		D	0035, 0435, 0835, 1235, 1635, 2035
		Wiarton	44° 20' N	081° 10' W	518	300	H	0110, 0510, 0910, 1310, 1710, 2110
		St. Johns	47° 30' N	052° 40' W	518	300	O	0220, 0620, 1020, 1420, 1820, 2220
		Thunder Bay	48° 25' N	089° 20' W	518	300	P	0230, 0630, 1030, 1430, 1830, 2230
		Sydney, NS	46° 10' N	060° 00' W	518	300	Q	0240, 0640, 1040, 1440, 1840, 2240
					490		J	0255, 0655, 1055, 1455, 1855, 2255
		Yarmouth	43° 45' N	066° 10' W	518	300	U	0320, 0720, 1120, 1520, 1920, 2320
					490		V	0335, 0735, 1135, 1535, 1935, 2335
		Montreal	45° 41' N	073° 16' W	518	400	W	0340, 0740, 1140, 1540, 1940, 2340

NAV area	Country	Station	Latitude	Longitude	Freq. (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
IV	Canada	Labrador	53° 42' N	057° 01' W	518	300	X	0350, 0750, 1150, 1550, 1950, 2350
		Iqaluit, NU	63° 43' N	068° 33' W	518	300	T	0310, 0710, 1110, 1510, 1910, 2310
					490		S	0300, 0700, 1100, 1500, 1900, 2300
	Greenland	Kook Island (Nuuk)	64° 04' N	052° 01' W	518	400	W	0340, 0740, 1140, 1540, 1940, 2340
		Simiutaq	60° 37' N	046° 21' W	518	400	M	0200, 0600, 1000, 1400, 1800, 2200
	United States	Miami	25° 37' N	080° 23' W	518	240	A	0000, 0400, 0800, 1200, 1600, 2000
		Boston	41° 43' N	070° 30' W	518	200	F	0050, 0450, 0850, 1250, 1650, 2050
		New Orleans	29° 53' N	089° 57' W	518	200	G	0100, 0500, 0900, 1300, 1700, 2100
		Portsmouth	36° 43' N	076° 00' W	518	280	N	0210, 0610, 1010, 1410, 1810, 2210
		San Juan	18° 28' N	067° 04' W	518	200	R	0250, 0650, 1050, 1450, 1850, 2250
		Charleston	32° 08' N	081° 42' W	518	200	E	0040, 0440, 0840, 1240, 1640, 2040
	Netherlands Antilles	Curacao	12° 10' N	068° 52' W	518	400	H	0110, 0510, 0910, 1310, 1710, 2110
V				NIL				
VI	Argentina	Ushaia	54° 48' S	068° 18' W	518	280	M	0200, 0600, 1000, 1400, 1800, 2200
					490		A	0000, 0400, 0800, 1200, 1600, 2000
		Rio Gallegos	51° 37' S	069° 03' W	518	280	N	0210, 0610, 1010, 1410, 1810, 2210
					490		B	0010, 0410, 0810, 1210, 1610, 2010
		Rivadavia	45° 51' S	067° 25' W	518	280	O	0220, 0620, 1020, 1420, 1820, 2220
					490		C	0020, 0420, 0820, 1220, 1620, 2020
		Bahia Blanca	38° 43' S	062° 06' W	518	280	P	0230, 0630, 1030, 1430, 1830, 2230
					490		D	0230, 0630, 1030, 1430, 1830, 2230
		Mar del Plata	38° 03' S	057° 32' W	518	280	Q	0240, 0640, 1040, 1440, 1840, 2240
					490		E	0040, 0440, 0840, 1240, 1640, 2040
		Buenos Aires	34° 36' S	058° 22' W	518	560	R	0250, 0650, 1050, 1450, 1850, 2250
					490		F	0050, 0450, 0850, 1250, 1650, 2050
	Uruguay	La Paloma	34° 40' S	054° 09' W	518	280	F	0050, 0450, 0850, 1250, 1650, 2050
					490		A	0000, 0400, 0800, 1200, 1600, 2000
VII	Namibia	Walvis Bay	23° 03' S	014° 37' E	518	378	B	0010, 0410, 0810, 1210, 1610, 2010
	South Africa	Cape Town	33° 40' S	018° 43' E	518	300	C	0020, 0420, 0820, 1220, 1620, 2020
		Port Elizabeth	34° 02' S	025° 33' E	518	300	I	0120, 0520, 0920, 1320, 1720, 2120
		Durban	29° 48' S	030° 49' E	518	300	O	0220, 0620, 1020, 1420, 1820, 2220
VIII	India	Mumbai (Bombay)	19° 05' N	072° 50' E	518	250	G	0100, 0500, 0900, 1300, 1700, 2100
		Madras	13° 05' N	080° 17' E	518	400	P	0230, 0630, 1030, 1430, 1830, 2230
	Mauritius	Mauritius	20° 10' S	057° 28' E	518	400	C	0020, 0420, 0820, 1220, 1620, 2020

(Continued on next page)

1-7

NAV area	Country	Station	Latitude	Longitude	Freq. (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
IX	Bahrain	Hamala	26° 09' N	050° 28' E	518	300	B	0010, 0410, 0810, 1210, 1610, 2010
	Egypt	Ismailia	30° 28' N	032° 22' E	518	200	X	0350, 0750, 1150, 1550, 1950, 2350
					4209.5		X	0750, 1150
		Quseir (Kosseir)	26° 06' N	034° 17' E	518	400	V	0330, 0730, 1130, 1530, 1930, 2330
	Iran	Bandar Abbas	27° 07' N	056° 03' E	518	300	F	0050, 0450, 0850, 1250, 1650, 2050
					490		I	0120, 0520, 0920, 1320, 1720, 2120
		Bushehr	28° 59' N	050° 49' E	518	300	A	0000, 0400, 0800, 1200, 1600, 2000
					490		D	0030, 0430, 0830, 1230, 1630, 2030
	Oman	Muscat	23° 36' N	058° 30' E	518	270	M	0200, 0600, 1000, 1400, 1800, 2200
	Pakistan	Karachi	24° 51' N	067° 03' E	518	400	P	0230, 0630, 1030, 1430, 1830, 2230
	Saudi Arabia	Jeddah	21° 23' N	039° 10' E	518	390	H	0705, 1305, 1905
		Damman	26° 26' N	050° 06' E	518	390	G	0100, 0500, 0900, 1300, 1700, 2100
X					NIL			
XI	China	Sanya	18° 14' N	109° 30' E	518	250	M	0200, 0600, 1000, 1400, 1800, 2200
		Guangzhou	23° 09' N	113° 29' E	518	250	N	0210, 0610, 1010, 1410, 1810, 2210
		Fuzhou	26° 01' N	119° 18' E	518	250	O	0220, 0620, 1020, 1420, 1820, 2220
		Shanghai	31° 08' N	121° 33' E	518	250	Q	0240, 0640, 1040, 1440, 1840, 2240
		Dalian	38° 52' N	121° 31' E	518	250	R	0250, 0650, 1050, 1450, 1850, 2250
	Hong Kong	Hong Kong	22° 13' N	114° 15' E	518	400	L	0150, 0550, 0950, 1350, 1750, 2150
	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		J	0130, 0530, 0930, 1330, 1730, 2130
		Pyongsan	35° 36' N	126° 29' E	518	200	W	0340, 0740, 1340, 1540, 1940, 2340
					490		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

NAV area	Country	Station	Latitude	Longitude	Freq. (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
XI	North Korea	Hamhung	39° 50' N	127° 41' E	518	200	E	0040, 0440, 0840, 1240, 1840, 2240
					490		B	0010, 0410, 0810, 1210, 1610, 2210
		Pyongyang	38° 55' N	125° 43' E	518	200	D	0030, 0430, 0830, 1230, 1830, 2230
					490		A	0000, 0400, 0800, 1200, 1600, 2200
	Philippines	Davao	07° 04' N	125° 36' E	518	400	K	0140, 0540, 0940, 1340, 1740, 2140
		Manila	14° 35' N	121° 03' E	518	400	J	0130, 0530, 0930, 1330, 1730, 2130
		Puerto Princesa	09° 44' N	118° 43' E	518	400	I	0120, 0520, 0920, 1320, 1720, 2120
	Singapore	Singapore	01° 21' N	103° 59' E	518	400	C	0020, 0420, 0820, 1220, 1620, 2020
	Taiwan	Kaohsiung	22° 29' N	120° 25' E	518	216	P	0230, 0630, 1030, 1430, 1830, 2230
		Chilung	25° 09' N	121° 44' E	518	400	P	0230, 0630, 1030, 1430, 1830, 2230
	Thailand	Bangkok	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	0330, 0730, 1130, 1530, 1930, 2330
	Vietnam	Ho Chi Minh City	10° 23' N	107° 08' E	518	400	X	0350, 0750, 1150, 1550, 1950, 2350
		Haiphong	20° 44' N	106° 44' E	4209.5	400	W	0230, 0630, 1030, 1430, 1830, 2230
					490		W	0340, 0740, 1140, 1540, 1940, 2340
		Danang	16° 05' N	108° 13' E	518	400	K	0140, 0540, 0940, 1340, 1740, 2140
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
	Ecuador	Ayora	00° 45' S	090° 19' W	518	400	L	0150, 0550, 0950, 1350, 1750, 2150
					490		A	0000, 0400, 0800, 1200, 1600, 2000
	United States	San Francisco	37° 55' N	122° 44' W	518	350	C	0020, 0420, 0820, 1220, 1620, 2020
		Kodiak (EAST)	57° 46' N	152° 34' W	518	200	J	0130, 0530, 0930, 1330, 1730, 2130
		Kodiak (WEST)					X	0350, 0750, 1150, 1550, 1950, 2250
		Honolulu	21° 22' N	158° 09' W	518	350	O	0220, 0620, 1020, 1420, 1820, 2220
		Cambria	35° 31' N	121° 03' W	518	350	Q	0240, 0640, 1040, 1440, 1840, 2240
		Astoria	46° 10' N	123° 49' W	518	216	W	0340, 0740, 1140, 1540, 1940, 2240
XIII	Russia	Beringovskiy	63° 03' N	179° 20' E	518	400	E	0040, 0440, 0840, 1240, 1640, 2040
		Kholmsk	47° 02' N	142° 03' E	518	300	B	0010, 0410, 0810, 1210, 1610, 2010
		Magadan	59° 41' N	150° 09' E	518	120	D	0030, 0430, 0830, 1230, 1630, 2030
		Okhotsk	59° 22' N	143° 12' E	518	300	G	0100, 0500, 0900, 1300, 1700, 2100
		Petropavlovsk	53° 00' N	158° 40' E	518	300	C	0020, 0420, 0820, 1220, 1620, 2020
		Provideniya	64° 40' N	173° 10' W	518	400	F	0050, 0450, 0850, 1250, 1650, 2050
		Vladivostok	43° 23' N	131° 54' E	518	230	A	0000, 0400, 0800, 1200, 1600, 2000
XIV	NIL							

NAV area	Country	Station	Latitude	Longitude	Freq. (kHz)	Area (nm)	Station ID	Broadcast schedule (UTC)
XV	Chile	Antofagasta	23° 40' S	070° 25' W	518	300	A	0400, 1200, 2000
							H	0000, 0800, 1600
		Valparaiso	32° 48' S	071° 29' W	518	300	B	0410, 1210, 2010
							I	0010, 0810, 1610
		Talcahuano	36° 42' S	073° 06' W	518	300	C	0420, 1220, 2020
							J	0020, 0820, 1620
		Puerto Montt	41° 30' S	072° 58' W	518	300	D	0430, 1230, 2030
							K	0030, 0830, 1630
		Punta Arenas	53° 09' S	070° 58' W	518	300	E	0440, 1240, 2040
							L	0040, 0840, 1640
		Isla de Pascua	27° 09' S	109° 25' W	518	300	F	0450, 1250, 2050
							G	0050, 0850, 1650
XVI	Ecuador	Guayaquil	02° 17' S	079° 52' W	518	400	M	0200, 0600, 1000, 1400, 1800, 2200
	Peru	Paita	05° 05' S	081° 07' W	518	200	S	0300, 0700, 1100, 1500, 1900, 2300
		Callao	12° 03' S	077° 09' W	518	200	U	0320, 0720, 1120, 1520, 1920, 2320
		Mollendo	17° 01' S	072° 01' W	518	200	W	0340, 0740, 1140, 1540, 1940, 2340
XVII	NIL							
XVIII* (EXT)	Greenland	Uppernavik	72° 47' N	056° 07' W	518	400	I	0120, 0520, 0920, 1320, 1720, 2120
XIX* (I)	Norway	Bodo	67° 16' N	014° 23' E	518	450	B	0010, 0410, 0810, 1210, 1610, 2010
		Vardoe Radio	70° 22' N	031° 06' E	518	450	C	0020, 0420, 0820, 1220, 1620, 2020
		Svalbard	78° 04' N	013° 38' E	518	450	A	0000, 0400, 0800, 1200, 1600, 2000
XX* (I)	Russia	Arkhangelsk	64° 51' N	040° 17' E	518	300	L	0150, 0550, 0950, 1350, 1750, 2150
		Murmansk	68° 46' N	032° 58' E	518	300	K	0140, 0540, 0940, 1340, 1740, 2140
XXI* (XIII)	Russia	Tiksi	71° 38' N	128° 50' E	518	300	Q	0240, 0640, 1040, 1440, 1840, 2240

*: This equipment can not set the NAV area numbers from XVIII to XXI. These are registered as the NAV area numbers in the parentheses in the above list (i.e. EXT, I or XIII).

2. OPERATION

2.1 Operating Controls
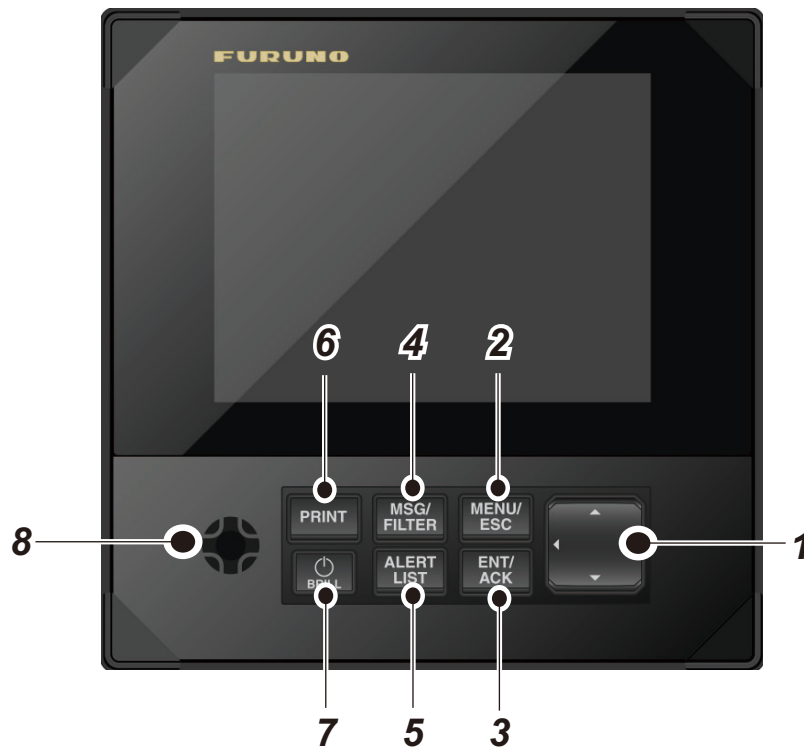
No.	Key	Description
1	▲▼◄► (TrackPad)	• Moves the cursor. • Changes the frequency. • Selects messages. • Select items on menus.
2	MENU/ESC	• Opens menu. • Returns to the previous display. • Cancels option.
3	ENT/ACK	• Confirms the selected menu/operation. • Shows the selected message. • Confirms alerts.
4	MSG/FILTER	• Opens the message list or message information display. • Opens the filter display.
5	ALERT LIST	• Shows the alert list display.
6	PRINT	Opens the print option display.
7	⏻ /BRILL	Short press: • Turns the power on (when the system is off). • Shows the [Brill Level Setup] display (when the system is on). Long press: • Turns the power off (3 sec).
8	Buzzer	Activates key beeps and alarm sounds.

2.2 Turning The Power On/Off

Press the ⏻ /**BRILL** key to turn the unit on. A beep sounds and the equipment shows the start up display as shown below. The ROM and RAM for proper operation and the program no. display appears. The results of the check are shown as OK or NG (No Good).

When the results of the check are OK, "All Messages" with frequency last used before turning the power off.

Start-up screen

To turn the power off, press the ⏻ /**BRILL** key more than three seconds. The time remaining until the power is turned off is counted down on the screen as shown below.
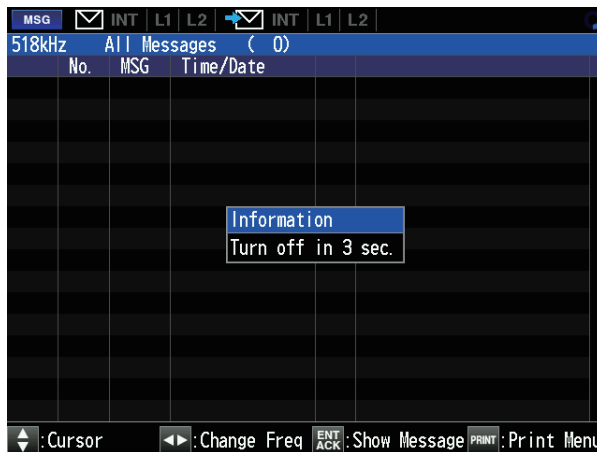
2.3 Adjusting Display/Panel Dimmer

2.3.1 Display/Panel Dimmer preset

1. Press **MENU/ESC** key to open the main menu.

2. Select [Display] and press the **ENT/ACK** key.

3. Select [Dimmer Preset] and press the **ENT/ACK** key.
   Following display appears.
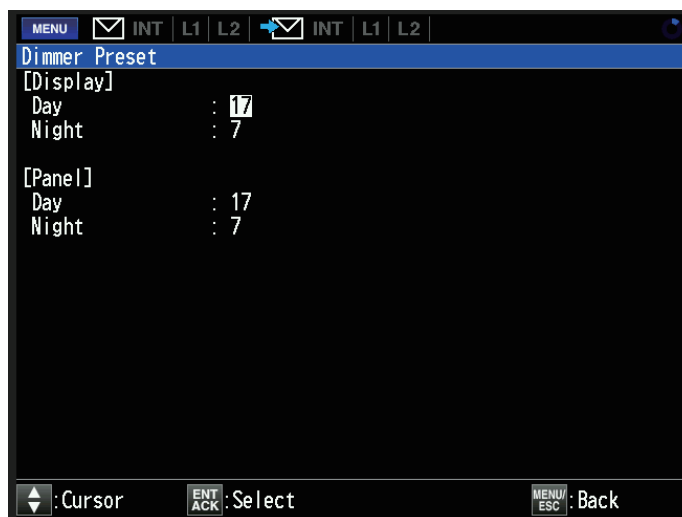
4. Use ▲ or ▼ to select [Day] or [Night] mode for [Display] dimmer, then press the **ENT/ACK** key. The setting range is 0 (dark) to 19 (bright).

5. Set the value and press the **ENT/ACK** key.
   - ▲: Raises the dimmer.
   - ▼: Decreases the dimmer.

6. Repeat step 4 and 5 for [Panel] dimmer. The setting range is 1 (dark) to 19 (bright).

7. Press **MENU/ESC** key to close the menu.

2.3.2 Adjusting Display/Panel Dimmer by ⏻/BRILL key

Display/Panel Dimmer can also be adjusted by short pressing ⏻/BRILL key. Below display appears. Use ◄►to adjust display and ▲▼to adjust Panel dimmer, then press the **ENT/ACK** key. Press MSG/FILTER key to change between [Day] or [Night] mode.
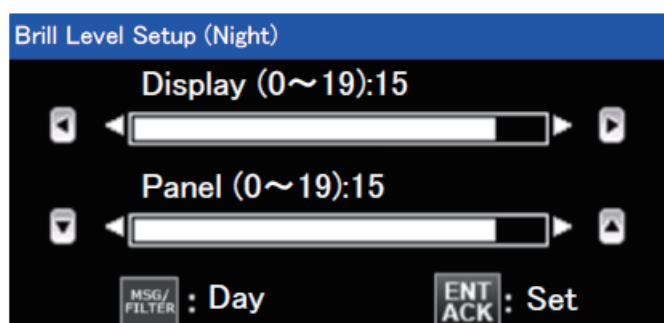
2.4 Messages

2.4.1 Receiving a message

When a new message is received, the pop-up window appears on the display. If you want to read the message immediately, press the **ENT/ACK** key to select "Yes" and open the message. To read the message later, select "No".

Note: For SAR messages, see section 2.5.
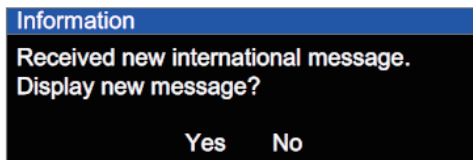
International message
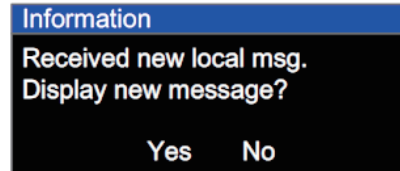
Local message

2.4.2 Open the message

Use ▲▼ to select desired message on the message list and press the **ENT/ACK** key to see the details of the message.
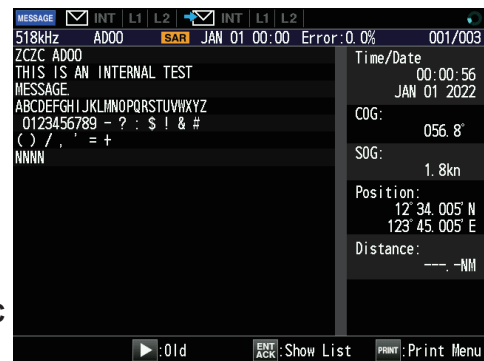
2.4.3 Selecting message category to display

The category of messages to display can be selected by pressing the **MSG/FILTER** key. Use ▲▼ keys to select the desired message category and press the **ENT/ACK** key.

- [All Messages]: Shows all received messages.
- [Alert Messages]: Shows only SAR/WARNING messages.
- [User Selected Messages]: Shows messages arranged at [User Select Station & Message] display (see section 2.7 for details).
- [Good Messages]: Shows messages whose error rate is less than 4%.
- [Lock Message] / [Unlock Message]: Select to lock or unlock the desired message. The protect icon (🔒) appears next to the message when locked (see "Lock and unlock the message" for details.)
  Note 1: When there are no received messages, [Lock Message] / [Unlock Message] is not shown on the menu.
  Note 2: When SAR messages are received, the settings changes to [All Messages] display mode.

2.4.4 Lock and unlock the message

Messages are automatically deleted from the memory under the following conditions.

• 66 hours passed from the moment when the message was received.

• There are more than 200 received messages (the message is older than No. 200).

To prevent messages from being deleted, you can lock or unlock the desired messages. When the validity of message is expired, following window will be shown.
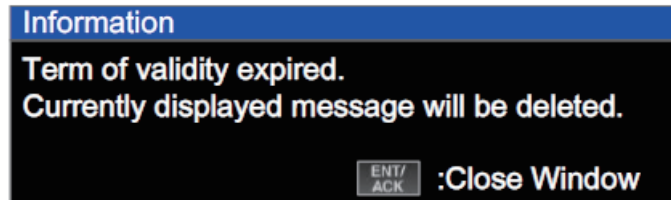
Lock the message

1. Select the message on the message list display.

2. Press the **MSG/FILTER** key to show the list options.

3. Select [Lock Message] and press the **ENT/ACK** key. The icon ( ) appears and message is safely locked.

Unlock the message

1. To unlock a message, select locked message on the list and press the **MSG/FIL-TER** key to show the list options.

2. select [Unlock Message] and press the **ENT/ACK** key. Protecting icon disappears and the message is unlocked.

Note: When you unlock a message which was received more than 66 hours ago or a message that is older than message No. 200, it will be deleted promptly when unlocked.

All Messages
Alert Messages
User Selected Messages
Good Messages
Unlock Message

2.4.5 Printing messages

Received messages can be printed out by using external printer. See also section 4.5 for how to setup the printer.

Printing all displayed messages

1. Select the category of messages to display ([All Messages]/ [Alert Messages]/ [User Selected Messages]/ [Good Messaged]) and press the **ENT/ACK** key.
2. Press **PRINT** key. Following pop-up window will be shown.
3. Select [Print] and press the **ENT/ACK** key to print.
4. To cancel printing, select [Cancel] and press the **ENT/ACK** key.
5. Press **MENU/ESC** key to close the menu.

Note: When a new message is received during printing out messages, the new one cannot be printed.

Printing selected messages

1. Use ▲▼ keys to select the desired message from the list.
2. Press the **ENT/ACK** key to show the detailed information of the message.
3. Press **PRINT** key. Pop-up window will be shown.
4. Select [Print] and press the **ENT/ACK** key to print.
5. To cancel printing, select [Cancel] and press the **ENT/ACK** key.
6. Press **MENU/ESC** key to close the menu.

2.5 Alerts

The buzzer sounds for equipment errors and is accompanied by a flashing indication at the bottom of the screen. Press the **ENT/ACK** key to silence the buzzer and acknowledge the alert. If there are multiple alerts, each alert must be acknowledged individually. The indication at the bottom of the screen remains until the alert cause is removed or rectified.

Note: See also "ALERT LISTS, ICONS, MEANINGS AND MEASURES" on page AP-10 for further information.

2.5.1 Alert background icons

The background icon is displayed when there are active alerts on the background (However, when there is only one active alert the icon is not displayed). If the alert with the highest priority among background alerts is Warning, the background icon flashes according to the alert with the highest priority.
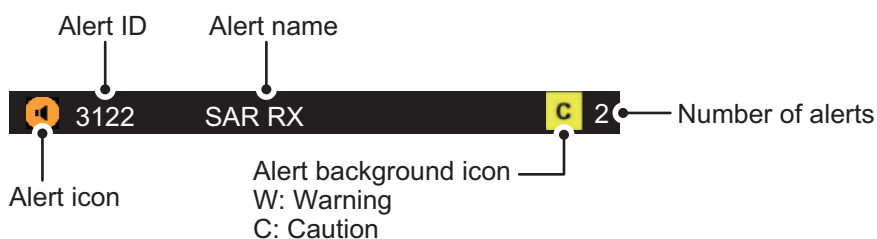
2.5.2 Alert list

Press the **ALERT LIST** key to show the [Active Alerts] window. You can see all the active alerts on the list. When there are no active alarm, the message "No Active Alerts" is shown in the middle of the window.
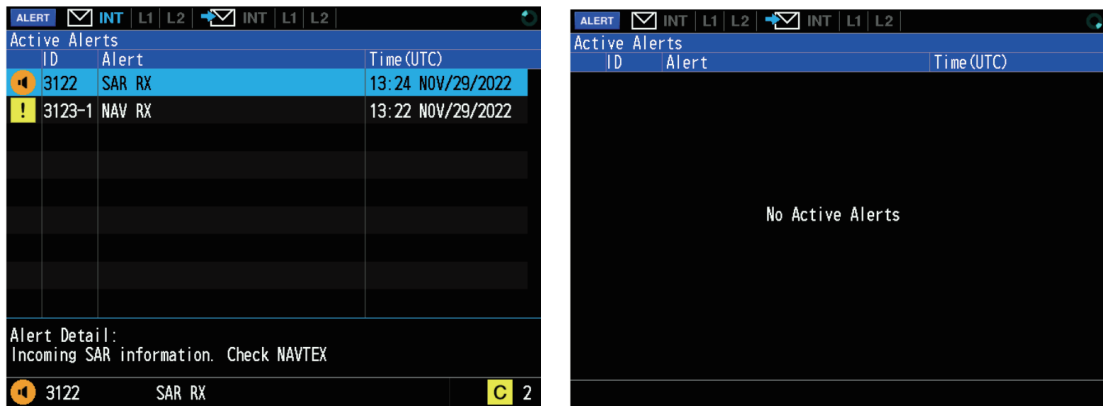
2.5.3 Alert messages

When receiving new SAR (Search and Rescue) message, the audible alarm beep sounds and the SAR message is shown. Note that [All Messages] list appears if other list option is chosen when the **ENT/ACK** key is pressed. To see alert message list, carry out the following procedure.

1. Press **MSG/FILTER** key to show list options.
2. Select [Alert Messages] and press the **ENT/ACK** key.

3. Select the alert message and press the **ENT/ACK** key.
   Details of the alert message will be shown.

4. Press **MENU/ESC** key to close the menu.

For detailed information regarding the possible alerts for this equipment, see "ALERT LISTS, ICONS, MEANINGS AND MEASURES" on page AP-10.

2.6   Receive Mode Settings

The [NAVTEX] menu allows you to select what station to receive: automatically or manually. The Auto mode requires navigation data, and stations are automatically selected according to the distance between own ship and NAVTEX stations. If navigation data is not input, all stations are selected.

The manual mode you can select what stations you wish to receive. The [INS] mode allows you to set the station, message and local channel from the external equipment (ex. Integrated Navigation System, using NRM or PFEC sentence) connected. Note that [Manual] should be chosen if you intend to not use the command from the external equipment.

1.   Press **MENU/ESC** key to open the main menu.
2.   Select [NAVTEX] and press the **ENT/ACK** key.
3.   Select [Mask Mode] and press the **ENT/ACK** key.
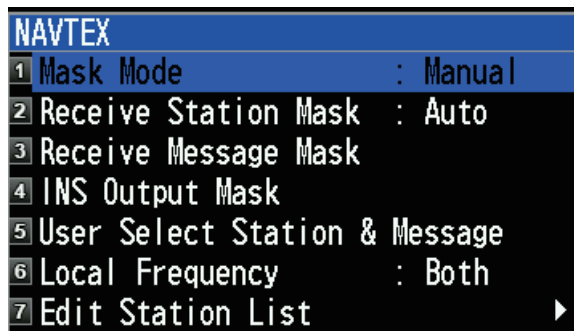
4.   Select [INS] or [Manual] as appropriate and press the **ENT/ACK** key.
      Note: When [INS] is selected, [Receive Station Mask] is not shown on the menu.
5.   For [Manual] mode, select [Receive Station Mask] and select [Auto] or [Manual] as desired and then press **ENT/ACK** key.
6.   Press **MENU/ESC** key to close the menu.

2.7 Adjusting the Station and Message Settings

1. Press **MENU/ESC** key to open the main menu.

2. Select [NAVTEX] and press the **ENT/ACK** key.

3. Select [Receive Message Mask], [INS Output Mask], [Printer Mask] or [User Select Station & Message] and press the **ENT/ACK** key.

Stations and messages for receiving/displaying on each station (message) can be adjusted as below.

[Receive Message Mask]

• Station: You can receive messages by station in [Manual] mode.

• Message: You can choose the messages to receive in [Manual] or [Auto] mode. Note that A/B/D/L cannot be rejected.

[INS Output Mask]

You can choose the stations and messages to output to the external equipment. Note that A/B/D/L cannot be rejected.

[Printer Mask]

Choose the type of message to be print automatically when it is received. Note that A/B/D/L cannot be rejected.

[User Select Station & Message]

You can choose the type of stations and messages to display on [User Selected] display (shown by selecting [User Selected Messages] after pressing **MSG/FILTER** key.) See subsection 2.5.3 for details.

Receive mode

International frequency

Local frequency
(see section 2.8)

```
MENU  ☐ INT | L1 | L2 | ➜☐ INT | L1 | L2 |
Receive Message Mask                          [Auto]
[518kHz]
 Station  :  ABCDEFGHIJKLMNOPQRSTUVWXYZ
 Message  :  ABCDEF-H-JKL---------V---Z

[490kHz]
 Station  :  ABCDEFGHIJKLMNOPQRSTUVWXYZ
 Message  :  ABCDEF-H-JKL---------V---Z

[4209.5kHz]
 Station  :  ABCDEFGHIJKLMNOPQRSTUVWXYZ
 Message  :  ABCDEF-H-JKL---------V---Z



 ↕:Cursor     ENT:Edit              MENU:Back
               ACK                   ESC
```

2.8 Frequency Settings

2.8.1 Selecting the local frequency

You can choose 490 kHz or 4209.5 kHz as the local frequency.

1. Press **MENU/ESC** key to open the main menu.

2. Select [NAVTEX] and press the **ENT/ACK** key.

3. Select [Local Frequency] and press the **ENT/ACK** key.

4. Select the desired frequency.

   • [Both]: Receive both 490 kHz and 4209.5 kHz as the local frequency.

   • [490 kHz]: Receive 490 kHz only.

   • [4209.5 kHz]: Receive 4209.5 kHz only.

5. Press **MENU/ESC** key to close the menu.

2.8.2 Switching the frequency on display

On the message list display, you can switch the frequency as 518 kHz, 490 kHz or 4209.5 kHz by pressing ◄ or ► key. The current frequency is shown on the top left corner of the display.

Current frequency
Press ◄ or ► to
change the frequency.

2.9   Add and Edit the Station List

Maximum 300 NAVTEX stations can be registered into the memory for this unit. Carry out the following procedure to edit the station list.

1. Press **MENU/ESC** key to open the main menu.

2. Select [NAVTEX] and press the **ENT/ACK** key.

3. Select [Edit Station List] and press the **ENT/ACK** key.
    The following pop-up window will be shown.

4. Select 518 kHz or 490 kHz list to edit as desired and press the **ENT/ACK** key.
    [Edit Station List] display will be shown.

Add station

1. Select [New] on the [Edit Station List] window and press the **ENT/ACK** key.
    [Add Station] display will be shown.
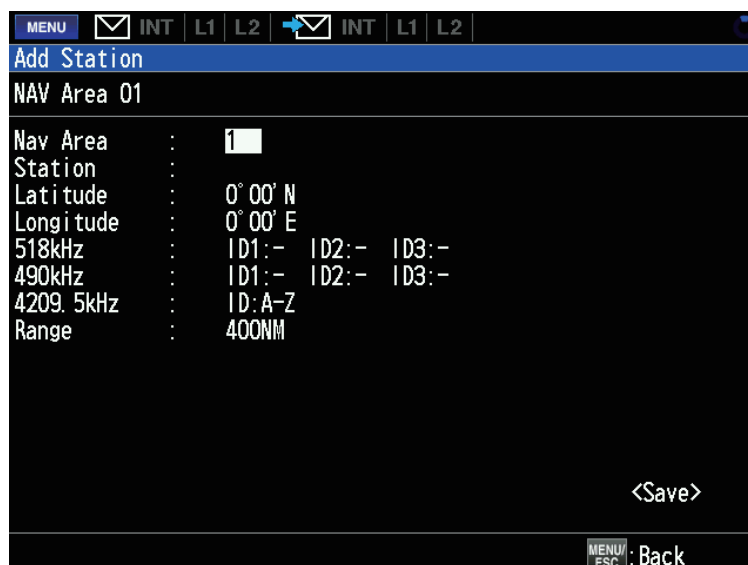
2. Select [Nav Area] and press the **ENT/ACK** key to show the area No. window.

3. Press ▲or ▼ to choose a Nav area No. (1 to 16, and EXT), and then press the **ENT/ACK** key.

4. Select [Station] and press the **ENT/ACK** key. Enter a station name (Max. 18 characters), and then press the **ENT/ACK** key.

5. Select [Latitude] and [Longitude] and press the **ENT/ACK** key. Enter the value, and then press the **ENT/ACK** key.

6. Select [518kHz], [490kHz] or [4209.5kHz] and press the **ENT/ACK** key. For [518kHz] or [490kHz], enter the station ID (A to Z), and then press the **ENT/ACK** key (for [4209.5kHz] station ID is automatically set and cannot be edited). For multiple stations, fill in ID2 and ID3.

7. Select [Range] and press the **ENT/ACK** key.

8. Enter the service area (1 to 999 NM), and then press the **ENT/ACK** key.

9. Select [<Save>] and press the **ENT/ACK** key. The message "Save new station?" appears.

10. Select "Yes", and then press **ENT/ACK** key.

11. Press **MENU/ESC** key to close the menu.

Edit station

1. Select the station to edit on the [Edit Station List] window and press the **ENT/ACK** key. Following pop-up window will be shown.

2. Select [Edit] and press the **ENT/ACK** key. [Edit station] window will be shown. See section 1.5 "NAVTEX Station List" and set the Nav area number.
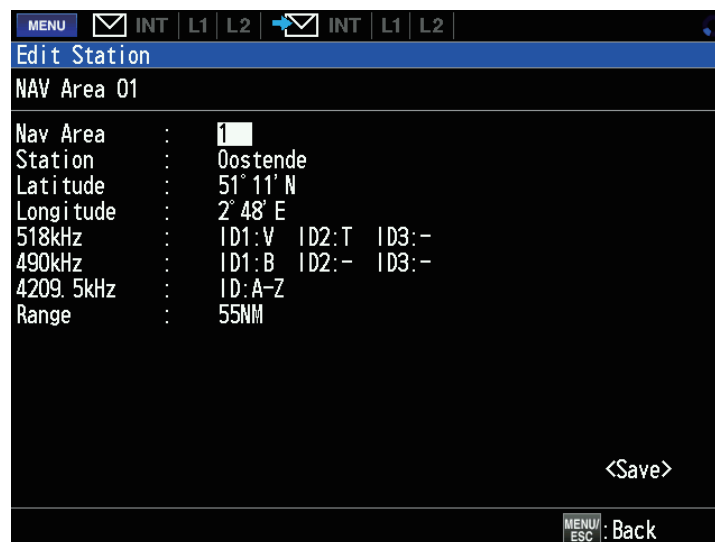
3. Edit the data as desired (see "Add station" on the previous page for details). Select [<Save>] and press the **ENT/ACK** key. The message "Save new station?" appears.

4. Select "Yes", and then press **ENT/ACK** key.

5. Press **MENU/ESC** key to close the menu.
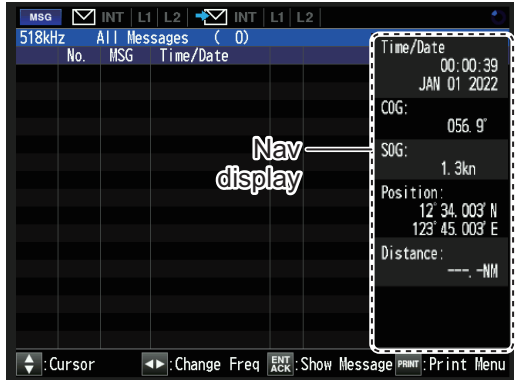
2.10 [System] Menu

On the [System] menu you can adjust sounds, time offset and units. When navigational data is fed to the NX-900, you can select units of distance and speed to use.

```
System
1 Notification Sound :OFF
2 Signal Sound       :OFF
3 Key Beep           :OFF
4 Time Offset        :+00:00
5 Units              :NM, kt
```

No.	Menu item	Setting	Description
1	[Notification Sound]	On, Off	Set the audible alarm on/off when receiving a Warning message. (A, B, and L) or printer error.
2	[Signal Sound]	Off, International, Local1, Local2	Set the audible alarm for monitoring of Rx signal on/off. • Off: Disables monitoring. • International: Monitors international frequency. • Local1/Local2: Monitors local frequency.
3	[Key Beep]	On, Off	Turns key beep on/off.
4	[Time Offset]	-13:30 to +13:30	If a GPS receiver feeds nav data to the NAVTEX, you may use local time instead of UTC time. Enter the time difference between local time and UTC time.
5	[Units]	NM, kt/km, km/h SM, mph	Selects units of measurement (distance and ship speed) to be shown.

2.11 [Display] Menu

No.	Menu item	Setting	Description
1	[Remote Dimmer Control]	On, Off	Adjust dimmer by using external equipment.
2	[Dimmer Preset]	See section 2.3.	See section 2.3.
3	[Scrolling]	Slow, fast, skip to $$	Selects the speed of scrolling by pressing ▲ or ▼ key. • Slow: Scrolls by one line. • Fast: Scrolls by half of screen. • Skip to $$: Scrolls line by line in list display; Skips to $$ position in detailed display.
4	[NAV Display]	On, Off	Shows the nav display information window on the right side of the display. • Off: Disables NAV display. • On: Displays Time/Date, COG, SOG, Position and Distance. **Note:** If there is no information data when NAV display is set to on, information is shown as "-".
5	[Speed Display]	SOG, STW	Selects the speed format to be displayed. • SOG: Speed Over Ground • STW: Speed Through Water
6	[Date Display]	MMM/DD/YYYY DD/MMM/YYYY YYYY/MM/DD	Selects the date format.

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3. MAINTENANCE

⚠ WARNING	NOTICE
Do not open the equipment. Hazardous voltage which can cause electrical shock exists inside the equipment. Only qualified personnel should work inside the equipment.	**Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.** Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

3.1   Maintenance

Regular maintenance is important for optimum performance. A maintenance program should be established and should at least include the items shown in the table below.

| Item	Check	Action
Connectors	Check for looseness and rust.	• Refasten if necessary.
Ground terminal	Check the ground terminal is not loosened or rusty and that the ground wire is properly grounded.	• Remove rust if necessary.
Antenna	Check antenna for damage.	Replace the antenna if damaged.
LCD	Check the LCD surface for dust and dirt. The LCD will, in time, accumulate a coating of dust which tends to dim the picture. **Note:** The life of the LCD is approx. 100,000 hour. When the LCD has expired, the brilliance cannot be raised.	Wipe the LCD carefully to prevent scratching, using the cleaning cloth provided and an LCD cleaner. To remove dirt or salt deposits, use an LCD cleaner, wiping slowly with cleaning cloth so as to dissolve the dirt or salt. Do not use solvents such as thinner, acetone or benzene for cleaning. Also, do not use degreaser or antifog solution on the LCD, as they can strip the coating on the LCD.

3.2 Replacement of Thermal Paper

When the thermal paper runs out completely, replace the paper as follows.

| Name	Type	Code No.	Remarks
Thermal paper	TP058-30CL	000-154-047	Width: 57 mm, Roll: 30 m

Note: The thermal paper begins to turn black at about 60°C gradually. Therefore, store it in a cool, dark place with the film packaging and keep in mind the following points.

• Store in a dark place at about 20°C and 60% RH in an unopened state.

• Locate away from direct sunlight.

• Do not expose to nitrogen oxides (NOx), sulfur oxides (SOx) and ozone.

1. Turn off the power.

2. Press the button shown below to open the paper holder cover.

Eject button
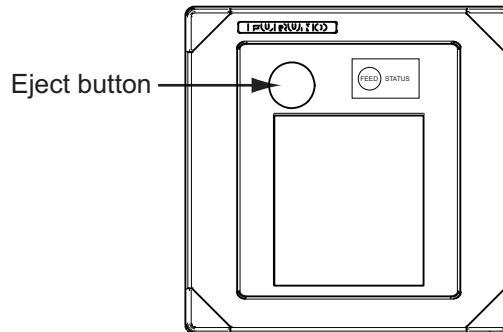
3. Peel the tape from the end of new paper.

Tape
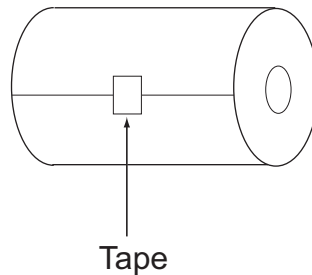
4. Set the new paper in the paper container in the direction shown below.

Paper holder

New paper

Paper holder cover
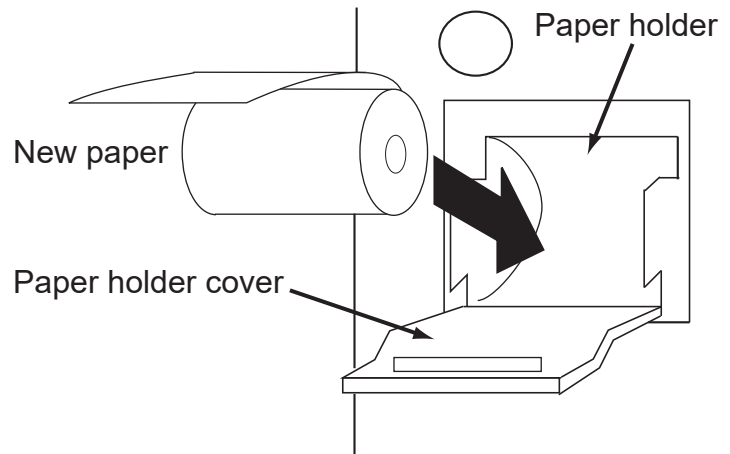
5. Pull the end of the paper by 2 to 3 cm (as shown above), and then close the cover.

3.3 Replacement of Fuse

The fuse attached to the power cable of the main unit and printer protects the equipment from overcurrent or reverse polarity. If the fuse blows, find the cause before replacing it. Use the correct fuse. Using the wrong fuse damage the equipment and void the warranty.

Name	Type	Code No.
Main Unit (NX-900)		
Fuse	FGBO-A 250V 2A PBF	000-155-829-10
Printer (PP-900)		
Fuse	FGBO-A 250V 3A PBF	000-155-841-10

⚠ **WARNING**

Use the proper fuse.

Use of a wrong fuse can result in damage to the equipment or cause fire.

3.4 Troubleshooting

This section provides simple troubleshooting procedures which the user can follow to restore normal operation. If you cannot restore normal operation, do not attempt to check inside the unit. Any trouble should be referred to a qualified technician.

| If...	Then...
you cannot turn on the power	• ask serviceman to replace the blown fuse. • check battery for proper voltage output.
the equipment receives unwanted messages.	confirm that Manual mode is chosen
NAVTEX signal cannot be received.	• check equipment by the diagnostic test. • check the broadcasting schedule. • check that the coaxial connector is firmly fastened. • check that the antenna cable is firmly fastened.
paper does not advance.	load paper correctly.
paper feeds but no recording.	check if correct thermal paper is being used.
paper has darkened.	keep the paper in a well-ventilated and cool place.
the recording is not proper for the external printer.	• check the printer cable. • check that the power of printer is turned on. • check that the printer is available. • check that paper is set properly. • check the setting of Printer on the [Print] menu.

3.5 Self Test

The diagnostic test checks ROM, RAM, serial numbers, keyboard, LCD and antenna for proper operation and displays program numbers.

1. Press the **MENU/ESC** key to open the main menu.

2. Select [Diagnostics] and press the **ENT/ACK** key.

3. Select [Self Test] and press the **ENT/ACK** key.
   Below message will be shown.
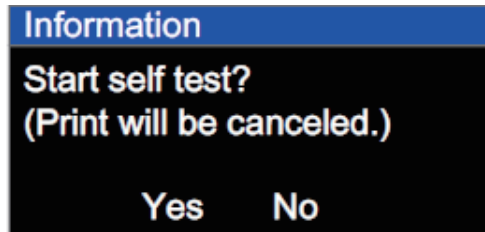
4. Select [Yes] and press the **ENT/ACK** key.
   [Self Test] display appears. The results are individually displayed as OK or NG (No Good). If any NG is displayed, contact your dealer.
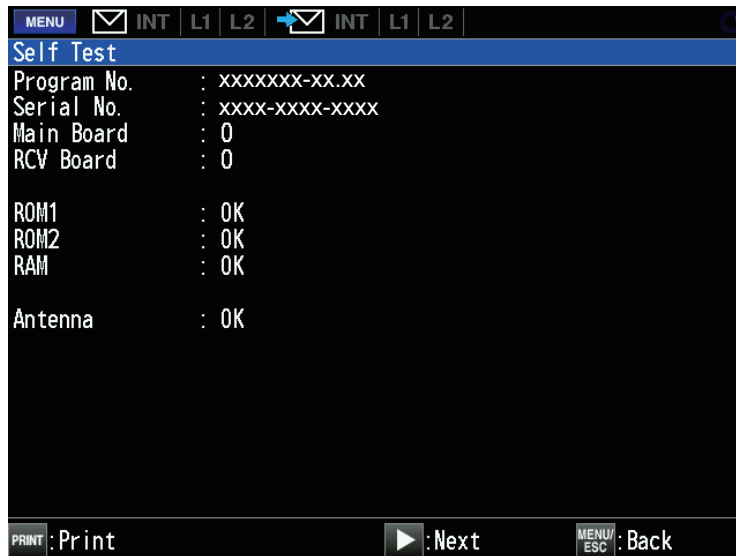
5. Press ▶ to continue to the LCD and key back light test.
   After the test is completed, the current back light value will be shown.
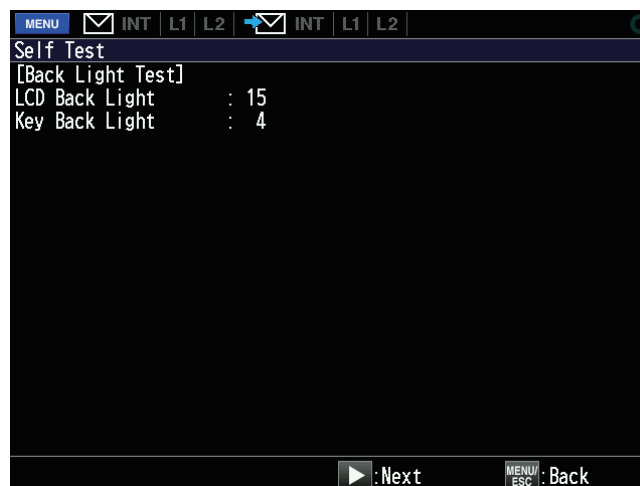
6. Press ▶ to continue to the key test.
   Press each key one by one. A key is functioning properly if on-screen location the key is shown in green when it is pressed and turns into blue when the key is released.

7. After all keys have been tested, press ▶ three times to continue to the LCD test.
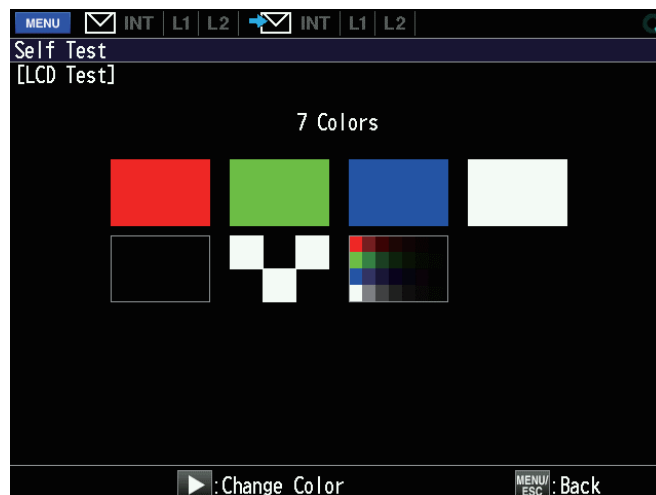
8. Press ▶ to change the color in order as shown above. After all 7 colors are displayed, [SAR RX + Alert Buzzer Test] display appears.
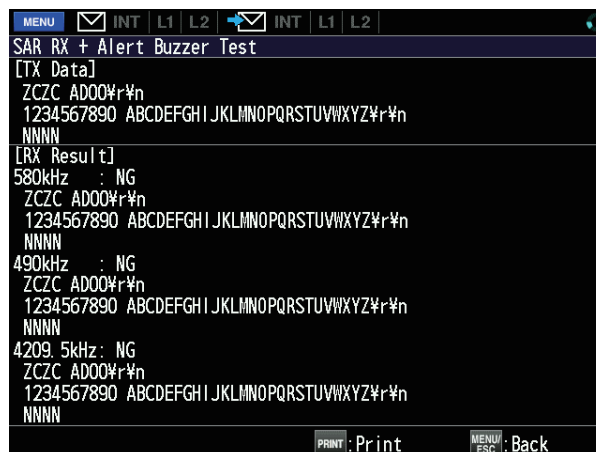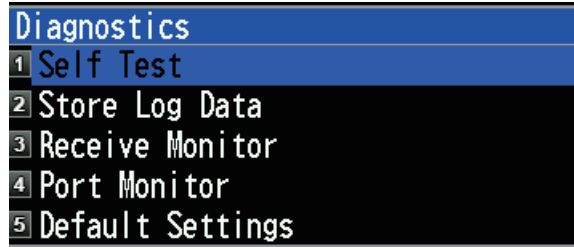

9. After the all the test results are completed, press the ▶ key to finish the test.
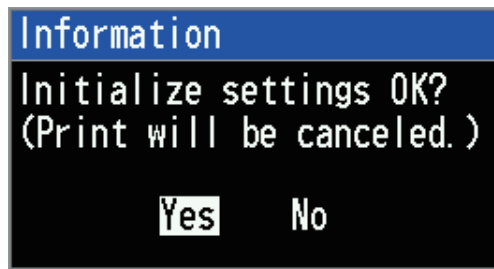
3.6   Restoring Default Settings

Do the following to restore all default settings.

1. Press the **MENU/ESC** key to open the main menu.

2. Select [Diagnostics] and press the **ENT/ACK** key.

3. Select [Default Settings] and press the **ENT/ACK** key.
    Following message appears.

4. Select [Yes] and press the **ENT/ACK** key.
    The system restarts as shown below and all settings are restored.

4.   INSTALLATION

4.1   Installation of Main Unit and Printer

Mounting considerations

The main unit (NX-900) and printer (PP-900) can be installed on a tabletop, on the overhead, or in a panel. Refer to the outline drawings at the back of this manual for installation instructions.

When selecting a mounting location, keep in mind the following points.

- Locate the unit away from exhaust pipes and vents.
- Locate the unit away from direct sunlight.
- The mounting location should be well ventilated.
- Select a location where the shock and vibration are minimal.
- Leave sufficient space for maintenance and service, referring to the outline drawings at the back of this manual.
- A magnetic compass will be affected if the unit is placed too close to the magnetic compass. Observe the compass safe distances at the front of this manual to prevent interference to a magnetic compass.
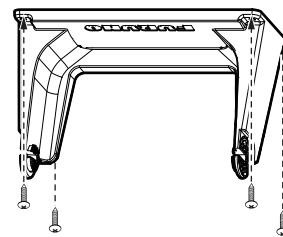
Tabletop, overhead mounting

The main unit is shipped with a bracket. Follow the steps below to mount the main unit on a desktop or overhead.

Note: For overhead mount, do NOT mount the unit higher than the operator's head.

1. Unfasten the knobs on either side of the main unit and detach the main unit from the bracket.
    Note: The bracket for the printer (PP-900) is supplied optionally. See the equipment list on page viii.

2. Drill four holes for the self-tapping screws at the mounting location. Be sure to follow the recommended maintenance space show in the outline drawing. Insufficient space may cause damage to connectors when disconnecting and reconnecting them.

3. Fix the bracket to the mounting location with four self-tapping screws ($\phi5\times20$, supplied). The bracket should be oriented with the insertion slots facing forward.
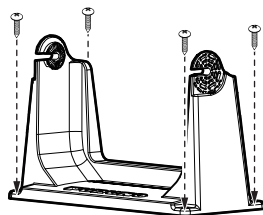
Desktop mount   Overhead mount

4. Fit the unit to the bracket and tighten the knobs on either side evenly.
    Adjust the angle of the unit so that the screen can be viewed clearly.

Flush mounting

Note: The main unit and printer can be flush mounted side by side in a console or panel by using the optional flush mount kit.

1. Make a mounting hole in the mounting location and four bolt holes, referring to the outline drawing at the back of this manual.
2. Feed the cable through the mounting hole, then connect the cable to the unit.
3. Remove four screw covers from the unit.
4. Set the unit to the mounting hole, then secure the unit using four self-tapping screws ($\phi4\times20$).
5. Reattach four screw covers to the unit.

4.2 Installation of Junction Box (IF-900)
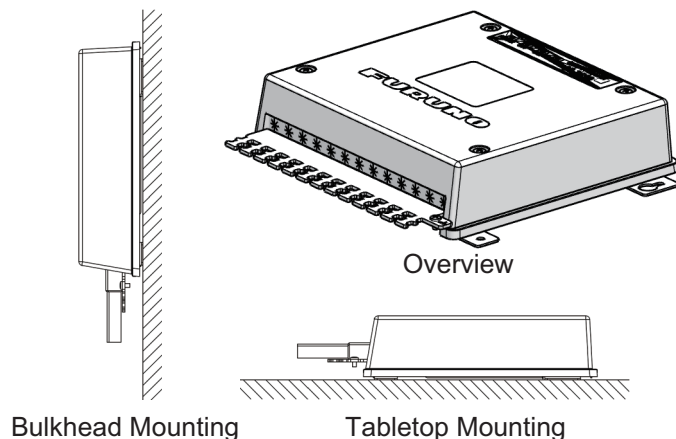
Mounting considerations

When selecting a mounting location, keep in mind the following points.

- Use the specified cable for connecting.
- The power cable is to be supplied locally.
- Turn off the power switch at the switchboard before proceeding with the mounting and wiring.
- Mount the unit in the direction indicated in the outline drawing.
- Leave sufficient space for maintenance and service, referring to the outline drawings at the back of this manual.
- A magnetic compass will be affected if the unit is placed too close to the magnetic compass. Observe the compass safe distances at the front of this manual to prevent interference to a magnetic compass.

Mounting procedure

This unit can be mounted on a desktop or bulkhead. Refer to the outline drawing at the back of this manual for details.

1. Make four pilot holes for self-tapping screws ($\phi4\times16$, supplied) in the mounting location.
2. Screw two self-tapping screws to the pilot holes, leaving a gap of 5 mm.
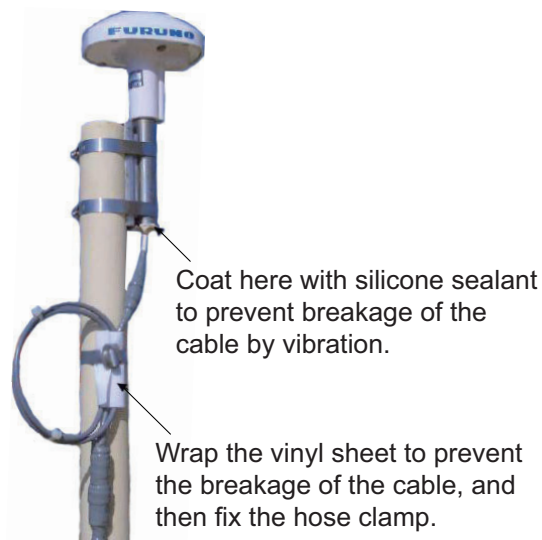3. Hang the unit on the screws and secure the unit by fastening the self-tapping screws.

Overview

Bulkhead Mounting   Tabletop Mounting

4.3   Installation of Antenna Unit

Mounting considerations

Install the antenna unit referring to the antenna installation diagram at the end of this manual.

When selecting a mounting location for the antenna unit, keep in mind the following points:

- Do not shorten the antenna cable.
- Do not install the antenna unit within beamwidth of the radar.
- To install an antenna unit other than the NX-9HE, contact your dealer.
- A magnetic compass will be affected if the unit is placed too close to the magnetic compass. Observe the compass safe distances at the front of this manual to prevent interference to a magnetic compass.
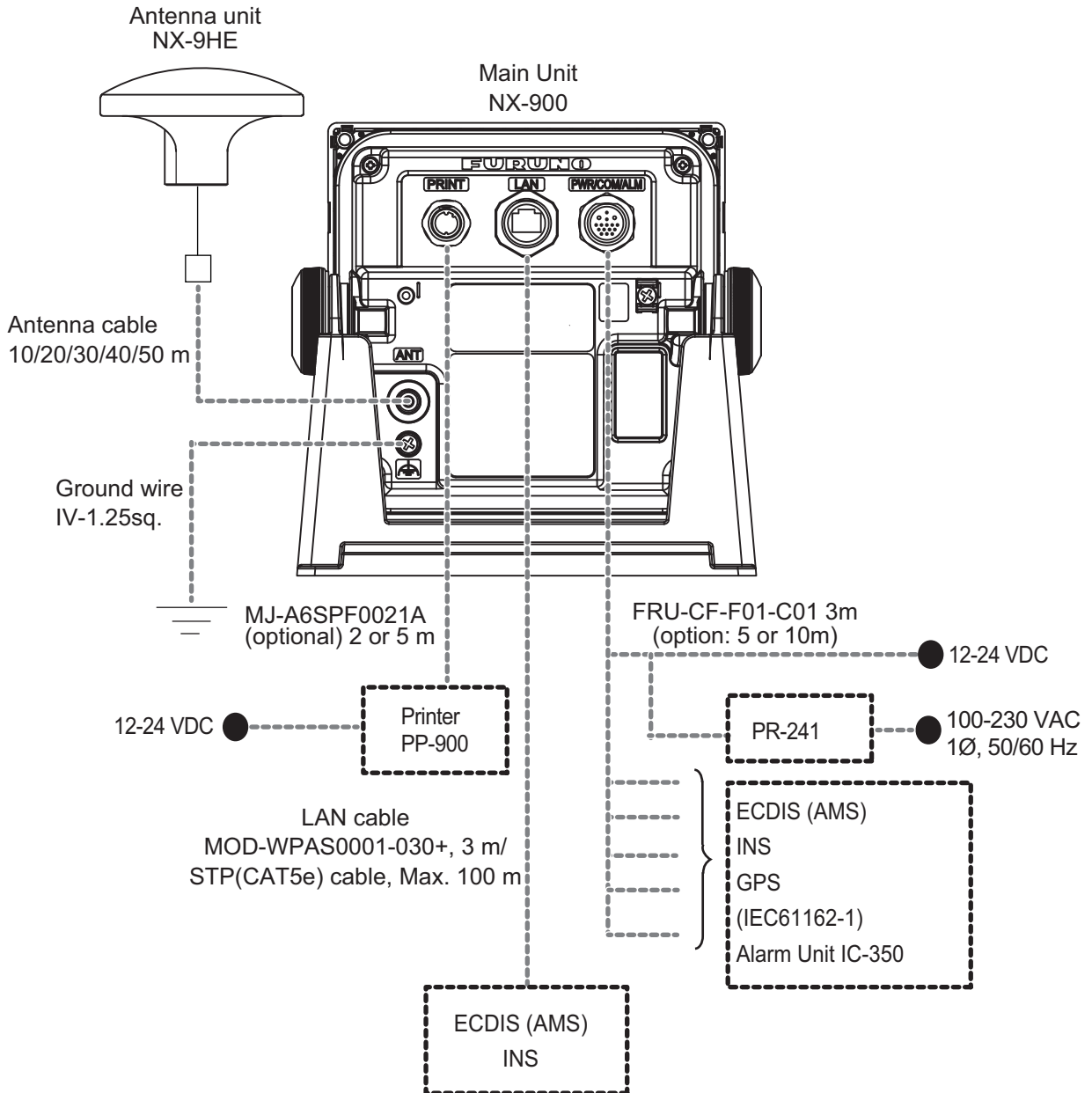

Coat here with silicone sealant to prevent breakage of the cable by vibration.

Wrap the vinyl sheet to prevent the breakage of the cable, and then fix the hose clamp.

4.4 Wiring

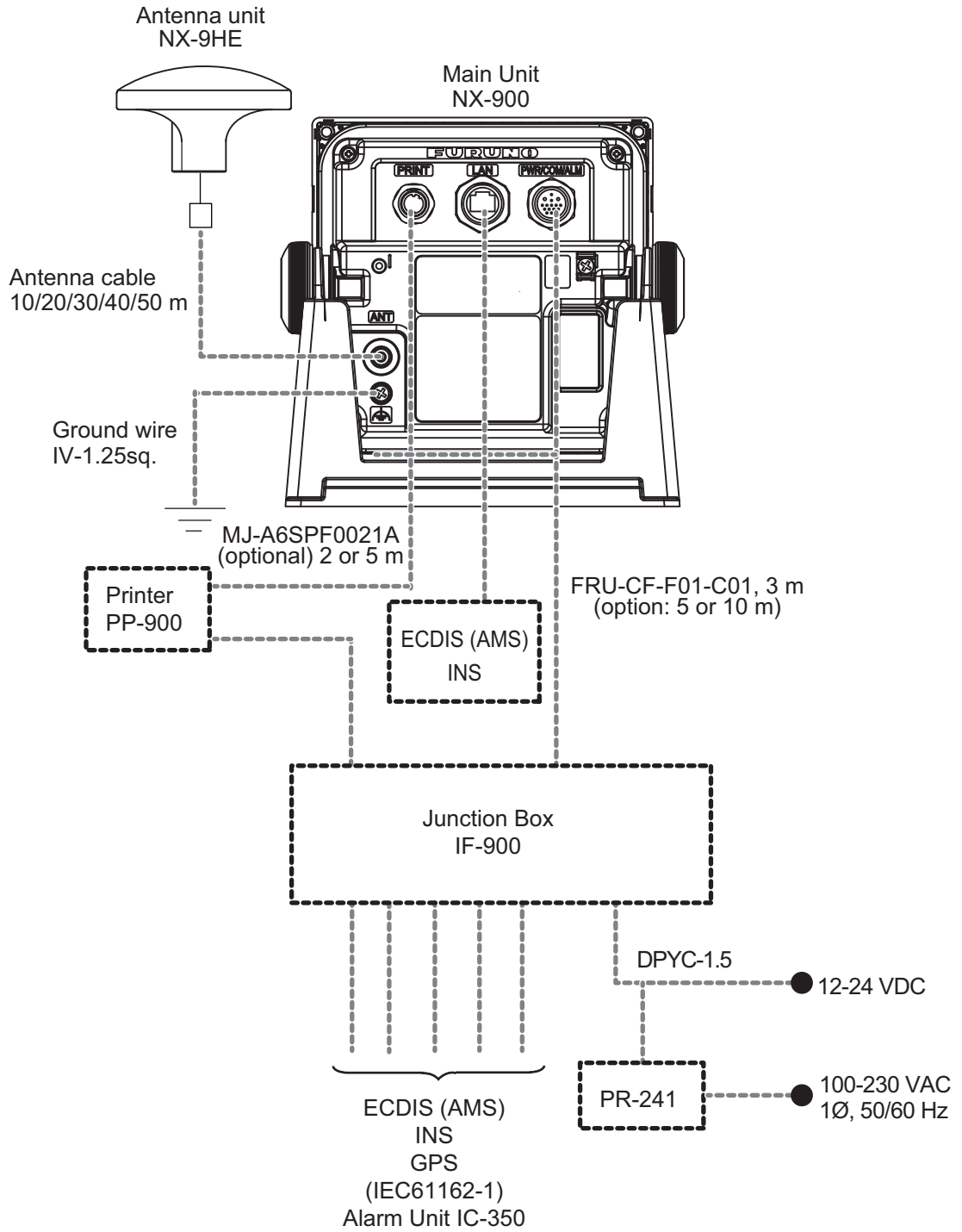### 4.4.1 Main unit

Connect the equipment, referring to the interconnection diagram at the back of this manual.
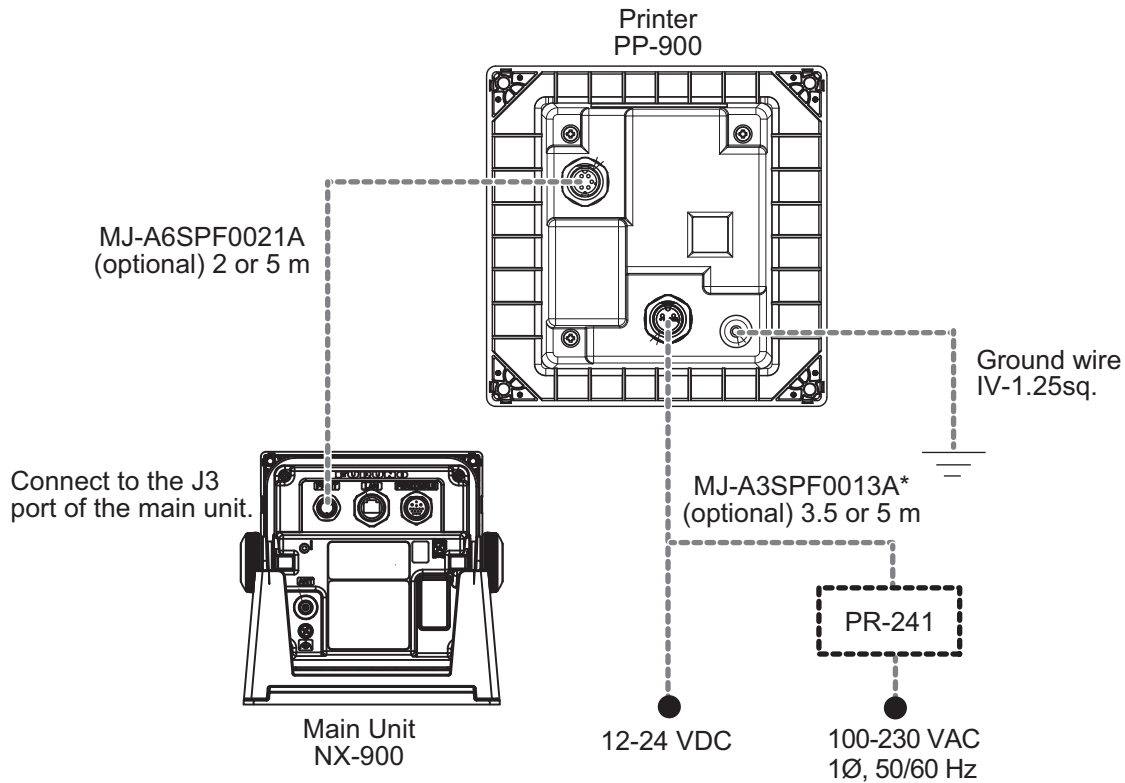
Without IF-900

With IF-900

Antenna unit
NX-9HE

Main Unit
NX-900

Antenna cable
10/20/30/40/50 m

Ground wire
IV-1.25sq.

MJ-A6SPF0021A
(optional) 2 or 5 m

FRU-CF-F01-C01, 3 m
(option: 5 or 10 m)

Printer
PP-900

ECDIS (AMS)
INS

Junction Box
IF-900

DPYC-1.5

12-24 VDC

PR-241

100-230 VAC
1Ø, 50/60 Hz

ECDIS (AMS)
INS
GPS
(IEC61162-1)
Alarm Unit IC-350

## 4.4.2   Printer (PP-900)

*: When using junction box (IF-900), connect MJ-A3SPF0013A to the power supply via TB4 of IF-900.

4.4.3   Junction box (IF-900)

Remove the cover from the junction box to access to plug-in terminal blocks. Fabricate the cables referring to the next page, then connect the cables.

Note: For details about pin assignment of each terminal block, see the interconnection diagram at the back of this manual.
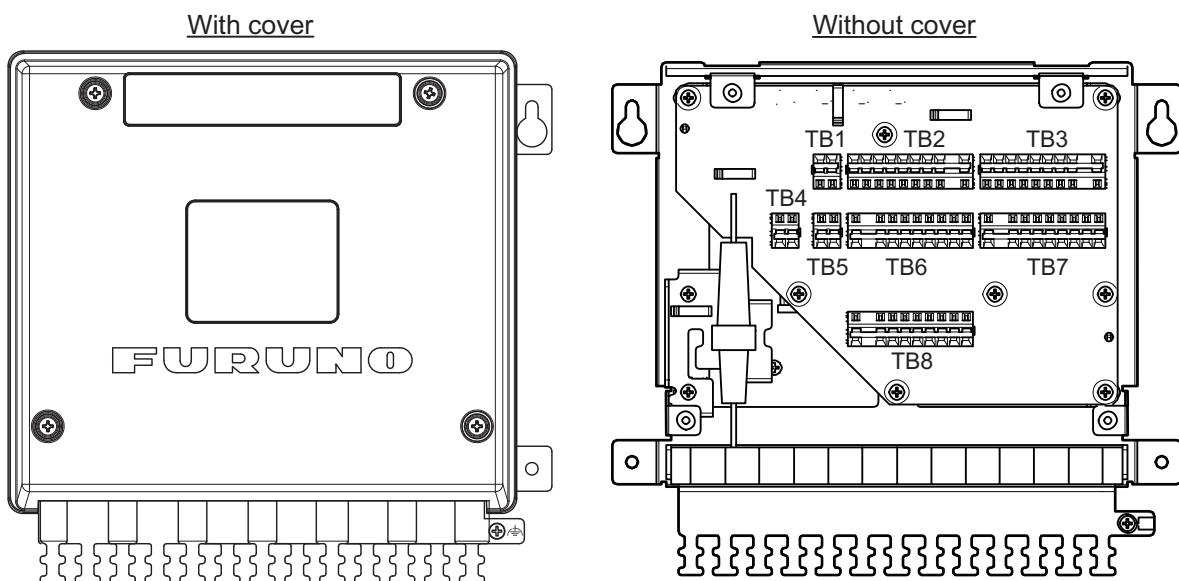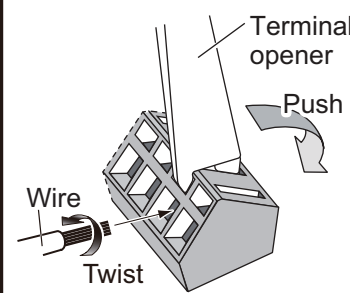
Connect to	Cable from	Cable name
TB1/TB2/TB3	Main unit	Cable assembly
TB4	PP-900	MJ-3 pin cable
TB5	Ship's main	DPYC-1.5
TB6	ECDIS/AMS	TTYCSLA-1/TTYCSLA-4
TB7	IC-350/GPS	TTYCSLA-1
TB8	ECDIS	TTYCSLA-1

Fabricate the cables as shown below to connect to the IF-900.
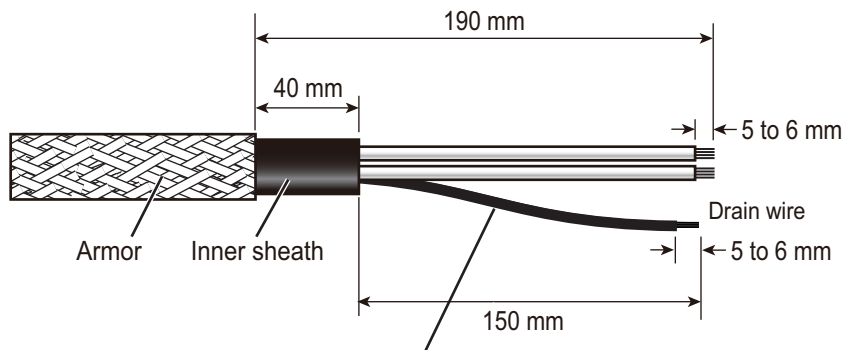
Pass the Insulation Tube (supplied) on to the drain wire.

How to connect wires

Procedure
1. Twist core.
2. Insert terminal opener and push.
3. Insert wire into hole. Be careful not to pinch the sheath.
4. Release terminal opener.
5. Pull wire to confirm it is correctly inserted.

After connecting the cable, secure the cable to the cable clamp using a cable tie.

4-7