

# **FURUNO**

## **OPERATOR'S MANUAL**

*NAVTEX RECEIVER*

Model **NX-700A/B**

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**ECF**

(Elemental Chlorine Free)

The paper used in this manual  
is elemental chlorine free.

**FURUNO ELECTRIC CO., LTD.**

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• FURUNO Authorized Distributor/Dealer

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# IMPORTANT NOTICE

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## 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 cancel 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 cancel 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: Ridderhaven 19B, 2984 BT Ridderkerk, The Netherlands
- All brand and product names are trademarks, registered trademarks or service marks of their respective holders.

## How to discard this product

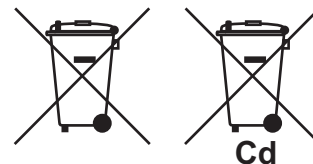
Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (<http://www.eiae.org/>) for the correct method of disposal.

## How to discard a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery(ies), see the chapter on Maintenance. Follow the instructions below if a battery(ies) is used.

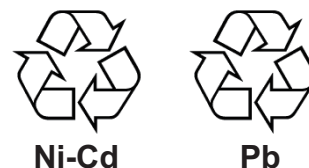
### In the European Union

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 recycling symbols in the future.



# SAFETY INSTRUCTIONS

Read these safety instructions before you operate 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 information 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.

**Keep heater away from equipment.**

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

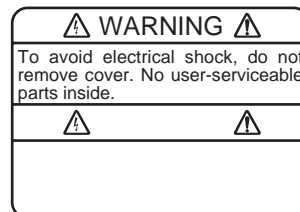
**Use the proper fuse.**

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



### CAUTION

**A warning label is attached to the equipment. Do not remove the label. If the label is missing or damaged, contact a FURUNO agent or dealer about replacement.**







Name: Warning Label (1)

Type: 86-003-1011-1

Code No.: 100-236-231

# Safety information for the Installer

 <b>WARNING</b>	
	<b>Do not open the equipment unless totally familiar with electrical circuits and service manual.</b>
<b>ELECTRICAL SHOCK HAZARD</b>	Only qualified personnel should work inside the equipment.
<b>Turn off the power at the mains switchboard before beginning the installation.</b>	
Fire, electrical shock or serious injury can result if the power is left on or is applied while the equipment is being installed.	

 <b>CAUTION</b>			
<b>Observe the following compass safe distances to prevent deviation of a magnetic compass.</b>			
		Standard	Steering
Display unit	NX-700A	1.45 m	0.95 m
	NX-700B	0.30 m	0.30 m
Receiver unit NX-7001		1.15 m	0.75 m
 <b>Attach securely protective earth to the ship's body.</b>			
The protective earth is required to the power supply to prevent electrical shock.			

# FOREWORD

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Congratulations on your choice of the FURUNO NX-700A/B 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-700A/B is just one of the many Furuno developments in the field of marine radio communication.

NX-700A: Display unit w/printer

NX-700B: Display unit w/o printer

This NX-700A/B 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 world wide 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-700 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-700 automatically decides in which NAVAREA the vessel is navigating, and selects stations. (NAVAREAs are geographical zones defined by the international Maritime Organization.)

-Meets the following standards and regulations

- MSC.148 (77)
- MSC.302 (87)
- IMO A.694 (17)
- IEC61097-6 Ed. 2 (2005-12)
- IEC 60945 Ed. 3 and 4
- IEC 61162-1 Ed.4 (2010-11)
- IEC 61162-2
- EN 300 065 V 1.1.3
- EN 301 011 V 1.1.1 (1998-09)
- ITU-R M.540-2
- ITU-R M.625-3

-Receives 518 kHz and another (490 or 4209.5 kHz) at the same time

-5" LCD display

-Prints out the message selected

-Bright 76 x 100 mm, monochrome LCD, 240 x 320 dots with adjustable contrast and brilliance

-Low power consumption

-Displays the NAV data (date, own ship's position, speed and course) or distance (distance between own ship's position and information mentioned in the message) at the bottom of screen

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

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# EQUIPMENT LISTS

## Standard Supply

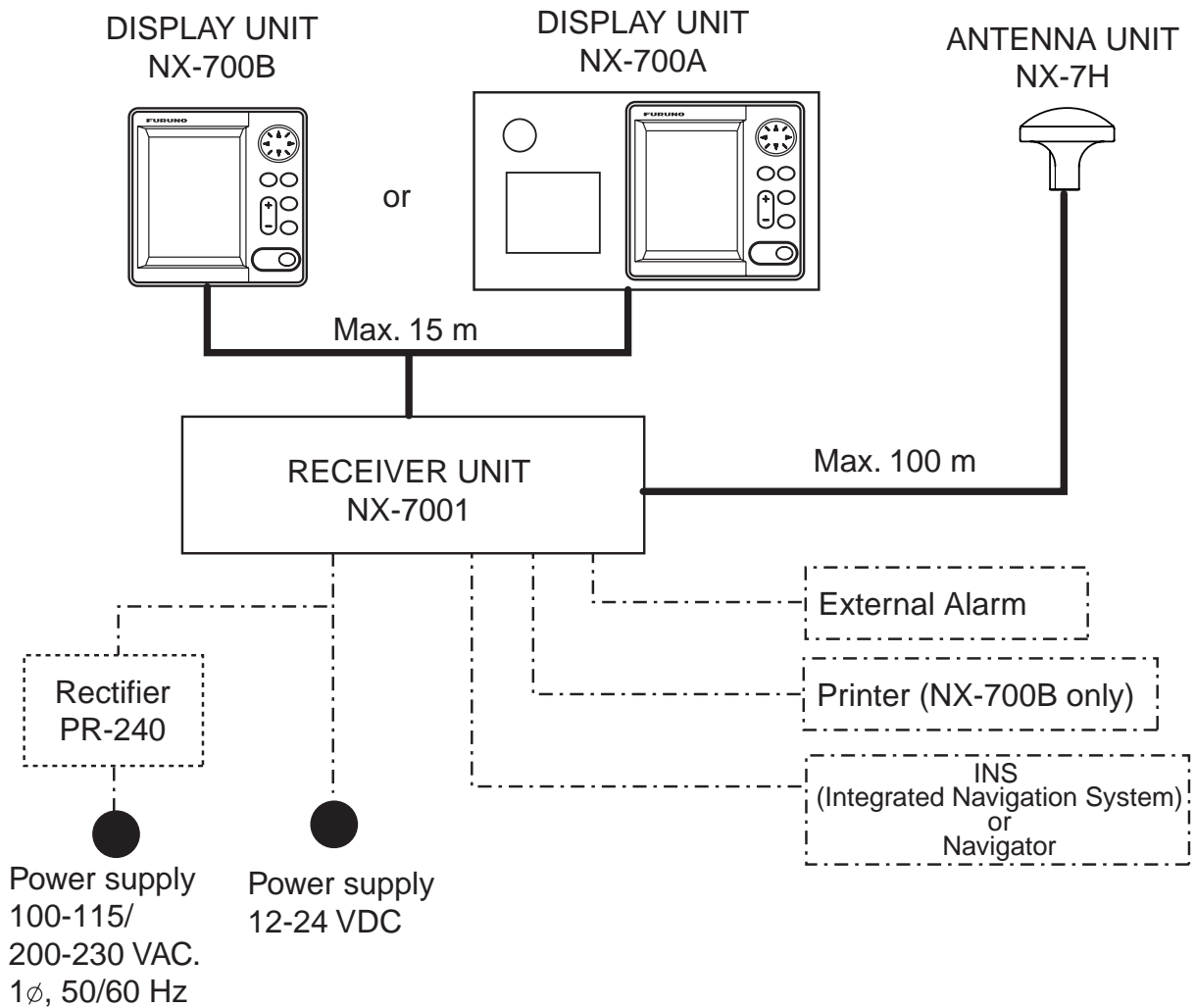
Name	Type	Code No.	Qty	Remarks
Display Unit	NX-700A	-	1	w/printer
	NX-700B	-		w/o printer
Receiver Unit	NX-7001	-	1	
Antenna Unit	NX-7H	-	1	
Installation Materials	CP08-01810	000-040-180	1	10 m cable, CP08-01811
	CP08-01820	000-040-210		20 m cable, CP08-01811*
	CP08-01870	000-040-350		30 m cable, CP08-01811*
	CP08-01880	000-040-362		40 m cable, CP08-01811*
	CP08-01890	000-040-363		50 m cable, CP08-01811*
	CP08-01860	000-040-349	1	DSUB25P cable, between Display and Receiver Units
	CP08-01863*	004-514-530	1	For Antenna Unit w/o antenna cable
	CP08-01864*	004-514-540		For Antenna Unit w/ antenna cable.
	CP08-01861*	004-514-350	1	For Display Unit
Spare Parts	SP08-02101*	004-514-370	1	Fuse for Receiver Unit*
Accessories	FP08-00800*	000-040-396	1	For NX-700A

\*: See the back of this manual.

## Optional Supply

Name	Type	Code No.	Qty	Remarks
Thermal Paper	TP058-30CL	000-154-047	1 set	For NX-700A
Flush Mount Kit	OP08-19	004-515-260	1	For NX-700A
	OP08-20	004-515-270	1	For NX-700B
AC-DC Power	PR-240	000-053-373	1	
Extension Cable Kit	OP04-2	000-041-174	1	10 m, w/connector
		000-041-175	1	20 m, w/connector
		000-041-176	1	30 m, w/connector
		000-041-177	1	40 m, w/connector
		000-041-178	1	50 m, w/connector
	OP08-12	005-948-250	1	10 m
		005-948-260	1	20 m
		005-948-270	1	30 m
		005-948-280	1	40 m
		005-948-290	1	50 m
Coaxial Cable	RG-10/U-Y	000-563-048	1	30 m
		000-126-000	1	40 m
		000-126-001	1	50 m
Cable Assy	DSUB25P-DSUB25P	000-152-698	1	3 m
		000-152-699	1	5 m
		000-152-700	1	10 m
		000-152-701	1	15 m
Right Angle Mounting Base	No.13-QA330	000-803-239	1	For antenna unit NX-7H
L-Angle Mounting Base	No.13-QA310	000-803-240	1	
Handrail Mounting Base	No.13-RC5160	000-806-114	1	
Mast Mounting Kit	CP20-01111	004-365-780	1	
Display Unit	NX-700A	-	1	
	NX-700B	-		

# SYSTEM CONFIGURATIONS



- : Standard
- : Option
- - - - - : User supply

## Environmental Category

Antenna unit	To be installed in an exposed area
Display unit Receiver unit	To be installed in a protected area

# **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 Navtex station has an identification code, from "A" to "Z". The frequency assigned to Navtex are 518 kHz and another (490 or 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).

### 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.

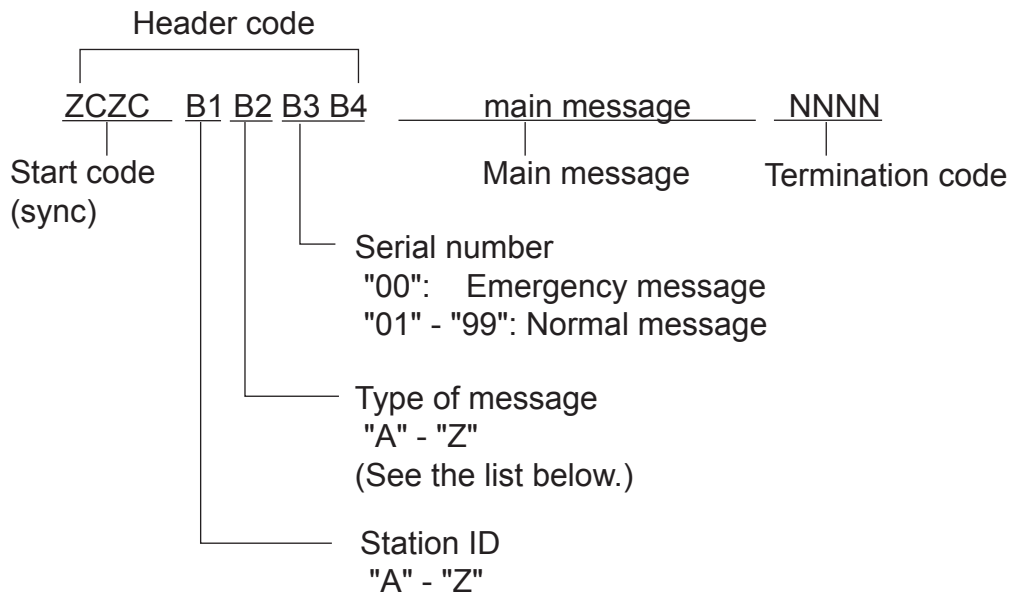
Character B1 is the identification letter of the Navtex station "A" thru "Z".

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).

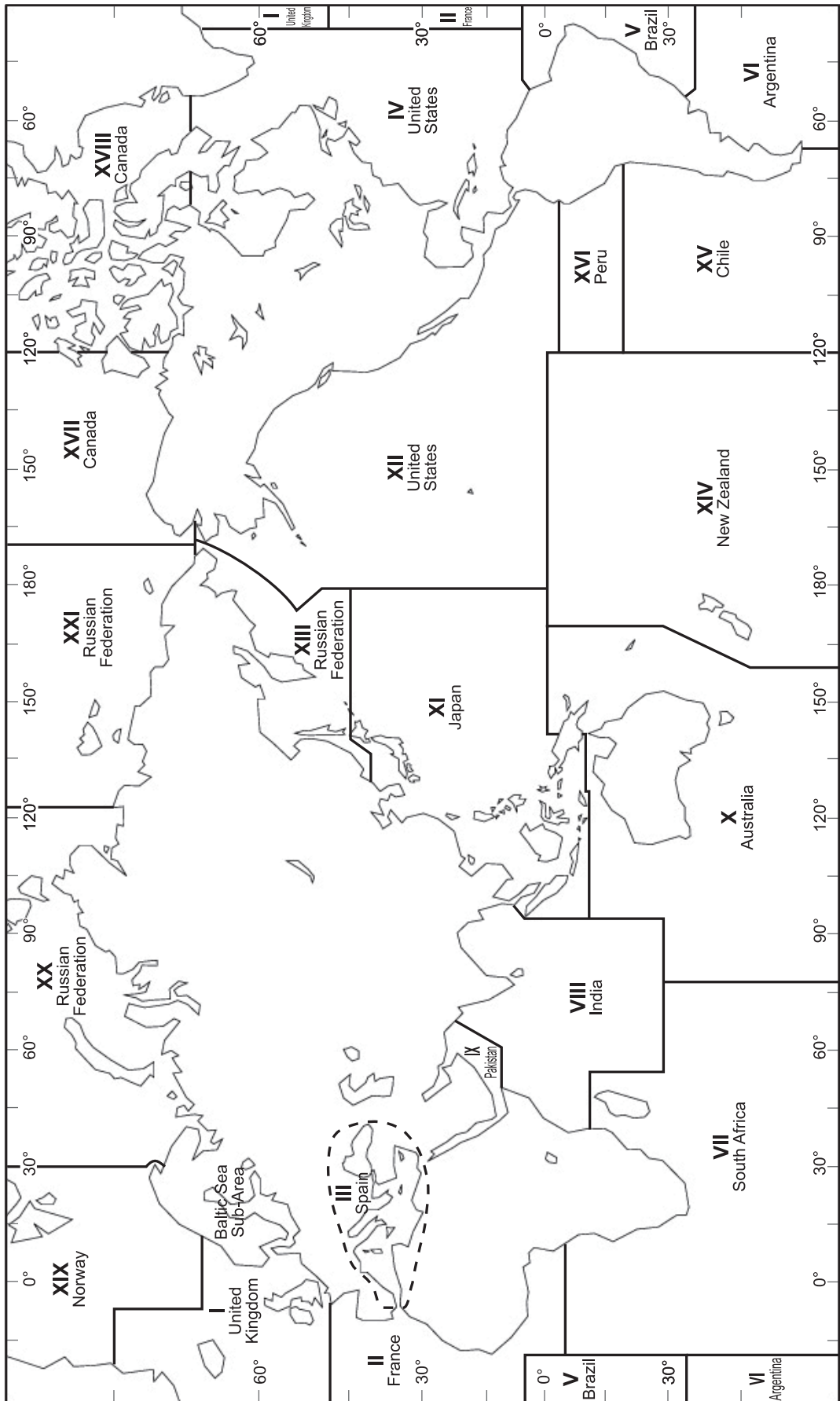
General message format is summarized below.



[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		
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		

(Continued on next page)



# 1. PRINCIPLE OF NAVTEX SYSTEM

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

(Continued on next page)

# 1. PRINCIPLE OF NAVTEX SYSTEM

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
		Warton	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		

(Continued on next page)

1. PRINCIPLE OF NAVTEX SYSTEM

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	Ushuaia	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. PRINCIPLE OF NAVTEX SYSTEM

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, 1630, 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

(Continued on next page)

# 1. PRINCIPLE OF NAVTEX SYSTEM

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							

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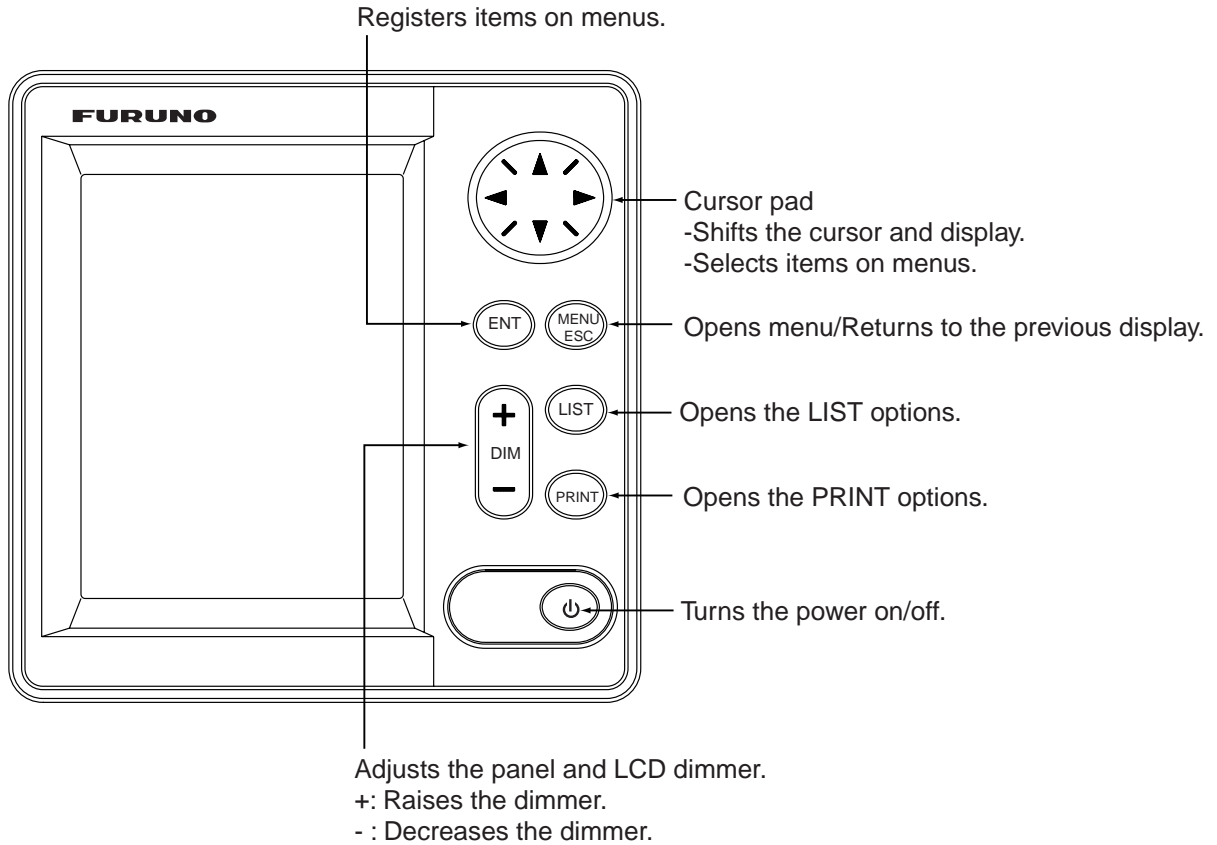
## 1. PRINCIPLE OF NAVTEX SYSTEM

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

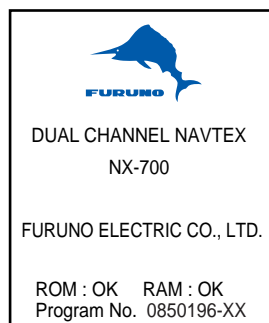


*Display unit, front view*

## 2.2 Turning the Unit On/Off

Press the  key to turn the unit on. A beep sounds and the equipment shows the start up display, where the ROM and RAM are checked for proper operation and the program no. is displayed. The results of the check are shown as OK or NG (No Good).

When the results are OK, the list display is shown after five seconds after completion of the check, with frequency last used before turning the power off.



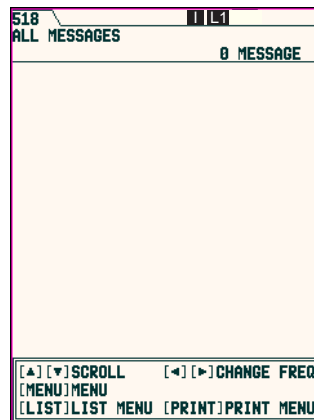
XX: Program version No.

## 2. OPERATION

At the default setting, the equipment functions as below;

When the results of the check are OK, ALL MESSAGE display for 518 kHz appears. This screen shows all messages received in 518 kHz.


You can switch 518 kHz (International message) and 490 kHz (local message) to display. The NX-700A is preset to print all received message out.



*All message display (518 kHz)*

**Note 1:** To display all received messages in 490 kHz, press ◀ or ▶.

**Note 2:** To cancel the printing all received messages out, see page 2-11.

To turn the power off, press the  key again.

**Note:** If NG appears for any test, try to press any key to go to the next stage. The equipment, however, may not be operated properly. Contact your dealer if the problem persists.

### 2.3 Adjusting LCD Dimmer

You can adjust LCD and panel dimmer with the + DIM – key. The adjustment range is 0 (dark) to 9 (bright).

+: Raises the dimmer.

-: Decreases the dimmer.



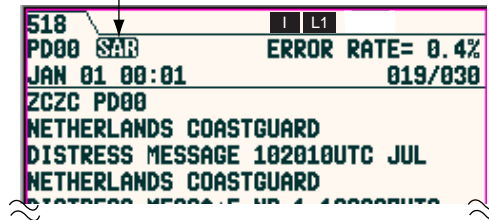
## 2.4 Confirming the New Message


When you receive a new message, do one of the following depending on message received.

### SAR (Search and Rescue) message

1. When an SAR message is received, the audible alert sounds and details for the SAR message appear.

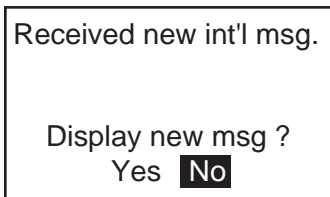
Icon for SAR message



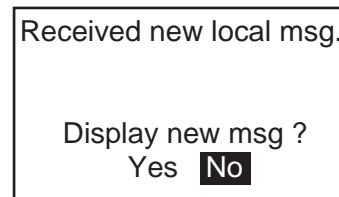
2. Press any key other than  key to silence the alarm.

### Other messages


1. When a message other than an SAR message is received, the display shows one of the following windows.



International message



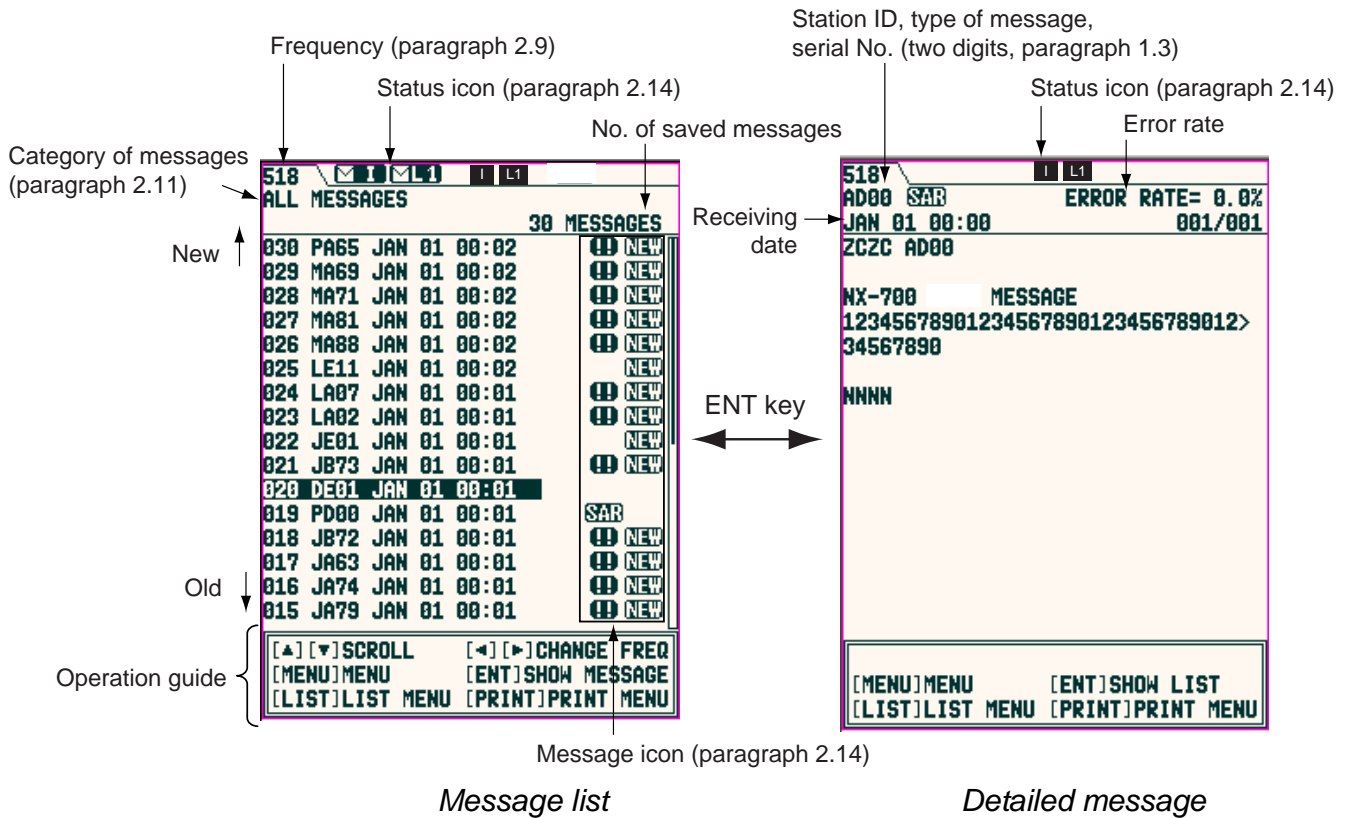
Local message

2. If you want to read the message immediately, press  to choose "Yes" and then press the **ENT** key to display the message

To read the message later, choose "No", and then press the **ENT** key to close the window.

## 2.5 Sample Messages

Press ▲ or ▼ on the cursor pad to choose a message, and then press the ENT key to show the detailed information for that message. The message list and detailed message displays can be switched by pressing the ENT key.



**Note 1:** The operation guide at the bottom of screen shows the functions of the keys available for use with the current screen.

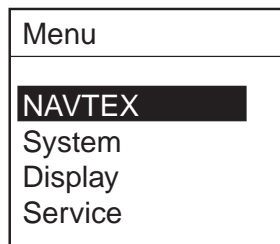
**Note 2:** The character size can be changed. For detail, see page 2-18.

Key	Display mode	Function
▲ ▼	List	Scrolls the list.
	Detailed	Scrolls the message.
◀ ▶	List	Switches the international and local lists.
	Detailed	Shows the newer (◀) or older (▶) message.
MENU	List	Shows the main menu.
	Detailed	
ENT	List	Shows the detailed message selected.
	Detailed	Shows the message list.
LIST	List	Shows the list options.
	Detailed	
PRINT	List	Shows the print options.
	Detailed	

## 2.6 Choosing the Receive Mode

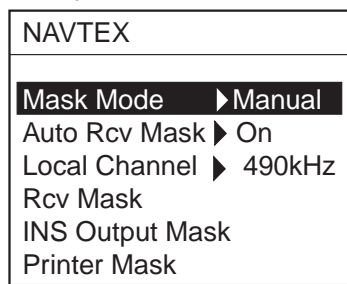
The NAVTEX menu allows you to select what station to receive, automatically, manually. The Auto mode requires navigation data, and stations are automatically selected according to the distance between own ship and NAVTEX stations. If navigation data is not input, all stations are selected. The manual mode lets you freely stations 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 the **MENU/ESC** key to show the main menu.



*Main menu*

2. Press **▲** or **▼** to choose NAVTEX.
3. Press the **ENT** key or **▶** to open the NAVTEX menu.



*NAVTEX menu*

4. Press **▲** or **▼** to choose Mask Mode, and then press the **ENT** key or **▶** to show the mask mode options.



*Mask mode options*

5. Press **▲** or **▼** to choose INS (for INS mode) or Manual (for Auto or Manual mode) as appropriate, and then press the **ENT** key. When choosing INS, Auto Rcv Mask and Local Channel are disappeared from the NAVTEX menu.
6. For Auto and Manual modes, do the follows.
  - a) Choose Auto Rcv Mask, and then press the **ENT** key.
  - b) Press **▼** to choose "On" for Auto or "Off" for Manual, and then press **ENT** key.
7. Press the **MENU/ESC** key several times to close the menu.

## 2.7 Choosing the Local Frequency

You can choose 490 kHz or 4209.5 kHz as the local frequency on Auto or Manual mode.

1. Press the **MENU/ESC** key to show the main menu.
2. Press **▲** or **▼** to choose NAVTEX, and then press the **ENT** key or **▶**.
3. Press **▲** or **▼** to choose Local Channel, and then press the **ENT** key or **▶** to show the local channel options.



*Local channel options*

4. Press **▲** or **▼** to choose the frequency 490 kHz or 4209.5 kHz, and then press the **ENT** key.
5. Press the **MENU/ESC** key several times to close the menu.

## 2.8 Editing the Settings for Station and Message

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

### **(NAVTEX menu)**

#### **Rcv 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**

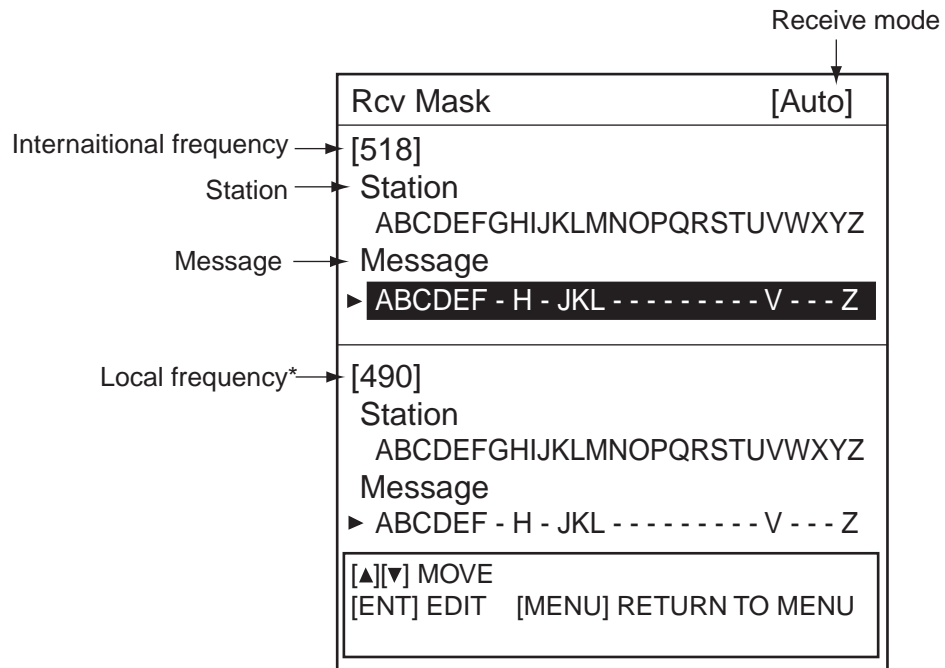
Choose the type of message to be print automatically when it is received. Note that A/B/D/L cannot be rejected.

### **(Display Menu)**

#### **User Select Station & Msg**

You can choose the type of stations and messages to display on SELECT MESSAGES display (shown by choosing "User Selected Message" after pressing **LIST** key.) For detail, see page 2-9.

1. Press the **MENU/ESC** key to show the main menu.
2. Press **▲** or **▼** to choose NAVTEX (for Rcv Mask, INS Output Mask and Printer mask) or Display (for User Select Station & Msg), and then press the **ENT** key.
3. Press **▲** or **▼** to choose “Rcv Mask”. “INS Output Mask”, “Printer Mask” or “User Select Station & Msg”.
4. Press the **ENT** key to open the appropriate editing window. (Below is the Rcv Mask editing window.)



\*: Local channel selected at Paragraph 2.7.

*Edit window (ex. Rcv Mask)*

5. Press **▲** or **▼** to choose the item to edit, and then press the **ENT** key to show the alphabet selection window.



6. Press **◀** or **▶** to choose the alphabet desired, and then press **▲** or **▼** to choose to receive or not.  
The alphabet you have chosen not to receive is marked with “-” (hyphen).
7. Press the **ENT** key.
8. Repeat steps 5 through 7 to complete.
9. Press the **MENU/ESC** key to close the window.

## 2.9 Switching the Frequency to Display

With showing the message list, you can switch the frequency to 518 kHz or 490 (or 4209.5) kHz by pressing ◀ or ▶ key.



*Switching the frequency to display*

## 2.10 Alarm Messages

The sequence of events when an alarm message is received is as shown below.

### **When receiving 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** key is pressed. (See paragraph 2.11.) The aural alarm sounds medium beep.

### **When receiving WARNING message (A/B/L):**

When the Warn Msg Alm on System menu is set to On, the audible alarm sounds and the message for receiving appears. The aural alarm sounds long beep.

**Note:** When both alarms are received, the aural alarm sounds short beeps.

### **Silencing audible alarm**

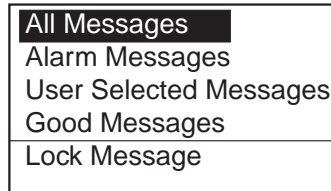
Press any key (except ⏻ key).

## 2.11 Processing Messages

### Choosing messages to display

You can choose which category of messages to display: All, Alarm, User Selected and Good messages.

1. With the message list or detailed message shown, press the **LIST** key to show the list options.



#### *List options*

2. Press **▲** or **▼** to choose the item.
  - All Messages:** Shows all messages received.
  - Alarm Messages:** Shows only SAR/WARNING messages.
  - User Selected Messages:** Shows messages arranged at User Select Station & Msg on Display menu.
  - Good Messages:** Shows messages whose error rate is less than 4%.
3. Press the **ENT** key to close the window.  
The list chosen at step 2 appears.

**Note:** When the following messages appear, set the List window to All Messages to show.

**Urgent message:**

“Message not chosen for display received; it is a int’l (or local) 00 message. Choose “All Message” (LIST menu) to display.”

**Normal message:**

Int’l (or local) message not chosen for display received. Choose “All Message” (LIST menu) to display.”

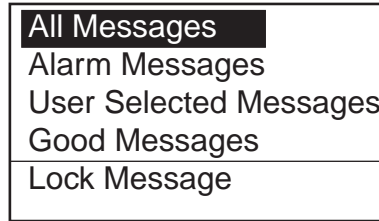
**Protecting message from deleting**

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

- 66 hours passed from the moment when received.
- Older than No. 200

To prevent a message from being deleted, do the follows;

1. Choose the message at the list display.
2. Press the **LIST** key to show the list options.



*List options*

3. Choose Lock Message from the list window and then press the **ENT** key.  
The protect icon (🔒) appears next to the message selected.

**Note 1:** To unlock a message, choose it and then select Unlock Message in the list window. (The protect icon disappears.)

**Note 2:** When you unlock a message which was received 66 hours ago or a message that is older than No. 200, it will be deleted promptly when unlocked.

**Note 3:** Maximum each 50 messages for International and local (or 25% of each memory) can be protected.



## 2.12 Printing Messages

Received messages can be printed automatically or manually, from the built-in printer (NX-700A) or external printer (NX-700B).

### Printing all messages displayed

All messages chosen on paragraph 2.11 can be printed out.

1. Press the **PRINT** key with showing all messages.



*Print options*

2. Press **▲** or **▼** to choose "Print".
3. Press the **ENT** key to print.

**Note:** When a message is received while printing some messages, the new one cannot be printed.

### Printing each message

1. Press **▲** or **▼** to choose the desired message from the list.
2. Press the **ENT** key to show the detailed information.
3. Press the **PRINT** key.
4. Press **▲** or **▼** to choose "Print" from the window.
5. Press the **ENT** key to print.

### Canceling printing

When a menu is displayed, you cannot cancel the printing.

1. Press the **PRINT** key while showing the messages to open the print window.
2. Press **▼** to choose "Cancel Print" and then press the **ENT** key.

## 2.13 Editing the NAVTEX Station List

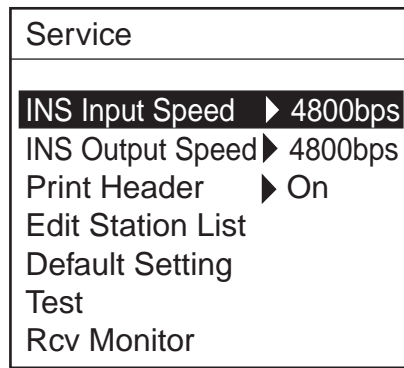
Maximum 300 NAVTEX stations can be registered into the memory.

**Note:** To cancel editing of a NAVTEX station, press the **MENU/ESC** key. The message “Exit without saving?” appears. Choose “Yes”, and then press **ENT** key.

### Adding NAVTEX station

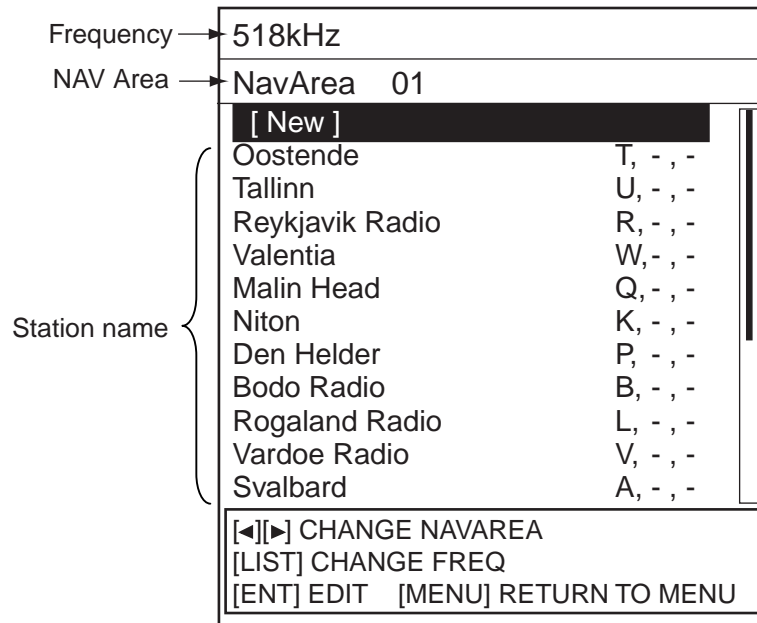
You may add a NAVTEX station to the NAVTEX station list as follows:

1. Press the **MENU/ESC** key to show the main menu.
2. Press **▲** or **▼** to choose Service, and then press the **ENT** key.



*Service menu*

3. Press **▲** or **▼** to choose Edit Station List, and then press the **ENT** key.



*Edit station list display*

4. Confirm that New is chosen, and then press the **ENT** key to show the addition window appears.

NAV Area →	NavArea	▶	1
Station Name →	Station	▶	
Latitude →	Latitude	▶	0° 00'N
Longitude →	Longitude	▶	0° 00'E
Station ID {	518kHz	▶	ID1: - ID2: - ID3: -
	490kHz	▶	ID1: - ID2: - ID3: -
	4209.5kHz	▶	ID1: - ID2: - ID3: -
Sertvice Area →	Range	▶	400nm
	Save data ?		

*New addition window*

5. Confirm that NavArea is chosen, and then press the **ENT** key to show the area No. window.
6. Press **▲** or **▼** to choose a Nav area No. (1 to 16, and EXT), and then press the **ENT** key.  
For NAV area No., see paragraph 1.4. EXT is reserved for future use.
7. Confirm that Station is chosen, and then press **ENT** key.
8. Enter a station name (Max. 18 characters), and then press the **ENT** key.
  - a) Press **▲** or **▼** to choose a character. Each press of **▲** shows A -> ... -> Z -> a -> ... -> z -> 0 -> ... -> 9 -> \_ -> - -> space in that sequence.
  - b) Press **▶** to move the cursor to next digit.
  - c) Repeat steps a) and b) to complete the station name.
9. Confirm that Latitude is chosen, and then press the **ENT** key.
10. Enter the latitude for station, and then press the **ENT** key.  
Use **▲** or **▼** to switch to North and South.
11. Confirm that Longitude is chosen, and then press the **ENT** key.
12. Enter the longitude for station, and then pres the **ENT** key.  
Use **▲** or **▼** to switch to East and West.
13. Choose 518kHz, 490kHz or 4209.5kHz, and then press the **ENT** key.
14. Enter the station ID (A to Z), and then press the **ENT** key.  
For multiple stations, fill in ID2 and ID3.
15. Confirm that Range is chosen, and then press the **ENT** key.
16. Enter the service area (1 to 999 nm), and then press the **ENT** key.
17. Confirm that Save data? is chosen, and then press the **ENT** key.  
The message "Save new station?" appears.
18. Press **◀** to choose "Yes", and then press **ENT** key to close the new addition window disappears.

**Note:** If the station ID was not entered at step 14, the message "Enter ID data." appears. Press any key, and then enter the station ID.

19. To enter another NAVTEX station, repeat steps 4 through 18.
20. Press the **MENU/ESC** key several times to close the menu.

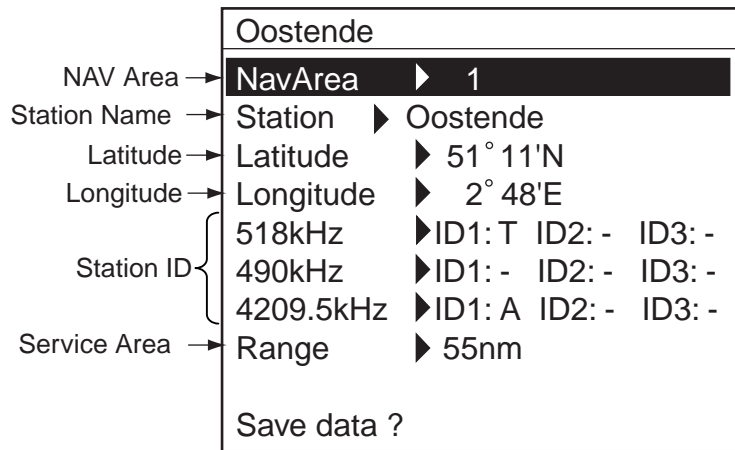
**Editing NAVTEX station**

Existing NAVTEX station may be edited as follows:

1. Press the **MENU/ESC** key to show the main menu.
2. Press **▲** or **▼** to choose Service, and then press the **ENT** key.
3. Press **▲** or **▼** to choose Edit Station List, and then press the **ENT** key.
4. Press **◀** or **▶** to choose the NAV area to be changed (01 to 16, EXT).
5. Press the **LIST** key to choose the frequency to be changed (518kHz, 490kHz or 4209.5kHz).
6. Press **▲** or **▼** to choose the station, and then press the **ENT** key.



7. Press **▲** to choose “Edit”, and then press **ENT** key to show the edit window appears.



*Edit window (Ex. NAVTEX station Oostende)*

8. Edit data as appropriate.
9. Confirm that Save data? is chosen, and then press the **ENT** key.
10. Press **◀** to choose “YES”, and then press the **ENT** key to close the edit window.
11. Press the **MENU/ESC** key several times to close the menu.

**Deleting NAVTEX stations**

You may delete unnecessary NAVTEX stations as follows:

1. Press the **MENU/ESC** key to show the main menu.
2. Press **▲** or **▼** to choose Service, and then press the **ENT** key.
3. Press **▲** or **▼** to choose Edit Station List, and then press the **ENT** key.
4. Press **◀** or **▶** to choose the NAV area to be deleted. (01 to 16, EXT).
5. Press the **LIST** key to choose the frequency to be deleted (518kHz, 490kHz or 4209.5kHz).
6. Press **▲** or **▼** to choose the station name to be deleted, and then press **ENT** key.

The item window appears.



7. Press ▲ or ▼ to choose Delete, and then press the **ENT** key.  
The message “Delete station?” appears.
8. Press ◀ to choose “Yes”, and then press the **ENT** key to close the edit window.
9. Press the **MENU/ESC** key several times to close the menu.

## 2.14 Icons

The NX-700 shows various icons to denote equipment status, and these are as shown in the table below.

Icon	Status	Meaning
<b>Status icon (shown at the tip of display)</b>		
	Blinking	Shows that an International frequency (518 kHz) message has not been read.
	Blinking	Shows that a Local frequency message has not been read. L1: 490 kHz, L2: 4209.5 kHz
	Blinking	
	Blinking	While receiving a message. I: International frequency (518 kHz) L1: 490 kHz L2: 4209.5 kHz
	Blinking	
	Blinking	
	Lighting	Appears when the equipment is ready to receive the International frequency.
	Lighting	Appears when the equipment is ready to receive the local frequency (L1: 490 kHz, L2: 4209.5 kHz)
	Lighting	
	Lighting	Displayed when the voltage of the internal battery is low. The message “Battery error” also appears on the display.
	Lighting	Print error (no paper, not connected to the printer, etc.). The message “Printer error” also appears on the display.
	Lighting	While printing.
<b>Message icon (shown next to messages)</b>		
	Lighting	Displayed when message is displayed for the first time. (This icon disappeared after showing the detail or 24 hours has passed.)
	Lighting	Displayed when message type D (SAR) is displayed.
	Lighting	Appears when message type A, B or L (Warning) is displayed.
	Lighting	Protected message

## 2.15 Messages List

In addition to the message "Received new local (int'l) msg." the following message-related messages may appear on the display.

Message	Meaning	Remedy
New message received. Oldest message deleted to free up memory.	Appears when the oldest message is deleted to make space for the latest one.	Press any key.
Same message with lower error rate received. Currently displayed message will be deleted.	Appears when two messages have the same ID are received and the latter's error rate is lower than the former.	Press any key.
Term of validity expired. Currently displayed message will be deleted.	Appears when 66 hours has passed after receiving the currently displayed message.	Press any key.
Message not chosen for display received; it is a int'l 00 message. Choose "All Message"(LIST menu) to display.	Appears when receiving an international message not specified for display (00) at the SELECT MESSAGES display.	Press any key, and then choose All Message in the List window.
Message not chosen for display received; it is a local 00 message. Choose "All Message"(LIST menu) to display.	Appears when receiving a local message not specified for display (00) at the SELECT MESSAGES display.	
Int'l message not chosen for display received. Choose "All Message"(LIST menu) to display.	Appears when receiving an international message not specified for display (Normal) at the SELECT MESSAGES display.	
Local message not chosen for display received. Choose "All Message"(LIST menu) to display.	Appears when receiving a local message not specified for display (Normal) at the SELECT MESSAGES display.	

## 2.16 Other Functions

This paragraph describes the various options which allow you to set up your unit to suit your needs.

### NAVTEX menu

Item	Description	Setting
Mask Mode	Chooses the receiving mode. (See paragraph 2.6.)	INS, Manual
Auto Rcv Mask*	Turns Auto mode on/off.	Off, On
Local Channel*	Chooses the local channel.	490kHz, 4209.5kHz
Rcv Mask*	Receives messages in the category.	-
INS Output Mask*	Sets the station and type of message to output to the INS.	-
Printer Mask*	Chooses the station and message to print out automatically (See paragraph 2.8.)	

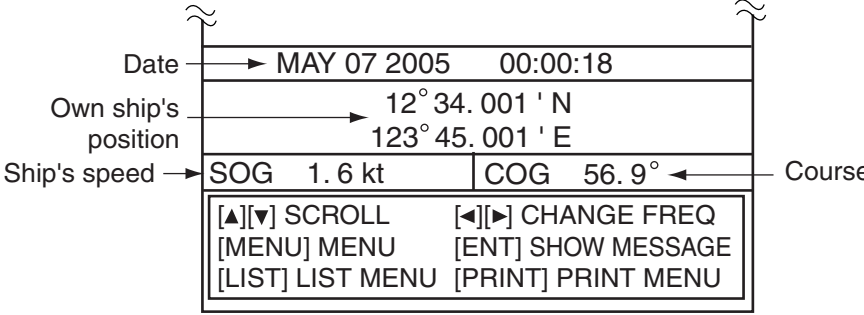
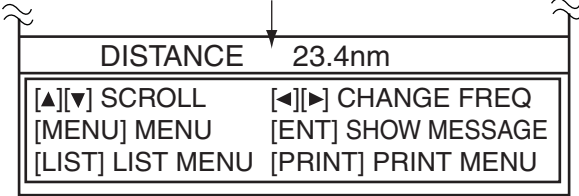
\*: Not available on INS mode.

### System menu

Item	Description	Setting
Warn Msg Alm	Turns the audible alarm on/off when receiving a Warning message (A, B, and L).	Off, On
Signal Monitor	Turns the audible alarm for monitoring of Rx signal on/off. <b>Off:</b> Disables monitoring. <b>Int'l:</b> Monitors international frequency. <b>Local:</b> Monitors local frequency.	Off, Int'l, Local
Key Beep	Turns key beep on/off.	Off, On
Time Offset	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.	-13:30 to +13:30
Units	Chooses units of measurement (distance and ship speed) to be shown on the User Display.	nm, kt, km, km/h, mi, mi/h
Printer	Sets the printer type. (See paragraph 4.6.)	None, NX-700A, Upright, Inverted

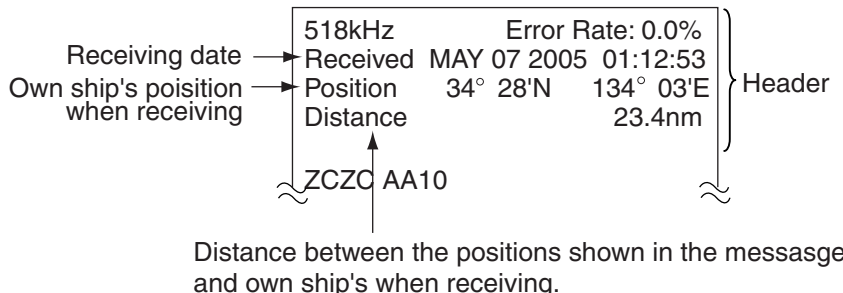

2. OPERATION

**Display menu**

Item	Description	Setting
Scrolling	Selects the speed of scrolling by pressing ▲ or ▼. <b>Slow:</b> Scrolls by one line. <b>Fast:</b> Scrolls by half of screen. <b>Skips to \$\$:</b> Scrolls line by line in list display; Skips to \$\$ position in detailed display.	Slow, Fast, Skip to \$\$
Font Size	Selects the size of characters.	Small, Medium, Large
Time Display	Selects the time format.	24 hour, 12 hour
Date Display	Selects the date format.	MMM DD YYYY, DD MMM YYYY, YYYY MMM DD
User Display	Selects the type of data as user display to be shown at the bottom of the display. <b>Nav Data</b>  <b>Distance</b> Distance between the positions shown in the message and own ship's when receiving. 	Off, Nav Data, Distance
Speed Display	Selects the speed format to be displayed. <b>SOG:</b> Speed Over Ground <b>STW:</b> Speed Through Water	SOG, STW
Contrast	Sets the display contrast.	0 to 9
User Select Station & Msg	Choose the type of messages and stations to display on SELECT MESSAGES display (shown by choosing "User Selected Message" after pressing LIST key.) For detail, see section 2.8.	-



**Service menu**



Item	Description	Setting
INS Input Speed	Selects the data transmission speed at which to input data from INS.	4800, 9600, 19200, 38400 bps
INS Output Speed	Selects the data transmission speed to output data to the INS.	4800, 9600, 19200, 38400 bps
Print Header	<p>Turns the header (Own ship's position, date, frequency, error rate and distance information when receiving a message) for printing on/off.</p> 	Off, On
Edit Station List	Edits/deletes stations. (See paragraph 2.13.)	-
Default Settings	Restores all default settings. (See paragraph 3.5.)	-
Test	Starts the diagnostic test. (See paragraph 3.4.)	-
Rcv Monitor	<p>Shows the status for International and Local receiving.</p> 	-

## 2. OPERATION

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# 3. MAINTENANCE & TROUBLESHOOTING

This chapter provides information necessary for keeping your unit in good working order and remedying simple problems.

	<b>WARNING</b>
	<p><b>Do not open the equipment.</b></p> <p>Hazardous voltage which can cause electrical shock exists inside the equipment. Only qualified personnel should work inside the equipment.</p>

<b>NOTICE</b>
<p><b>Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.</b></p> <p>Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.</p>

## 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.

Maintenance program

Item	Check point	Remedy
Display unit connectors	Check for tight connection.	Tighten loosened connectors.
LCD	The LCD will, in time, accumulate a coating of dust which tends to dim the picture. Wipe LCD lightly with soft cloth to remove dust.	Wipe the LCD carefully to prevent scratching, using tissue paper and an LCD cleaner. To remove dirt or salt deposits, use an LCD cleaner, wiping slowly with tissue paper so as to dissolve the dirt or salt. Change paper frequently so the salt or dirt will not scratch the LCD. Do not use solvents such as thinner, acetone or benzene for cleaning.
Ground terminal	Check for tight connection and corrosion.	Clean or replace ground wire as necessary.

## 3.2 Replacement of Fuse, Battery and Thermal Paper

### Fuse

The fuse inside the receiver unit protects the equipment from overcurrent or reverse polarity. If the fuse blows, contact your dealer about replacement.

Name	Type	Code No.
Fuse	FGMB-A 125V 2A PBF	000-157-479-10

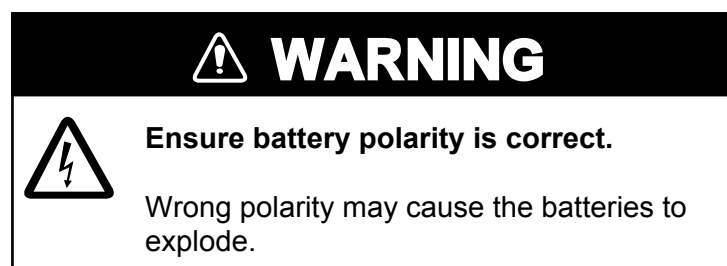


### Battery

A battery is installed inside the display unit, and it preserves data when the power is turned off. The life of the battery is about 5-10 years, and its voltage is checked when the power is turned on. When its voltage is low, the BATTERY (🔋) icon appears on the display to alert you. When this happens, contact your dealer to request replacement of the battery.

**Note:** When the battery is dead, all default settings are restored.


Name	Type	Code No.
BATT	CR2450-F2ST2L	000-144-941



### LCD Display

The life of the LCD is approx. 20,000 hour. When the LCD has expired, the brilliance cannot be raised.

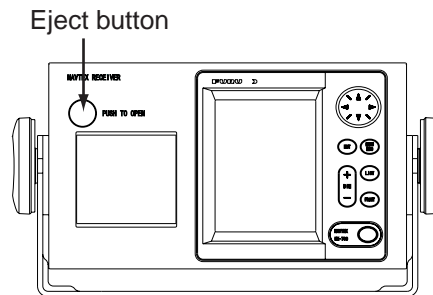
**Thermal paper (NX-700A only)**

When the thermal paper runs out completely, the message “Printer error” (center of screen) and the  icon (at the right-hand top corner) appear. Replace the paper as follows.

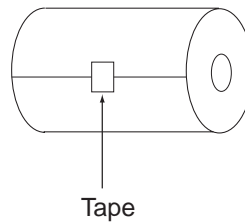
**Note:** Use only the specified thermal paper.

Name	Type	Code No.
Thermal paper	TP058-30CL	000-154-047

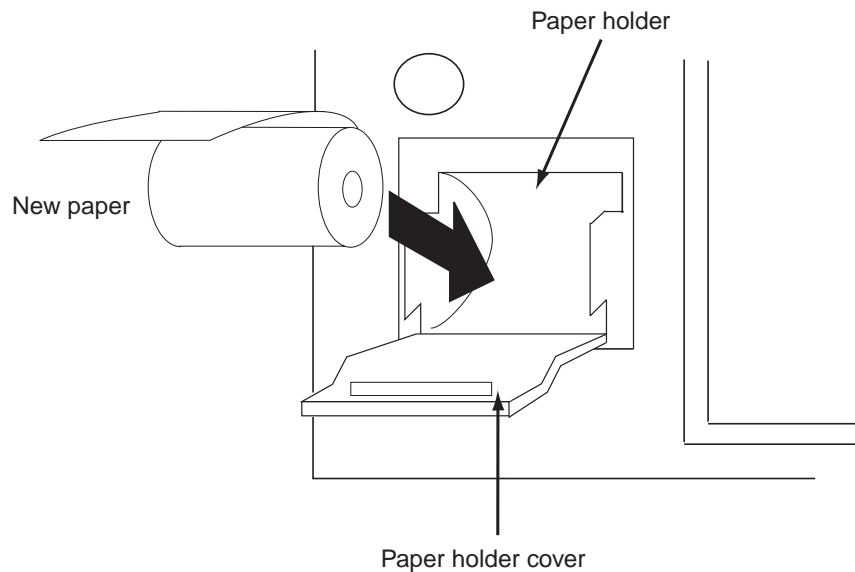
1. Turn off the power.
2. Press the button shown below to open the paper holder cover.



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



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



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

### 3.3 Troubleshooting

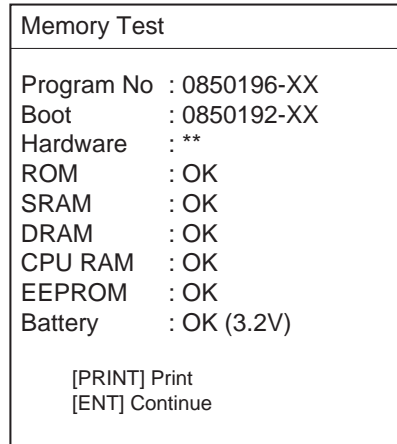
This section provides simple troubleshooting procedures which the user can follow to restore normal operation. If you cannot restore normal operation do not attempt to check inside the unit. Any trouble should be referred to a qualified technician.

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. (See paragraph 2.6.)
NAVTEX signal cannot be received.	check equipment by the diagnostic test.
	check the broadcasting schedule.
	check that the D-sub connector is firmly fastened.
check that the antenna cable is firmly fastened.	
paper does not advance. (NX-700A only)	load paper correctly.
paper feeds but no recording. (NX-700A only)	check if correct thermal paper is being used.
paper has darkened. (NX-700A only)	keep the paper in a well-ventilated and cool place.
the recording is not proper for the external printer. (NX-700B only)	check the setting of Printer on the System menu.
	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.

## 3.4 Diagnostics

The memory test checks ROM, RAM, data port, battery, keyboard and LCD for proper operation and displays program version numbers.

1. Press the **MENU/ESC** key to open the main menu.
2. Press **▼** to choose Service, and then press the **ENT** key.
3. Press **▲** or **▼** to choose Test, and then press the **ENT** key.  
The message "Start test?" appears.
4. Press **◀** to choose "Yes", and then press the **ENT** key.



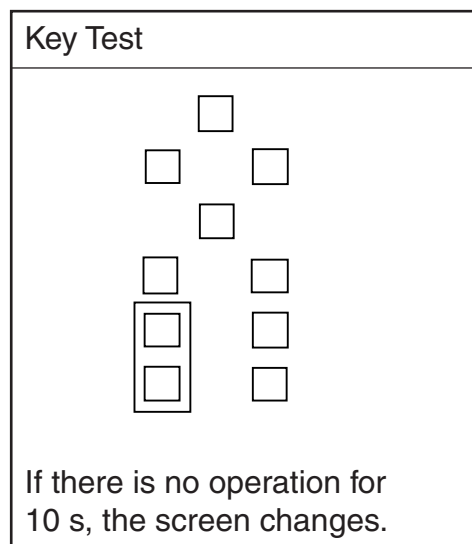
XX: Program version no.

\*\* : Board version no.


### *Memory test*

For any NG (No Good), contact your dealer.


5. When the message "[ENT] Continue" appears at the bottom of screen, press ENT key to show the key test screen.



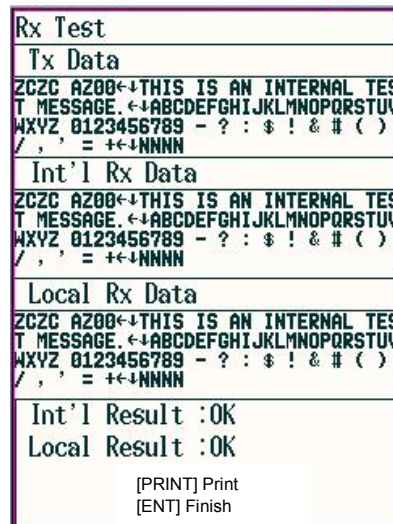
### *Key test*

6. Press each key (except  key) one by one.  
A key is functioning properly if its on-screen location fills in black when the key is pressed.

### 3. MAINTENANCE & TROUBLESHOOTING

7. After all keys have been tested or no key is pressed after 10 seconds, the equipment starts the LCD test by showing the white and black display (level 0 to 9).
8. When the message “Hit any key” appears on the screen, press any key (except  key) to show the Rx test screen.

The alarm for receiving monitor sounds while the Rx test is being conducted.



#### *Rx test*

9. When the message “[ENT] Finish” appears on the screen, press the **ENT** key or wait for one minute with no operation to finish.  
Also the test message is printed by pressing **PRINT** key when the item other than “None” at Printer on System menu.
10. Press the **MENU/ESC** key several times to close the menu.

## 3.5 Restoring all Default Settings

This operation restores all default settings. The following two settings, however, are not disturbed.

- Received messages
- NAVTEX stations list (See paragraph 2.13.)

1. Press the **MENU/ESC** key to show the main menu.
2. Press **▼** to choose Service, and then press the **ENT** key.
3. Press **▲** or **▼** to choose Default Setting, and then press **ENT** key.  
The message “Restore default settings?” appears.
4. Press **◀** to choose “Yes”, and then press the **ENT** key.  
The Service menu appears.
5. Press the **MENU/ESC** key several times to close the menu.



# 4. INSTALLATION

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## 4.1 Display Unit

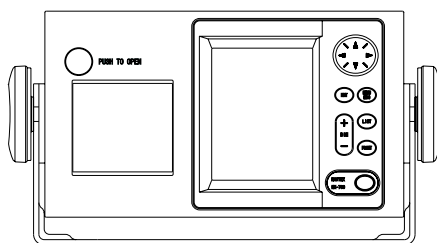
The display unit can be installed on a tabletop, on the overhead, or in a panel. Refer to the outline drawings at the back of this manual for installation instructions. When selecting a mounting location, keep in mind the following points.

- Locate the unit away from exhaust pipes and vents.
- Locate it of direct sunlight, (or in a suitable, ventilated enclosure) to prevent heat which can build up inside the cabinet.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal.
- Allow sufficient maintenance space at the sides and rear of the unit and leave sufficient slack in cables, to facilitate maintenance and servicing.
- Compass safe distances are:  
NX-700A (Standard: 1.45 m, Steering: 0.95 m)  
NX-700B (Standard: 0.30 m, Steering: 0.30 m)

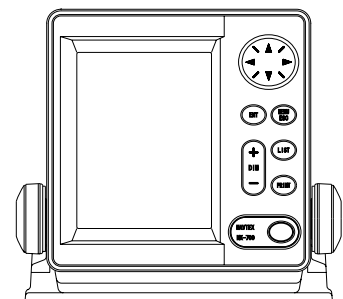
### Tabletop, overhead mounting

1. Fix the hanger by using four self-tapping screws (5x20).
2. Screw knob bolts in display unit, set it to the hanger, and tighten the knob bolts.

**Note:** For the overhead mounting, reinforce the mounting location for the weight of the display unit (NX-700A: 3.3 kg, NX-700B: 0.7 kg) and secure the hanger, with bolts, nuts and washers (local supply).



NX-700A



NX-700B

## 4. INSTALLATION

### **Flush mounting**

The display unit can be installed flush mounted in a console or panel by using the optional flush mount kit.

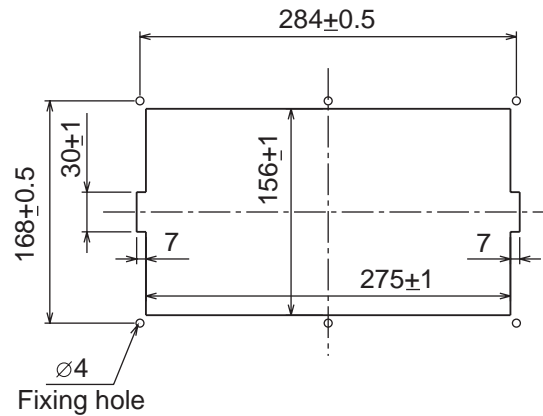
#### **(For NX-700A)**

Type: OP08-19

Code No.: 004-515-260

Name	Type	Code No.	Qty	Remarks
Mounting metal	08-023-1019	100-326-960	1	
Self-tapping screw	5X20	000-802-081	6	
Hex. bolt	M8x15	000-862-144	2	
Spring washer	M8	000-864-262	2	

1. Cut out a hole with dimensions as shown below in the mounting location.



2. Attach the fixing metal to the display unit with two hex. bolts (M8x15, supplied with optional kit) and spring washers (supplied with optional kit).
3. Fasten six self-tapping screws to fix the display unit to the mounting location.

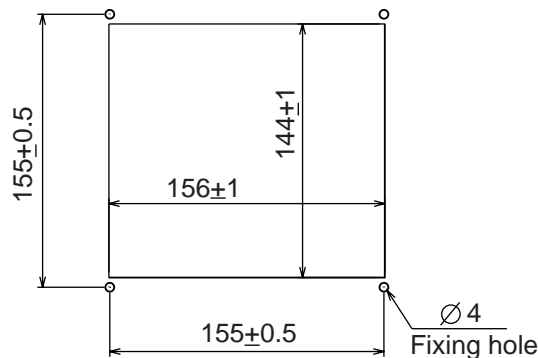
#### **(For NX-700B)**

Type: OP08-20

Code No.: 004-515-270

Name	Type	Code No.	Qty	Remarks
Mounting metal	08-023-2011	100-327-010	1	
Self-tapping screw	5x20	000-802-081	4	
Pan head screw	M4x12	000-802-130	4	

1. Cut out a hole with dimensions as shown below in the mounting location.



2. Attach the fixing metal to the display unit with four pan head screws (M4X12, supplied with the optional kit).
3. Fasten four self-tapping screws (supplied with the optional kit) to fix the display unit to the mounting location.

## 4.2 Receiver Unit

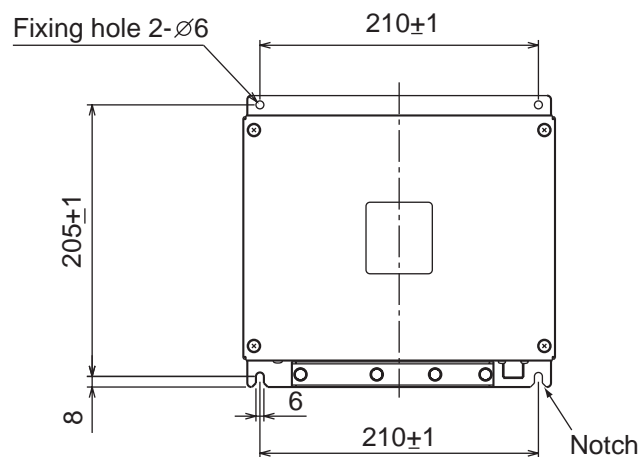
### General mounting considerations

- The mounting location should be well ventilated and dry.
- The unit can be mounted on bulkhead or the desk.
- Secure the maintenance space shown in drawing at the back of this manual for ease of maintenance and service.
- Compass safe distances are:  
Standard: 1.15 m, Steering: 0.75 m

### Mounting Method

Fasten the receiver unit with four self-tapping screws (5x20, supplied as installation material). For bulkhead mounting, do the follows.

1. Tighten lower self-tapping screws so there is 5 mm clearance between bottom of screw head and bulkhead.
2. Hook the receiver unit on the lower screws.
3. Tighten upper screws followed by the lower screws.



## 4.3 Antenna Unit

### Mounting considerations

Install the antenna unit referring to the antenna installation diagram at the back 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.

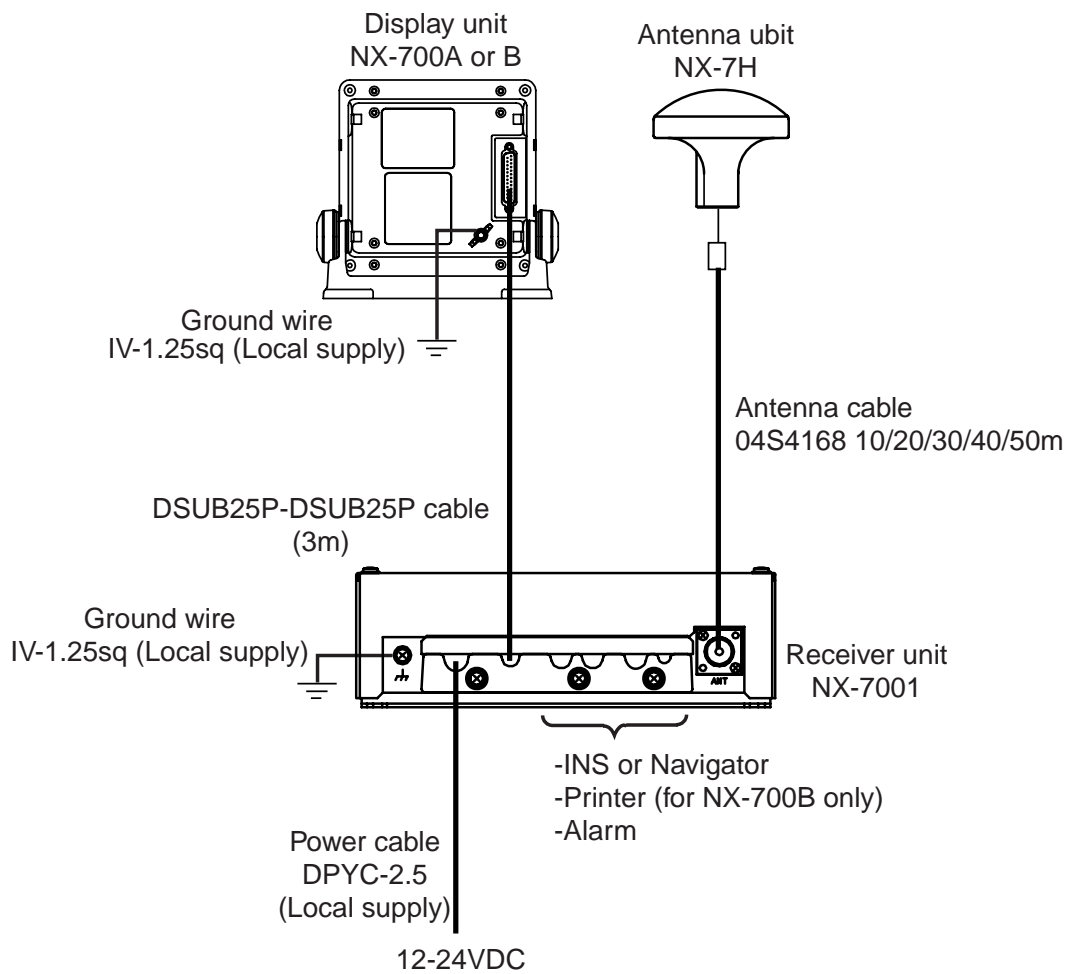


## 4.4 Printer (NX-700B only)

Prepare the printer by locally as shown below for the NX-700B.

- Serial RS-232C
- Serial printer
- Baud Rate: 9600 bps
- Character length: 8 bit
- Parity: No
- Flow control: Xon/Xoff
- 32 characters/line or more

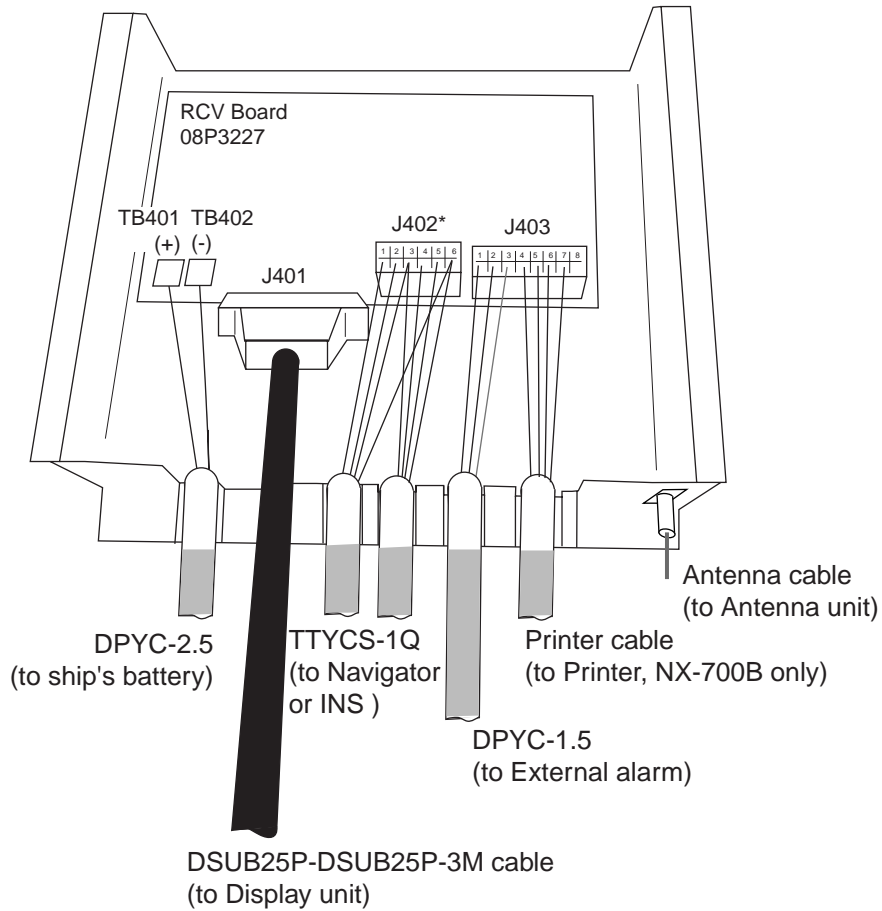
## 4.5 Wiring



## 4. INSTALLATION

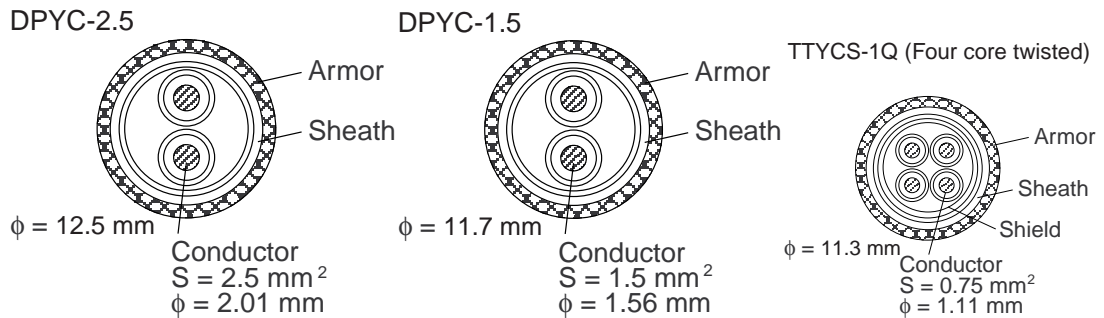
### Receiver unit

All cables are gathered to the receiver unit. Connect cables at inside of the receiver unit as shown below.



*Receiver unit, inside view*

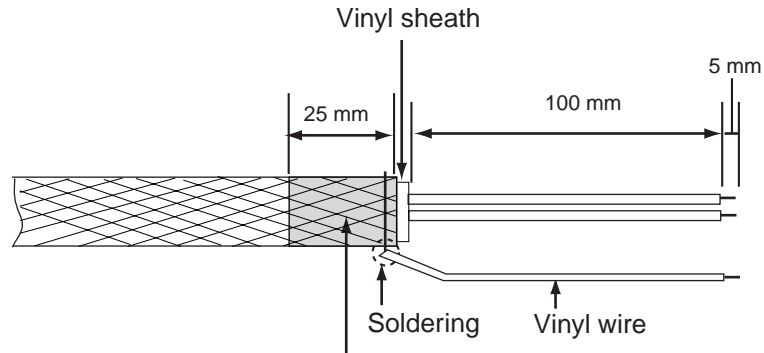
Use the following JIS cable (Japan Industrial Standard) or equivalent to connect power source, INS and external alarm appropriately.



For printer, use the cable supplied with the printer.

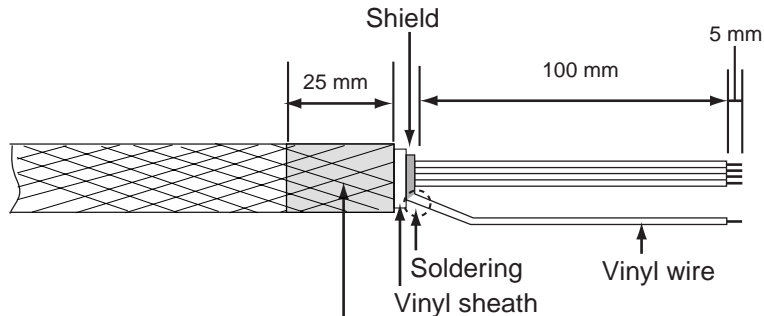
Fabricate these cables as below to connect to the receiver unit.

DPYC-1.5 (For external alarm)



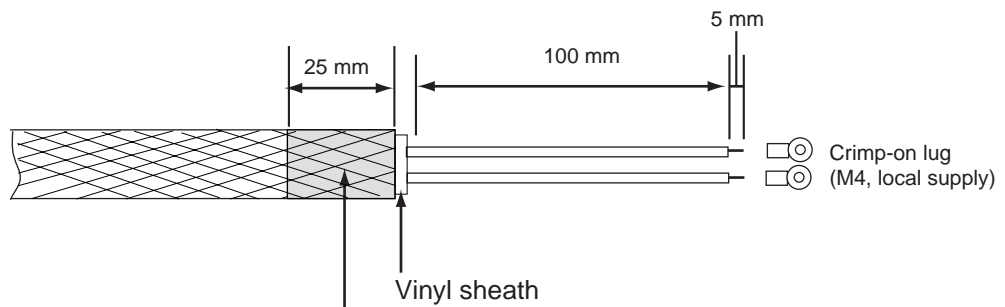
Scrape the paint off the cable where the cable contacts the cable clamp.

TTYCS-1Q (For Navigator or INS)



Scrape the paint off the cable where the cable contacts the cable clamp.

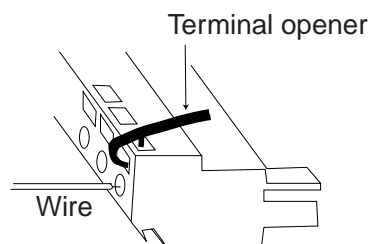
DPYC-2.5 (For ship's battery)



Scrape the paint off the cable where the cable contacts the cable clamp.

**How to use J402 and 403 connector**

1. Insert the terminal opener (attached in the receiver unit) into the connector.
2. Insert a wire in terminal while pressing and holding the terminal opener.
3. Release the terminal opener. Pull wire to confirm that it is connected firmly.



## 4. INSTALLATION

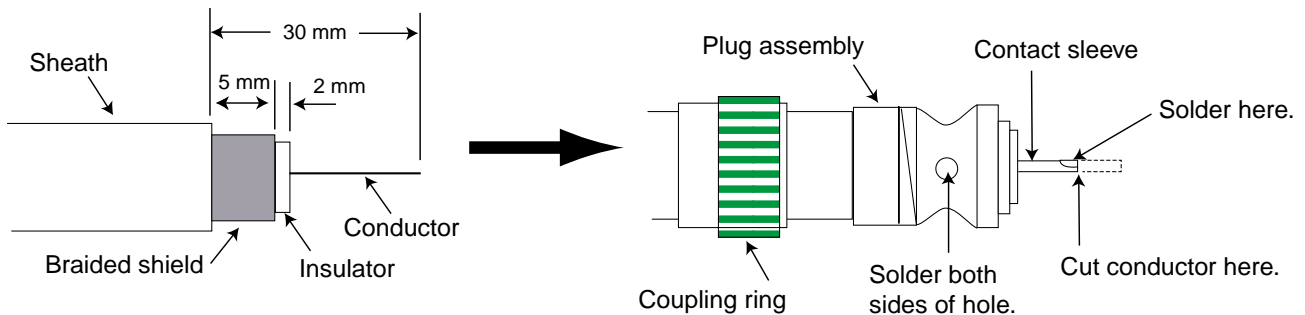
### Antenna cable

Be sure to leave some slack in the cable for future service and maintenance.

#### **For RG-10/UY, RG-214 cable**

When using the coaxial cable, type RG-10/UY or RG-214, attach the FM-MP-7 connector (supplied as installation material) or PL-259 (local supply) as below.

1. Remove the sheath by 30 mm.
2. Bare 23 mm of the center conductor. Trim braided shield by 5 mm and tin.
3. Slide coupling ring onto cable.
4. Screw the plug assembly on the cable.
5. Solder plug assembly to braided shield through solder holes. Solder contact sleeve to conductor.
6. Screw coupling ring into plug assembly.



**Note:** When the RG-214 cable is used, care must be exercised to prevent damage to the cable as it has no armor.

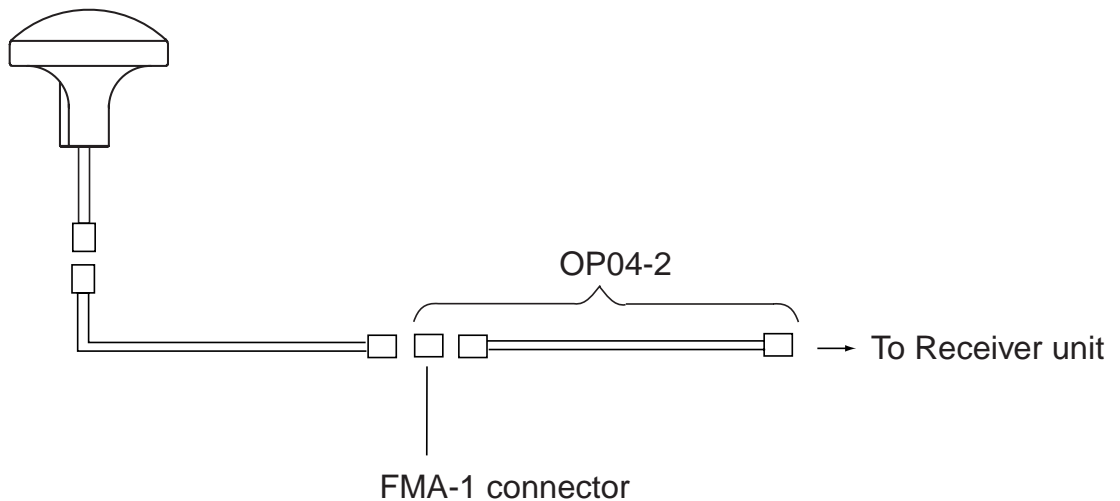


**Extending antenna cable length**

When connecting two cables for extension, use optional extension cable kit OP-04-2.

Code No.: 000-041-174 (10 m), 000-041-175 (20 m), 000-041-176 (30 m),  
000-041-177 (40 m), 000-041-178 (50 m)


Name	Type	Code No.	Qty	Remarks
Cable assy	04S4168	005-948-320	1	10 m w/connectors
		005-948-330		20 m w/connectors
		005-948-340		30 m w/connectors
		005-948-350		40 m w/connectors
		005-948-360		50 m w/connectors
Connector	FMA-1	000-152-964-10	1	
Insulating tape	U tape 0.5x19x5M	000-800-985	1	

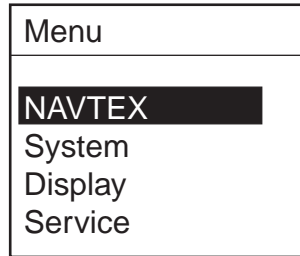
**Grounding**

The ground wire (local supply) should be 1.25 sq or larger. The ground wire should be as short as possible.

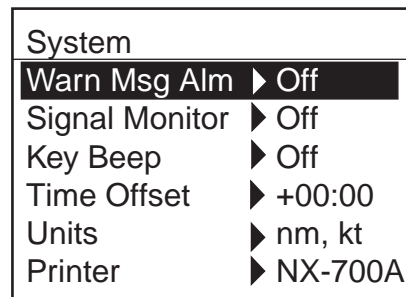
## 4.6 Setting of Printer

After the connection completely, the setting of printer should be done for NX-700B as shown below. (For NX-700A, use the default setting as is.)

1. Press the  key to turn the power on.
2. Press the **MENU** key to show the main menu.



3. Press **▼** to choose System, and then press the **ENT** key or **▶** to activate the System menu.



4. Press **▼** to choose Printer, and then press the **ENT** key or **▶** to show the item window.



5. Press **▲** or **▼** to choose the appropriate setting, and then press the **ENT** key.

None: When no printer is connected.

NX-700A: For NX-700A only.

Upright: When NX-700B is connected to an upright-type printer which ejects paper in bottom to top direction.

Inverted: When NX-700B is connected to a bulkhead mount printer which ejects paper in top to bottom direction.

6. Press the **MENU** key several times to close the menu.

## 4.7 Digital Interfacing

This equipment can receive navigation data in IEC 61162-1 Ed4/2 format.

### Priority

TIME & DATE	ZDA
L/L	GNS > GGA > RMC > GLL
SOG	VTG > VBW > RMC
STW	VHW > VBW
COG	VTG > RMC

### Input data sentence description

#### **ACK: Acknowledge**

\$--ACK,xxx\*hh<CR><LF>

```

  | |
  | +-----2
+-----1

```

1. Unique alarm number (identifier)
2. Checksum

#### **ACN: Alert command**

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

```

  | | | | |
  | | | | +----- 6
  | | | | +----- 5
  | | | | +----- 4
  | | | | +----- 3
  | | | | +----- 2
+----- 1

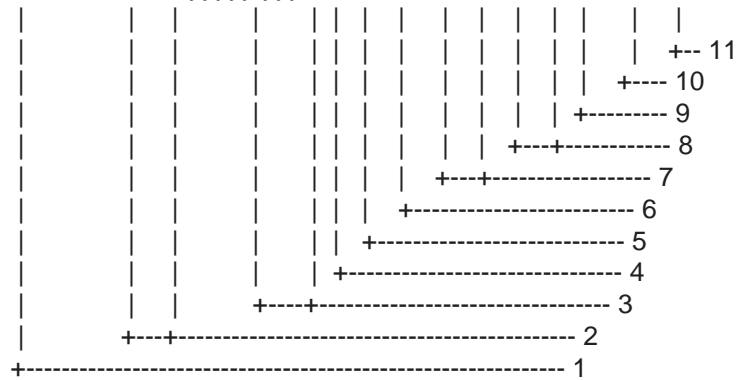
```

1. Time
2. Manufacturer mnemonic code
3. Alert identifier
4. Alert instance (1 - 999999)
5. Alert command (A=acknowledge, Q=request/repeat information, O=responsibility transfer, S=silence)
6. Sentence status flag

## 4. INSTALLATION

### GGA: GPS position fixing condition

\$--GGA,hhmmss.ss,llll.lll,a,yyyyy.yyy,a,x,xx,x.x,x.x,M,x.x,M,x.x,xxxx\*hh<CR><LF>



1. UTC of position
2. Latitude, N/S
3. Longitude, E/W
4. GPS quality indicator (see note)
5. Number of satellite in use,00-12, may be different from the number in view
6. Horizontal dilution of precision
7. Antenna altitude above/below mean sealevel, m
8. Geoidal separation, m
9. Age of differential GPS data
10. Differential reference station ID, 0000-1023
11. Checksum

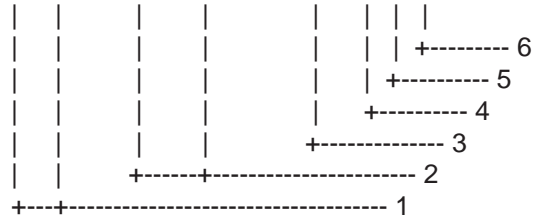
#### NOTE

- 0 = fix not available or invalid
- 1 = GPS SPS mode, fix valid
- 2 = differential GPS, SPS mode, fix valid
- 3 = GPS PPS mode, fix valid
- 4 = Real Time Kinetic. Satellite system used in RTK mode with fixed integers
- 5 = Float RTK. Satellite system used in RTK mode with floating fingers
- 6 = Estimated (dead reckoning) mode
- 7 = Manual input mode
- 8 = Simulator mode

The GPS quality indicator shall not be a null field.

**GLL: Latitude and longitude**

```
$--GLL,lll.lll,a,yyyyy.yyy,a,hhmmss.ss,A,a*hh<CR><LF>
```



1. Latitude, N/S
2. Longitude, E/W
3. UTC of position
4. Status: A=data valid, V=data invalid
5. Mode indicator (see note)
6. Checksum

NOTE Positioning system Mode indicator:

- A = Autonomous
- D = Differential
- E = Estimated (dead reckoning)
- M = Manual input
- S = Simulator
- N = Data not valid

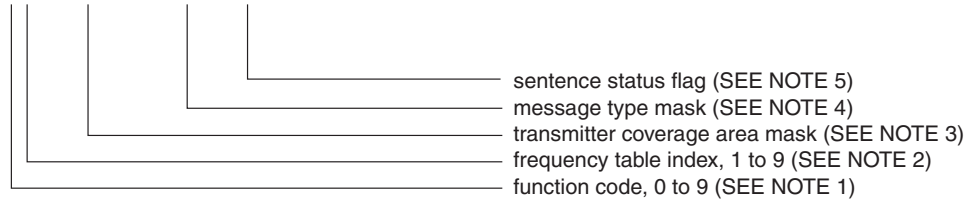
The Mode indicator field supplements the Status field. The Status field shall be set to V=invalid for all values of Operating Mode except for A=Autonomous and D=Differential. The positioning system Mode indicator and Status field shall not be null fields.



**NRM: NAVTEX receiver mask**

This command is used to manipulate the configuration masks that control which messages are stored, printed and sent to the INS port of the NAVTEX receiver.

```
$--NRM,x,x,hhhhhhhh,hhhhhhhh,a*hh<CR><LF>
```



NOTE 1: The function code is used to further identify the purpose of the sentence. The meaning of the function code is as follows:

- 0 - request messages for the given mask
- 1 - set/report the storage mask
- 2 - set/report the printer mask
- 3 - set/report the INS mask
- 4 to 9 - reserved for future use

NOTE 2: The frequency indicator identifies the frequency that the NAVTEX message was received on:

- 1 = 490 kHz
- 2 = 518 kHz
- 3 = 4209.5 kHz
- 4 through 9 are reserved for future use

NOTE 3: The transmitter coverage area mask is defined as a 32 bit hex field where the least significant bit represents transmitter coverage area "A", the next bit is "B" and so on up to bit 25 which is "Z". Bits 31 through 26 are reserved for future use and are set to zero. To select a transmitter coverage area, its corresponding bit should be set to one. To deselect a transmitter coverage area its corresponding bit should be set to zero.

NOTE 4: The message type mask is defined as a 32 bit hex field where the least significant bit represents message type "A", the next bit is "B" and so on up to bit 25 which is "Z". Bits 31 through 26 are reserved for future use and are set to zero. To select a message type its corresponding bit should be set to one.

NOTE 5: This field is used to indicate a sentence that is a status report of current settings or a configuration command changing settings. This field should not be null.

R = Sentence is a status report of current settings (use for a reply to a query).

C = Sentence is a configuration command to change settings. A sentence without "C" is not a command.

When another device (for example an INS) wishes to set one or more of the bit masks it sends one or more NRM sentences to the NAVTEX receiver. When another device wishes to determine the current values of the bit masks it sends a query sentence to the NAVTEX receiver as follows:

```
$--CRQ, NRM*hh<CR><LF>
```

On receiving this query, the NAVTEX receiver will respond with one NRM sentences for each mask type and frequency combination that it supports. For example a NAVTEX receiver which support separate storage, printer and INS masks for each of three receiver frequencies will return a total of nine NRM sentences in response to the above query.

Example

```
$INNRM,2,1,00001E1F,00000023*57
```

This example specifies that message identifiers "A", "B" and "F", received from transmitter areas "A" to "E" and "J" to "M" on 490 kHz should be sent to the printer port when they are received. Note that this command sets the printer mask for future use; there is no immediate output generated as a result of receiving this command.

Example

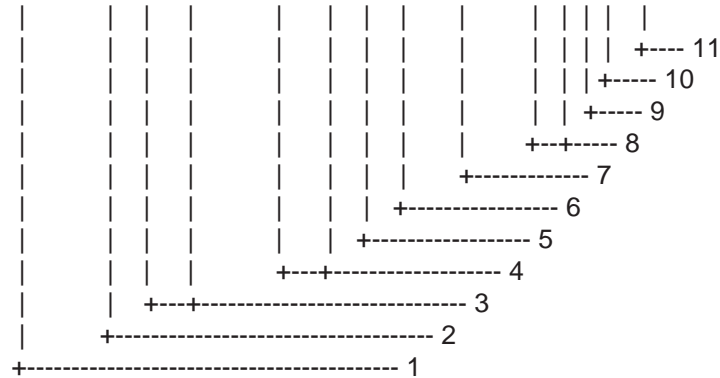
```
$INNRM,0,2,00001E1F,0FFFFFF*21
```

This example requests that all currently stored messages of all message type, received from transmitter areas "A" to "E" and "J" to "M" on 518 kHz should be immediately returned to the requesting device as a series of NRX sentences. Note that this command does not update any of the stored masks.

## 4. INSTALLATION

### RMC: Recommend Minimum Specific GNSS Data

\$--RMC,hhmmss.ss,A,lll.lll,a,yyyyy.yyy,a,x.x,x.x,xxxxxx,x.x,a,a,a\*hh<CR><LF>



1. UTC of position fix
2. Status: A=data valid, V=navigation receiver warning
3. Latitude, N/S
4. Longitude, E/W
5. Speed over ground, knots
6. Course over ground, degrees true
7. Date: dd/mm/yy
8. Magnetic variation, degrees E/W
9. Mode indicator (see note1)
10. Navigational status (see note2)
11. Checksum

NOTE1 Positioning system Mode indicator:

- A = Autonomous
- D = Differential
- E = Estimated (dead reckoning)
- F = Float Real time kinematic
- M = Manual input
- N = Data not valid
- P = Precise
- R = Real time kinematic
- S = Simulator

The Mode indicator field supplements the Status field. The Status field shall be set to V=invalid for all values of Operating Mode except for A=Autonomous and D=Differential. The positioning system Mode indicator and Status field shall not be null fields.

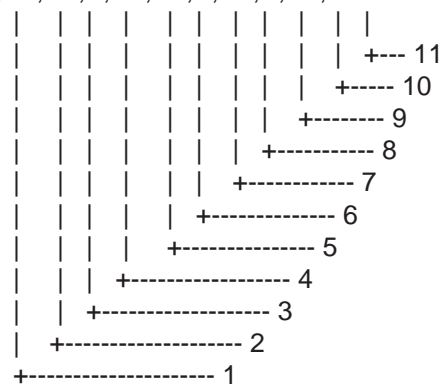
NOTE2 The navigational status indicator is according to IEC 61108 requirements on 'Navigational (or Failure) warnings and status indications'. This field should not be a NULL field and the character should take one of the following values:

- S = Safe
- C = Caution
- U = Unsafe
- V = Navigational status not valid



**VBW: Dual ground/water speed**

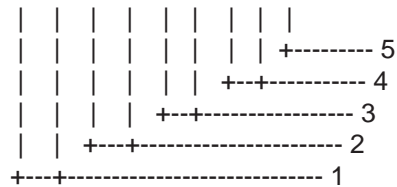
\$--VBW,x.x,x.x,A,x.x,x.x,A,x.x,A,x.x,A\*hh<CR><LF>



1. Longitudinal water speed, knots
2. Transverse water speed, knots
3. Status: water speed, A=data valid V=data invalid
4. Longitudinal ground speed, knots
5. Transverse ground speed, knots
6. Status: ground speed, A=data valid V=data invalid
7. Stern transverse water speed, knots
8. Status: stern water speed, A=data valid V=data invalid
9. Stern transverse ground speed, knots
10. Status: stern ground speed, A=data valid V=data invalid
11. Checksum

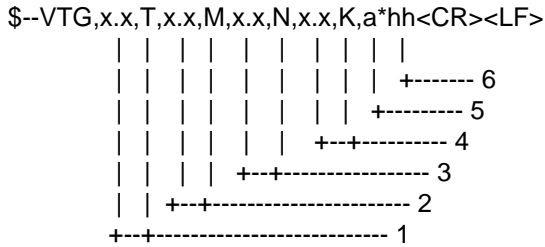
**VHW: Water speed and heading**

\$--VHW,x.x,T,x.x,M,x.x,N,x.x,K\*hh<CR><LF>



1. Heading, degrees true
2. Heading, degrees magnetic
3. Speed, knots
4. Speed, km/h
5. Checksum

**VTG: Course over ground and ground speed**



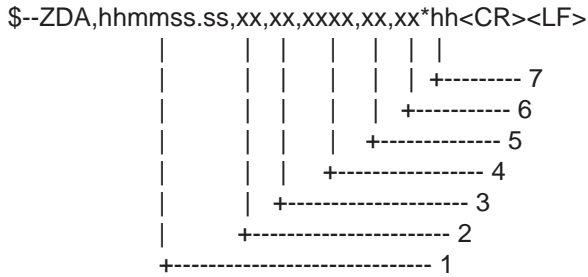
1. Course over ground, degrees true
2. Course over ground, degrees magnetic
3. Speed over ground, knots
4. Speed over ground, km/h
5. Mode indicator (see note)
6. Checksum

NOTE Positioning system Mode indicator:

A = Autonomous, D = Differential, E = Estimated (dead reckoning), M = Manual input,  
 N = Data not valid, P = Satellite system used in precision, S = Simulator

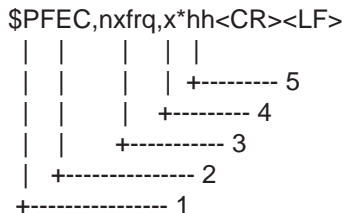
The positioning system Mode indicator field shall not be a null field.

**ZDA: Time and date**



1. UTC
2. Day, 01 to 31(UTC)
3. Month, 01 to 12(UTC)
4. Year(UTC)
5. Local zone hours, 00h to +13h
6. Local zone minutes, 00 to +59 as local hours
7. Checksum

**PFEC,nxfrq : LOCAL FREQUENCY**



1. Proprietary sentence ID
2. Manufacturer's Mnemonic code: Furuno Electric Co.,ltd.
3. Manufacturer's Data: Local frequency setting command
4. Manufacturer's Data: Local frequency indicator (SEE NOTE)
5. Checksum

NOTE Local frequency indicator:

0 = 490kHz, 1 = 4209.5kHz

**Output data description****ALC: Cyclic alert list**

```
$--ALC,xx,xx,xx,x,x,aaa,x,x,x,x,x, ... ..,aaa,x,x,x,x,x*hh<CR><LF>
```

```

| | | | | | | | |
| | | | | | | | | +--- 9
| | | | | | | | | +---- 8
| | | | | | | | | +----- 7
| | | | | | | | | +----- 6
| | | | | | | | | +----- 5
| | | | | | | | | +----- 4
| | | | | | | | | +----- 3
| | | | | | | | | +----- 2
| | | | | | | | | +----- 1

```

1. Total number of sentences for this message (01 - 99)
  2. Sentence number (01 - 99)
  3. Sequential message identifier (00 - 99)
  4. Number of alert entries
  5. Manufacturer mnemonic code
  6. Alert identifier
  7. Alert instance
  8. Revision counter
  9. Additional Alert entries (same as 5 to 8)
- Alert entry 1

**ALF: Alert sentence**

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

```

| | | | | | | | | | | | |
| | | | | | | | | | | | | +----- 13
| | | | | | | | | | | | | +----- 12
| | | | | | | | | | | | | +----- 11
| | | | | | | | | | | | | +----- 10
| | | | | | | | | | | | | +----- 9
| | | | | | | | | | | | | +----- 8
| | | | | | | | | | | | | +----- 7
| | | | | | | | | | | | | +----- 6
| | | | | | | | | | | | | +----- 5
| | | | | | | | | | | | | +----- 4
| | | | | | | | | | | | | +----- 3
| | | | | | | | | | | | | +----- 2
| | | | | | | | | | | | | +----- 1

```

1. Total number of ALF sentences for this message (1 - 2)
2. Sentence number (1 - 2)
3. Sequential message identifier (0 - 9)
4. Time of last change
5. Alert category (A = Category A, B = Category B, C = Category C, NULL)
6. Alert priority (E = Emergency Alarm, A = Alarm, W = Warning, C = Caution, NULL)
7. Alert state (V = active - unacknowledged, S = active - silenced,  
A = active - acknowledged or active, O = active - responsibility transferred,  
U = rectified - unacknowledged, N = normal, NULL)
8. Manufacturer mnemonic code
9. Alert identifier
10. Alert instance (1 - 999999)
11. Revision counter (1 - 99)
12. Escalation counter (0 - 9)
13. Alert text

(Continued on next page)

## 4. INSTALLATION

	Alert identifier	Vender code	Alert category	Alert priority	Alert text (Where sentence no.=1)	Alert text (Where sentence no.=2)
B2 (Type of message)	001		B	Warning	NAV WRN	NAVTEX: Navigational warning
B2 (Type of message)	002		B	Warning	MET WRN	NAVTEX: Meteorological warning
B2 (Type of message)	003		A	Warning	SAR	NAVTEX: Search and rescue information
Printer Error	420051	FEC	B	Warning	PRN ERR	NAVTEX: Printer Error
Battery Error	420052	FEC	B	Warning	BAT ERR	NAVTEX: Battery Error
BAM COM ERROR	420950	FEC	B	Caution	BAM COM ERR	NAVTEX: Communication Error with BAM

### ALR: Set alarms

```
$CRALR,hhmmss.xxx,A,A,c--c<CR><LF>
|         | | | |
|         | | | | +----- 5
|         | | | | +----- 4
|         | | | | +----- 3
|         | | | | +----- 2
+----- 1
```

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

### NOTE:

	"2. Local alarm number (identifier)"	"5. Alarm's description text"
B2 (Type of message): A or L	001	NAVTEX: Navigational warning
B2 (Type of message): B	002	NAVTEX: Meteorological warning
B2 (Type of message): D	003	NAVTEX: Search and rescue information
Printer Error	051	NAVTEX: Printer Error
Battery Error	052	NAVTEX: Battery Error
Errors other than above	006	NAVTEX: General failure

### ARC: Alert command refused

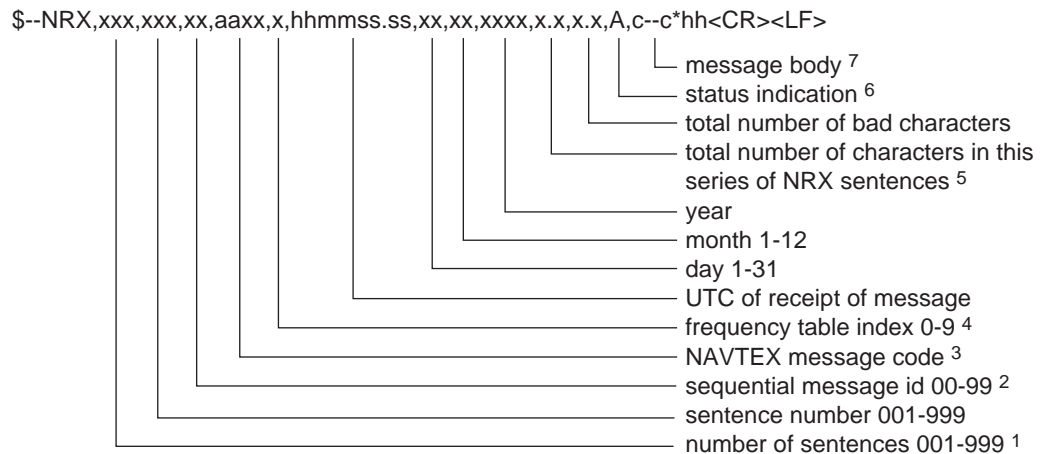
```
$--ARC,hhmmss.ss,aaa,x.x,x.x,c*hh<CR><LF>
|         | | | |
|         | | | | +--- 5
|         | | | | +--- 4
|         | | | | +--- 3
|         | | | | +--- 2
+----- 1
```

1. Time
2. Manufacturer mnemonic code
3. Alert identifier
4. Alert instance (1 - 999999)
5. Refused alert command (A = acknowledge, Q = request/repeat information, O = responsibility transfer, S = silence)

**HBT: Heart beat supervision** (See page 4-14.)

## NRX: NAVTEX received message

The NRX sentence is used to transfer the contents of a received NAVTEX message from the NAVTEX receiver to another device. As the length of a single NAVTEX message may exceed the number of characters permitted in a single sentence, many NRX sentences may be required to transfer a single NAVTEX message.



NOTE 1: The total number of sentences required to transfer the NAVTEX message from the NAVTEX radio receiver. The first field specifies the total number of sentences used for a message, minimum value 1. The Sentence Number field identifies the order of this sentence in the message, minimum value 1. All sentences contain the same number of fields. For efficiency it is recommended that null fields be used in the additional sentences where the data is unchanged from the first sentence (this applies to fields 4 through 12).

NOTE 2: The sequential message identifier provides a unique identifier for each NAVTEX message represented by a group of sentences. Though the message code (field 4) contains a NAVTEX message serial number, there are special cases when the message serial number is set to 00 and has a different meaning or when the same message code can occur more than once. When these conditions occur, the sequential message identifier can be relied upon to uniquely identify this NAVTEX message from other NAVTEX messages with the same message code.

NOTE 3: The NAVTEX message code contains three related entities. The first character identifies the transmitter coverage area and the second character identifies the type of message. Both these characters are as defined in Table I of Recommendation ITU-R M.625-3, combination numbers 1-26. Transmitter identification characters are allocated by the IMO NAVTEX manual (IMO publication 951E). The remaining two characters are restricted to numerals with a range of 00 to 99 and represent a serial number for each type of message. The value of 00 is a special case and not considered a serial number.

NOTE 4: The frequency indicator identifies the frequency that the NAVTEX message was received on:

- 0 = not received over air (eg test messages)
- 1 = 490 kHz
- 2 = 518 kHz
- 3 = 4209,5 kHz
- 4 through 9 are reserved for future use

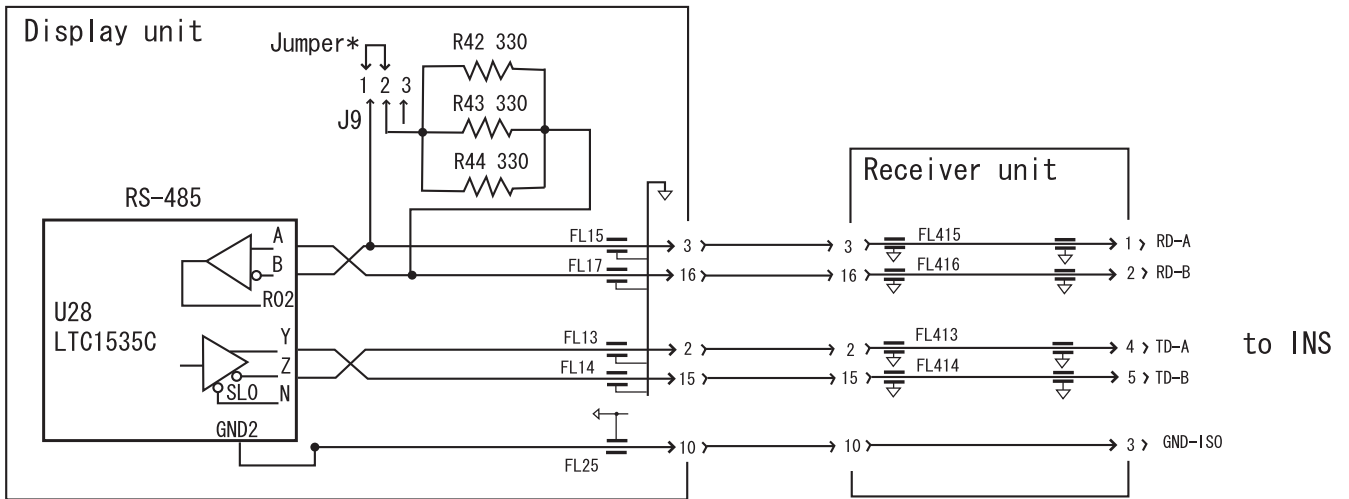
NOTE 5: The total number of characters indicates the expected size of the message body sent in this sequence of NRX sentences. It does not include the additional overhead for reserved characters found in table 1 of IEC 61162-1.

NOTE 6: Status "A" is used for syntactically correct message reception. Status "V" is used for syntactically incorrect message reception, e.g. end characters NNNN missing.

NOTE 7: The message body may contain reserved characters as defined in IEC 61162-1.

## 4. INSTALLATION

### Serial Interface

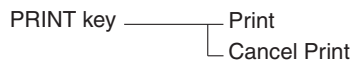
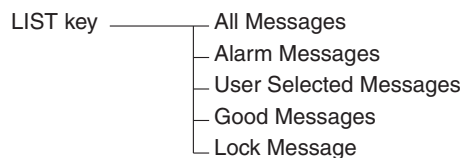
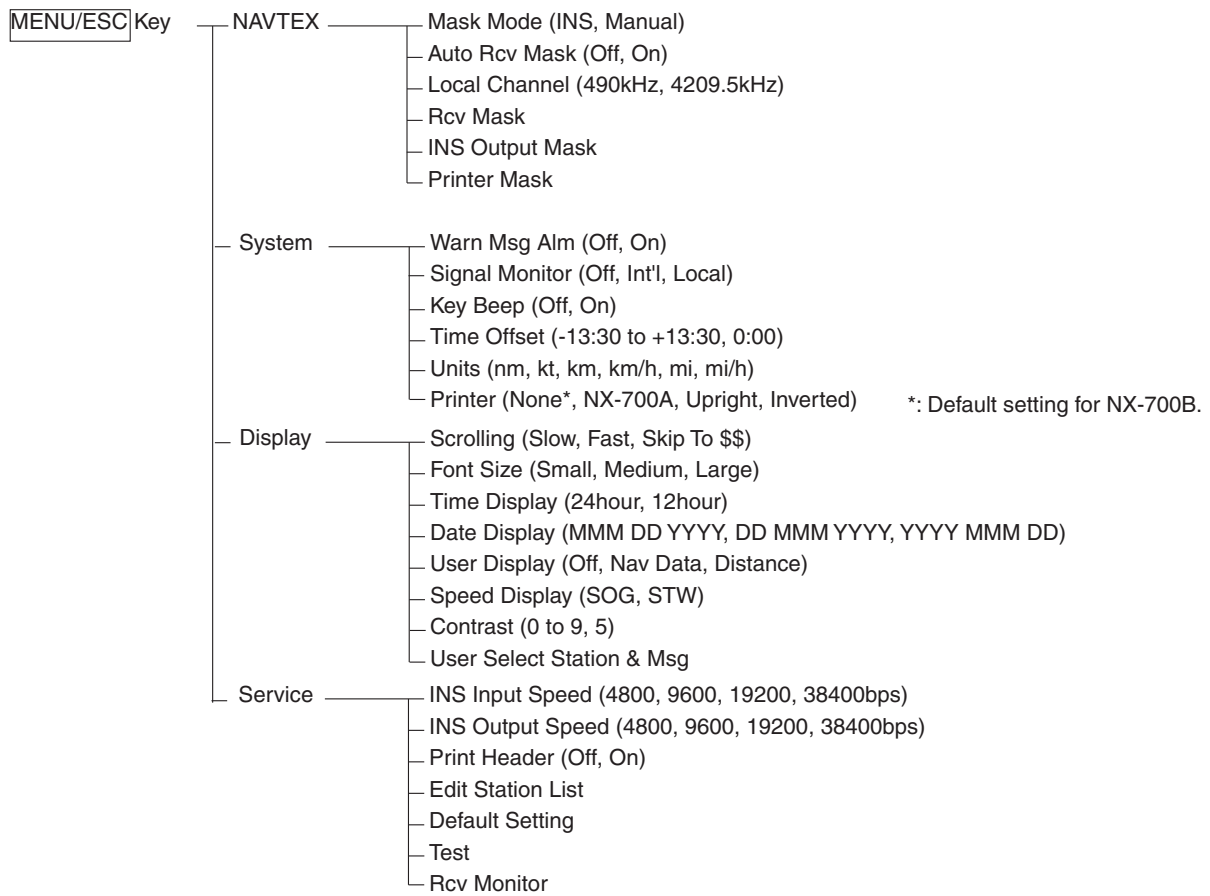


\*When only NX-700A/B is listener for talker:  
When multiple listeners (including NX-700A/B) for talker:

Short #1 and 2 (default setting).  
NX-700A/B is the end of bus; Short #1 and 2.  
Besides above; Short #2 and 3.

# APPENDIX 1 MENU TREE

---



# APPENDIX 2 ALARM MESSAGES

---

When an internal error occurs or a message is received, a user is notified of it on the pop-up message display.

Text	Meaning	Remedy
Printer error Hit any key.	Printer error (no paper, not connected to the printer, etc.).	- Check if the thermal paper runs out (NX-700A only). If no paper, see "Thermal paper (NX-700A only)" on page 3-3. Press any key. - Check if the printer and the NX-700A/B are firmly connected. If no connection to the printer, see section 3.3.
Battery error Hit any key.	Appears when the voltage of the internal battery is low.	See "Battery" on page 3-2.
Received new int'l msg. Display new msg? Yes No	Appears when a message other than an SAR message is received.	For an SAR message, check its message. For other messages, check their message as appropriate.



**SPECIFICATIONS OF NAVTEX RECEIVER  
NX-700A/B**

**1 NAVTEX RECEIVER**

- 1.1 Receiving frequency 518 kHz and 490 kHz (or 4209.5 kHz), receive both frequencies simultaneously
- 1.2 Mode of reception F1B
- 1.3 Sensitivity 2  $\mu$ V e.m.f. (50 ohms), 4% error rate or less
- 1.4 Input protection Withstands 30 Vrms for 15 minutes or more (w/ pre-amp unit)
- 1.5 Spurious emission 1nW or less
- 1.6 Message category
  - A: navigational warning
  - B: meteorological warning
  - C: ice report
  - D: search and rescue information/piracy and armed robbery
  - E: meteorological forecast
  - F: pilot message
  - G: AIS
  - H: LORAN-C message
  - I: reserved presently not used
  - J: SATNAV message
  - K: other electronic navigational aid system message
  - L: navigational warning (additional)
  - M to Y: reserved presently not used
  - Z: QRU (no message on hand)

**2 DISPLAY UNIT**

- 2.1 Display system 5-inch, 76 (W) x 100 (H) mm, monochrome LCD, 240 x 320 dots
- 2.2 Display modes
  - Message selection mode
  - Message display mode
- 2.3 Message storage 200 messages x 2 channels  
(100,000 characters x 2 channels)

**3 PRINTER SECTION (FOR NX-700A ONLY)**

- 3.1 Printing system Line thermal head printing system
- 3.2 Printing paper Thermal paper (58 mm x 30 m)
- 3.3 Printing width 48 mm
- 3.4 Character format 24 x 12 dot
- 3.5 Dot pitch 8 dots/ mm
- 3.6 Number of characters 32 characters/line
- 3.7 Print speed Approx. 20 mm/sec.

**4 ANTENNA UNIT**

- 4.1 Antenna type NX-7H: H-field antenna
- 4.2 Output impedance 50 ohms
- 4.3 Power supply +7 V to +9 V (thru coax. cable)

**5 INTERFACE**

- 5.1 Input data IEC61162-1/2  
ACK, ACN, CRQ, GGA, GLL, GNS, HBT, NRM, RMC, VBW, VHW,  
VTG, ZDA, PFEC
- 5.2 Output data ALC, ALF, ALR, ARC, HBT, NRM, NRX
- 5.3 Alarm Normal close, contact closure signal (floating, max. 80 mA, 50 V)  
for SAR alert

**6 POWER SUPPLY**

- 6.1 NX-700A 12-24 VDC: 1.5-0.8 A
- 6.2 NX-700B 12-24 VDC: 0.7-0.4 A

**7 ENVIRONMENTAL CONDITION**

- 7.1 Ambient temperature
  - Antenna unit -25°C to +70°C
  - Receiver / Display unit -15°C to +55°C
- 7.2 Relative humidity 95% at 40°C (without dew condensation)
- 7.3 Waterproofing
  - Antenna unit IP66
  - Receiver / Display unit IP20 (NX-700B: IP25 for front panel)
- 7.4 Vibration
  - 2Hz to 5 Hz and up to 13.2 Hz with an excursion of  $\pm 1 \text{ mm} \pm 10\%$   
(7 m/s<sup>2</sup> maximum acceleration at 13.2 Hz);
  - above 13.2 Hz and up to 100 Hz with a constant maximum  
acceleration of 7 m/s<sup>2</sup>

**8 COATING COLOR**




- 8.1 Display unit N3.0
- 8.2 Receiver unit N3.0
- 8.3 Antenna unit N9.5

# PACKING LIST

NX-700A/NX-700A-HK/NX-700A-R

08AW-X-9862 -6 1/1

A-1

NAME	UNIT	OUTLINE	DESCRIPTION/CODE No.	Q'TY
<b>ユニット</b>				
指示部			NX-700-A/-HK/-R	1
DISPLAY UNIT			000-040-342-00 **	
<b>付属品</b>				
感熱記録紙			TP058-30CL	1
RECORDING PAPER			000-154-047-11	
<b>工事材料</b>				
INSTALLATION MATERIALS				
			CP08-01861	1
			004-515-280-00	

1.コード番号末尾の[\*\*]は、選択品の代表コードを表します。

CODE NUMBER ENDING WITH "\*\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

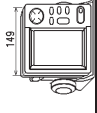
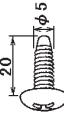
C5649-708-G

# PACKING LIST

NX-700B/NX-700B-HK/NX-700B-R

08AW-X-9860 -3 1/1

A-2

NAME	UNIT	OUTLINE	DESCRIPTION/CODE	Q'TY
<b>ユニット</b>				
指示部			NX-700B/HK/R	1
DISPLAY UNIT			000-152-663-00 **	
<b>工事材料</b>				
INSTALLATION MATERIALS				
+177カク'ネジ' 12x1			5X20 SUS304	4
SELF-TAPPING SCREW			000-162-608-10	
			CP08-01861	

1.コード番号末尾の[\*\*]は、選択品の代表コードを表します。

CODE NUMBER ENDING WITH "\*\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

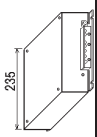





C5649-Z06-D

# PACKING LIST

NX-7001-AN\*/BN\*/-R

08AW-X-9861 -3 1/1

A-3

NAME	OUTLINE	DESCRIPTION/CODE No.	QTY
<b>ユニット</b>			
受信部		NX-7001-*	1
RECEIVER UNIT		000-040-345-00	**
<b>受信部予備品</b>			
予備品		SP08-02101	1
SPARE PARTS		004-515-290-00	
<b>工事材料</b>			
<b>INSTALLATION MATERIALS</b>			
ケーブル組品		DSUB25P-DSUB25P-3M	1
CABLE ASSY.		DSUB25P-DSUB25P-3M	
		001-085-560-10	
		000-152-698-00	
<b>受信部工材</b>			
<b>RECEIVER UNIT INSTALLATION MATERIALS</b>			
工事材料		CP08-01863	1
INSTALLATION MATERIALS		004-515-300-00	
<b>図書</b>			
<b>DOCUMENT</b>			
取扱説明書		OM*-56490-*	1
OPERATOR'S MANUAL		000-152-804-1*	**
			(*1)
操作要領書		OS*-56490-*	1
OPERATOR'S GUIDE		000-152-805-1*	**

1.コード番号末尾の「\*」は、選択品の代表コードを表します。  
 CODE NUMBER ENDING WITH "\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.  
 2.(\*1)印の図書型式「56491」は中心向け専用となります。  
 THE OPERATOR'S MANUAL 56491 MARKED (\*1) IS USED FOR RUSSIAN MODEL.

型式/コード番号が二段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。  
 TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
 (略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

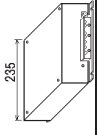




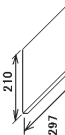
C5649-Z07-D

# PACKING LIST

NX-7001-AA\*/BA\*

08AW-X-9859 -3 1/1

A-4

NAME	OUTLINE	DESCRIPTION/CODE No.	QTY
<b>ユニット</b>			
受信部		NX-7001-*	1
RECEIVER UNIT		000-040-345-00	**
<b>受信部予備品</b>			
予備品		SP08-02101	1
SPARE PARTS		004-515-290-00	
<b>工事材料</b>			
<b>INSTALLATION MATERIALS</b>			
ケーブル組品		DSUB25P-DSUB25P-3M	1
CABLE ASSY.		DSUB25P-DSUB25P-3M	
		001-085-560-10	
		000-152-698-00	
<b>受信部工材</b>			
<b>RECEIVER UNIT INSTALLATION MATERIALS</b>			
工事材料		CP08-01864	1
INSTALLATION MATERIALS		004-515-430-00	
<b>図書</b>			
<b>DOCUMENT</b>			
取扱説明書		OM*-56490-*	1
OPERATOR'S MANUAL		000-152-803-1*	**
操作要領書		OS*-56490-*	1
OPERATOR'S GUIDE		000-152-805-1*	**

1.コード番号末尾の「\*」は、選択品の代表コードを表します。  
 CODE NUMBER ENDING WITH "\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コード番号が二段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。なお、品質は変わりません。  
 TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
 (略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

C5649-Z05-D

PACKING LIST  
NX-7H-0-10/-10-HK, NX-7H-0-20/-20-HK

08AW-X-9852 -1 1/1  
A-5

NAME	UNIT	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット				
アンテナ			NX-7H* 000-040-214-00**	1
<b>工事材料</b>				
ケーブル組品			CP08-01810/01820	
CABLE ASSY.			04S4168 *10M* 04S4168 *10M* 001-093-360-10 000-106-821-00	1 (* )
CABLE ASSY.			04S4168 *20M* 04S4168 *20M* 001-093-370-10 000-107-019-00	1 (* )
工事材料			CP08-01811	1
INSTALLATION MATERIALS			004-514-610-00	

1.コード番号末尾の[\*\*]は、選択品の代表コードを表します。  
CODE NUMBER ENDING WITH "\*\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.  
2.(\*)印のケーブル組品は選択出来ます。  
(\* ) MARKED CABLES ARE SELECTABLE.  
型式/コード番号が二段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
( 略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

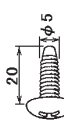
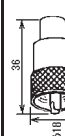
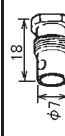
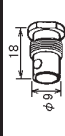
FURUNO

A-6

CODE NO.	004-515-280-00	08AW-X-9401 -2			
TYPE	CP08-01861	1/1			
<b>工事材料表</b>					
INSTALLATION MATERIALS					
番号	名称	略図	型名 / 規格	数量	用途 / 備考
NO.	NAME	OUTLINE	DESCRIPTIONS	Q'TY	REMARKS
1	+57797C'707' 171 SELF-TAPPING SCREW		SX20 SUS304 CODE NO. 000-102-608-10	4	

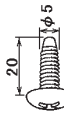
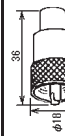
型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
( 略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)  
FURUNO ELECTRIC CO.,LTD.

CODE NO.	004-515-300-00	08AW-X-9402 -4
TYPE	CP08-01863	1/1

工率材料表			
INSTALLATION MATERIALS			
番号 NO.	名称 NAME	略図 OUTLINE	用途/備考 REMARKS
1	+57797C 7/1 SELF-TAPPING SCREW		数量 Q'TY 4
2	コネクタ (M) COAXIAL CONNECTOR *M TYPE*		数量 Q'TY 2
3	77777 (同軸) REDUCER (S)		数量 Q'TY 2
4	77777 (同軸) REDUCER (L)		数量 Q'TY 2


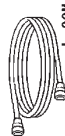



型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

CODE NO.	004-515-430-00	08AW-X-9403 -4
TYPE	CP08-01864	1/1

工率材料表			
INSTALLATION MATERIALS			
番号 NO.	名称 NAME	略図 OUTLINE	用途/備考 REMARKS
1	+57797C 7/1 SELF-TAPPING SCREW		数量 Q'TY 4
2	コネクタ (M) COAXIAL CONNECTOR *M TYPE*		数量 Q'TY 1


型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

CODE NO.	08AW-X-9407-2
TYPE	1/1

工事材料表 INSTALLATION MATERIALS		略図 OUTLINE		型名/規格 DESCRIPTIONS	数量 Q'TY	用途/備考 REMARKS
番号 NO.	名称 NAME					
1	ケーブル組品 CABLE ASSY.			04S4168 *10M* 04S4168 *10M* CODE NO. 001-083-360-10 000-107-021-00	1	選択 TO BE SELECT
2	ケーブル組品 CABLE ASSY.			04S4168 *20M* 04S4168 *20M* CODE NO. 001-083-370-10 000-107-019-00	1	選択 TO BE SELECT
3	ケーブル組品 CABLE ASSY.			04S4168 *30M* 04S4168 *30M* CODE NO. 001-083-380-10 000-107-020-00	1	選択 TO BE SELECT
4	ケーブル組品 CABLE ASSY.			04S4168 *40M* 04S4168 *40M* CODE NO. 001-083-390-10 000-107-021-00	1	選択 TO BE SELECT
5	ケーブル組品 CABLE ASSY.			04S4168 *50M* 04S4168 *50M* CODE NO. 001-083-400-10 000-107-022-00	1	選択 TO BE SELECT


型式/コード番号が2段の場合、下段より上段に代わる標準品であり、どちらかが入っています。なお、品質は変わりません。  
 TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
 (略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

CODE NO.	004-514-610-00
TYPE	CP08-01811

工事材料表 INSTALLATION MATERIALS		略図 OUTLINE		型名/規格 DESCRIPTIONS	数量 Q'TY	用途/備考 REMARKS
番号 NO.	名称 NAME					
1	絶縁テープ SELF-BONDING TAPE			UF-7 0.5X19X611 UF-7 0.5X19X611 CODE NO. 000-165-833-10 000-300-985-00	1	

型式/コード番号が2段の場合、下段より上段に代わる標準品であり、どちらかが入っています。なお、品質は変わりません。  
 TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.  
 (略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

# FURUNO

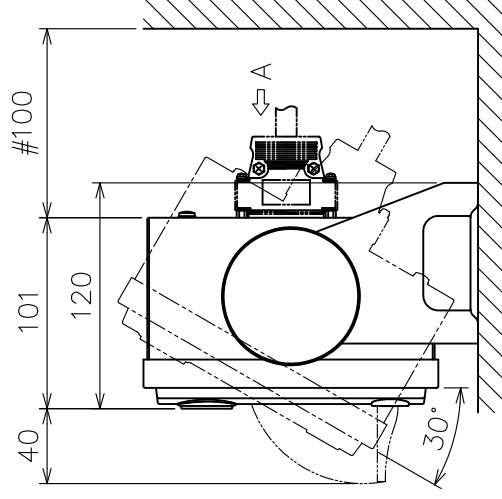
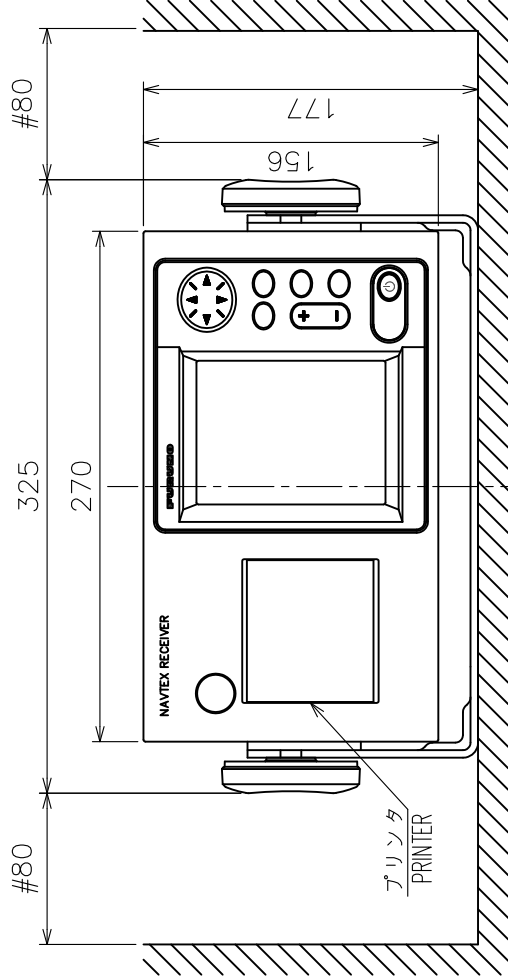
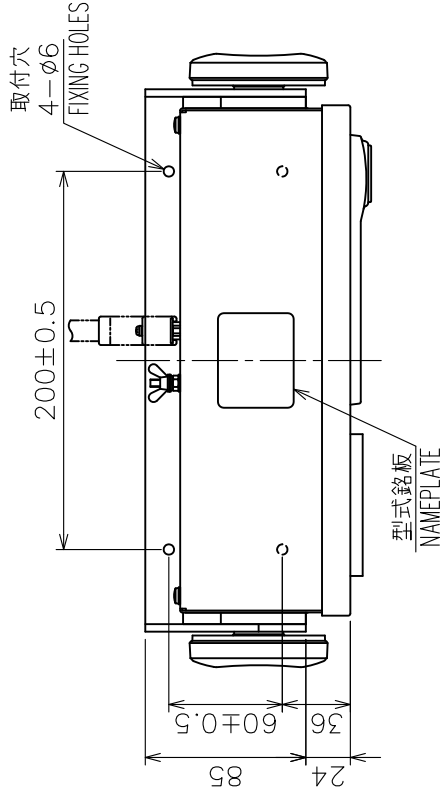
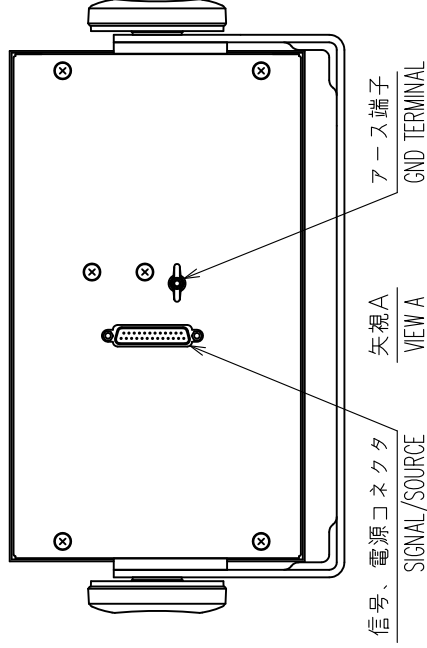
SHIP NO.		SPARE PARTS LIST FOR		U S E		REMARKS/CODE NO.		SETS PER VESSEL	
CODE NO.	004-515-290-00	OSANI-X-9301-3	I/1						
TYPE	SP08-02101	BOX NO.	P						
ITEM NO.	NAME OF PART	OUTLINE	DWG. NO. OR TYPE NO.	QUANTITY		REMARKS/CODE NO.			
1	GLASS TUBE FUSE		FCMB 125V 2A PBF	1	1		000-157-479-10		
MR'S NAME	FURUNO ELECTRIC CO., LTD.	DWG NO.	C5649-P01-D					I/1	

(寸法の単位は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)



表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	± 1.5
50 < L ≤ 100	± 2.5
100 < L ≤ 500	± 3

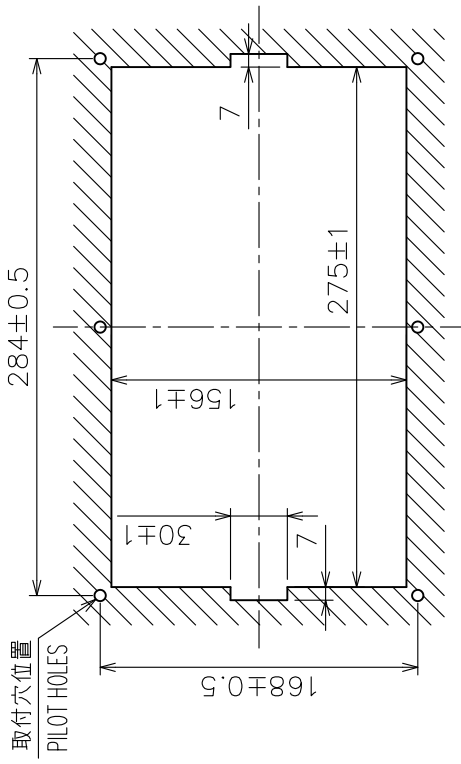


- 注 記 1) 指定外の寸法公差は表 1 による。  
 2) # 印寸法は最小サービス空間寸法とする。  
 3) 取付用ネジはトラスタピンネジ呼び径 5 × 2.0 を使用のこと。
- NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.  
 2. #: MINIMUM SERVICE CLEARANCE.  
 3. USE TAPPING SCREWS φ5x2.0 FOR FIXING THE UNIT.

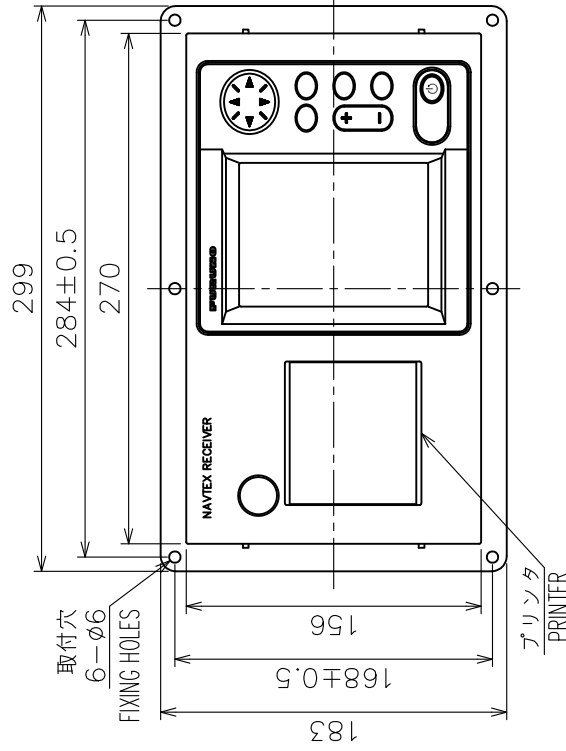
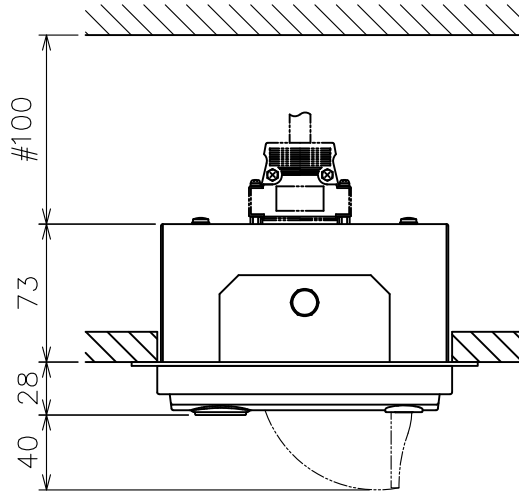
DRAWN	26/Nov/09 I.YAMASAKI	TITLE	NX-700A/800A
CHECKED	26/Nov/09 I.TAKENO	名称	指示部 (卓上装備)
APPROVED	2/Dec/09 R. Esumi		外寸図
SCALE	1/4	NAME	DISPLAY UNIT (TABLETOP MOUNT)
DWG. No.	C5649-G01-D	REF. No.	08-023-100G-2
			OUTLINE DRAWING

表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	$\pm 1.5$
$50 < L \leq 100$	$\pm 2.5$
$100 < L \leq 500$	$\pm 3$



取付穴寸法図 (参考図)  
CUTOUT DIMENSIONS



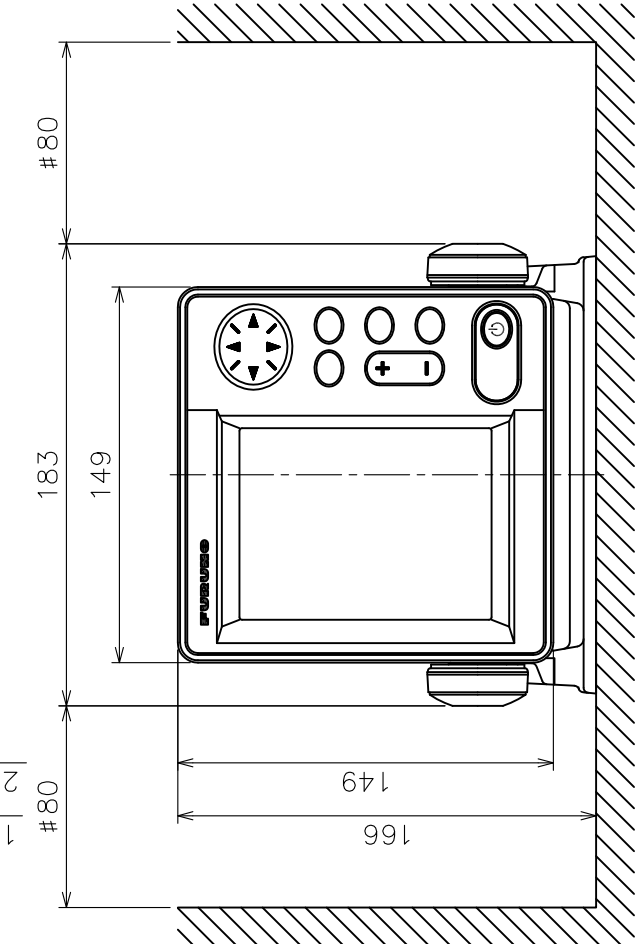
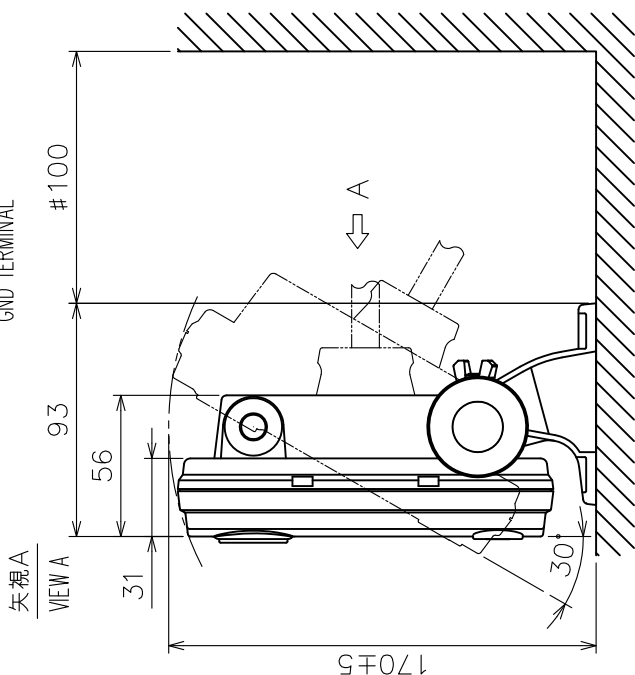
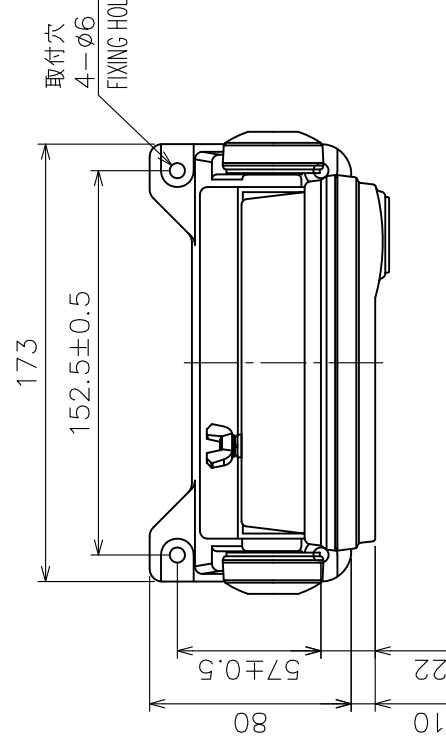
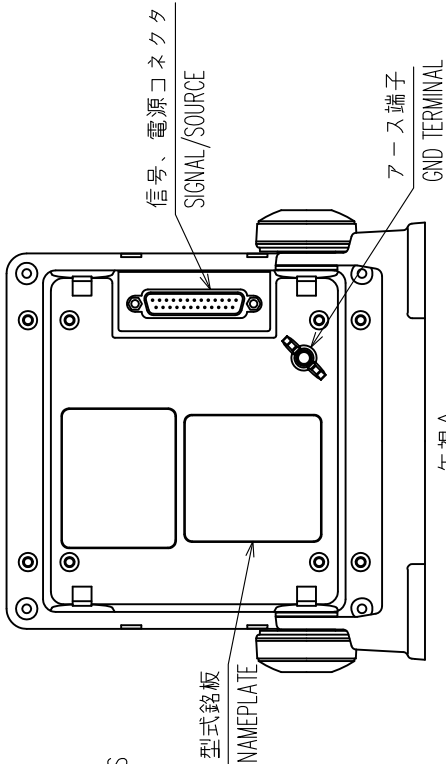
背面  
REAR VIEW

- 注 記
- 1) 指定外の寸法公差は表 1 による。
  - 2) # 印寸法は最小サービスイタス呼び径  $5 \times 20$  を使用のこと。
  - 3) 取付用ネジはトラスタップピンネジ呼び径  $5 \times 20$  を使用のこと。
- NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
  2. #: MINIMUM SERVICE CLEARANCE.
  3. USE TAPPING SCREWS  $\phi 5 \times 20$  FOR FIXING THE UNIT.

DRAWN	26/Nov/09	I. YAMASAKI	TITLE	NX-700A/800A
CHECKED	26/Nov/09	I. TAKENO	名称	指示部 (埋込装備)
APPROVED	2/Dec/09	R. ESUMI	外寸図	
SCALE	1/4	MSS 3.1	NAME	DISPLAY UNIT (FLUSH MOUNT)
DWG. No.	C5649-G04-C	REF. No.	08-023-110G-4	OUTLINE DRAWING

表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3

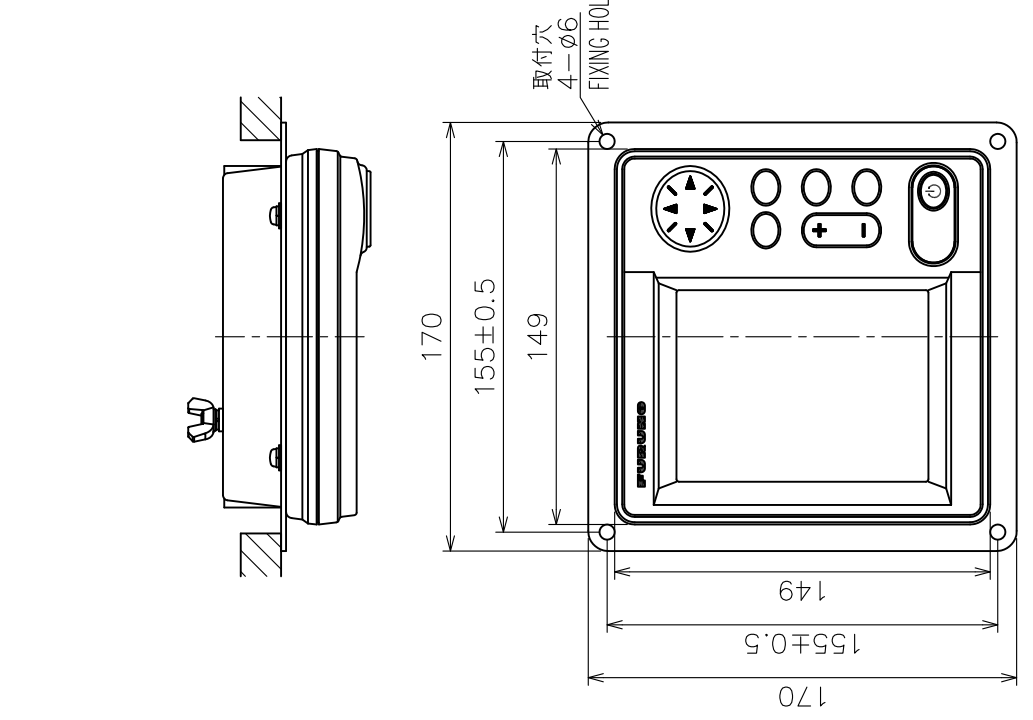
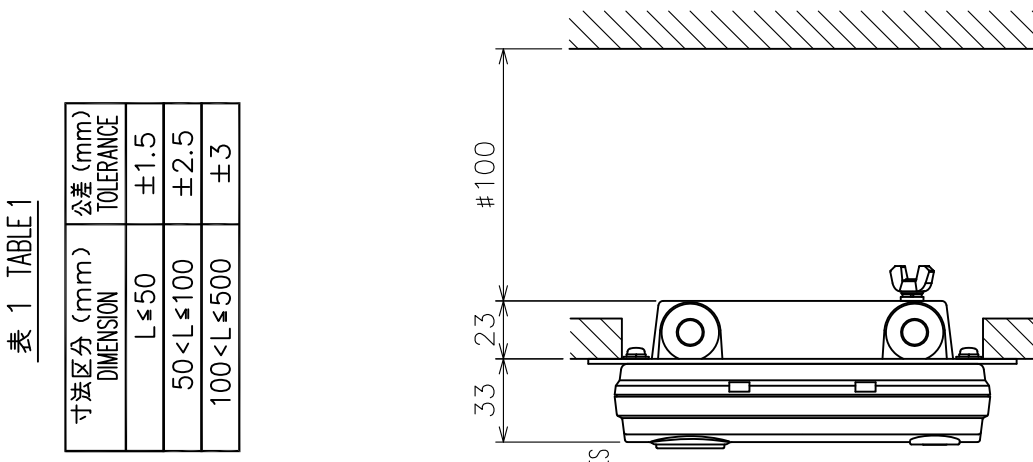
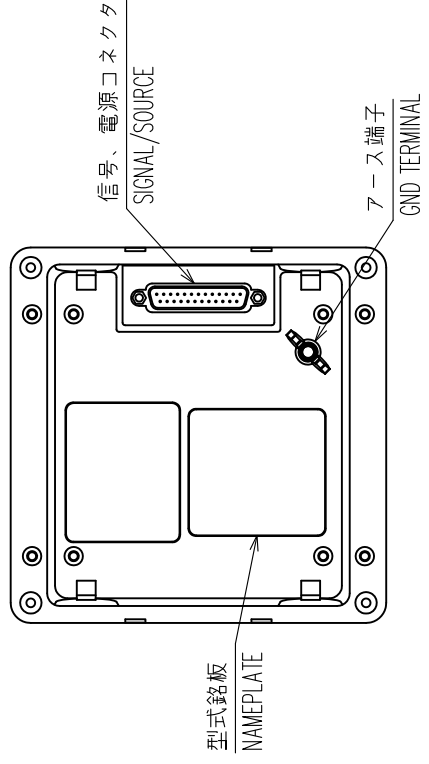
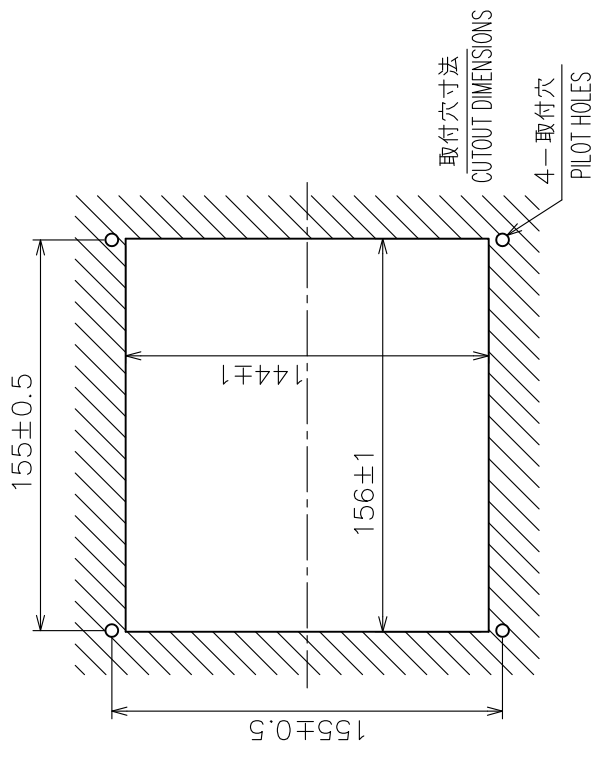


- 注記
- 1) 指定外の寸法公差は表 1 による。
  - 2) # 印寸法は最小サービスペース寸法とする。
  - 3) 取付用ネジはトラスタツピンネジ呼び径5×20を使用のこと。
- NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
  2. #: MINIMUM SERVICE CLEARANCE.
  3. USE TAPPING SCREWS φ5 × 20 FOR FIXING THE UNIT.

DRAWN	26/Nov/09	T.YAMASAKI	TITLE	NX-700B/800B
CHECKED	26/Nov/09	I.TAKENO	名称	指示部 (卓上装備)
APPROVED	2/Dec/09	R. Esumi	外寸図	
SCALE	1/3	1/MS 0.7	NAME	DISPLAY UNIT (TABLETOP MOUNT)
DWG.No.	C5649-G05-C			OUTLINE DRAWING
			08-023-200G-1	

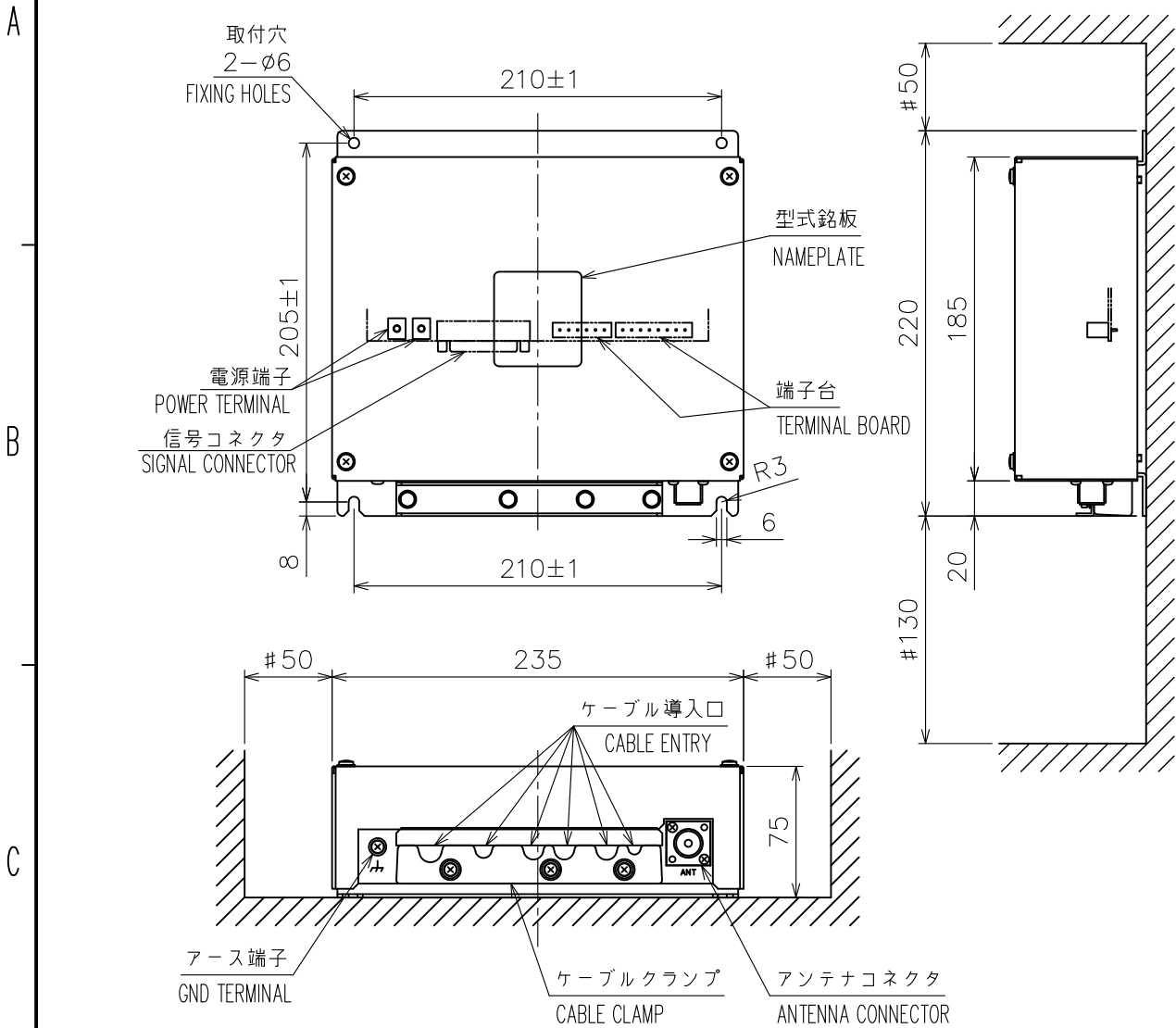
表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L ≤ 50	±1.5
50 < L ≤ 100	±2.5
100 < L ≤ 500	±3



- 注記
- 1) 指定外の寸法公差は表 1 による。
  - 2) # 印寸法は最小サービス空間寸法とする。
  - 3) 取付用ネジはトラスター呼び径 5 × 2.0 を使用のこと。
- NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
  2. #: MINIMUM SERVICE CLEARANCE.
  3. USE TAPPING SCREWS φ5×2.0 FOR FIXING THE UNIT.

DRAWN	12/Mar/2010	I. YAMASAKI	TITLE	NX-700B/800B
CHECKED	12/Mar/2010	I. TAKAHASHI	名称	指示部 (埋込装備)
APPROVED	12/Mar/2010	Y. NISHIYAMA	外寸図	
SCALE	1/3	WSS 0.7 kg	NAME	DISPLAY UNIT (FLUSH MOUNT)
DWG. No.	C5649-G07-D		08-023-220G-1	OUTLINE DRAWING



注 記

- 1) 指定外の寸法公差は表 1 による。
- 2) # 印寸法は最小サービス空間寸法とする。
- 3) 取付用ネジはトラスタッピンネジ呼び径  $5 \times 20$  を使用のこと。

NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. # MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS  $\phi 5 \times 20$  FOR FIXING THE UNIT.

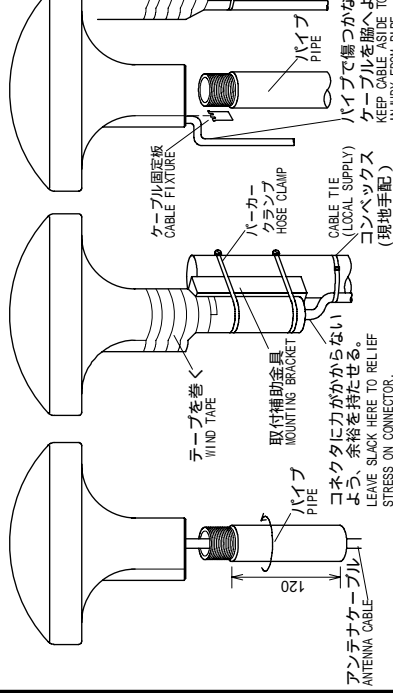
表 1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	$\pm 1.5$
$50 < L \leq 100$	$\pm 2.5$
$100 < L \leq 500$	$\pm 3$

DRAWN	26/Nov/09 T.YAMASAKI	TITLE	NX-7001/8001
CHECKED	26/Nov/09 T.TAKENO	名称	受信部
APPROVED	2/Dec/09 R.Esumi		外寸図
SCALE	1/4 MASS 2.0 $\pm 10\%$ kg	NAME	RECEIVER UNIT
DWG. No.	C5649-G03-B	REF. No.	08-023-300G-1
		OUTLINE DRAWING	

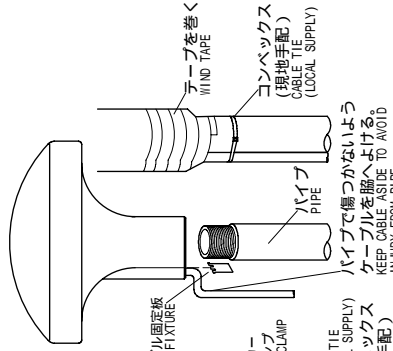
**A) マストへの取付け MAST MOUNTING**

a) マスト取付金具CP20-0111(工事材料)でマストに固定する。  
USE MAST MOUNTING KIT CP20-0111.



コネクタに力がかからないよう、余裕を持たせる。  
LEAVE SLACK HERE TO RELIEF STRESS ON CONNECTOR.

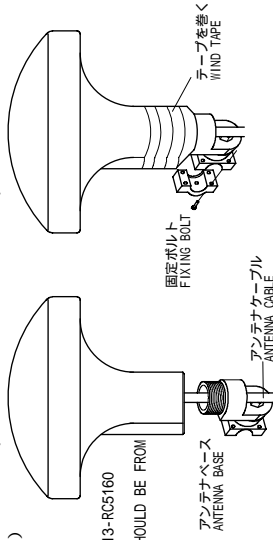
b) パイプのみを使うとき  
USE A PIPE ONLY.



パイプで傷つかないよう、ケーブルを踏へ上げる。  
KEEP CABLE ASIDE TO AVOID INJURY FROM PIPE.

**B) スタンションやパルピットに取付けるとき HANDRAIL MOUNTING**

レール用アンテナベース No.13-RC5160 (取付可能レール直径: 19~32) (コード番号: 000-806-114)



USE HANDRAIL MOUNTING BASE No. 13-RC5160 (CODE No. 000-806-114, OPTION). THE DIAMETER OF THE HANDRAIL SHOULD BE FROM 19mm TO 32mm.

注記 1) パイプ(アンテナベース)はアンテナユニットにねじ込みだ後に固定する。  
2) アンテナを固定するときパイプ(アンテナベース)をアンテナにねじ込むこと。  
アンテナ側をねじるとコネクタ部やケーブルに無理がかかり、故障の原因となる。  
NOTE 1. FASTEN PIPE(ANTENNA BASE) TO ANTENNA UNIT FIRST THEN FIX THEM TO MAST OR HANDRAIL.  
2. WHEN FIXING ANTENNA, TURN PIPE OR ANTENNA BASE; NOT THE ANTENNA. TURNING THE ANTENNA MAY TWIST THE CABLE AND PLACE STRESS ON CONNECTOR.

**C) 取付ける場所が傾斜しているとき ANTENNA BASE MOUNTING**

オプションのアンテナベースを使う。  
USE OPTIONAL ANTENNA BASE No.13-0A330/0A310.

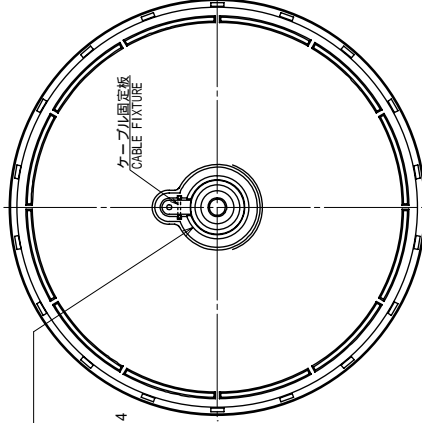
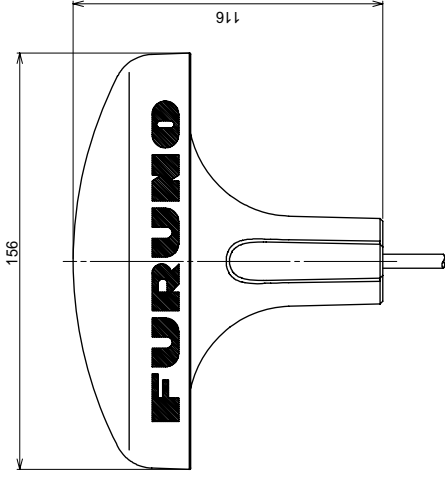
傾斜 INCLINATION	-5° - 33°	32° - 65°	65° - 98°
装備方法 MOUNTING METHOD			
アンテナベース型式 ANTENNA BASE TYPE	直型アンテナベース No.13-0A330	L型アンテナベース No.13-0A310	L型アンテナベース No.13-0A310
コード番号 CODE No.	000-803-239	000-803-240	000-803-240

表 1 TABLE 1

寸法区分 (mm) DIMENSIONS	公差 (mm) TOLERANCE
0 < L 50	± 1 . 5
50 < L 100	± 2 . 5
100 < L 500	± 3

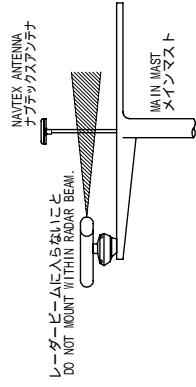
表 2 TABLE 2

型式 TYPE	質量 (kg) MASS (±10%)
NX-3H-D (NX-300)	0.94
NX-7H (NX-700)	0.6



ねじ山数 (25.4mmにつき) : 14  
ねじピッチ : 1.8143 mm  
オネジ有効長さ : 15.17 mm  
オネジ有効径 : 24.17 mm  
THREAD PER 25.4mm (1 INCH) : 14  
PITCH: 1.8143 mm  
THREAD LENGTH: 15.17 mm  
PITCH DIAMETER: 24.17 mm

**取付位置 MOUNTING LOCATION**



注記 1) 指定外の寸法公差は表1による。  
NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

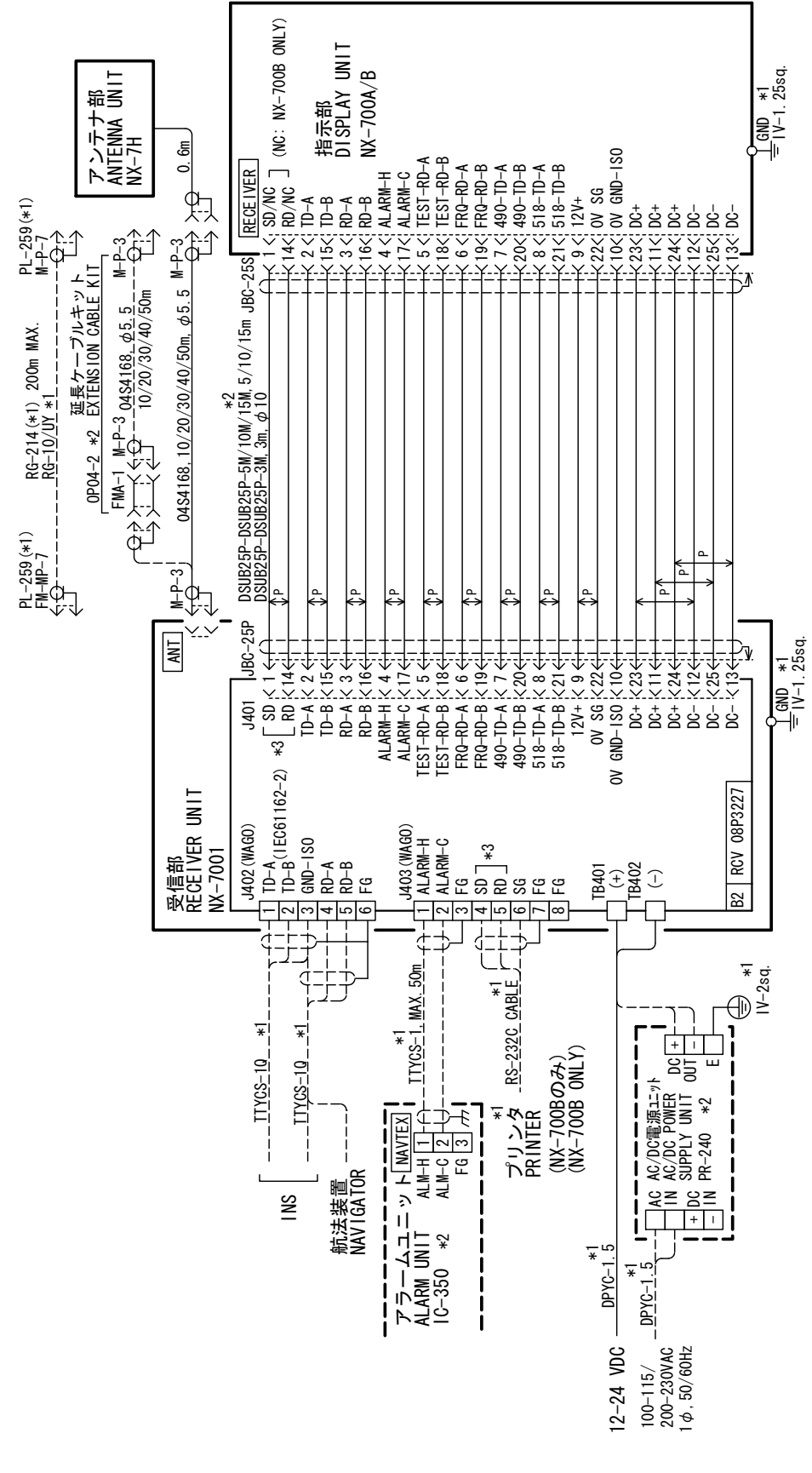
DRAWN Oct. 13, '05	E. MIYOSHI
CHECKED	TAKAHASHI, T
APPROVED	Y. Hatai
SCALE 1/2	質量 質量(10mケーブルを含む) MASS 質量(10m CABLE)
DWG. No. C5629-G05-F	08-021-310G-1

TITLE	NX-3H-D/NX-7H
名称	空中線部/アンテナ部
外寸図	
NAME	ANTENNA UNIT
	OUTLINE DRAWING

A

B

C



DRAWN	25/AUG/08	T. YAMASAKI	TITLE	NX-7000A/B
CHECKED	25/AUG/08	T. TAKENO	名称	ナビテックス受信機
APPROVED	30/SEP/08	R. Esumi	相互結線図	
SCALE		MASS	NAME	NAVTEX RECEIVER
DWG. No.	C5649-C01-H		INTERCONNECTION DIAGRAM	
			REF. No.	08-001-3157-A

- 注記
- \* 1) 造船所手配。
  - \* 2) オプション。
  - \* 3) プリント信号出力はメニューにて選択。
- NOTE
- \* 1. SHIPYARD SUPPLY.
  - \* 2. OPTION.
  - \* 3. SELECT OUTPUT OF PRINTER SIGNAL FROM MENU.

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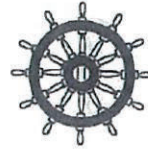
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## Declaration of Conformity



# 0560

We **FURUNO ELECTRIC CO., LTD.**

(Manufacturer)

9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan

(Address)

declare under our sole responsibility that the product

**NAVTEX RECEIVER NX-700A and NX-700B**

(Model name, type number)

to which this declaration relates conforms to the following standard(s) or normative document(s)

IMO Resolution MSC.148 (77)	IEC 60945 Ed.4.0: 2002 incl.Corr.1: 2008
IMO Resolution A.694 (17)	IEC 61097-6 Ed.2.1: 2012
ITU-R Recommendation M.540-2	IEC 61162-1 Ed.4.0: 2010
ITU-R Recommendation M.625-4	IEC 61162-2 Ed.1.0: 1998

(title and/or number and date of issue of the standard(s) or other normative document(s))

For assessment, see

- EC type-examination (Module B) certificate No. 152120001 issued by Telefication, The Netherlands.
- Production Quality System (Module D) certificate No. P 112 issued by Telefication, The Netherlands.

This declaration is issued according to the Directive 2014/90/EU of the European Parliament and of the Council on marine equipment, and the Implementing Regulation (EU) 2017/306.

On behalf of Furuno Electric Co., Ltd.

Nishinomiya City, Japan  
May 16, 2017

(Place and date of issue)

Yoshitaka Shogaki  
Department General Manager  
Quality Assurance Department

(name and signature or equivalent marking of authorized person)