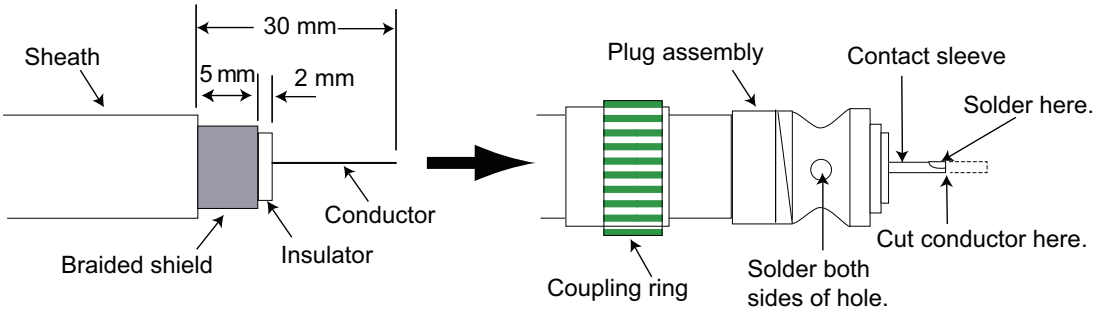
4.4.4 Wiring for RG-10/UY antenna cable

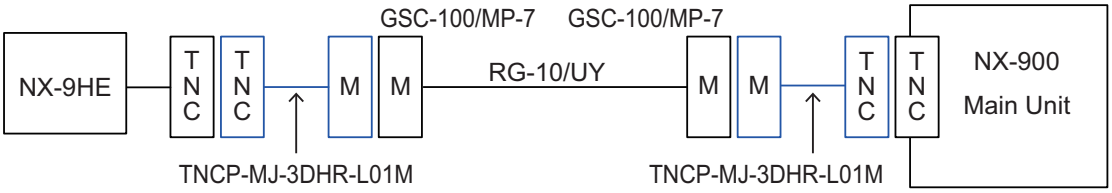
When using the coaxial cable type RG-10/UY, attach the GSC-100/MP-7 connector (optional supply) as below.

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

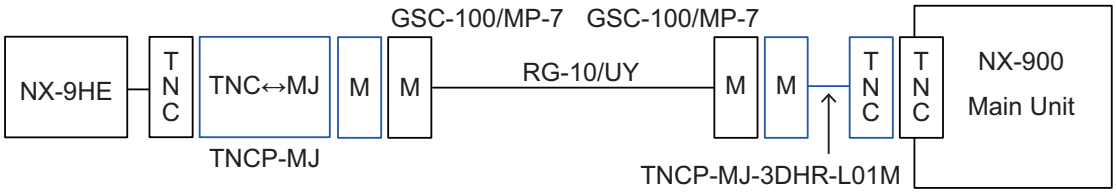
1. Remove the sheath by 30 mm.
2. Bare 23 mm of the center conductor. Trim braided shield by 5 mm and tin.
3. Slide coupling ring onto cable.
4. Screw the plug assembly on the cable.
5. Solder plug assembly to braided shield through solder holes. Solder contact sleeve to conductor.
6. Screw coupling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



The connector on the main unit and antenna unit is the TNC-type connector, and the connector on the RG-10/UY cable is the M-type connector. Therefore, the coaxial connector exchange cable (TNCP-MJ-3DHR-L01M, optional supply) is required to use the RG-10/UY cable.



Note: For the antenna side coaxial cable, also coaxial connector adapter (TNCP-MJ) can be used.



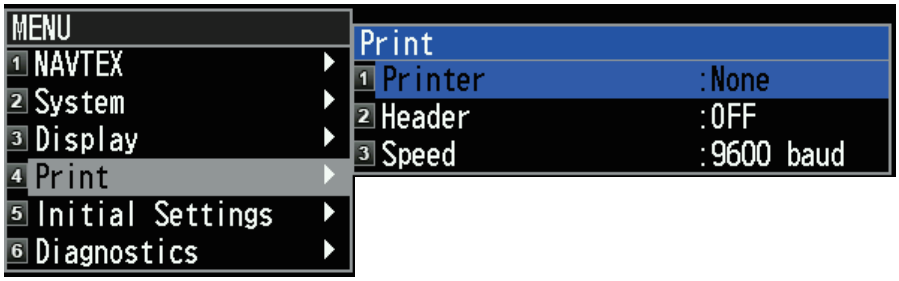
4.4.5 Grounding

To ground the unit, fasten a ground wire (IV-1.25 sq. or larger, supplied locally) between its ground terminal and the ship's ground. The ground wire should be as short as possible.

4.5 Printer Setup

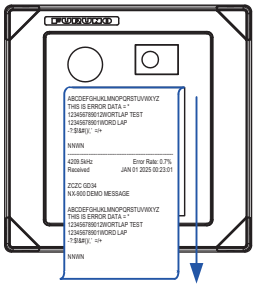
After the connection completely, the setting of printer should be done for NX-900 as shown below.

1. Press the ⏻/**BRILL** key to turn the power on.
2. Press **MENU/ESC** key to open the main menu.
3. Select [Print] and press the **ENT/ACK** key.

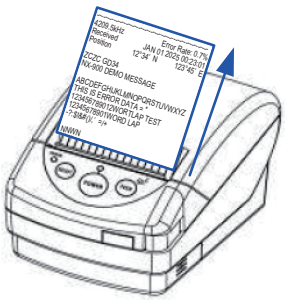


4. Select [Printer] and press the **ENT/ACK** key.
5. Choose the appropriate setting and press the **ENT/ACK** key.

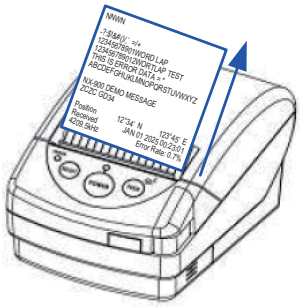
- [None]: When no printer is connected.
- [PP-900]: PP-900 printer (optional supply.)
- [Upright]: When NX-900 is connected to an upright-type printer which ejects paper in bottom to top direction.
- [Inverted]: When NX-900 is connected to a bulkhead mount printer which ejects paper in top to bottom direction.



PP-900



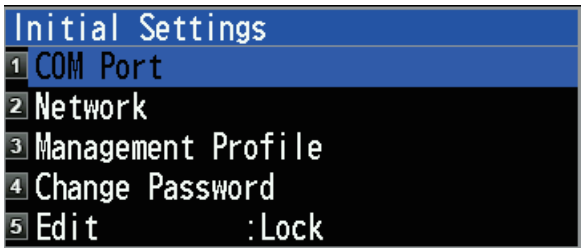
Upright
(Bottom to top direction)



Inverted
(top to bottom direction)

6. Select [Header] and press the **ENT/ACK** key. Select [ON] or [OFF] as desired.
   - [ON]: Print out the header with following information.
     - Received date
     - Received frequency
     - Message error rate
     - Position
     - Distance
   - [OFF]: Disable the header print.
7. Select [Speed] and set the baudrate for the printer.
   Note: When [PP-900] or [None] is selected, baudrate is automatically set as 9600 and cannot be adjusted. For other printer than PP-900, set the appropriate baudrate: 4800 baud, 9600 baud, 19200 baud or 38400 baud.
8. Press **MENU/ESC** key to close the menu.

4.6 [Initial Settings] Menu



No.	Menu item	Setting	Description
1	[COM Port]	-	Press **ENT/ACK** key to show the [Com Port] display. Set the baudrate to 4800, 9600, 19200 or 38400 as appropriate. **Note:** Set [Edit] to [Unlock] to adjust the settings. 
2	[Network]	-	See subsection 4.6.1 for details.
3	[Management Profile]	Off, On	Press **ENT/ACK** key to show the [Management Profile] display. Set RMS function on/off as appropriate. **Note:** Set [Edit] to [Unlock] to adjust the settings. 
4	[Change Password]	-	You can change the password to unlock the settings on [Initial Settings] menu. See subsection 4.6.2 for details.
5	[Edit]	Lock, Unlock	Lock or unlock the settings on [Initial Settings] menu. To unlock, password for initial setting is needed.

4.6.1 Network settings

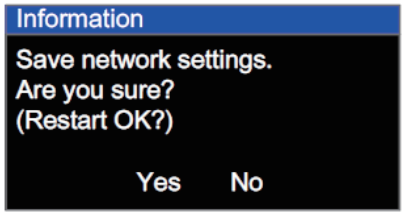
Do as follows to set the network settings (IP address, subnet mask, etc.).

Note: To edit network settings, set [Edit] to [Unlock] on the [Initial Settings] menu.

1. Press **MENU/ESC** key to open the main menu.
2. Select [Initial Settings] and press the **ENT/ACK** key.
3. Select [Network] and press the **ENT/ACK** key. The network window will be shown.

4. Use ▲▼ keys to select desired setting to edit.
   - [IP Address]: Unit IP address
   - [Subnet Mask]: Unit subnet mask
   - [Gateway]: Unit gateway
   - [Own SFI]: Set the system function for the unit (setting range: 0001 to 9998, CR set by system and cannot be adjusted). SFI is used as a identifier to identify devices on the network.
     Note: Be sure to use an SFI not used by other devices in the shipboard network.
   - [RX SFI]: Judges the received sentences as valid if the source SFI and the set value of the NMEA sentences received by LAN450 match.
     - [Position]: Format: GGA/GLL/GNS and RMC sentences.
     - [SOG/COG]: Format: RMC/ VBW and VTG sentences.
     - [STW]: Format: VHW and VBW sentences.

     Note: When not set, a bar is displayed and no sentences are received from the IEC 61162-450 port.
5. Select [<Save>] and press the **ENT/ACK** key.
   Following pop-up window appears.



6. Select [Yes] and press the **ENT/ACK** key.
   System restarts and settings are saved.

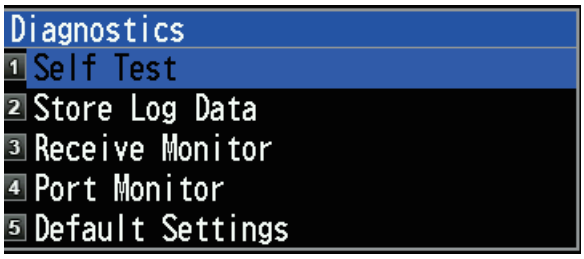
4.6.2 Password settings

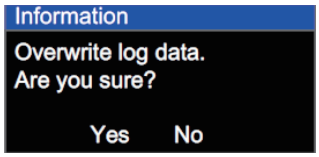
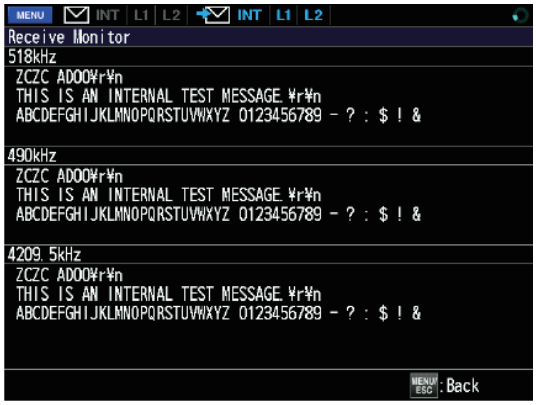
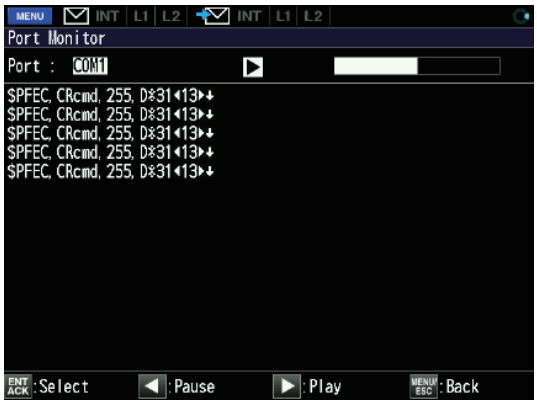
The password is required to change [Edit] to [Unlock] and unlock the settings on [Initial Settings] menu. To change the password, do as follows.

1. Press **MENU/ESC** key to open the main menu.
2. Select [Initial Settings] and press the **ENT/ACK** key.
3. Select [Change Password] and press the **ENT/ACK** key.

4. Enter the current password to [Edit Password] field.
5. If the password is correct, [New] can be selected by using ▼ key.
6. Enter the new password (setting range: 00000000 to 99999999).
7. Select [Confirm] and enter the new password once again.
   “Agree” confirmation window appears.
8. Press the **ENT/ACK** key. The new password is set.
9. Press **MENU/ESC** key to close the menu.

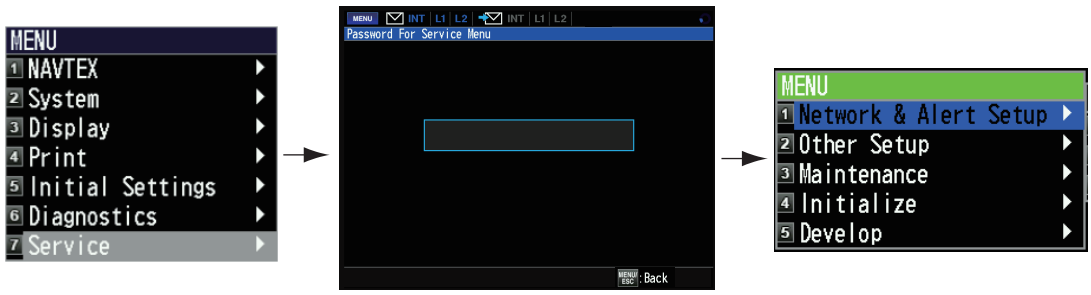
4.7 [Diagnostics] Menu



No.	Menu item	Setting	Description
1	[Self Test]	-	See section 3.5 for details.
2	[Store Log Data]	-	Press the **ENT/ACK** key. Below confirmation message will be shown. Select [Yes] and press the **ENT/ACK** key to store log data. 
3	[Receive Monitor]	-	Press the **ENT/ACK** key to show the [Receive Monitor Display]. 
4	[Port Monitor]	COM1, COM2, LAN	Press the **ENT/ACK** key to show the [Port Monitor] display. You can see received NAV data sentences. For [Port], select COM1/COM2 or LAN as desired and use ◀▶ keys to play and pause the display. 
5	[Default Settings]	-	See section 3.6 for details.

4.8 [Service] Menu

Press ◀ key five times to show the [Service] menu on the main menu list. Password is needed to open the service menu.

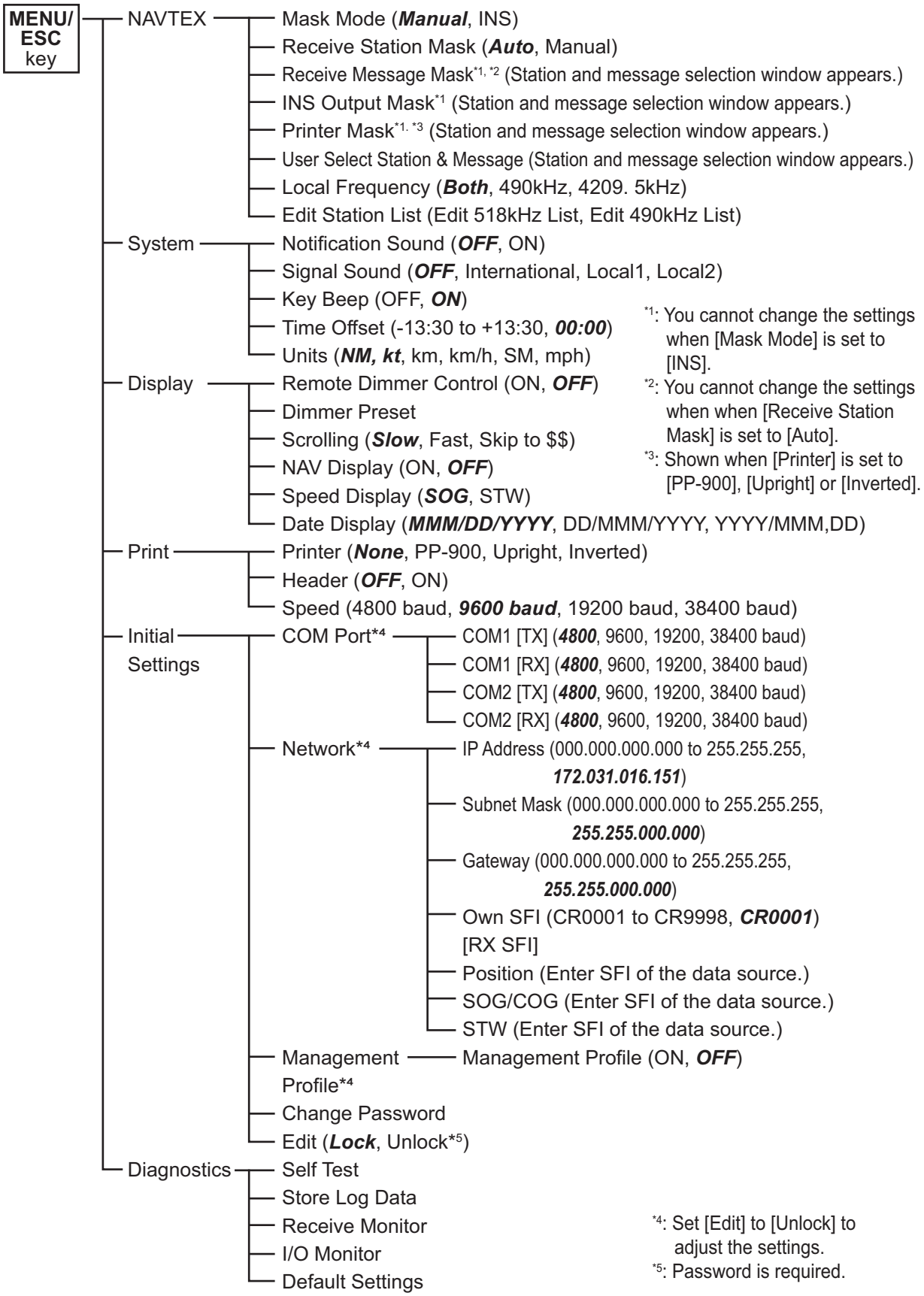


Press (◀) key five times | Enter the password | Opens the [Service] menu

Menus other than the [Network & Alert Setup] menu are not used at installation. Set up the menu items on the [Network & Alert Setup] menu, referring to the following table.

No.	Menu item	Setting	Description
1	[Transmission Group Setup]	-	Press the **ENT/ACK** key to show the [Transmission Group Setup] display to set the IP address and port for [TX Setup], Group for [Rx Setup]. 
2	[Alert Mode]	Legacy, Alert IF1, Alert IF2	Select the desired alert mode. “System will restart” confirmation message appears and the unit restarts.
3	[Cluster]	Nav, Com	Select [Nav] or [Com] mode for cluster.

APPX. 1 MENU TREE



*1: You cannot change the settings when [Mask Mode] is set to [INS].
*2: You cannot change the settings when when [Receive Station Mask] is set to [Auto].
*3: Shown when [Printer] is set to [PP-900], [Upright] or [Inverted].

*4: Set [Edit] to [Unlock] to adjust the settings.
*5: Password is required.

APPX. 2 DIGITAL INTERFACE

This equipment can receive navigation data in IEC61162-1 and IEC61162-450 format.

Sentence data

Input sentences:
ACK, ACN, CRQ, DDC, GGA, GLL, GNS, NRM, RMC, SRP*, VBW, VHW, VTG, ZDA

Output sentences:
ALC, ALF, ALR, ARC, DDC, HBT, NRM, NRX, SRP*

*: SRP sentence is for IEC61162-450 only.

Load requirements as listener

Isolation: Photo coupler
Input impedance: 470 ohms
Max. Voltage ±15 V
Threshold: 3 mA (in case of connection of FURUNO device talker)

Output drive capability

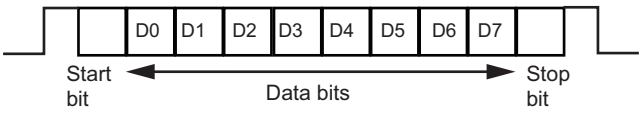
Differential driver output
R = 100 ohm 2 V min.

Driver short-circuit current
250 mA max.

Data transmission

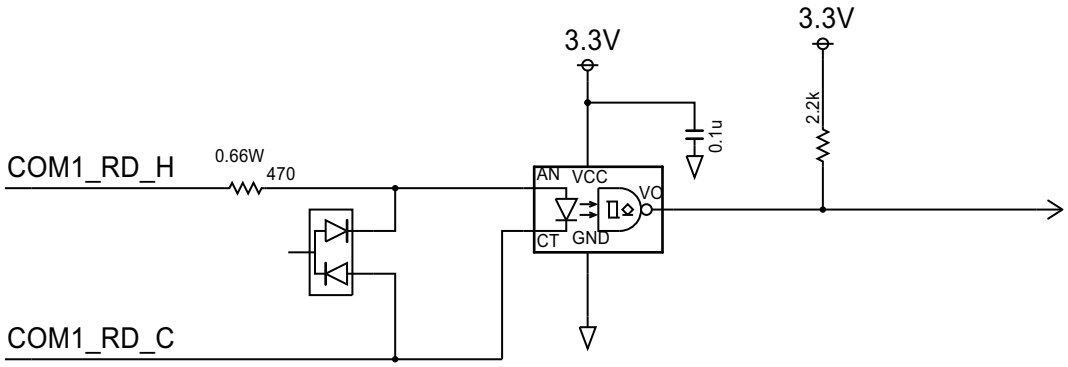
Data is transmitted in serial asynchronous form in accordance with the standard referenced in 2.1 of IEC61162-1. The first bit is a start bit and is followed by data bits, least-significant-bit as illustrated below.

The following parameters are used:
Baud rate: 38.4 Kbps /4800 bps
Data bits: 8 (D7 = 0), parity none
Stop bits: 1
IEC61162-1: Edition 5.0 2016-08
IEC61162-450: Edition 2.0 2018-05

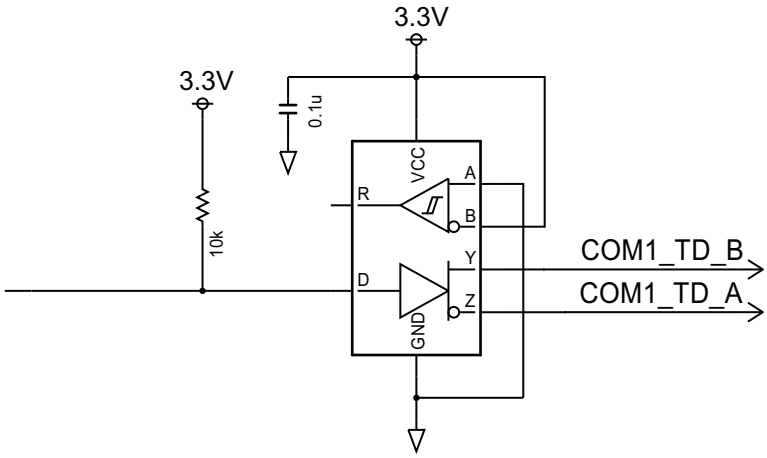


Serial & contact interface I/O circuit

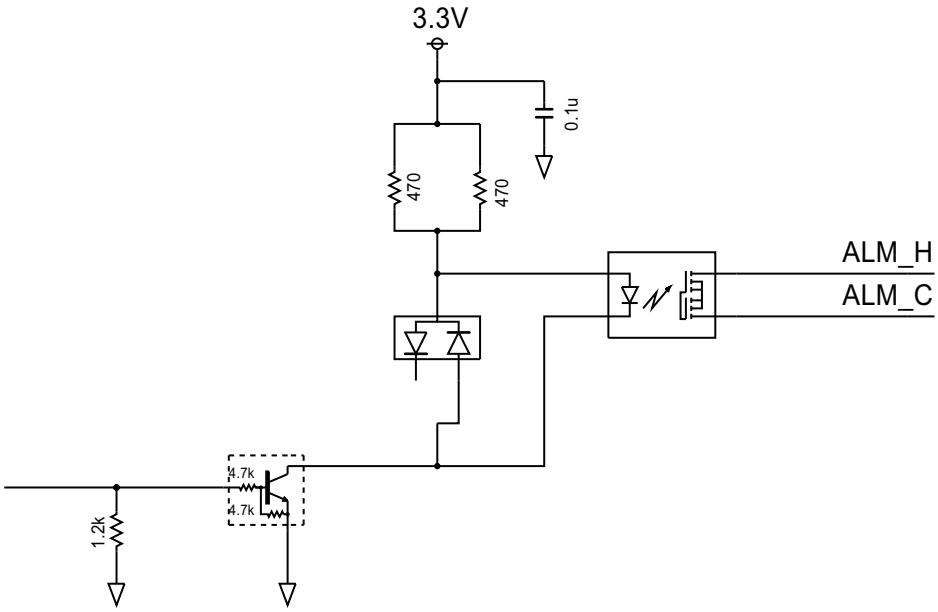
COM1 or 2 port (input)



COM1 or 2 port (output)



External Alarm



Sentence description

Input sentences

ACK: Acknowledge alarm

$**ACK,xxx,*hh<CR><LF>
1

1. Unique alarm number (identifier) at alarm source (001, 002, 003, 051)

ACN: Alert Command

$**ACN,hhmmss.ss,aaa,x.x,x.x,c,a*hh<CR><LF>
1 2 3 4 5 6

1. Time (no use)
2. Manufacturer mnemonic code (null)
3. Alert Identifier (0, 3122, 3123, 3079)
4. Alert Instance (0, 1, 2, null)
5. Alert command (A = acknowledge, Q = request/repeat information, O = responsibility transfer, S = silence)
6. Sentence status flag (C = Command)

DDC: Display dimming control

$**DDC,a,xx,a,a*hh<CR><LF>
1 2 3 4

1. Display dimming preset (D = Daytime, N = Nighttime, null)
2. Brightness percentage (00 to 99, null)
3. Color palette (no use)
4. Sentences status flag (C = Command)

GGA: Global positioning system (GPS) fix data

$**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 2 3 4 5 6 7 8 9 10 11 12 13 14

1. UTC of position (no use)
2. Latitude (0000.00000 to 9000.00000)
3. N/S (N, S)
4. Longitude (00000.00000 to 18000.00000)
5. E/W (E, W)
6. GPS quality indicator (1 to 5)
7. Number of satellite in use (no use)
8. Horizontal dilution of precision (no use)
9. Antenna altitude above/below (no use)
10. Units of antenna altitude, m (no use)
11. Geoidal separation (no use)
12. Units of geoidal separation, m (no use)
13. Age of differential GPS data (no use)
14. Differential reference station ID (no use)

GLL: Geographic position – Latitude/longitude

$**GLL,llll.lll,a,yyyyy.yyy,a,hhmmss.ss,a,x,*hh<CR><LF>
1 2 3 4 5 6 7

1. Latitude (0000.00000 to 9000.00000)
2. N/S (N, S)
3. Longitude (00000.00000 to 18000.00000)
4. E/W (E, W)
5. UTC of position (no use)
6. Status (A = data valid)
7. Mode indicator (A = Autonomous, D = Differential)

GNS: GNSS fix data

$**GNS,hhmmss.ss,llll.lll,a,IIIII.III,a,c--c,xx,x.x,x.x,x.x,x.x,x.x,x.x,a*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13

1. UTC of position (no use)
2. Latitude (0000.00000 to 9000.00000)
3. N/S (N, S)
4. Longitude (00000.00000 to 18000.00000)
5. E/W (E, W)
6. Mode indicator (N = No fix, A = Autonomous, D = Differential, P = Precise, R = Real Time Kinematic, F = Float RTK, E = Estimated Mode, M = Manual Input Mode, S = Simulator Mode)
7. Total number of satellites in use (no use)
8. HDOP (no use)
9. Antenna altitude, meters (no use)
10. Geoidal separation, meters (no use)
11. Age of differential data (no use)
12. Differential reference station ID (no use)
13. Navigational status indicator (S = Safe, C = Caution, U = Unsafe, V = Navigational status not valid)

NRM: NAVTEX receiver mask

$**NRM,x,x,hhhhhhhh,hhhhhhhh,a*hh<CR><LF>
1 2 3 4 5

1. Function code (0 to 3)
2. Frequency table index (1 to 3)
3. Transmitter coverage area mask (00000000 to 03FFFFFF)
4. Message type mask (00000000 to 03FFFFFF)
5. Sentence status flag (C = Command)

RMC: Recommend Minimum Specific GNSS data

$**RMC,hhmmss.ss,A,llll.ll,a,yyyyy.yy,a,x.x,x.x,ddmmyy,x.x,a,a,a*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 111213

1. UTC of position fix (no use)
2. Status (A=data valid)
3. Latitude (0000.00000 to 9000.0000)
4. N/S (N, S)
5. Longitude (00000.00000 to 18000.0000)
6. E/W (E, W)
7. Speed over ground, knots (0.000 to 999.999)
8. Course over ground, degrees true (0.00 to 360.00)
9. Date (no use)
10. Magnetic variation, degrees E/W (no use)
11. E/W (no use)
12. Mode indicator (A = Autonomous mode, D = Differential mode, F = Float RTK, P = Precise, R = Real time kinematic)
13. Navigational status indication (S = Safe, C = Caution, U = Unsafe, V = Navigational status not valid)

SRP: System function ID resolution protocol

$--SRP,x,hhhhhhhhhhhh,c--c*hh<CR><LF>
1 2 3

1. Instance number for interface redundant alternative (null)
2. MAC address (null)
3. IP address (null)

VBW: Dual ground/water speed

$**VBW,x.x,x.x,x,x.x,x.x,x,x.x,x,x.x,x,*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10

1. Longitudinal water speed, knots (-999.99 to 999.99)
2. Transverse water speed, knots (-999.99 to 999.99, null)
3. Status: water speed (A = Data valid)
4. Longitudinal ground speed, knots (-999.99 to 999.99)
5. Transverse ground speed, knots (-999.99 to 999.99, null)
6. Status: ground speed (A = Data valid)
7. Stern transverse water speed, knots (no use)
8. Status: stern water speed (no use)
9. Stern transverse ground speed, knots (no use)
10. Status: stern ground speed (no use)

VHW: Water speed and heading

$**VHW,x.x,T,x.x,M,x.x,N,x.x,K,*hh <CR><LF>
1 2 3 4 5 6 7 8

1. Heading, degrees (no use)
2. T=True (no use)
3. Heading, degrees (no use)
4. M=Magnetic (no use)
5. Speed, knots (-999.99 to 999.99)
6. N=Knots (fixed)
7. Speed, knots (-999.99 to 999.99)
8. K=km/hr (fixed)

VTG: Course over ground and ground speed

$**VTG,x.x,T,x.x,M,x.x,N,x.x,K,a,*hh <CR><LF>
1 2 3 4 5 6 7 8 9

1. Course over ground, degrees (0.00 to 360.00)
2. T=True (fixed)
3. Course over ground, degrees (0.00 to 360.00)
4. M=Magnetic (fixed)
5. Speed over ground, knots (0.00 to 999.99)
6. N=Knots (fixed)
7. Speed over ground (0.00 to 999.99)
8. K=km/h (fixed)
9. Mode indicator (A = Autonomous, D = Differential, P = Precise)

ZDA: Time and date

$**ZDA,hhmmss.ss,xx,xx,xxxx,xx,xx,*hh<CR><LF>
1 2 3 4 5 6

1. UTC (hh = 00 to 23, mm = 00 to 59, ss.ss = 00.00 to 59.99)
2. Day (01 to 31)
3. Month (01 to 12)
4. Year (2022 to 2081)
5. Local zone, hours (no use)
6. Local zone, minutes (no use)

Output sentences

ALC: Cyclic alert list

$**ALC,xx,xx,xx,x.x, aaa,x.x,x.x,x.x,’’’’’’,*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Total number of sentences this message (01 to 03)
2. Sentence number (01 to 03)
3. Sequential message identifier (00 to 99)
4. Number of alert entries (0 to 2)
5. Manufacturer mnemonic code (null)
6. Alert identifier (3122, 3123, 3079)
7. Alert instance (0, 1, 2, null)
8. Revision counter (1 to 99)
9. Additional alert entries (same as 5 and 8)

ALF: Alert sentence

$**ALF,x,x,x,hhmmss.ss,a,a,a,aaa,x.x,x.x,x.x,x,c--c,*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13

1. Total number of ALF sentences this message (1, 2)
2. Sentence number (1, 2)
3. Sequential message identifier (0 to 9)
4. Time of last change (hh = 00 to 23, mm = 00 to 59, ss.ss = 00.00 to 59.99, null)
5. Alert category (A = Alert category A, B = Alert category B, null)
6. Alert priority (W = Warning, C = Caution, null)
7. Alert state (A = active-acknowledged or active, S = active-silenced, V = active-unacknowledged, N = Normal, null)
8. Manufacturer mnemonic code (null)
9. Alert identifier (3122, 3123, 3079)
10. Alert instance (0, 1, 2, null)
11. Revision counter (1 to 99)
12. Escalation counter (0 to 9)
13. Alert text

ALR: Set alarm state

$**ALR,hhmmss.ss,xxx,A,A,c—c,*hh<CR><LF>
1 2 3 4 5

1. Time of alarm condition change, UTC (hh = 00 to 23, mm = 00 to 59, ss.ss = 00.00 to 59.99, null)
2. Unique alarm number (identifier) at alarm source (001, 002, 003, 006, 051)
3. Alarm condition (A = threshold exceeded, V = not exceeded)
4. Alarm acknowledge state (A = acknowledged, V = not acknowledged)
5. Alarm description text (alphanumeric)

ARC: Alert command refused

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

1. Release time of the Alert Command Refused (hh = 00 to 23, mm = 00 to 59, ss.ss = 00.00 to 59.99, null)
2. Used for proprietary alerts, defined by the manufacturer (null)
3. The alert identifier (3122, 3123, 3079)
4. The alert instance (0, 1, 2, null)
5. Refused Alert Command (A = acknowledge, Q = request/repeat information, S = silence)

DDC: Display dimming control

$**DDC,a,xx,a,a*hh<CR><LF>
1 2 3 4

1. Display dimming preset (D = Daytime, N = Nighttime, null)
2. Brightness percentage (00 to 99)
3. Color palette (null)
4. Sentences status flag (R = Report)

HBT: Heartbeat supervision sentence

$**HBT,x.x,A,x*hh<CR><LF>
1 2 3

1. Configured repeat interval (25)
2. Equipment status (A = Normal)
3. Sequential sequence identifier (0 to 9)

NRM: NAVTEX receiver mask

$**NRM,x,x,hhhhhhhh,hhhhhhhh,a*hh<CR><LF>
1 2 3 4 5

1. Function code (0 to 3)
2. Frequency table index (1 to 3)
3. Transmitter coverage area mask (00000000 to 03FFFFFF)
4. Message type mask (00000000 to 03FFFFFF)
5. Sentence status flag (R = Report)

NRX: NAVTEX received message

$**NRX,xxx,xxx,xx,aaxx,x,hhmmss.ss,xx,xx,xxxx,x.x,x.x, A,c--c,*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13

1. Number of sentences (001 to 500)
2. Sentence number (001 to 500)
3. Sequential message ID (00 to 99)
4. Navtex message code (aaxx (aa: AA to ZZ xx: 00 to 99))
5. Frequency table index (0 to 3)
6. UTC of receipt of message (hh = 00 to 23, mm = 00 to 59, ss.ss = 00.00 to 59.99, null)
7. Day (0 to 31, null)
8. Month (01 to 12, null)
9. Year (0000 to 9999, null)
10. Total number of characters in this series of NRX sentences (1 to 8000, null)
11. Total number of bad characters (0 to 8000, null)
12. Status indication (A = correct message)
13. Message body (alphanumeric characters)

SRP: System function ID resolution protocol

$--SRP,x,hhhhhhhhhhhh,c--c*hh<CR><LF>
1 2 3

1. Instance number for interface redundant alternative (null)
2. MAC address (000000000000 to FFFFFFFFFFFE)
3. IP address 0.0.0.0 to 255.255.255.255)

APPX. 3 JIS CABLE GUIDE

Cables listed in the manual are usually shown as Japanese Industrial Standard (JIS). Use the following guide to locate an equivalent cable locally.

JIS cable names may have up to 6 alphabetical characters, followed by a dash and a numerical value (example: DPYC-2.5).
For core types D and T, the numerical designation indicates the *cross-sectional Area (mm^2)* of the core wire(s) in the cable.
For core types M and TT, the numerical designation indicates the *number of core wires* in the cable.

1. Core Type

D: Double core power line
T: Triple core power line
M: Multi core
TT: Twisted pair communications (1Q=quad cable)

2. Insulation Type

P: Ethylene Propylene Rubber

3. Sheath Type

Y: PVC (Vinyl)

4. Armor Type

C: Steel

5. Sheath Type

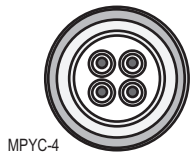
Y: Anticorrosive vinyl sheath

6. Shielding Type

SLA: All cores in one shield, plastic tape w/aluminum tape
-SLA: Individually shielded cores, plastic tape w/aluminum tape


DPYCY


TPYCY


MPYC-4


TTYCSLA-4

1 3 4 5 6
EX: TTYCYSLA - 4
Designation type — # of twisted pairs

1 2 3 4
MPYC - 4
Designation type — # of cores

The following reference table lists gives the measurements of JIS cables commonly used with Furuno products:

Type	Core Area	Core Diameter	Cable Diameter	Type	Core Area	Core Diameter	Cable Diameter
DPYC-1.5	1.5mm²	1.56mm	11.7mm	TTYCSLA-1	0.75mm²	1.11mm	9.4mm
DPYC-2.5	2.5mm²	2.01mm	12.8mm	TTYCSLA-1T	0.75mm²	1.11mm	10.1mm
DPYC-4	4.0mm²	2.55mm	13.9mm	TTYCSLA-1Q	0.75mm²	1.11mm	10.8mm
DPYC-6	6.0mm²	3.12mm	15.2mm	TTYCSLA-4	0.75mm²	1.11mm	15.7mm
DPYC-10	10.0mm²	4.05mm	17.1mm	TTYCY-1	0.75mm²	1.11mm	11.0mm
DPYCY-1.5	1.5mm²	1.56mm	13.7mm	TTYCY-1T	0.75mm²	1.11mm	11.7mm
DPYCY-2.5	2.5mm²	2.01mm	14.8mm	TTYCY-1Q	0.75mm²	1.11mm	12.6mm
DPYCY-4	4.0mm²	2.55mm	15.9mm	TTYCY-4	0.75mm²	1.11mm	17.7mm
MPYC-2	1.0mm²	1.29mm	10.0mm	TTYCY-4SLA	0.75mm²	1.11mm	19.5mm
MPYC-4	1.0mm²	1.29mm	11.2mm	TTYCYSLA-1	0.75mm²	1.11mm	11.2mm
MPYC-7	1.0mm²	1.29mm	13.2mm	TTYCYSLA-4	0.75mm²	1.11mm	17.9mm
MPYC-12	1.0mm²	1.29mm	16.8mm	TTPYCSLA-1	0.75mm²	1.11mm	9.2mm
TPYC-1.5	1.5mm²	1.56mm	12.5mm	TTPYCSLA-1T	0.75mm²	1.11mm	9.8mm
TPYC-2.5	2.5mm²	2.01mm	13.5mm	TTPYCSLA-1Q	0.75mm²	1.11mm	10.5mm
TPYC-4	4.0mm²	2.55mm	14.7mm	TTPYCSLA-4	0.75mm²	1.11mm	15.3mm
TPYCY-1.5	1.5mm²	1.56mm	14.5mm				
TPYCY-2.5	2.5mm²	2.01mm	15.5mm				
TPYCY-4	4.0mm²	2.55mm	16.9mm				

APPX. 4 ALERT LISTS, ICONS, MEANINGS AND MEASURES

The NX-900 displays alerts at the bottom of the screen, as they occur. You can see all alerts, current and past, from the [ALERT LIST] screen. The contents of [ALERT LIST] screen differs when selecting [Alert IF2] and [Legacy]. To use BAM (Bridge Alert Management), set the [Alert Mode] to [Alert IF2]. [Alert Mode] is password protected. Contact FURUNO for password details.

The table on the following page shows the alert ID, displayed message, meaning and measures for each alert.

Alert priority and alert category

"Alert" is a generic name for a notice to any unusual or potentially dangerous situation generated within the system.

Alerts are classified according to priority and category.

Alert priority

There are three alert priorities: alarm, warning and caution.

Alarm: Situations or conditions which require immediate attention, decision and (if necessary) action by the bridge team to avoid any kind of hazardous situation and to maintain the safe navigation of the ship.

Warning: Conditions or situations which require immediate attention for precautionary reasons, to make the bridge team aware of conditions which are not immediately hazardous, but may become so.

Caution: Awareness of a condition which continues to require attention out of the ordinary consideration of the situation or of given information.

Alert category

An alert is further classified by category, A, B or C, according to its degree of severity or source.

Category	Description
A	Category A alerts are not shown on this equipment.
B	Alert where no additional information for decision support is necessary.
C	Category C alerts are not shown on this equipment.

Note 1: The BAM function type for the NX-900 is "P".

Note 2: Connection with the Central Alert Management (CAM) is available on COM1 and Com2 or with LAN.

For [Alert IF2]

Alert ID	Displayed message	Sub message	Priority/ Category	Meaning	Measures
3122*1	SAR RX	Incoming SAR information. Check NAVTEX	Warning /A	SAR message is received	Check the message contents.
3123-1	NAV RX	Incoming NAV warning information. Check NAVTEX	Caution(1)*2 /B	Navigational warning message is received.	Check the message contents.
3123-2	MET RX	Incoming MET warning information. Check NAVTEX	Caution(2)*2 /B	Meteorological warning message is received.	Check the message contents.
3079	PRINTER	Printer failure	Caution /B	Printer error (no paper, not connected to the printer etc.).	- Check if the thermal paper runs out. See section 3.2 for replacement. -Check if the printer and the main unit are firmly connected. See section 3.4.

*1: The temporary silence is allowed by inputting ACN sentence.

*2: The number in the brackets shows the alert instance.

For [Legacy/Alert IF1]

Alert ID	Displayed message	Sub message	Priority/ Category	Meaning	Measures
001	NAV RX	Navigational warning	Warning /A	SAR message is received	Check the message contents.
002	MET RX	Meteorological warning	Warning /A	Navigational warning message is received.	Check the message contents.
003	SAR RX	Search and rescue information	Warning /A	Meteorological warning message is received.	Check the message contents.
051	PRINTER	Printer failure	Warning /A	Printer error (no paper, not connected to the printer etc.).	- Check if the thermal paper runs out. See section 3.2 for replacement. -Check if the printer and the main unit are firmly connected. See section 3.4.

Alert Icons

Each active alert entry is accompanied by an alert icon, indicating the state of the alert. The alert icons displayed on the NX-900 are listed in the table below with a brief description.

Icon	Description	Priority
	Active-Unacknowledged warning Notification, icon is flashing*	Warning
	Active-silenced notification, icon is flashing.*	
	Rectified-unacknowledged notification, icon is flashing.*	
	Active-responsibility transferred notification, icon is lit steadily.	
	Active-acknowledged notification, icon is lit steadily.	
	Active, icon is lit steadily.	Caution

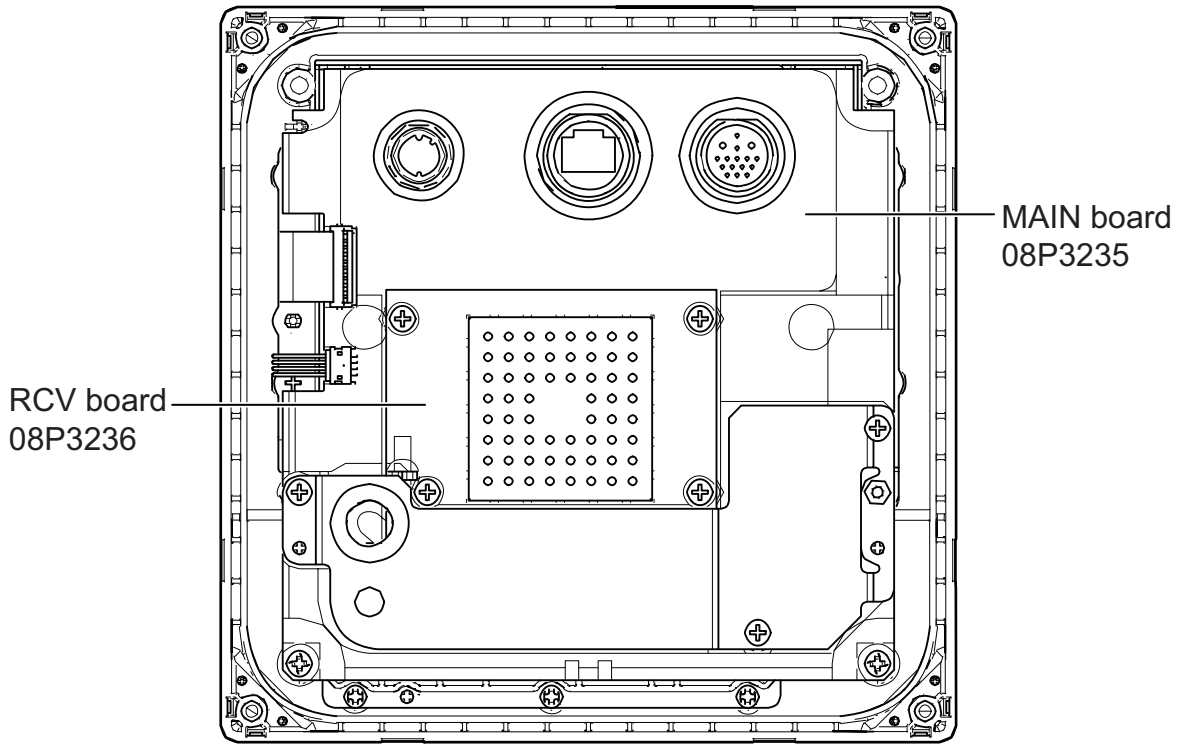
*: Flashing at 0.5 second intervals.

APPX. 5 ABBREVIATIONS

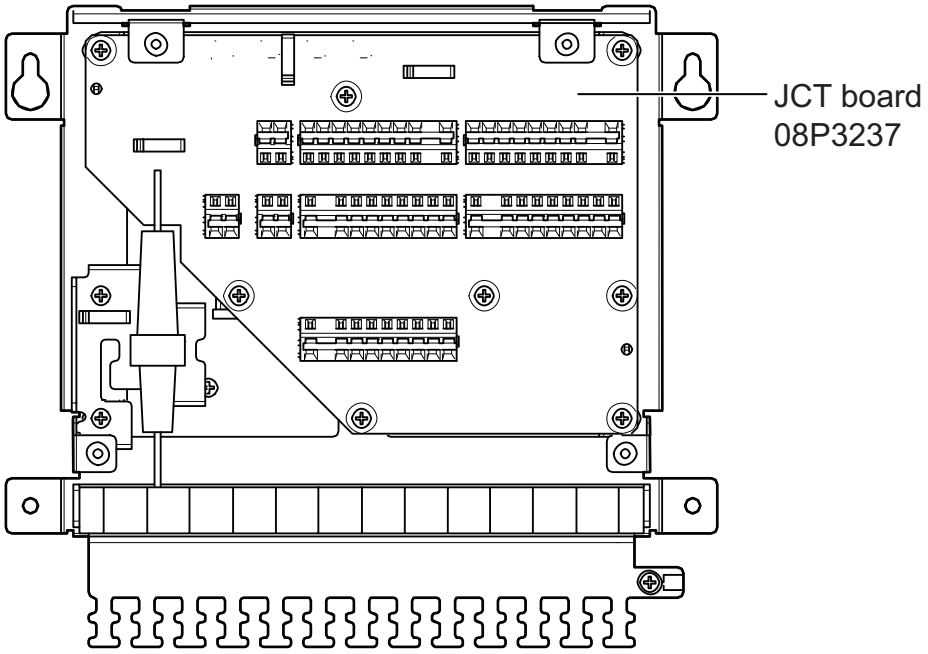
Abbreviation	Meaning
BAM	Bridge Alert Management
CAM	Central Alert Management
COG	Course Over Ground
COM	Communication
ID	Identification
IF	Interface
INS	Integrated Navigation System
km	Kilometer
km/h	Kilometers per hour
kt	Knot
LCD	Liquid Crystal Display
MET	Meteorological
mph	Miles per hour
MSG	Message
NAV	Navigation
NAVTEX	Navigational Telex
NM	Nautical Mile
OFF	Off
ON	On
RAM	Random Access Memory
ROM	Read Only Memory
SAR	Search and Rescue
SFI	System Function ID
SM	Statute Mile
SOG	Speed Over Ground
STW	Speed Through Water
TIME	Time

APPX. 6 PARTS LOCATION

Main Unit (NX-900)



Junction Box (IF-900)



SPECIFICATIONS OF NAVTEX RECEIVER
NX-900

1 GENERAL

1.1	Receiving frequency	518 kHz, 490 kHz and 4209.5 kHz receiving three frequencies simultaneously
1.2	Class of emission	F1B
1.3	Modulation	FSK, 100 bps, ±85 Hz deviation
1.4	Sensitivity	-107 dBm input, error rate: 4% or less
1.5	Spurious emission	1 nW or less

2 MAIN UNIT

2.1	Screen type	5.7-inch color TFT, 640 x 480 (VGA)
2.2	Screen size	115.2 (W) x 86.4 (H) mm
2.3	Brightness	394 cd/m^2 typical
2.4	Brilliance	20 steps (off to maximum brightness)
2.5	Display color	Day/Night mode
2.6	Display modes	Message list, Message details
2.7	Message capacity	500 characters with 200 messages x 3 channels
2.8	Alert category	Navigational warning Meteorological warning Search and rescue information Printer error

3 ANTENNA UNIT

3.1	Antenna type	H-field antenna
3.2	Receiving polarity	Omnidirectional
3.3	Input impedance	50 ohms

4 PRINTER

4.1	Printing system	Line thermal head
4.2	Dot pitch	8 dots/mm
4.3	Number of characters	32 characters/line
4.4	Printing width	48 mm
4.5	Printing paper	Thermal paper (57 mm x 30 m)

5 INTERFACE

5.1	Number of ports	
	Serial	2 ports, IEC61162-1 Ed.5, 4800 bps
	LAN	1 port, Ethernet 100Base-TX, IEC61162-450
	RS-232C	1 port, for printer
	Contact closure	1 port, for alert, 50V: 40mA or less, normal close
5.2	Data sentence	IEC61162-1/450
	Input data	ACK, ACN, CRQ, DDC, GGA, GLL, GNS, NRM, RMC, SRP*, VBW, VHW, VTG, ZDA
	Output data	ALC, ALF, ALR, ARC, DDC, HBT, NRM, NRX, SRP* *: IEC61162-450 only

5.3 Output proprietary sentences

PFEC	nxcom, nxnrm, nxnrx, pidat

6 POWER SUPPLY

6.1	Main unit	DC12-24 (10.8-31.2 V): 1.6-0.5 A
6.2	Junction box (option)	DC12-24 (10.8-31.2 V): 1.6-0.5 A (main unit included)
6.3	Printer (option)	DC12-24 (10.8-31.2 V): 2.6-0.9 A

7 ENVIRONMENTAL CONDITION

7.1 Ambient temperature

Main unit	-20ºC to +55ºC (storage: -20ºC to +70ºC)
Antenna unit	-25ºC to +55ºC (storage: -25ºC to +70ºC)
Printer	-15°C to +55ºC (storage: -20ºC to +70ºC)
Junction box	-15°C to +55ºC (storage: -30ºC to +70ºC)

7.2 Relative humidity: 93% at +40ºC

7.3 Degree of protection

Antenna unit	IP56
Main unit	IP20 (IP22: option)
Printer	IP20
Junction box	IP20 (IP22: bulkhead mount)

7.4 Vibration: IEC60945 Ed.4

FURUNO

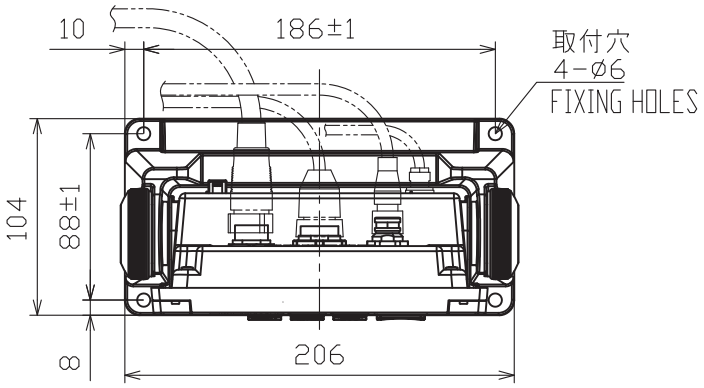
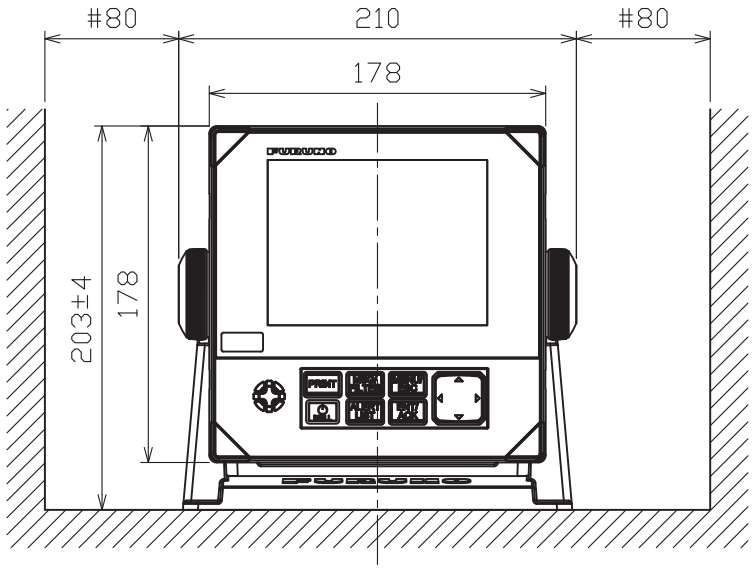
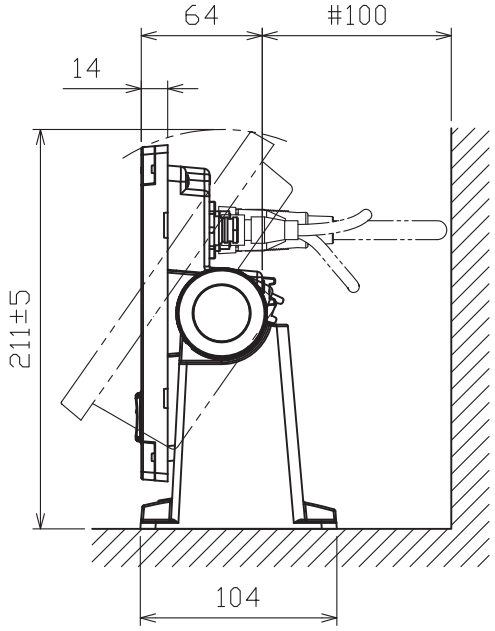
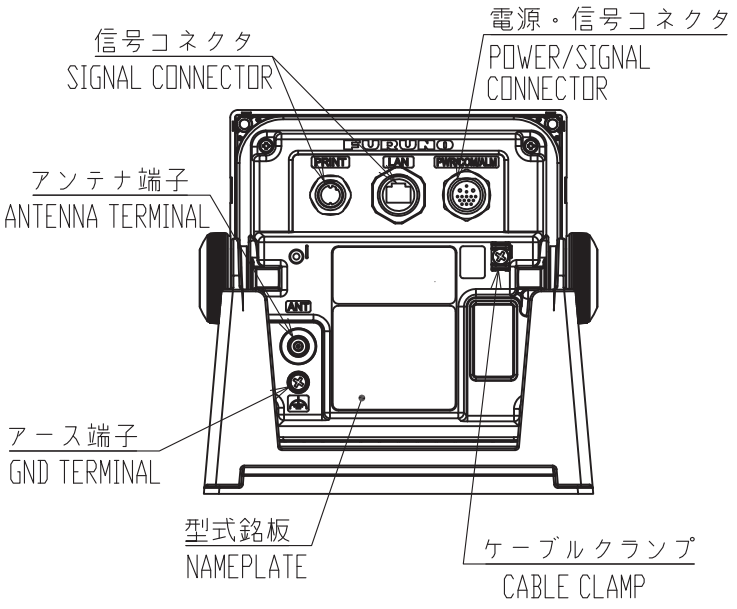


表1 TABLE 1

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ッピンネジ呼び径５×２０を使用のこと。

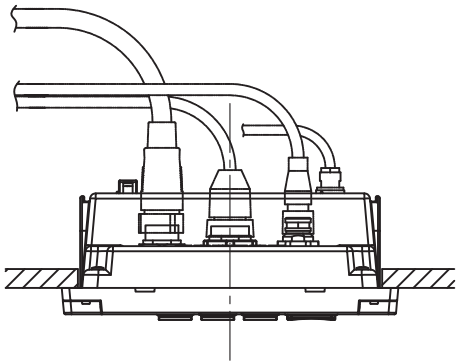
NOTE

1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS ø5x20 FOR FIXING THE UNIT.

DRAWN 31/Oct/2022 S.HAN		TITLE	NX-900
CHECKED 31/Oct/2022 T.YAMASAKI		名称	本体部（卓上装備）
APPROVED			外寸図
SCALE 1/4	MASS 1.0 ±10% kg	質量はケーブルを含まず。 MASS DOES NOT INCLUDE CABLE.	NAME MAIN UNIT (TABLETOP MOUNT)
DWG.No. C5715-G01-A	REF.No. 08-025-250G-1		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO



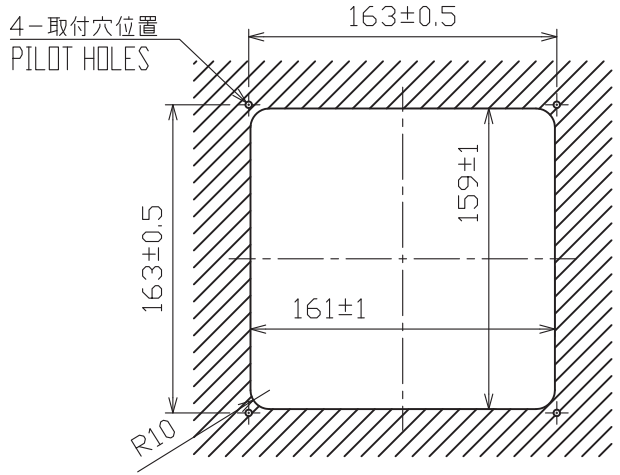
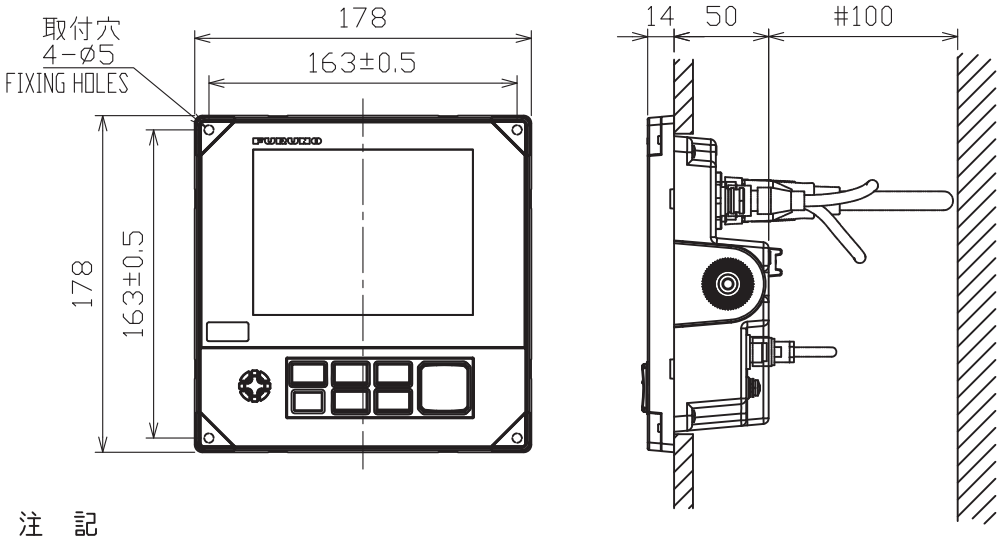
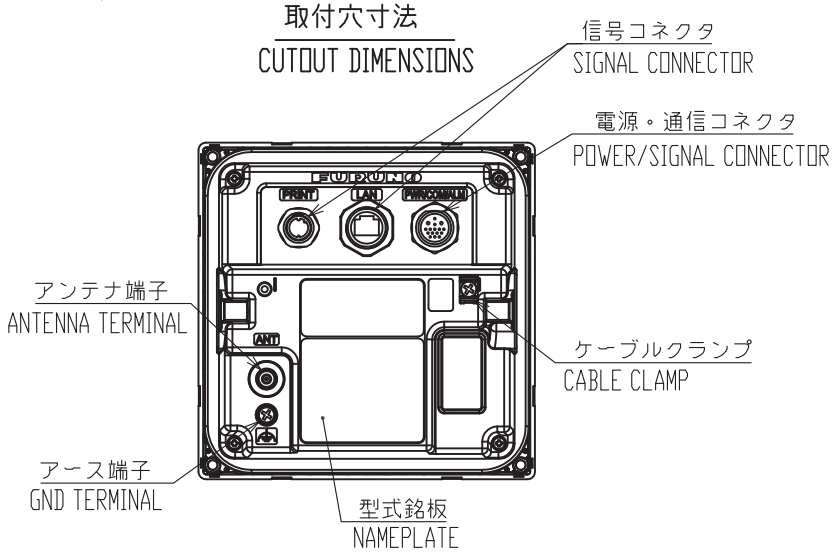


表1 TABLE 1

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



取付穴寸法
CUTOUT DIMENSIONS



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４×２０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 ø4x20 FOR FIXING THE UNIT.

DRAWN 31/Oct/2022 S.HAN		TITLE	NX-900
CHECKED 31/Oct/2022 T.YAMASAKI		名称	本体部（埋込装備）
APPROVED			外寸図
SCALE 1/4	MASS 0.8 ±10% kg	質量はケーブルを含まず。 MASS DOES NOT INCLUDE CABLE.	NAME MAIN UNIT (FLUSH MOUNT)
DWG.No. C5715-G02-A		REF.No. 08-025-251G-1	OUTLINE DRAWING

FURUNO

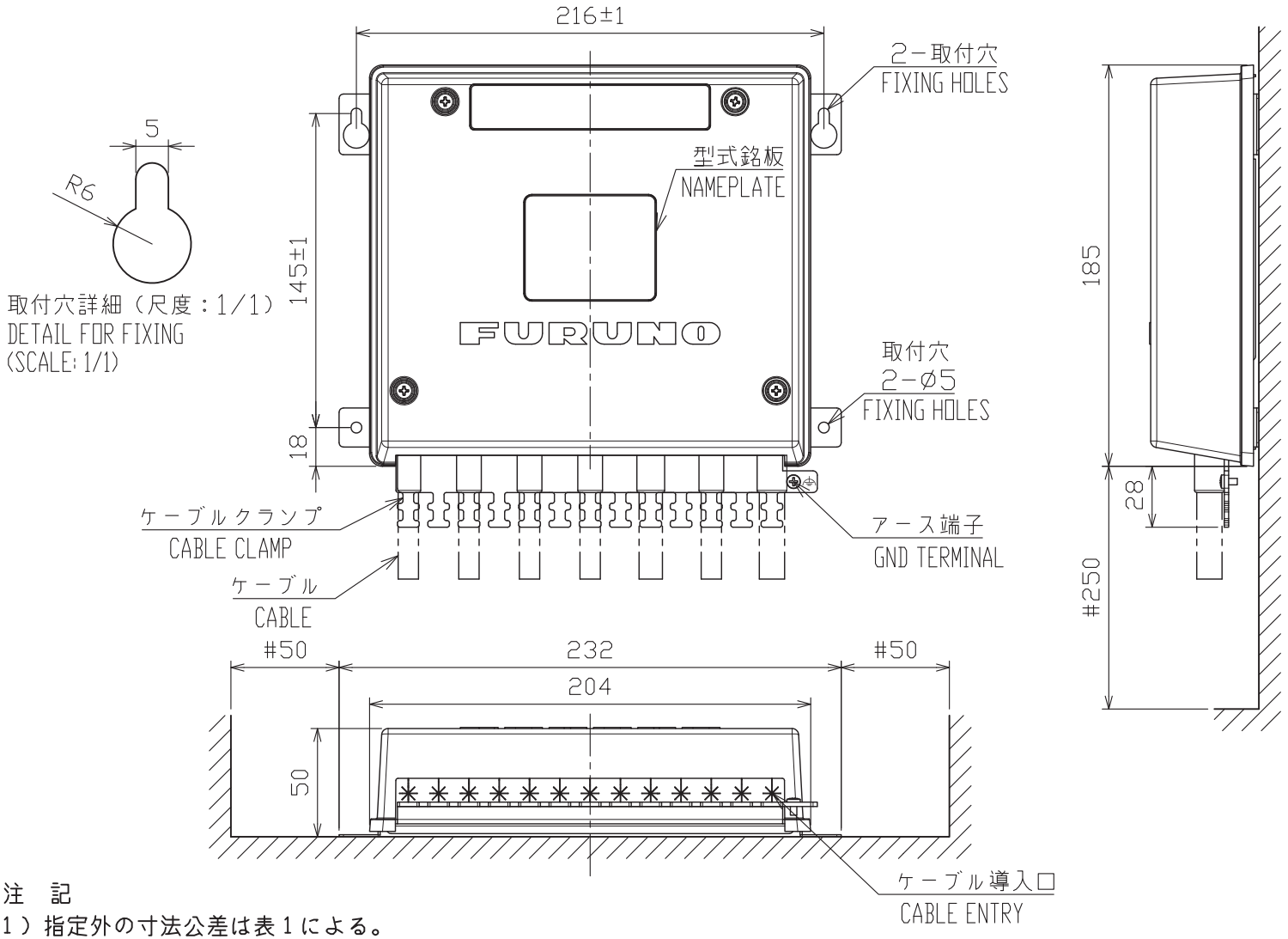


表1 TABLE1

寸法区分（mm） DIMENTION	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＋トラスタッピンネジ呼び径４×１６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 ø4x16 FOR FIXING THE UNIT.

DRAWN 31/Oct/2022 S.HAN			TITLE IF-900
CHECKED 31/Oct/2022 T.YAMASAKI			名称 接続箱（壁掛装備）
APPROVED		NX-900	外寸図
SCALE 1/3	MASS 0.8 ±10% kg	質量はケーブルを含まず。 MASS DOES NOT INCLUDE CABLE.	NAME JUNCTION BOX (BULKHEAD MOUNT)
DWG.No. C5715-G03- A		REF.No. 08-025-450G-0	OUTLINE DRAWING

FURUNO

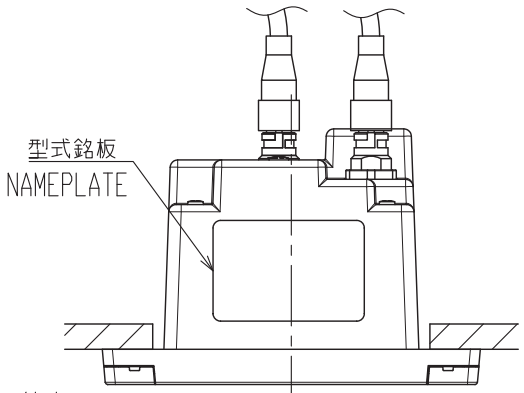
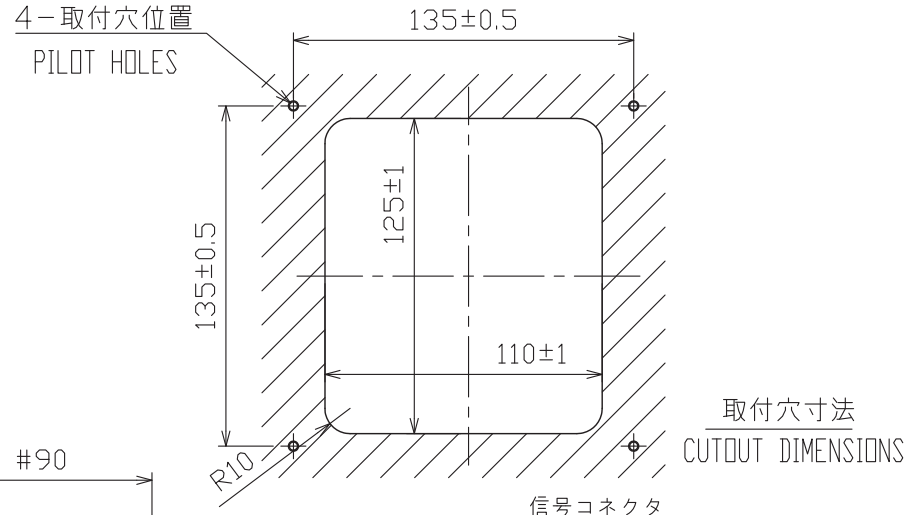
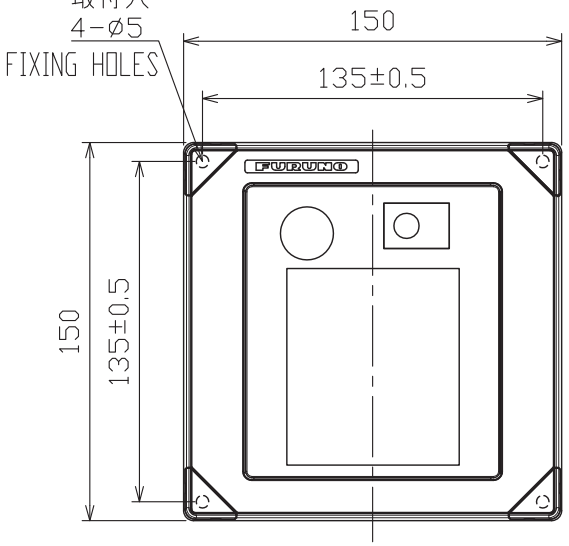


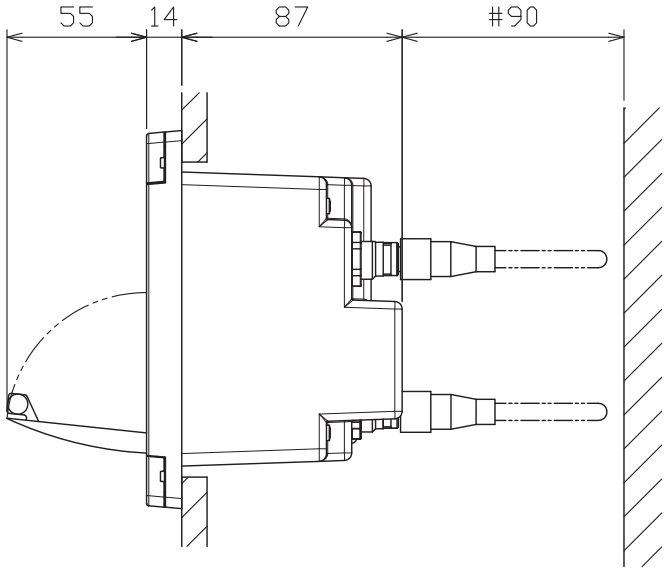
表1　TABLE 1

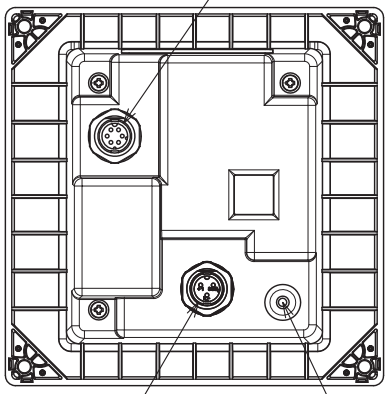
寸法区分（mm） DIMENSION	公差（mm） TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3



取付穴寸法
CUTOUT DIMENSIONS







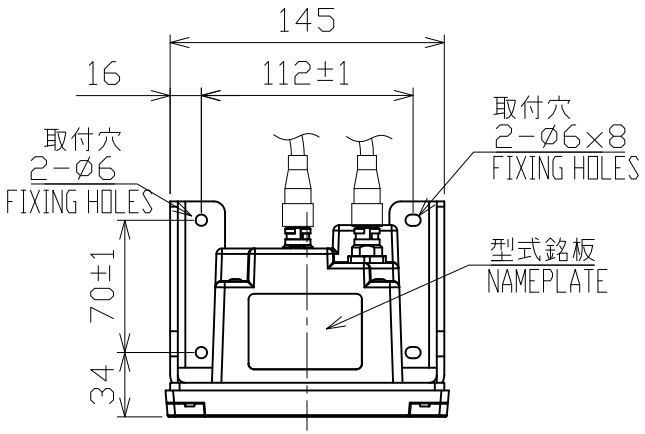
注記
１）指定外の寸法公差は表１による。
２）＃印寸法は最小サービス空間寸法とする。
３）取付用ネジはトラスタッピンネジ呼び径４×２０を使用のこと。

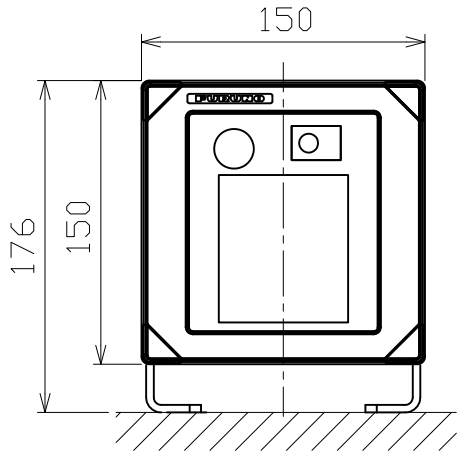
NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS ø4x20 FOR FIXING THE UNIT.

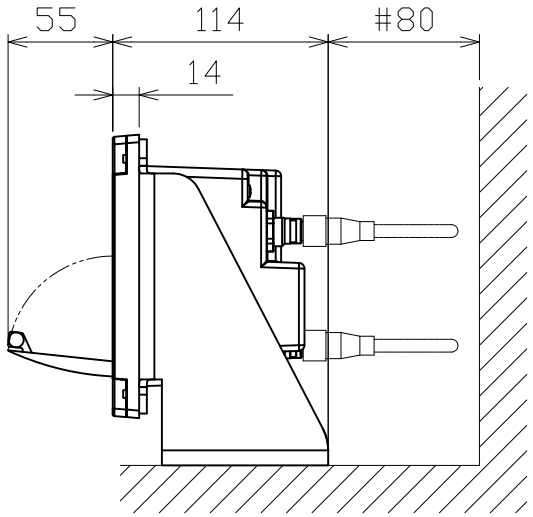
DRAWN 31/Oct/2022 S.HAN			TITLE PP-900
CHECKED 31/Oct/2022 T.YAMASAKI			名称 プリンタ(埋込装備)
APPROVED		NX-900	外寸図
SCALE 1/3	MASS 0.8 ±10% kg	質量はケーブルを含まず。 MASS DOES NOT INCLUDE CABLE.	NAME PRINTER (FLUSH MOUNT)
DWG.No. C5715-G04- A		REF.No. 08-025-551G-1	OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO







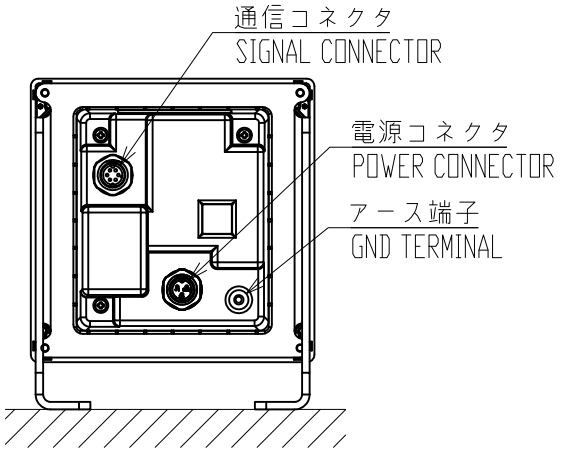


表1 TABLE 1

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+トラスタッピンネジ呼び径5×20を使用のこと。

NOTE

1. TABLE 1 INDICATES OF TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS Ø5x20 FOR FIXING THE UNIT.

DRAWN 12/Dec/2022 T.YAMASAKI		TITLE	PP-900
CHECKED 12/Dec/2022 H.MAKI		名称	プリンタ(卓上装備)
APPROVED			外寸図
SCALE 1/4 MASS 1 ±10% kg	質量はケーブルを含まず。 MASS DOES NOT INCLUDE CABLES.	NAME	PRINTER (TABLETOP MOUNT)
DWG.No. C5715-G07-A	REF.No. 08-025-550G-1		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO

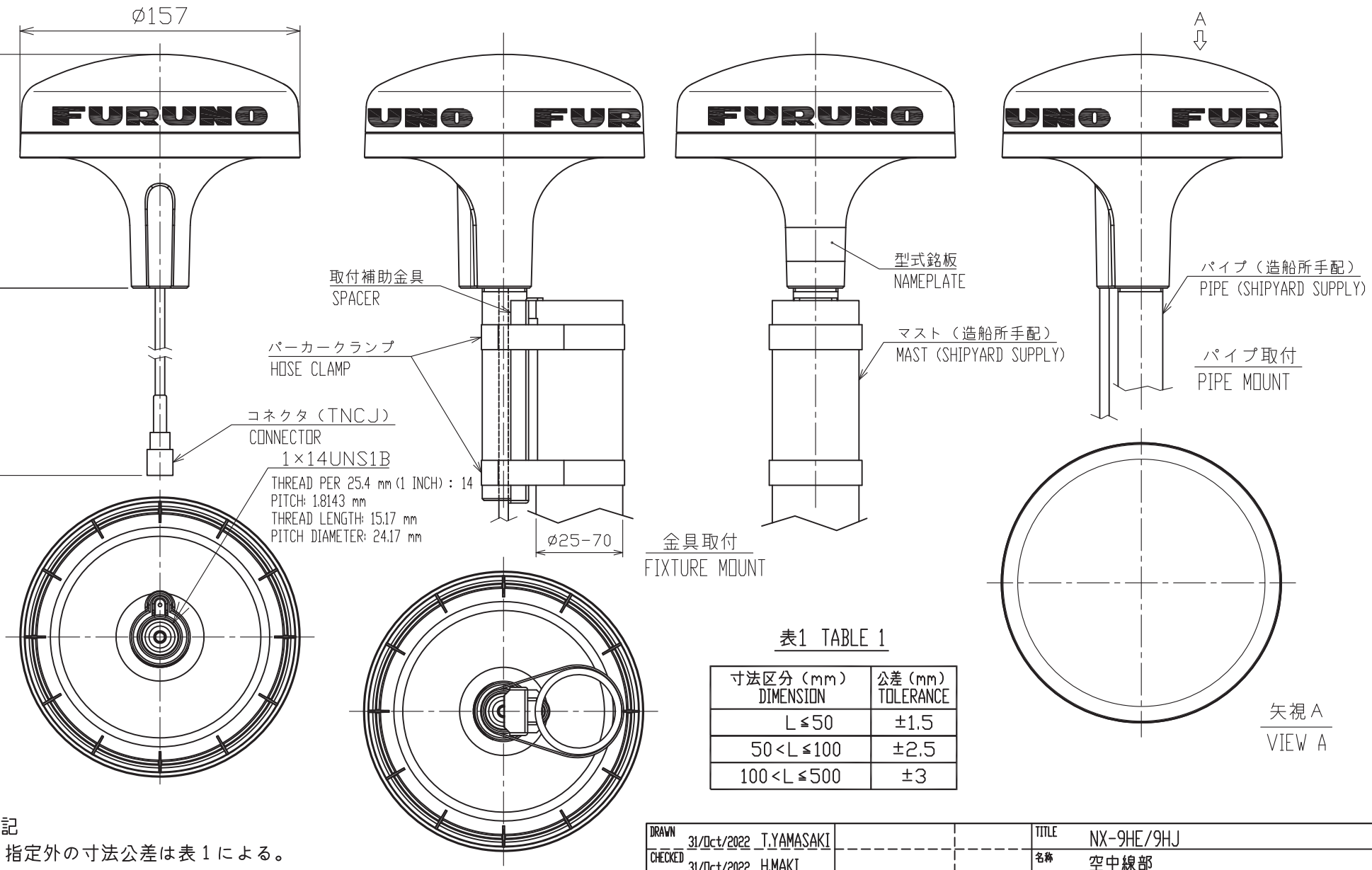


表1 TABLE 1

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。

NOTE

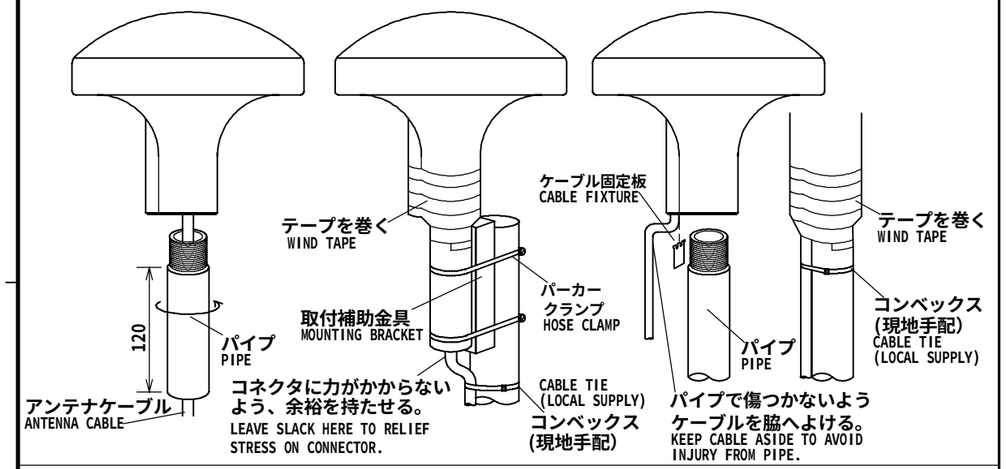
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

DRAWN 31/Oct/2022 T.YAMASAKI		TITLE NX-9HE/9HJ
CHECKED 31/Oct/2022 H.MAKI		名称 空中線部
APPROVED	NX-900	外寸図
SCALE 1/3 MASS 0.48 ±10% kg	質量は工事材料を含まず。 MASS DOES NOT INCLUDE INST. MATERIAL.	NAME ANTENNA UNIT
DWG.No. C5715-G06- A	REF.No. 08-025-350G-0	OUTLINE DRAWING

A)マストへの取付け　MAST MOUNTING

a)マスト取付金具CP20-01111(工事材料)でマストに固定する。
USE MAST MOUNTING KIT CP20-01111.

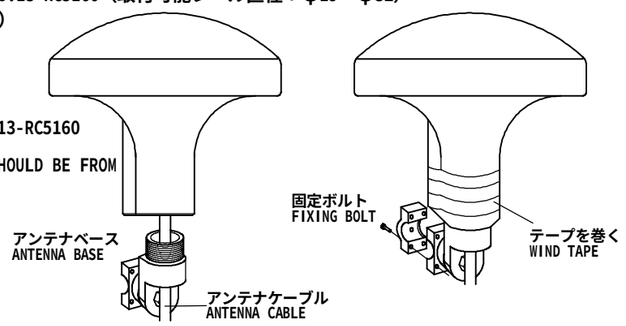
b)パイプのみを使うとき
USE A PIPE ONLY.



B)スタンションやパルピットにつけるとき　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：φ19～φ32）
(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 φ19mm TO φ32mm.

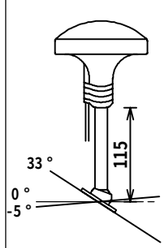
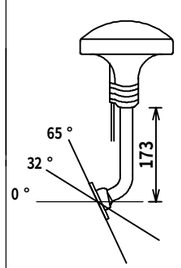
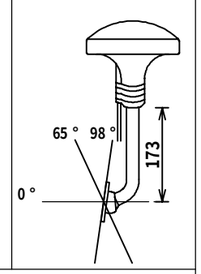


注記 1) パイプ(アンテナベース)はアンテナユニットにねじ込んだ後に固定する。
2) アンテナを固定するときはパイプ（アンテナベース）をアンテナにねじ込むこと。
アンテナ側をねじるとコネクタ部やケーブルに無理がかかり、故障の原因となる。

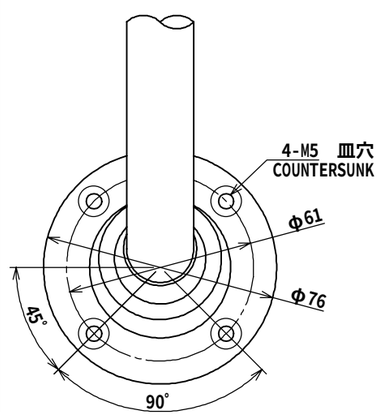
NOTE 1. FASTEN PIPE(ANTENNA BASE) TO ANTENNA UNIT FIRST THEN FIX THEM TO MAST OR HANDRAIL.
2. WHEN FIXING ANTENNA, TURN PIPE OR ANTENNA BASE; NOT THE ANTENNA.
TURNING THE ANTENNA MAY TWIST THE CABLE AND PLACE STRESS ON CONNECTOR.

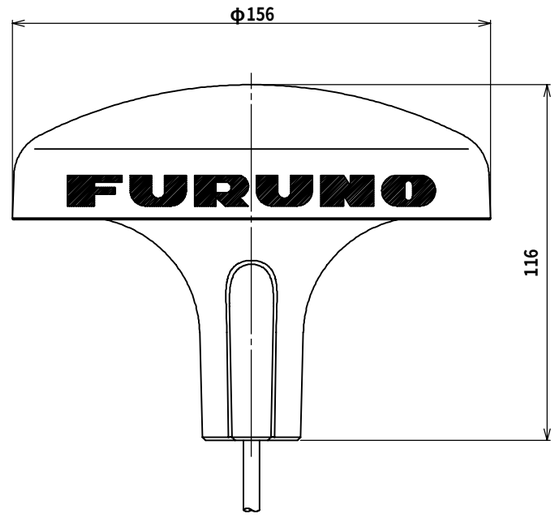
C)取付ける場所が傾斜しているとき　ANTENNA BASE MOUNTING

オプションのアンテナベースを使う。
USE OPTIONAL ANTENNA BASE No.13-QA330/QA310.

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 RIGHT ANGLE ANTENNA BASE No.13-QA330	L型アンテナベース L-TYPE ANTENNA BASE No.13-QA310	
コード番号 CODE No.	000-803-239	000-803-240	

アンテナベース基部
MOUNTING DIMENSIONS OF ANTENNA BASE





1-14UNS1B
ねじ山数(25.4mmにつき)： 14
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

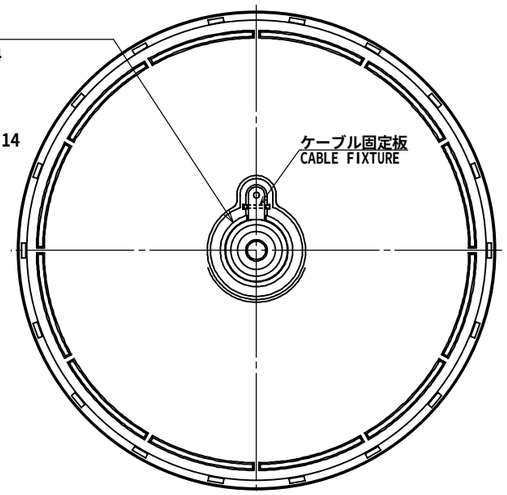


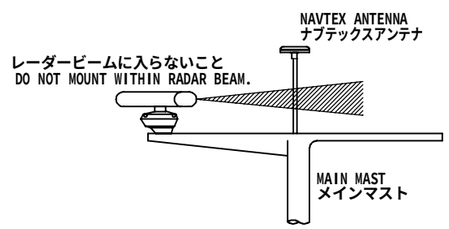
表 1　TABLE 1

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

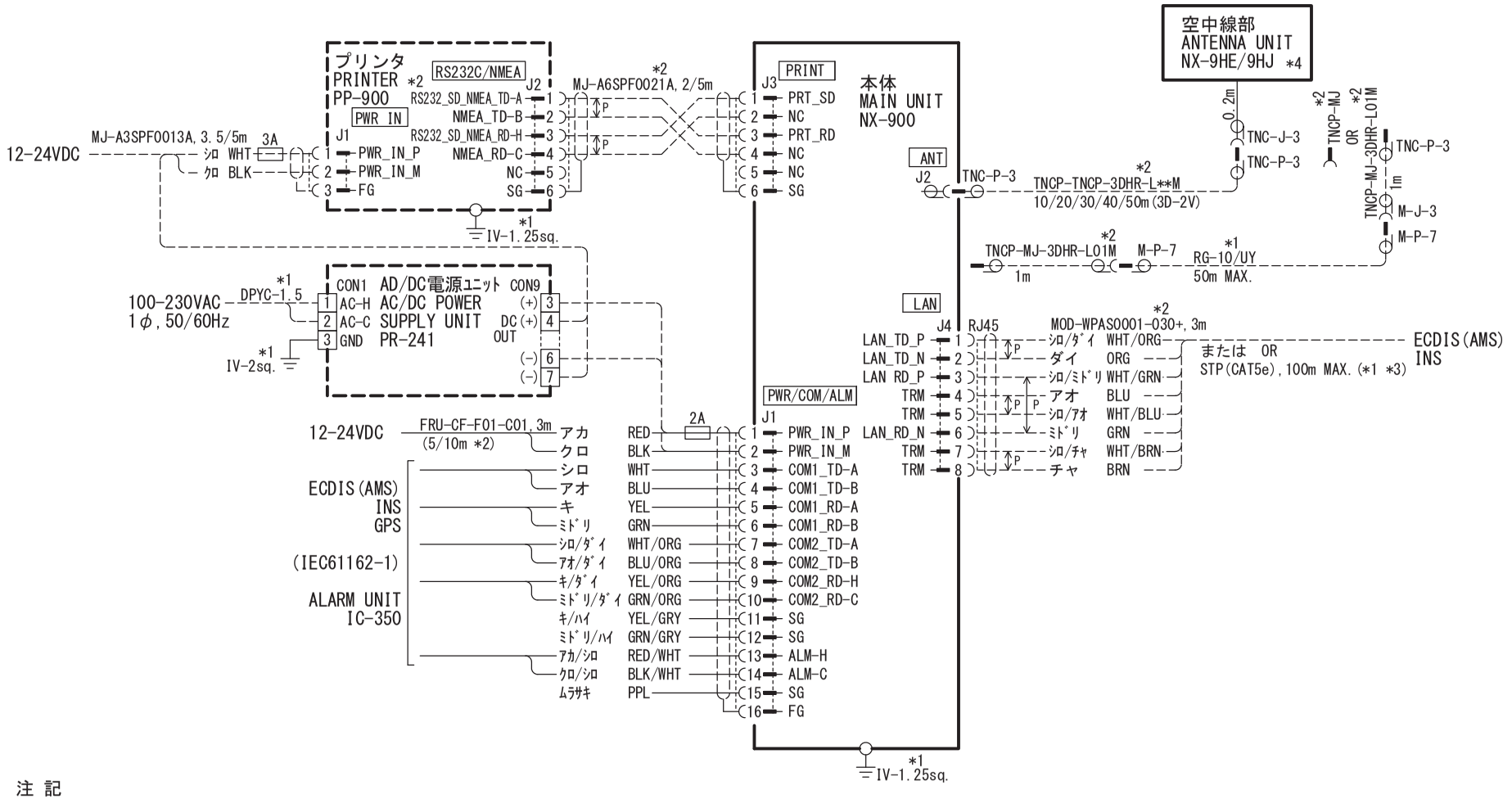
取付位置
MOUNTING LOCATION



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			TITLE NX-3H-D/NX-7H
CHECKED TAKAHASHI.T			名称 空中線部/アンテナ部
APPROVED Y. Hatai		NX-700 NX-300	外寸図
SCALE 1/2	MASS 表2参照 SEE TABLE 2.	質量は10mケーブルを含む。 MASS W/ 10m CABLE.	NAME ANTENNA UNIT
DWG. No. C5629-G05- F		08-021-310G- 1	OUTLINE DRAWING

FURUNO



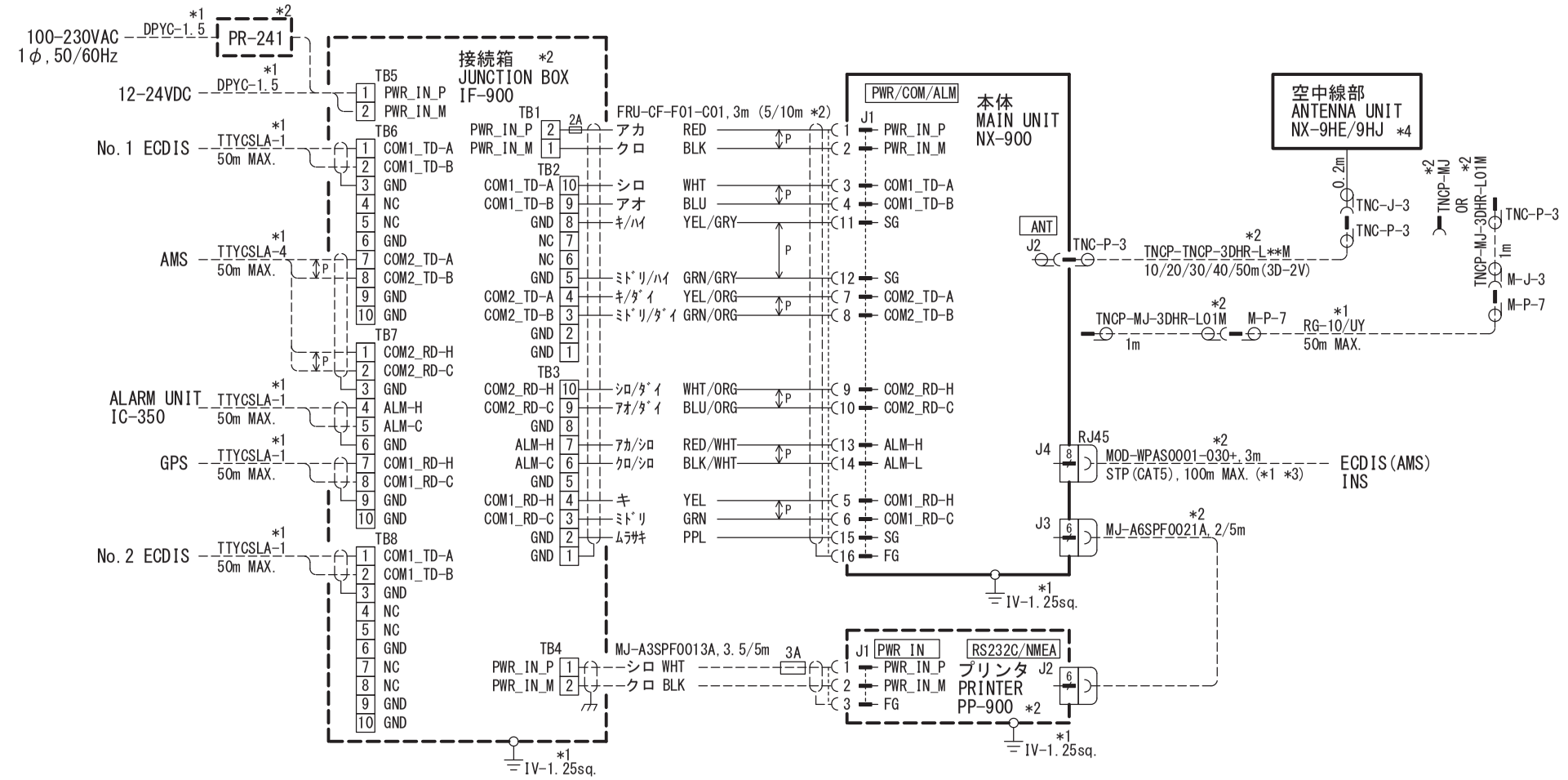
注 記
＊1）造船所手配。
＊2）オプション。
＊3）標準LANケーブル使用時コネクタパネルの防水は無効。
＊4）NX-9HE:国際用、NX-9HJ:日本語用。

NOTE
*1: SHIPYARD SUPPLY.
*2: OPTION.
*3: WATERPROOF AT CONNECTOR PANEL IS INVALID
WHEN A STANDARD LAN CABLE IS USED.
*4: NX-9HE: FOR INTERNATIONAL, NX-9HJ: FOR JAPAN.

DRAWN 24/Nov/2022 S. HAN			TYPE NX-900
CHECKED 24/Nov/2022 T. YAMASAKI			名 称 ナブテックス受信機
APPROVED			相互結線図
SCALE	MASS kg		NAME NAVTEX RECEIVER
DWG. No. C5715-C01- B	REF. No.		INTERCONNECTION DIAGRAM

FURUNO ELECTRIC CO., LTD.

FURUNO



注 記
＊1）造船所手配。
＊2）オプション。
＊3）標準LANケーブル使用時コネクタパネルの防水は無効。
＊4）NX-9HE:国際用、NX-9HJ:日本語用。

NOTE
*1: SHIPYARD SUPPLY.
*2: OPTION.
*3: WATERPROOF AT CONNECTOR PANEL IS INVALID
WHEN A STANDARD LAN CABLE IS USED.
*4: NX-9HE: FOR INTERNATIONAL, NX-9HJ: FOR JAPAN.

DRAWN 5/Jan/2023 T. YAMASAKI			TYPE NX-900 (IF-900)
CHECKED 5/Jan/2023 H. MAKI			名 称 ナブテックス受信機
APPROVED			相互結線図
SCALE	MASS kg		NAME NAVTEX RECEIVER
DWG. No. C5715-C02- B	REF. No.		INTERCONNECTION DIAGRAM

FURUNO ELECTRIC CO., LTD.