

FURUNO

OPERATOR'S MANUAL

INTERFACE UNIT

MODEL IF - 1001



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NISHINOMIYA, JAPAN

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Printed in Japan

(YOSH)

PUB. No. OME-43410
IF-1001

Your Local Agent/Dealer

FIRST EDITION : NOV 1990
L : MAY 31, 1999





SAFETY INSTRUCTIONS

“**DANGER**”, “**WARNING**” and “**CAUTION**” notices appear throughout this manual. It is the responsibility of the operator and the installer of the equipment to read, understand and follow these notices. If you have any questions regarding these safety instructions, please contact a FURUNO agent or dealer.



DANGER

This notice indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

This notice indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

This notice indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury, or property damage.



Safety instruction for the Operator.



WARNING



Do not open the cover of the equipment.

This equipment uses high voltage electricity which can shock, burn, or cause death. Only qualified personnel should work inside the equipment. Do not 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 ship's mains switchboard if water or foreign object falls into the equipment or the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire, electrical shock or serious injury.



CAUTION

Do not place liquid-filled containers on the top of the equipment.

Fire or electrical shock can result if a liquid spills into the equipment.

Do not place heater near the equipment .

Heat can melt the power cord, which can result in fire or electrical shock.

Do not operate the unit with wet hands.



Electrical shock can result.

Use the correct fuse.

Use of a wrong fuse can cause fire or equipment damage.



Safety instruction for the installer.

 WARNING	
	<p>Do not open the cover unless totally familiar with electrical circuits and service manual.</p> <p>High voltage exists inside the equipment, and a residual charge remains in capacitors several minutes after the power is turned off. Improper handling can result in electrical shock.</p>
<p>Turn off the power at the switchboard before beginning the installation.</p> <p>Fire or electrical shock can result if the power is left on.</p>	
<p>Do not install the equipment where it may get wet from rain or water splash.</p> <p>Water in the equipment can result in fire, electrical shock or equipment damage.</p>	
<p>Be sure that the power supply is compatible with the voltage rating of the equipment.</p> <p>Connection of an incorrect power supply can cause fire or equipment damage. The voltage rating of the equipment appears on the label above the power connector.</p>	



 CAUTION	
	<p>Ground the equipment to prevent electrical shock and mutual interference.</p>

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SPECIFICATIONS OF INTERFACE UNIT IF-1001

General

The Furuno IF-1001 Interface Unit converts NMEA0183 format data to CIF format data (Furuno) and vice versa to enable exchange of data between Furuno-make equipment and equipment outputting NMEA0183 format data.

Specifications

Date conversion	CIF to NMEA0183 or NMEA0183 to CIF
I/O Data (CIF to NMEA0183)	Time Present Position (Lat/Long) Range and Bearing to TO WPT from present position Speed and Course Water Temperature Water Depth Current Data (Direction and Velocity of first layer) True and Relative Wind Data (Direction, Velocity)
I/O Data (NMEA0183 to CIF)	Present Position Range and Bearing to TO WPT from present position Speed and Course Water Temperature Water Depth Water Tracking ship Speed True Wind Data
I/O Ports	Input ----- 1 port Output ----- 1 port
I/O Transfer Rate	CIF ----- 4800 baud NMEA0183 --- 4800, 2400, 1200 or 600 baud
I/O Signal Level	CIF ----- Current Loop NMEA0183 --- Current Loop or RS 232C
Power Supply	Regulated 5VDC from RS-232C equipment or 8 to 42VDC from external power supply.
Power Consumption	Less than 1W at regulated 5VDC
Color	2.5GY 5/1.5 Newton No.5

EQUIPMENT LIST

COMPLETE SET

No.	NAME	TYPE	CODE No.	Qty	REMARKS
1	Main Unit	IF-1001	000-041-370	1	
2	Accessories	FP14-01500	000-041-374	1	
3	Installation Materials	CP14-02800	000-041-373	1	
4	Spare Parts	SP14-01620	000-041-372	1	

ACCESSORIES (FP14-01500)

No.	NAME	TYPE	CODE No.	Qty	REMARKS
1	Tapping Screw	4x16 SUS304	000-802-080	4	
2	Fastener	14-042-2011	100-135-380	2	

INSTALLATION MATERIALS (CP14-02800)

No.	NAME	TYPE	CODE No.	Qty	REMARKS
1	Power Cable	22S0019-2	000-109-000	1	
2	Connector	SRCN6A16-10P	000-508-663	2	
3	Short Bar	00-8261-0249-06-807	000-118-700	1	

SPARE PARTS (SP14-01620)

No.	NAME	TYPE	CODE No.	Qty	REMARKS
1	Fuse	FGMB 0.2A	000-121-723	3	

CHAPTER 1 OPERATION

1. OPERATION

In normal operation, nothing is required of the operator. The power to the interface unit is turned on/off with an external power supply or by a device connected to the interface unit.

2. CONVERSION

The CIF data are converted into NMEA0183 data as show in the table below.

CIF DATA		NMEA0183 DATA	
Time		IIZDA GPZDA	*1
Present Position	Decca GPS Loran A Loran C Omega Dead reckoning	DEGLL GPGLL LAGLL LCGLL OMGLL TRGLL	*2
Range & Bearing to TO WPT from Present Position	Decca GPS Loran A Loran C Omega Dead reckoning	DEWPL GPWPL LAWPL LCWPL OMWPL TRWPL	
Speed & Course	Decca GPS Loran A Loran C Omega Dead reckoning	DEV TG GPV TG LAV TG LCV TG OMV TG TRV TG	
Water Temperature		YCMTW	
Water Depth		SDDBT	
Current Data	Current of first layer. Set & Drift Heading and water speed.	VDVCD VDVDR VDVHW	
Wind Data	Relative bearing and velocity. True bearing and velocity.	IIVWR IIVWT	

*1 : Version 1.5 or 2.0 can be changed by dip SW.

*2 : Version 1.5 or 2.0 can be changed by dip SW.

In case of version 2.0,time data output in null field and status data output additionally.

The NMEA0183 data are converted into CIF data as shown in the table below.

NMEA0183 DATA	CIF DATA	
DEGLL GPGLL LAGLL LCGLL OMGLL TRGLL IIGLL (Ver.2.0)	Present Position	Decca GPS Loran A Loran C Omega Dead reckoning Dead reckoning
DEVTG GPVTG LAVTG LCVTG TRVTG	Speed Course	Decca GPS Loran A Loran C Dead reckoning
**MTW	Water Temperature	
**DBS **DBT **DBK	Water Depth Water Depth Water Depth	
**VHW	Current Data	Heading and water speed.
IIVWT	Wind Data	True bearing and velocity.
**ZDA (Ver.2.0)	UTC Time	NOTE: This is converted with **GLL at the same time.
TRRMB IIRMB OMRMB LARMB LCRMB DERMB GPRMB	Navigation calculation by dead reckoning data. Navigation calculation by dead reckoning data. Navigation calculation by omega data. Navigation calculation by Loran A data. Navigation calculation by Loran C data. Navigation calculation by Decca data. Navigation calculation by GPS data.	

NOTE : ** is any talker ID.

3. FUSE REPLACEMENT

To protect the unit from serious damage, a 0.2A fuse is provided on the unit's lone P.C. board. The fuse protects against overvoltage or internal fault of the equipment. If the fuse blows, find the cause of the problem before replacing it.

CAUTION

Do not use a fuse rated more than 0.2A, since it may cause more serious damage to the equipment.

4. SELF TEST

The IF-1001 employs self tests to check it for proper operation.

1) Automatic self test

A simple check of the equipment is done each time the power is turned on.

Items Tested

ROM Test
RAM Test
SIO Test (CPU Loop back test)

RESULT OF THE SELF TEST

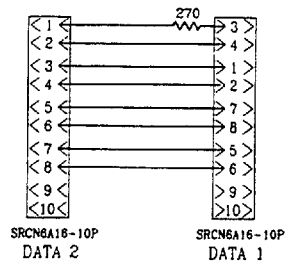
Normal.....CR17 blinks every second.
Abnormal...CR17 blinks every 0.5 seconds.

If this test shows abnormal operation, perform the test described below to identify the defective device.

2) Self test triggered by DIP SW1-8

This test identifies defective devices, and requires an external loop. Connect it as shown below. (Without the loop SIO cannot be tested.)

EXTERNAL LOOP



Items Tested

ROM Test
RAM Test
SIO Test (CPU loop back test)
 (Current loop data input output test)
 (RS-232C data input output test)

RESULT OF THE SELF TEST

Error is shown by the status of LEDs CR14 to CR16.

CR14 ON Defective ROM
CR15 ON Defective RAM
CR16 ON or BLINK Error in SIO test
ON CPU loop back error.
Blinks every second Current loop data input output error.
Blinks every 0.5 seconds RS-232C data input output error.

5. LED STATUS

LED	STATUS
CR 9	Lights when power is supplied
CR10	Lights when sending NMEA0183 data
CR11	Lights when receiving NMEA0183 data
CR12	Lights when sending CIF data
CR13	Lights when receiving CIF data
CR14	Lights when data is not received for more than 60 seconds.
CR15	Lights when data format does not agree with the DIP switch setting for more than 60 seconds.
CR16	NOT USED
CR17	Flickers every second. Blinks every 0.5 seconds when the self test detects an error.

CHAPTER 2 INSTALLATION

1. INSTALLATION

1) General notes on installation

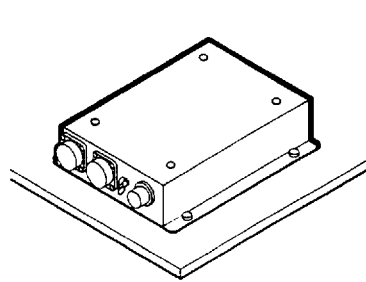
This equipment provides its intended function only when it is installed properly. The installation site is important for proper operation and continued performance. Select it keeping the following points in mind.

- (1) Keep away from water spray.
- (2) Select a clean and cool place.
- (3) Select a place where shock, vibration and noise are minimal.

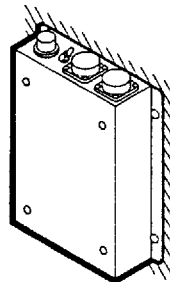
NOTE

FURUNO will assume no responsibility for the damage caused by water spray.

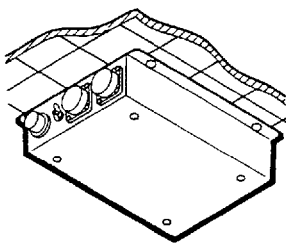
2) Mounting the unit



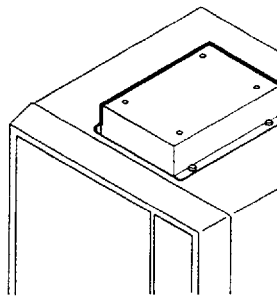
TABLETOP



BULKHEAD

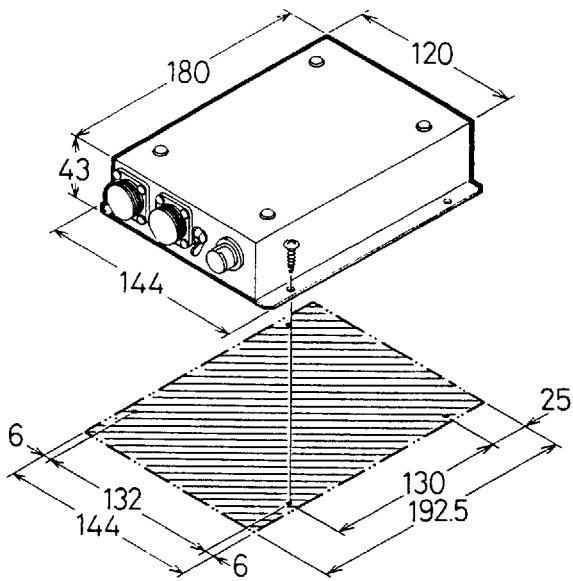


OVERHEAD



ON A DISPLAY UNIT

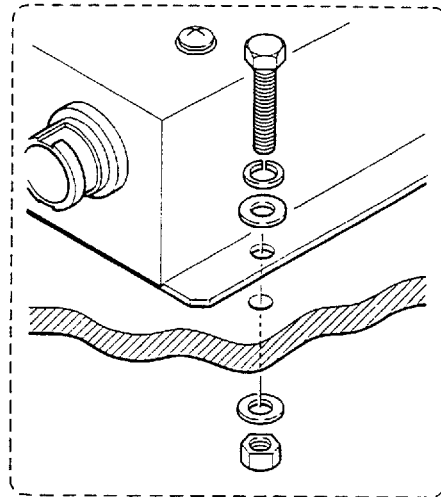
3) Mounting dimensions



All dimensions in millimeters.

For thin walls, use nuts, bolts and washers instead of woodscrews.

Secure sufficient space around the unit for maintenance and checking.



4) Mounting procedure

Mounting on the overhead, on a table or on the wall

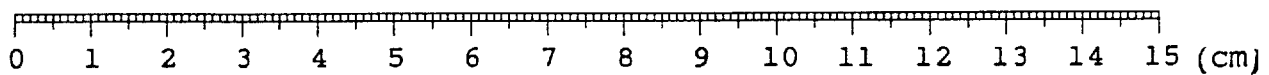
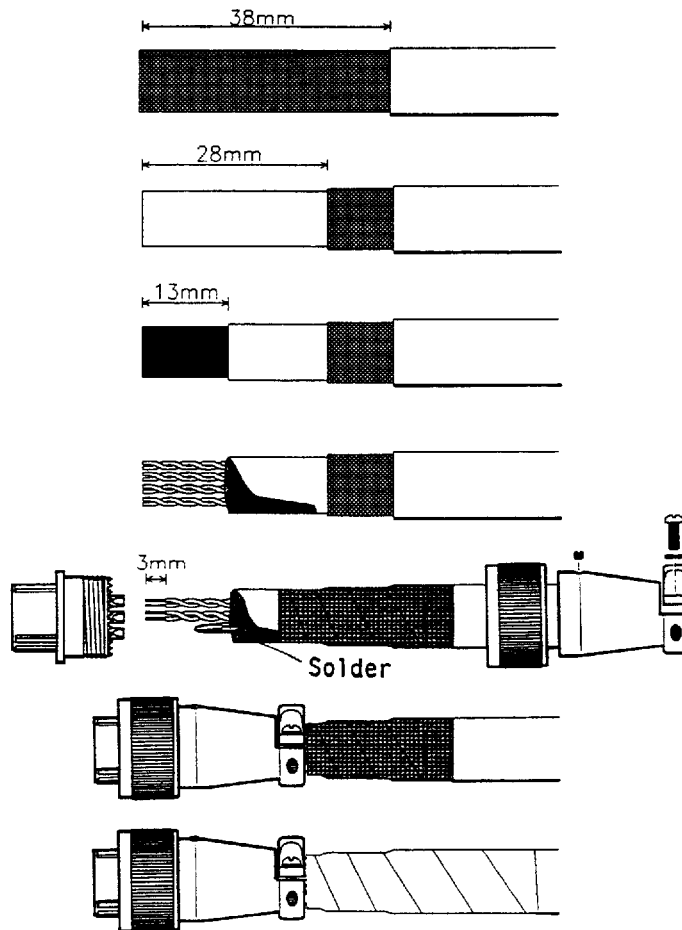
- (1) Drill pilot holes.
- (2) Fix the unit with tapping screws (supplied).
For thin walls, use bolts and nuts instead of the tapping screws.

Mounting on a display

- (1) Wipe off dust or dirt on the display. Fix the unit to the display with fasteners (supplied).

2. CABLE FABRICATION

- (1) Remove the outer sheath by 38 mm.
- (2) Remove the armor by 28 mm.
- (3) Remove the sheath by 13 mm.
- (4) Separate the cores from the braided shield.
- (5) Fold back the shield.
- (6) Remove the insulation of the cores by 3 mm. Cut and solder unused cores to the shield.
- (7) Dress the shield and the outer sheath with EMI tape.
- (8) Solder the cores to the pin and assemble the connector.
- (9) Clamp the EMI tape with connector clamp.
- (10) Dress the end of EMI tape with vinyl tape.



3. POWER SUPPLY

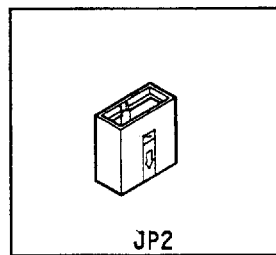
Supply the power to either of the following connectors.

- 1) POWER connector
- 2) DATA 1 connector
- 3) DATA 2 connector

Connector	Voltage	Jumper Setting
Power Supply DATA 1 DATA 2	8VDC to 42VDC 5VDC regulated 5VDC regulated	Figure 1, Figure 2 Figure 3 Figure 4

Change the jumper block on JP2 according the connector as tabulated.

Jumper Block



8 to 18VDC

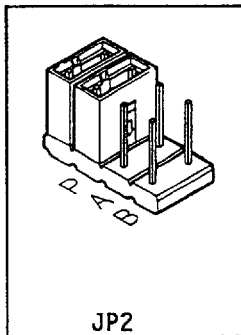


Figure 1

18 to 42VDC

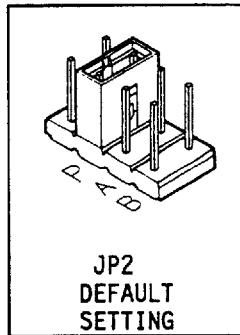


Figure 2

DATA 1 Connector

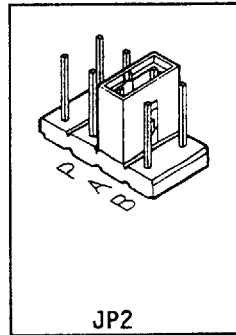


Figure 3

DATA 2 Connector

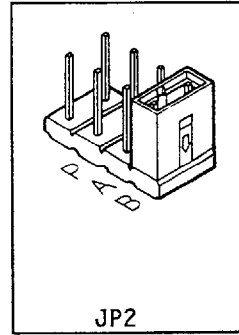


Figure 4

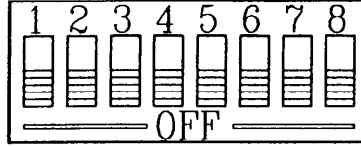
4. GROUNDING

Ground the unit with a copper strap to prevent interference to nearby equipment.

5. DIP SWITCH SETTING

1) Default setting

DIP switch S1 provides the specifications tabulated below. The default setting for each segment is OFF.



Input data CIF
Output data NMEA0183

2) Function of DIP switches

Segment	Function	Setting
SW1-1	Select input/output signal	SW1-1
	Input NMEA0183/ Output CIF Input CIF/ Output NMEA0183	ON OFF
SW1-2	"OFF"	
SW1-3	Signal level of NMEA0183 input.	SW1-3
	Current loop RS232-C level	OFF ON
SW1-4	Output NMEA0183 Ver.2.0(only GLL,ZDA)	ON
	Output NMEA0183 Ver.1.5(only GLL,ZDA)	OFF
SW1-5	"OFF"	
SW1-6,1-7 (SW1-1:ON)	Change talker name (*1)	SW1-6 SW1-7
	No change	OFF OFF
	Change from GP to LC	OFF ON
	Change from GP to LA	ON OFF
	Change from GP to DR	OFF OFF
	NMEA → CIF	
SW1-8	Self test	SW1-8
	Self test at power on	ON OFF (for normal operation)
SW1-6 (SW1-1:OFF)	Change from UTC time to GPZDA Change from UTC time to IIZDA	ON OFF
	CIF → NMEA	

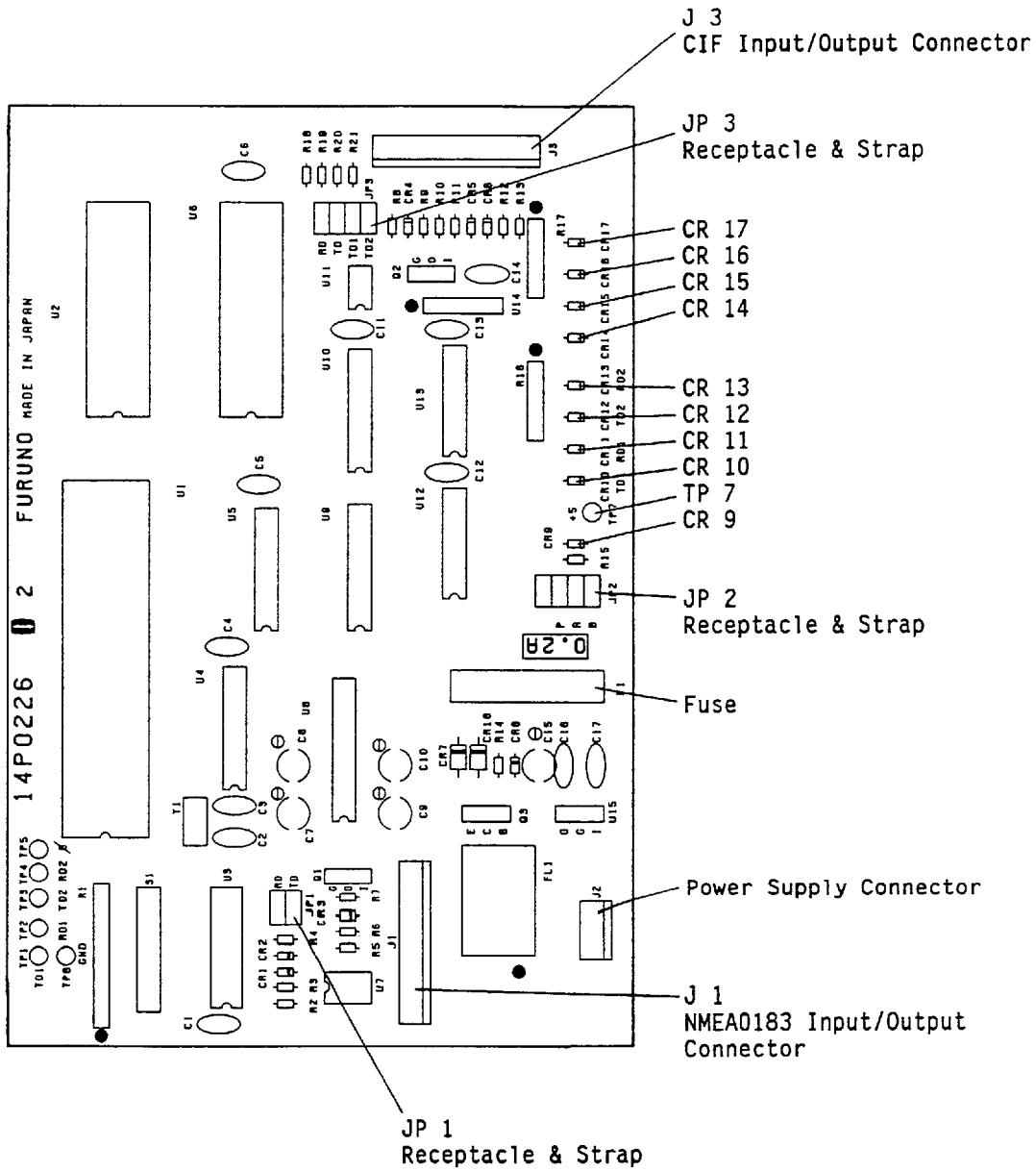
NOTE 1: Changcable only when inputting NMEA0183* with the talker name "GP".

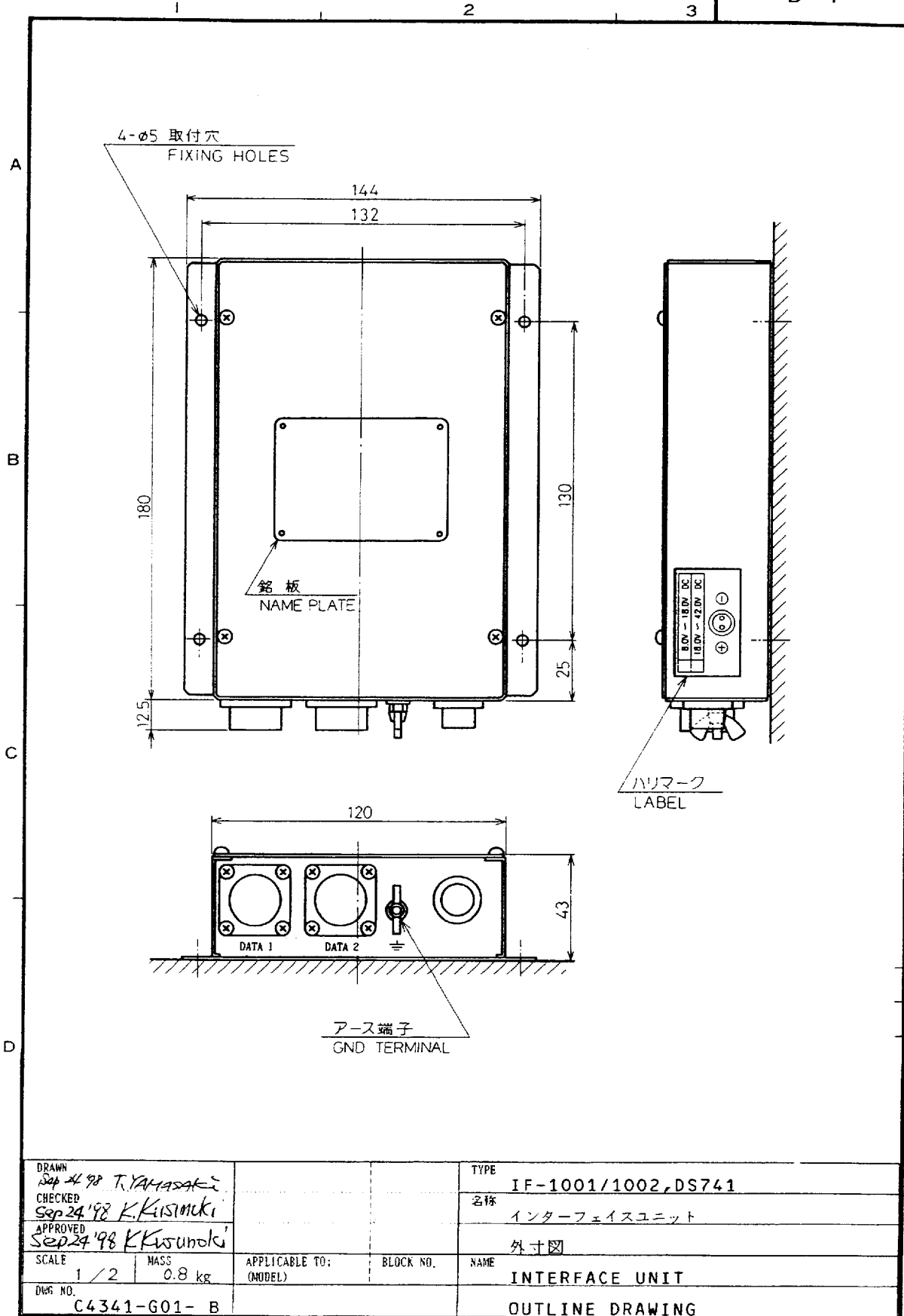
*NMEA0183 data ----- GPGLL, GPRMB, GPVTG

6. JUMPER WIRES

There are 2 more jumper wires JP1 and JP 3 but do not change them from default settings.

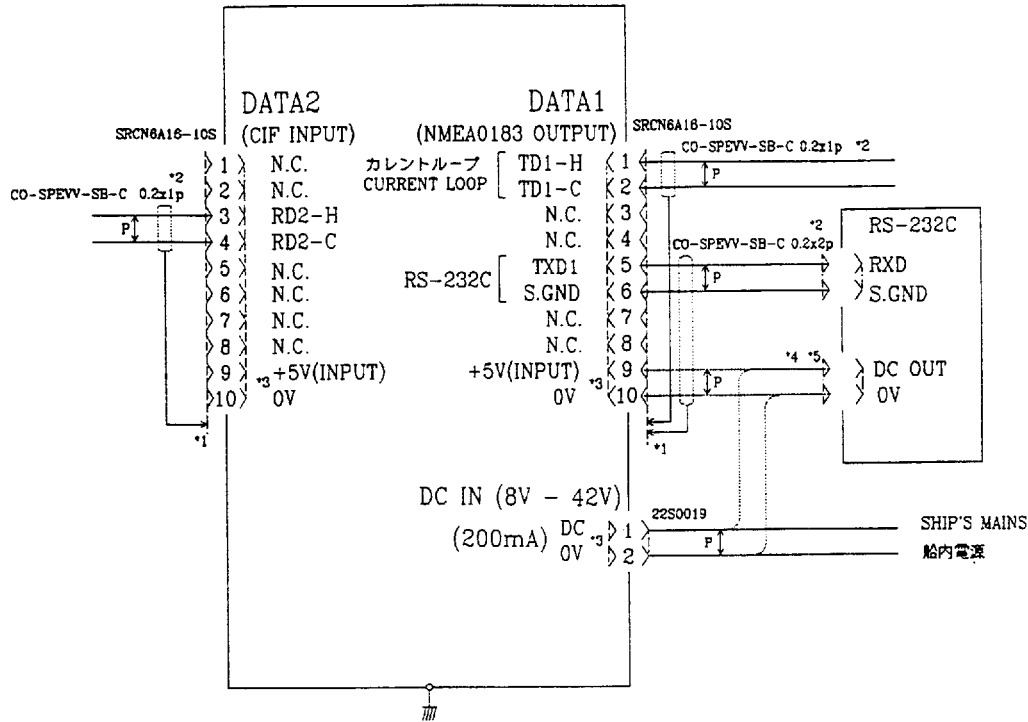
CHAPTER 3 PARTS LOCATION





INTERFACE UNIT インターフェイス ユニット IF-1001

CIF → NMEA0183(CURRENT LOOP)
CIF → NMEA0183(RS-232C)



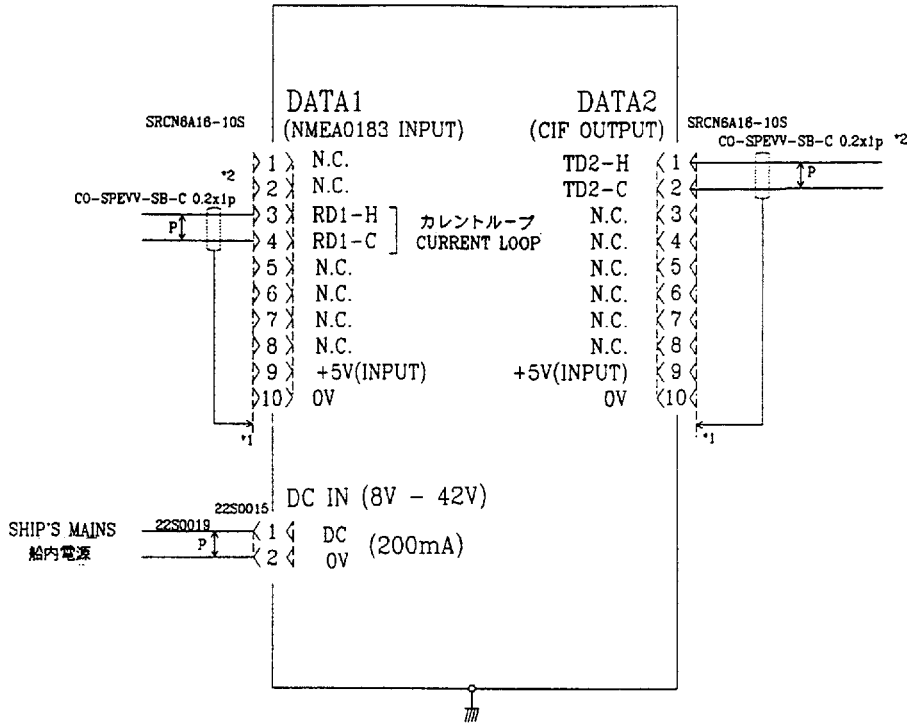
- NOTE 1 : Ground to the chassis with connector clamp.
 2 : Max. 10m.
 3 : Choose the power supply between 5VDC and 8-42VDC.
 4 : While operating in RS-232C level, supply the power from RS-232C equipment.
 5 : Supply only regulated 5VDC to pin 9 and 10. Other voltages to DC IN terminal.
 6 : Change jumper block setting according to the supplied power.

- 注1 : コネクタのクランプでアースに落とす。
 2 : 最大10m。
 3 : 電源は、船内電源または、RS-232C 機器のいずれかより供給。
 4 : RS-232C 機器を接続するときは、その機器から電源を供給すること。
 5 : 5Vの安定化電源の場合は、9番10番に印加する。その他の場合は、DC IN 端子に接続。
 6 : 供給する電源電圧により内部のジャンパー線の接続を変更。

CIF → NMEA	品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS
承認 APPROVED	Nov. 9 '90 T. NAKANO	三角法 THIRD ANGLE PROJECTION	名称 TITLE			相互結線図
検図 CHECKED	Nov. 1 '90 N. SAITO	尺度 SCALE				IF-1001 INTERCONNECTION DIAGRAM
製図 DRAWN	Oct. 31 '90 S. Nishik	重量 WEIGHT	kg		図番 DWG.NO.	C4341-C04-B

INTERFACE UNIT インターフェイス ユニット IF-1001

NMEA0183(CURRENT LOOP) → CIF



NOTE 1 : Ground to the chassis with connector clamp.

2 : Max. 10m.

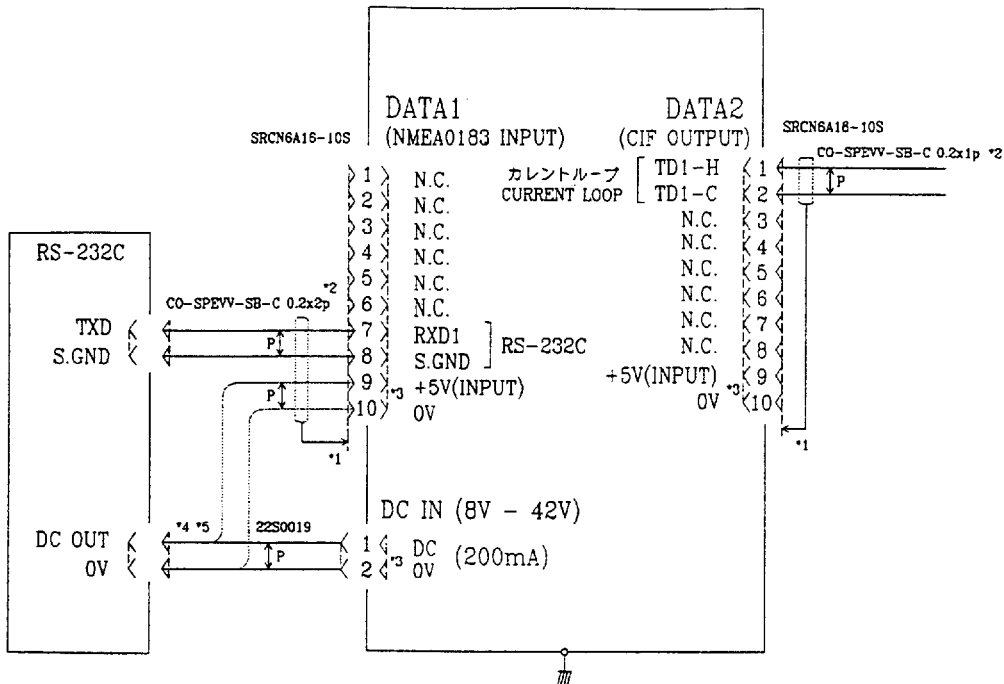
注1 : コネクタのクランプでアースに落とす。

2 : 最大10m。

NMEA (C.L.) → CIF		品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG. NO.	摘要 REMARKS
承認 APPROVED	NOV. 9. '90 T. LAKAWA	三角法 THIRD ANGLE PROJECTION		名称 TITLE		相互結線図 INTERCONNECTION DIAGRAM	
検図 CHECKED	NOV. 1. '90 N. SAITO	尺度 SCALE	/	IF-1001			
製図 DRAWN	Oct. 31. '90 S. NISHI	重量 WEIGHT	kg	図番 DWG. NO.		C4341-C05-B	

INTERFACE UNIT インターフェイス ユニット IF-1001

NMEA0183(RS-232C) → CIF



- NOTE 1 : Ground to the chassis with connector clamp.
 2 : Max. 10m.
 3 : While operating in RS-232C level, supply the power from RS-232C equipment.
 4 : Supply only regulated 5VDC to pin 9 and 10. Other voltages to DC IN terminal.
 5 : Change jumper block setting according to the supplied power.

- 注1 : コネクタのクランプでアースに落とす。
 2 : 最大10m。
 3 : RS-232C 機器を接続するときは、その機器から電源を供給すること。
 4 : 5Vの安定化電源の場合は、9番10番に印加する。その他の場合は、DC IN 端子に接続。
 5 : 供給する電源電圧により内部のジャンパー線の接続を変更。

NMEA (RS232C) → CIF		品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG. NO.	摘要 REMARKS
承認 APPROVED	NOV. 9 '90 T. KAKAZU	三角法 THIRD ANGLE PROJECTION		名称 TITLE 相互結線図			
検図 CHECKED	NOV. 1 '90 N. SAITO	尺 SCALE	/	IF-1001 INTERCONNECTION DIAGRAM			
製図 DRAWN	OCT. 31 '90 S. Nishi	重量 WEIGHT	kg	図番 DWG. NO. C4341-C06-C			