

FURUNO

OPERATOR'S MANUAL

INTERFACE UNIT

MODEL IF - 2000



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SAFETY INSTRUCTIONS

"DANGER", "WARNING" and "CAUTION" notices appear throughout this manual. It is the responsibility of the operator 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.

The level of risk appearing in the notices is defined as follows:



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.

 **WARNING**



Do not open the equipment.

Hazardous voltage which can cause electrical shock, burn or serious injury exists inside 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.

Turn off the power immediately if water leaks into the equipment or the equipment is emitting smoke or fire.

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

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 operate the equipment with wet hands.

Electrical shock can result.

Keep heater away from equipment.

Heat can alter equipment shape and melt the power cord, which can cause fire or electrical shock.

 **CAUTION**

Use the proper fuse.

Use of a wrong fuse can result in fire or permanent equipment damage.

Do not use the equipment for other than its intended purpose.

Personal injury can result if the equipment is used as a chair or stepping stool, for example.

Do not place objects on the top of the equipment.

The equipment can overheat or personal injury can result if the object falls.

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SPECIFICATIONS OF INTERFACE UNIT IF-2000

General

The FURUNO IF-2000 interface unit distributes CIF data, AD-10S format GYRO data and contact closure LOG signal. Two CIF inputs are combined into one line then distributed to three outputs. One GYRO input to three outputs and one LOG input to three outputs.

Specifications

- | | |
|----------------------|---|
| 1. Input Ports | CIF --- 2 ports GYRO -- 1 ports (AD-10S Format) LOG --- 1 port (Contact Closure Signal) |
| 2. Output Ports | CIF --- 3 ports GYRO -- 3 ports LOG --- 3 ports |
| 3. Power Supply | 8VDC to 42VDC |
| 4. Power Consumption | 0.1 A (8VDC to 42VDC) |
| 5. Dimensions | 230 (W) x 50 (H) x 188 (D) (mm) |
| 6. Weight | 1.5 kg |
| 7. Color | 2.5G5/1.5 Newton No.5 |

EQUIPMENT LIST

COMPLETE SET

| No. | NAME | TYPE | CODE No. | Qty | REMARKS |
|-----|------------------------|------------|-------------|-----|---------|
| 1 | Main Unit | IF-2000 | 000-041-376 | 1 | |
| 2 | Installation Materials | CP14-03500 | 000-041-377 | 1 | |
| 3 | Spare Parts | SP14-01100 | 000-043-093 | 1 | |

INSTALLATION MATERIALS (CP14-03500)

| No. | NAME | TYPE | CODE No. | Qty | REMARKS |
|-----|--------------------|--------------|-------------|-----|---------|
| 1 | Tapping Screw | 4x16 SUS304 | 000-802-080 | 4 | |
| 2 | NH Connector Assy. | 14-273 (3P) | 004-397-570 | 5 | |
| 3 | NH Connector Assy. | 14-274 (4P) | 004-397-580 | 4 | |
| 4 | NH Connector Assy. | 14-275 (5P) | 004-397-590 | 4 | |
| 5 | VH Connector Assy. | 14-276 (2P) | 004-397-600 | 1 | |
| 6 | Heat Shrink Tube F | 3x0.25 1m | 000-568-172 | 1 | Black |
| 7 | Heat Shrink Tube F | 10x0.25 0.5m | 000-123-379 | 1 | Black |
| 8 | Sticker | 14-042-3101 | 100-146-940 | 1 | |

SPARE PARTS (SP14-01100)

| No. | NAME | TYPE | CODE No. | Qty | REMARKS |
|-----|------|----------------|-------------|-----|---------|
| 1 | Fuse | FGMB 0.5A 125V | 000-114-994 | 3 | |

CHAPTER 1 OPERATION

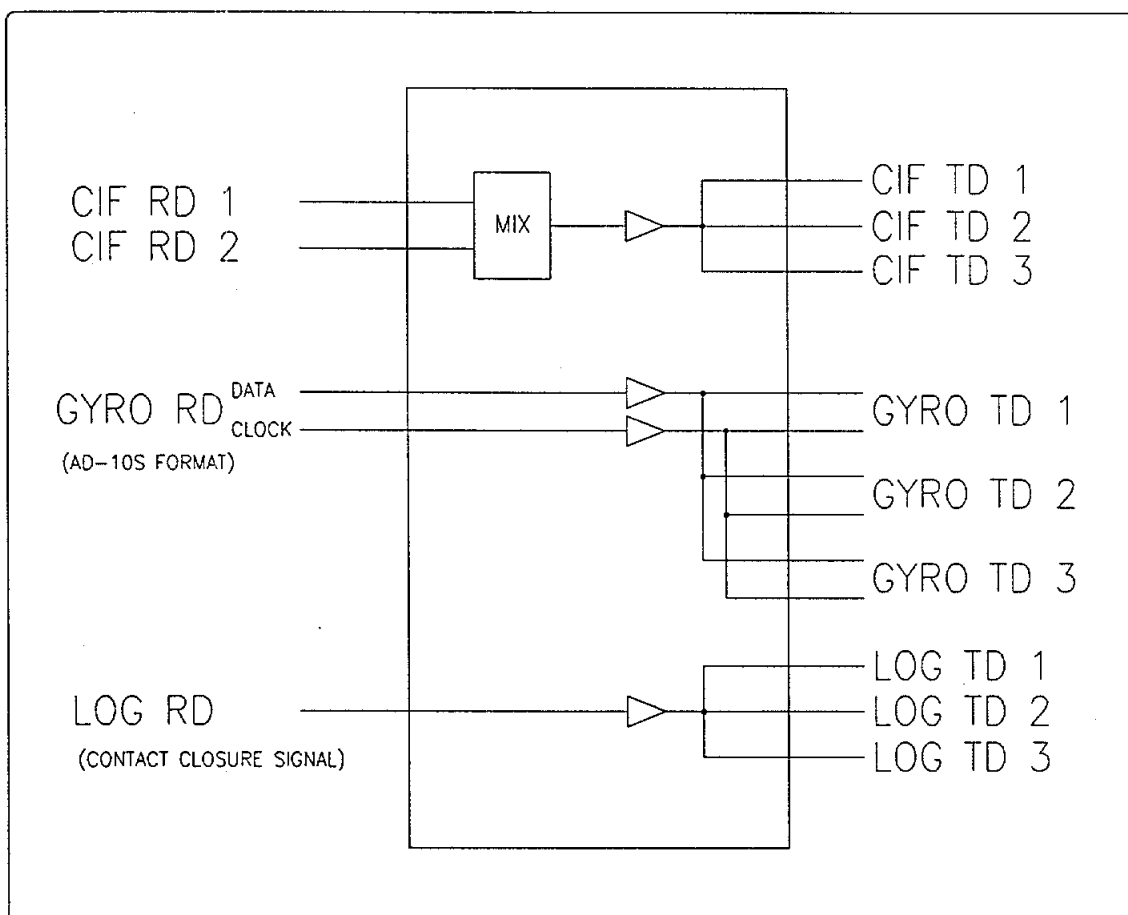
1. OPERATION

In normal operation, nothing is required of the operator, because the power to the interface unit is turned on/off with an external power supply.

2. DATA INPUT AND OUTPUT

1) Data distribution

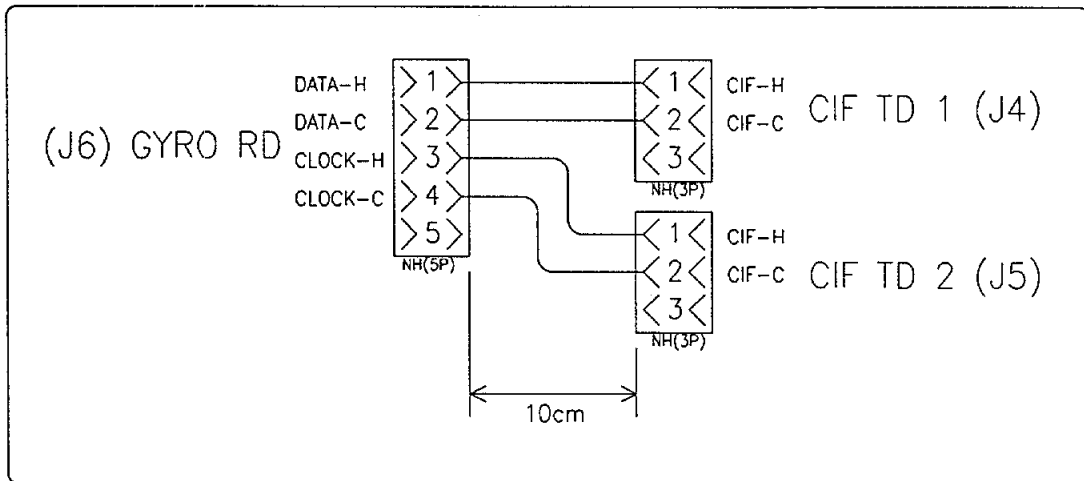
| DATA | INPUT | OUTPUT |
|----------------------------|-------|--------|
| CIF data | 2 | 3 |
| GYRO data in AD-10S format | 1 | 3 |
| LOG contact closure signal | 1 | 3 |



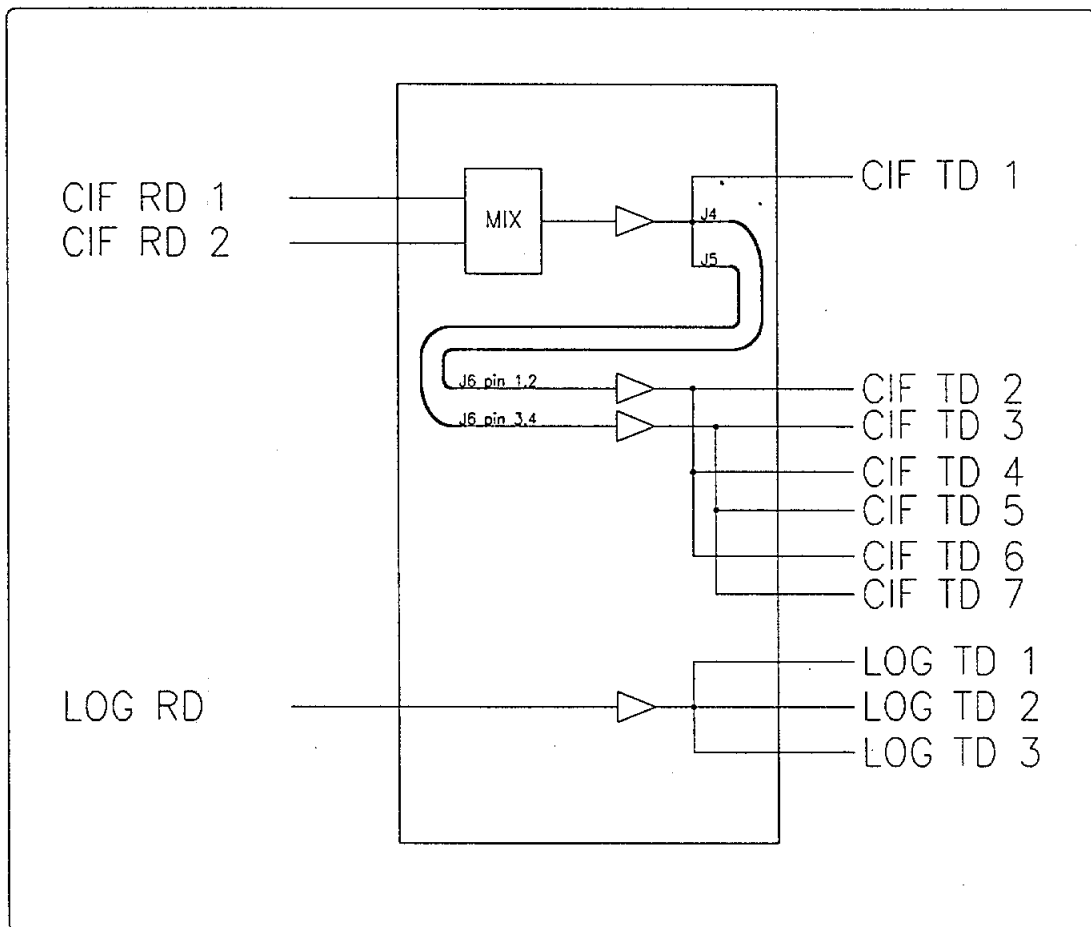
2) 7 CIF outputs

Seven CIF output ports are available by using GYRO distributor as CIF data distributor. See the second figure below.

Locally prepare the jumper cables shown below, then change the internal connections as shown by bold lines in the figure. One CIF output to GYRO data input and the other CIF output to GYRO clock input.



JUMPER WIRE



CHANGE THE INTERNAL CONNECTION FOR SEVEN CIF OUTPUTS

3) LOG input

If the input LOG signal is interfered with noise, change the pulse width setting of the LOG contact closure signal, by jumpers JP3 and JP4. The input pulse width must be wider than the value in the table. The width of the output pulse is fixed at 150 msec.

| JP3 | JP4 | PULSE WIDTH | REMARKS |
|-------|-------|----------------|-----------------|
| OPEN | OPEN | about 1 msec | Factory setting |
| SHORT | OPEN | about 12 msec | |
| SHORT | SHORT | about 125 msec | |

The values in the table are approximate and vary according to device connected. Check the LOG contact closure signal output at pins 1 and 2 of J11 or J12 or J13 after changing the input pulse width setting. If no output, lower the pulse width.

3. FUSE REPLACEMENT

To protect the unit from serious damage, a 0.5A 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 0.5A, since it may cause more serious damage to the equipment.

4. SELF TEST

The IF-2000 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.

Sequence

- (1) LEDs CR13 to CR16 each light every two seconds twice then turn off.
- (2) The items below are tested.

Items Tested

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

- (3) LED CR13 blinks every second for normal operation.

RESULT OF THE SELF TEST

Error is shown by the status of LEDs CR13 to CR16.

| LED | STATUS | RESULTS |
|------|---|--|
| CR13 | Blinks every second. Blinks every 0.5 seconds. | No error. Error detected (See below). |
| CR14 | ON | SIO (CPU loop back) error. |
| CR15 | ON | Defective RAM. |
| CR16 | ON | Defective ROM. |

Remedy

Replace the P.C. board.

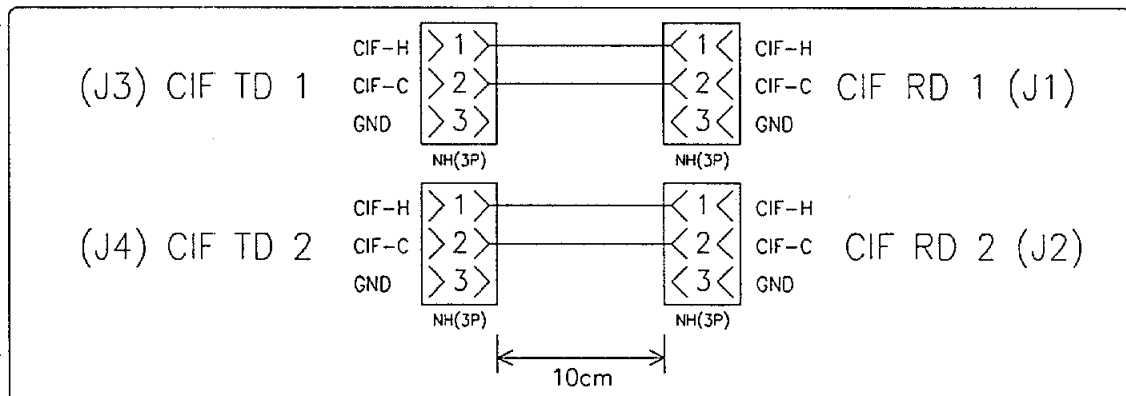
| NAME | TYPE | CODE No. | Qty |
|-----------|---------|-------------|-----|
| CPU Board | 14P0231 | 004-397-680 | 1 |

2) Self test triggered by JP2

Plug in jumper block JP2 before turning on the equipment.

This test checks I/O and requires an external loop. Temporarily disconnect the data input and output connectors J1, J2, J3 and J4. Shorten J1 and J3, J2 and J4 with the external loop (shown below).

EXTERNAL LOOP



Sequence

- (1) LEDs CR13 to CR16 each light every two seconds twice then turn off.
- (2) The items below are tested.

Items Tested

- ROM Test
- RAM Test
- SIO Test (CPU Loop back test)
- I/O Test (Data input/output test)

(3) The test repeats itself. (To escape from the test, turn off the power by disconnecting the power cable.)

RESULT OF THE SELF TEST

Error is shown by the status of LEDs CR13 to CR16.

| LED | STATUS | RESULTS |
|------|---|--|
| CR13 | Blinks every second. Blinks every 0.5 seconds. | No error. Error detected (see below). |
| CR14 | Lights | SIO (CPU loop back) error. I/O (Data input/output) error. |
| CR15 | Lights | Defective RAM. |
| CR16 | Lights | Defective ROM. |

Remedy

Replace the P.C. board.

| NAME | TYPE | CODE No. | Qty |
|-----------|---------|-------------|-----|
| CPU Board | 14P0231 | 004-397-680 | 1 |

5. LED STATUS

| LED | STATUS |
|------|--|
| CR 8 | Lights when power is supplied. |
| CR 9 | Lights when sending self test data. |
| CR10 | Lights when receiving CIF data (J1). |
| CR11 | Lights when sending CIF data (J3 - J5). |
| CR12 | Lights when receiving CIF data (J2). |
| CR13 | Blinks every second when no error. Blinks every 0.5 sec when error is detected. |
| CR14 | Lights when the I/O error or SIO error is detected. |
| CR15 | Lights when the RAM is defective. |
| CR16 | Lights when the ROM is defective. |
| CR17 | Lights when sending GYRO data (J7 - J9). |
| CR18 | Lights when sending GYRO clock (J7 - J9). |
| CR19 | Lights when receiving LOG signal (J11). |

CHAPTER 2 INSTALLATION

1. INSTALLATION

1) General notes on installation

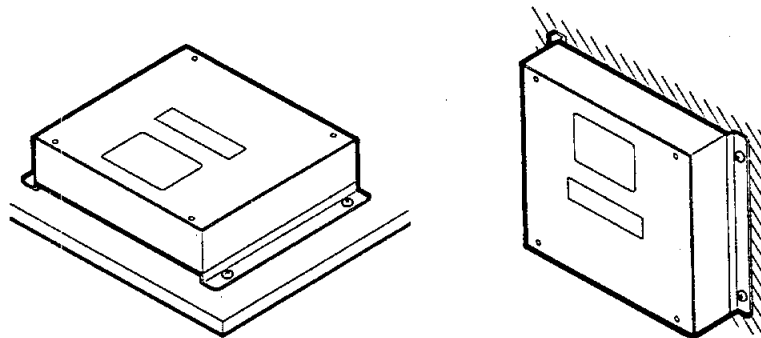
This equipment provides its intended function only when it is installed properly. The installation site is important for proper operation and continued performance. Select it keeping the following points in mind.

- (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

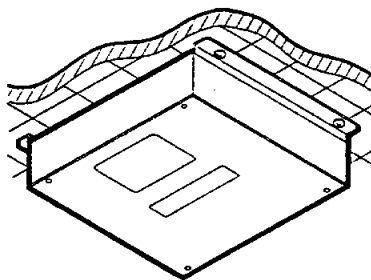
FURUNO will assume no responsibility for the damage caused by water spray.

2) Mounting the unit



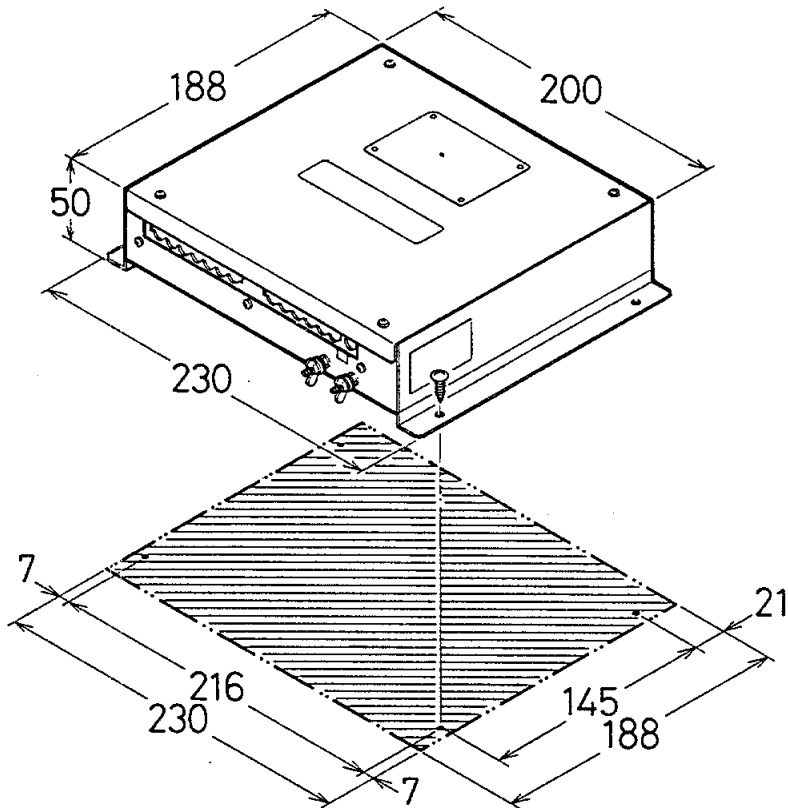
TABLETOP

BULKHEAD



OVERHEAD

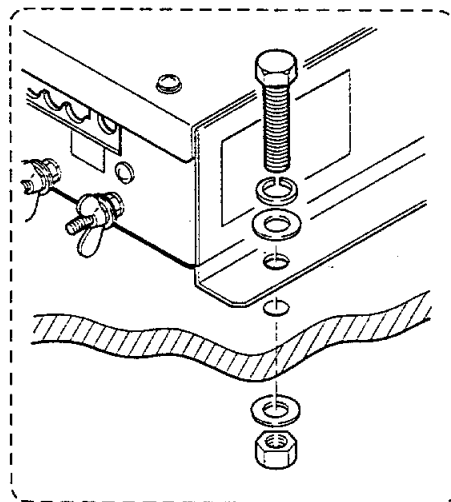
3) Mounting dimensions



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

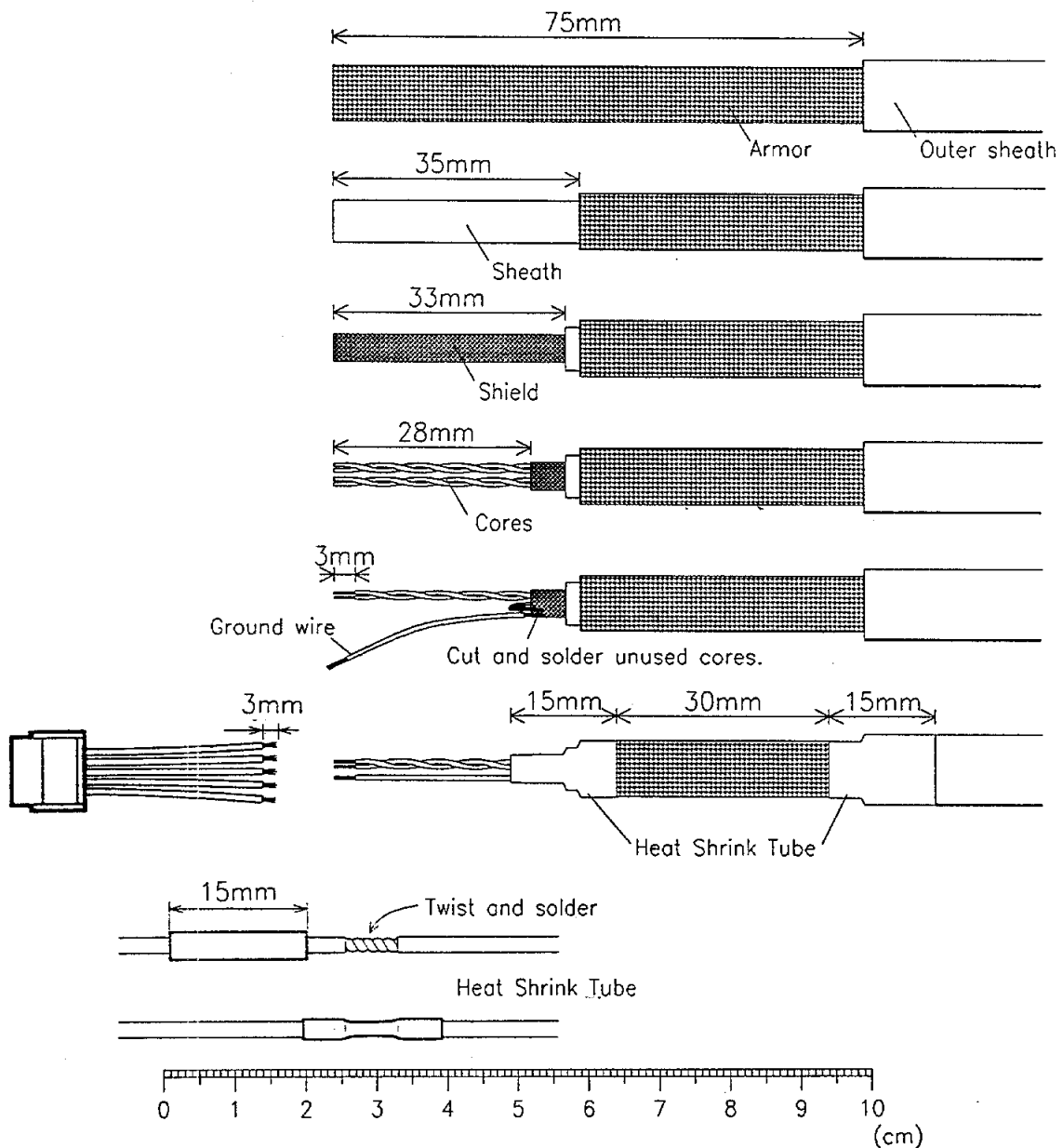
(1) Drill pilot holes.

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

2. CABLE FABRICATION

- (1) Remove the outer sheath, armor, sheath and shield as illustrated.
- (2) Remove the insulation of cores by 3 mm. Cut and solder unused cores to the shield.
- (3) Solder a ground wire to the shield.
- (4) Dress the shield and the outer sheath with heat shrink tube, leaving 30mm of shield and outer sheath exposed.
- (5) Heat the heat shrink tube.
- (6) Remove the insulation of NH connector (supplied) by 3 mm.
- (7) Pass the cable through heat shrink tube. Solder cable and core.
- (8) Heat the heat shrink tube.

Note : Ground the armor through the cable clamp.



3. POWER SUPPLY

This unit accomodates supply voltage from 8VDC to 18VDC or 18VDC to 42VDC, by a jumper wire (JP1). The default setting is 18VDC to 42VDC (OPEN). For 8VDC to 18VDC, short the jumper by twining the lead wire around the pins and solder.

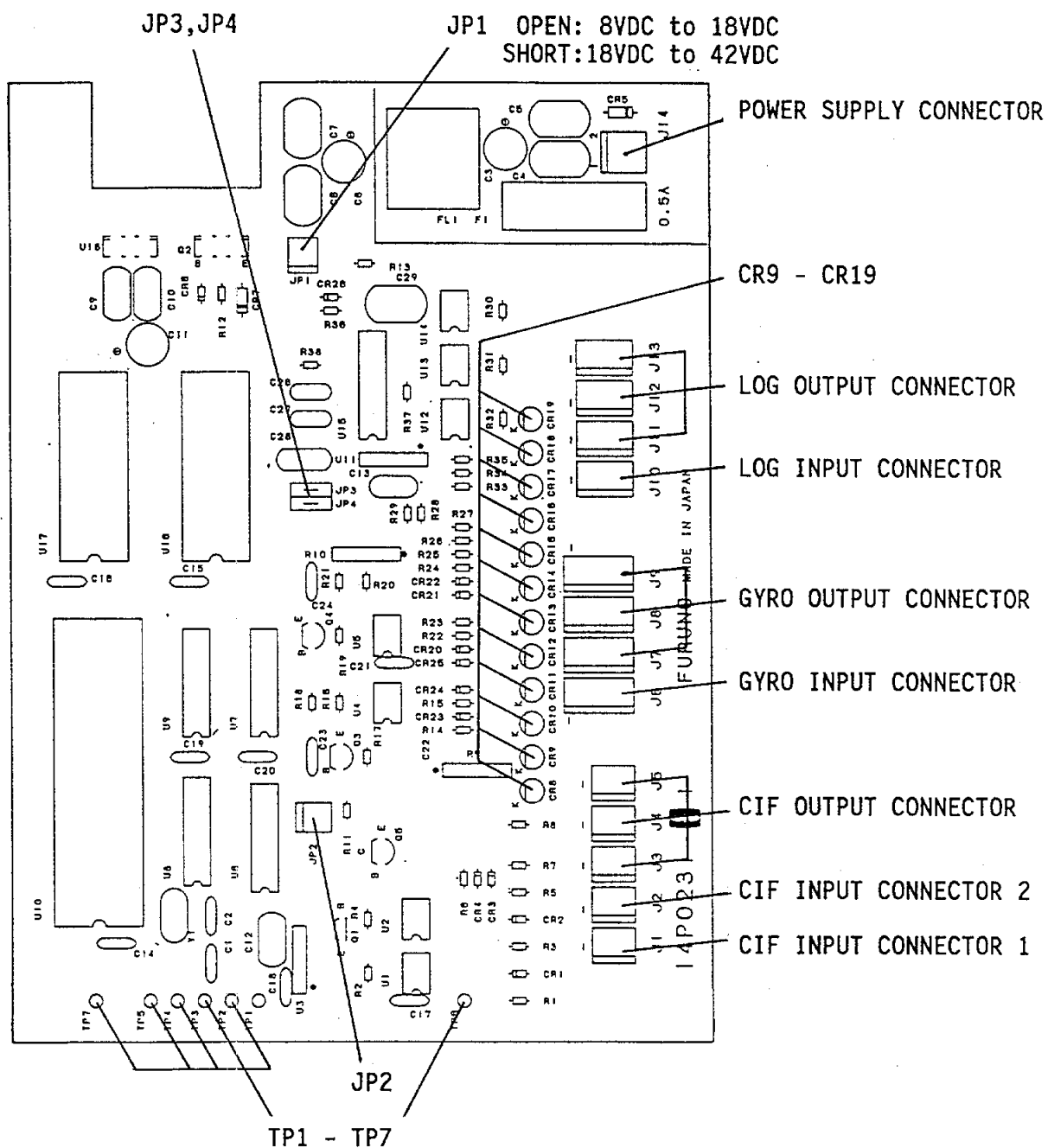
| Voltage | JP1 |
|---------------------------------|---------------|
| 8VDC to 18VDC 18VDC to 42VDC | SHORT OPEN |

4. GROUNDING

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

CHAPTER 3 PARTS LOCATION

1. PARTS LOCATION

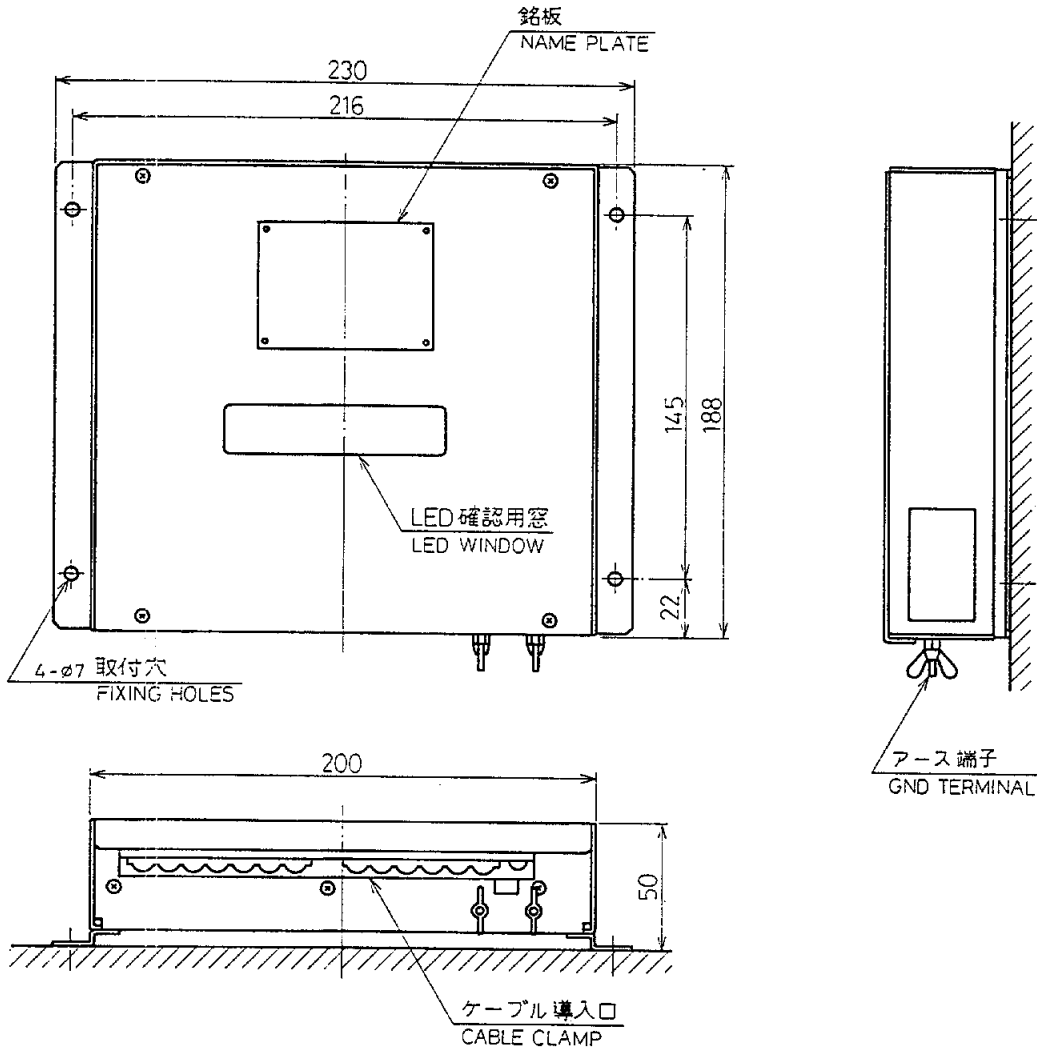


A

B

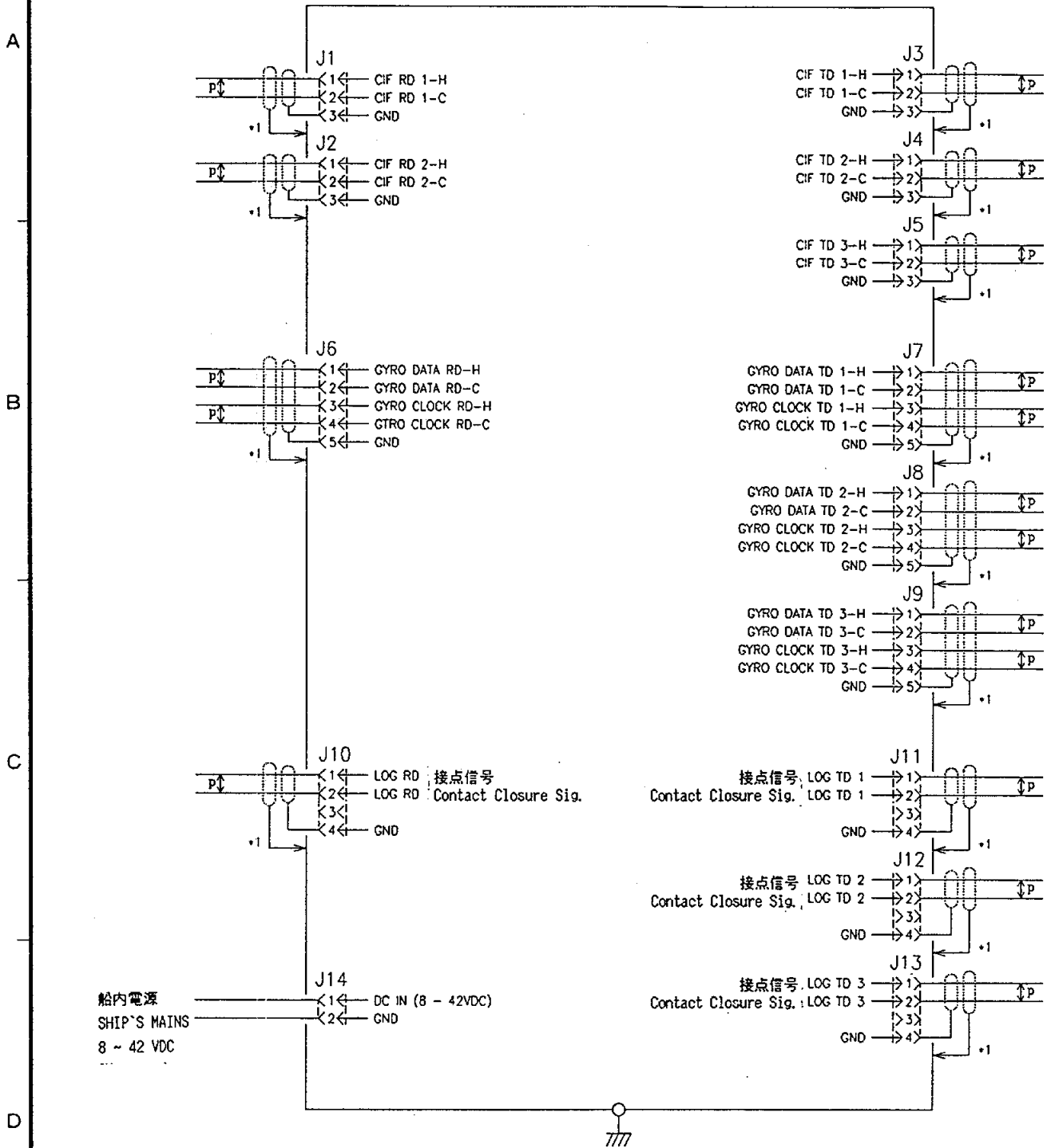
C

D



| 承認 APPROVED | 品番 ITEM | 品名 NAME | 材質 MATERIAL | 数量 Q'TY | 図番 DWG.NO. | 摘要 REMARKS |
|-----------------------|------------|-------------------------------|----------------|------------|---------------|---------------------------|
| DEC.17.90 T.NAKANO | | 三角法 THIRD ANGLE PROJECTION | | | | 名称 INTERFACE UNIT |
| DEC.17.90 N.SAITO | | 尺度 SCALE | | | | IF-2000 IF-2500 |
| DEC.14.90 S.NISHI | | 重量 WEIGHT | 1.5 kg | | | 図番 DWG.NO. C4342-G01-D |

インターフェイスユニット INTERFACE UNIT IF-2000



注1: ケーブルクランプでアースに落ち。 NOTE 1: Ground to the chassis with cable clamp.
 2: ケーブルはすべて現地手配。 2: Supply the cables locally.

| 品番 ITEM | 品名 NAME | 材質 MATERIAL | 数量 Q'TY | 図番 DWG.NO. | 摘要 REMARKS |
|----------------|------------------------|-------------------------------|----------------|-------------------------|---------------|
| 承認 APPROVED | DEC.18.90 T. NAKANO | 三角法 THIRD ANGLE PROJECTION | 名称 TITLE | インターフェイスユニット IF-2000 | |
| 検図 CHECKED | DEC.18.90 N. SAITO | 尺度 SCALE | INTERFACE UNIT | | |
| 製図 DRAWN | Dec.18.90 S. NISHI | 重量 WEIGHT | kg | 図番 DWG.NO. | C4342-C01-A |

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