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FURUNO

INSTALLATION MANUAL

LOG SIGNAL DISTRIBUTOR

MODEL MD-101

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

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·Your Local Agent/Dealer

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(ETMI) MD-101

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⚠ SAFETY INSTRUCTIONS

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

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.

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⚠ WARNING



Do not work inside the equipment unless totally familiar with electrical circuits.

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



Turn off the power at the mains switchboard before beginning the installation. Post a sign near the switch to indicate it should not be turned on while the equipment is being installed.

Fire, electrical shock or serious injury can result if the power is left on or is applied while the equipment is being installed.

⚠ CAUTION



Ground the equipment to prevent electrical shock and mutual interference.

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

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

Use the correct fuse.

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

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NOTICE

1. The MD-101 is not of splash-proof construction. Mount it in a place free from water spray.

2. Power switch is not provided on the MD-101.

3. LEDs (seen from LED window)
   Green LED ..... Lights when power supply (+ 5V) is normal.
   Yellow LED ..... Blinks with each log signal input.

   To check MD-101 for proper operation, short and open the circuit between input port J1 #1 and #2 pins. The yellow LED should blink.

4. Fuse Replacement
   A 0.5A fuse is provided on P.C. board. If the fuse has blown, find the cause before replacing it. Do not use a fuse rated more than 0.5A.

5. Ground detector (indicator) activates if GND line is grounded at the connected equipment using TTL type log signal.
   Cut out the label below and post it on the MD-101 when input/output signal is TTL type.

CAUTION

When using TTL type log signal, Ground Indicator activates if GND line is grounded.

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SPECIFICATIONS OF MD-101

1. GENERAL

The MD-101 Log Signal Distributor provides eight contact closure and eight TTL level log signal outputs with one input signal of either contact closure or TTL type. Photo MOS relays are employed for contact closure signal, ensuring reliable performance.

2. SPECIFICATION

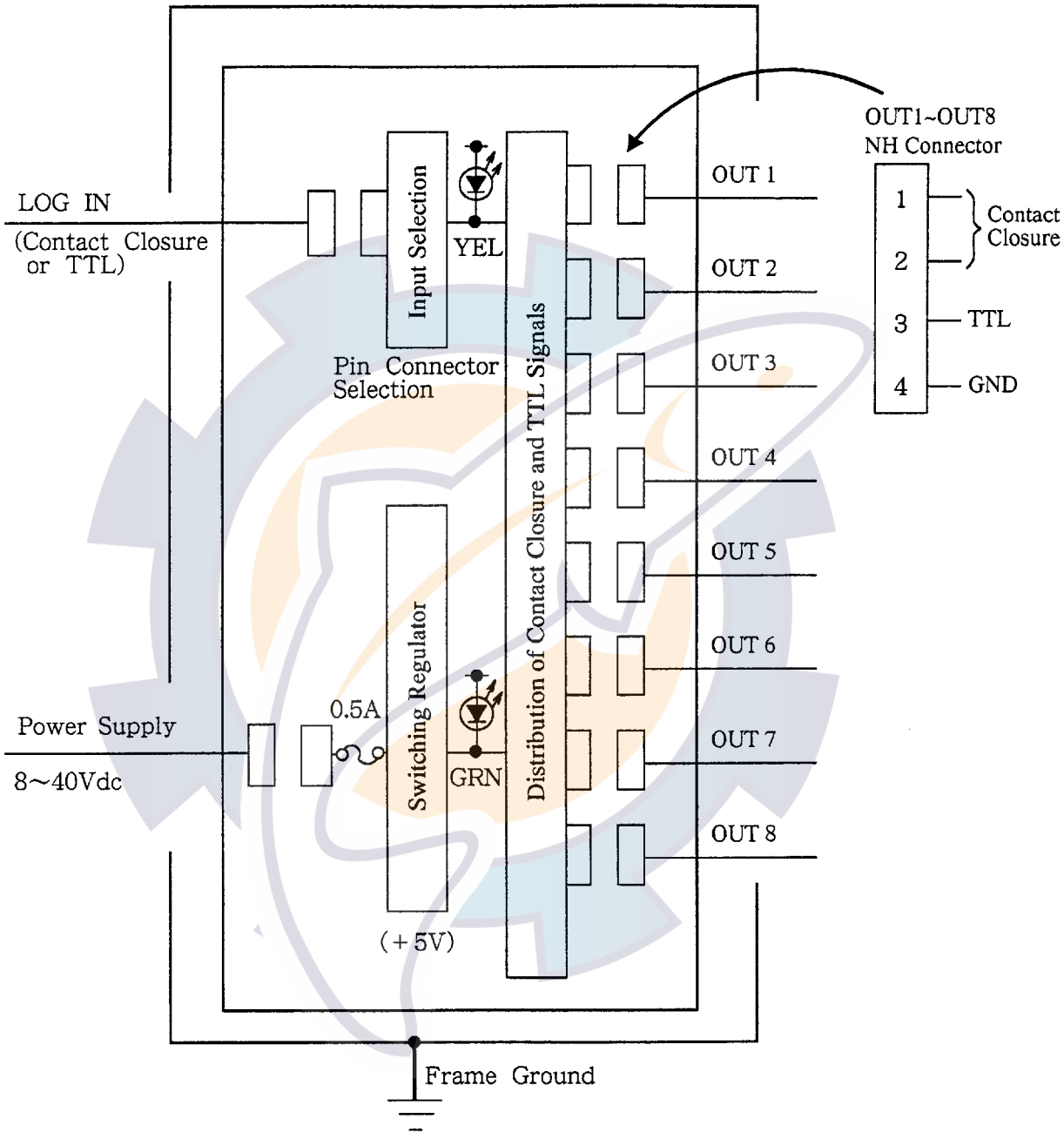
1) Input Port	1 port Contact Closure or TTL Level (preset selection)	
2) Output Port	Contact Closure (AC/DC 60V, 0.4A) TTL Level	8 ports 8 ports
3) Input Pulse Width	Contact Closure Chattering TTL High Level	10msec or more 5msec or less 0.1msec or more
4) Output Pulse Width	Contact Closure TTL High Level	100msec (constant) 100msec (constant)
5) Max. Ship Speed	90 knots at 200 pulses/nm 45 knots at 400 pulses/nm (Output pulse duty 50%)	
6) Power Supply	8 to 40 Vdc, 1W	
7) Ambient Temperature	–5°C to + 50°C	
8) Dimensions and Weight	230mm(W) × 50mm(H) × 188mm(D), 1.5kg	
9) Cabinet Color	Munsell 2.5GY5/1.5 Newtone No.5	

3.Complete Set

1) Main Unit	MD-101 (Code No. 000-043-095)
2) Spare Parts	SP14-01100 (Code No. 000-043-093)
3) Installation Materials	CP14-03900 (Code No. 000-043-096)

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Block Diagram

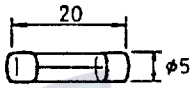


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Spare Parts List

CODE No.	000-043-093	BOX No.	P
TYPE	SP14-01100		

SHIP No.	SPARE PARTS LIST FOR	U S E	SETS PER VESSEL
	MD-101 LOG 信号分配器 LOG SIGNAL DISTRIBUTOR		

ITEM No.	NAME OF PART	OUTLINE	DWG. No. OR TYPE No.	QUANTITY WORKING PER SET	QUANTITY WORKING PER VES.	QUANTITY SPARE	REMARKS/CODE No.
1	ミゼットヒューズ FUSE		FGMB 0.5A 125V	1		3	000-114-994

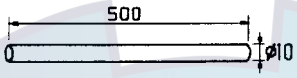
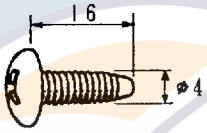
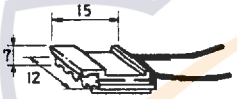
MFR'S NAME	FURUNO ELECTRIC CO., LTD.	DWG. No.	C 4 0 1 4 - P 0 1 - B	

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Installation Materials List

CODE NO.	000-043-096	64AP-X-9401-1
TYPE	CP14-03900	

工事材料表 INSTALLATION MATERIALS	MD-101	LOG信号分配器 LOG SIGNAL DISTRIBUTOR	

番号 No.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	スミチューブ F HEAT-SHRINK TUBE	 L=1m	3X0.25 2Q *1M* BLK CODE NO. 000-568-172	1	
2	スミチューブ F HEAT-SHRINK TUBE		10 X 0.25 2Q *0.5M* BLK CODE NO. 000-123-379	1	
3	+トラスタッピングネジ TAPPING SCREW		4X16 1シュ SUS304 CODE NO. 000-802-080	4	
4	NHコネクタ組品 NH CONNECTOR ASSY.		14-311(3P) (H3P-SHF-AA) CODE NO. 004-010-310	1	電源用 FOR POWER SUPPLY
5	NHコネクタ組品 NH CONNECTOR ASSY.		14-312(4P) (H4P-SHF-AA) CODE NO. 004-010-320	9	入出力用 FOR INPUT/OUTPUT
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		

図番 DWG. NO. C4014-M01-C (1/1)

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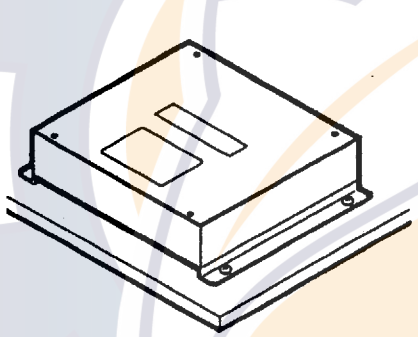
INSTALLATION

1. MOUNTING

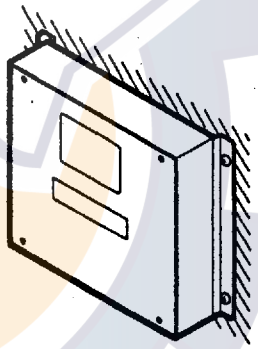
1) Mounting Place

The MD-101 requires no operation in daily use, thus it can be installed almost anywhere. Its usual mounting location is on a tabletop, on a bulkhead, or on the overhead. When selecting a mounting location be sure to leave enough space around the unit so it can be easily accessed for maintenance and servicing. In addition, the mounting location should satisfy the following conditions.

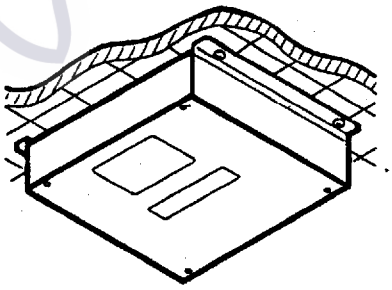
1) Keep away from water spray.
2) Select a clean and cool place.
3) Select a place where shock and vibration are minimal.



Desk Top



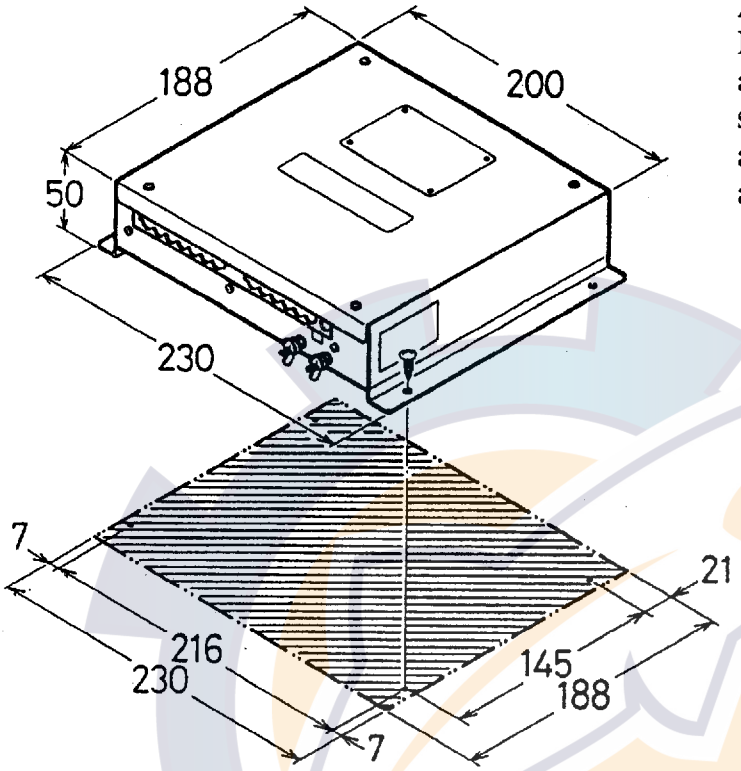
Bulkhead



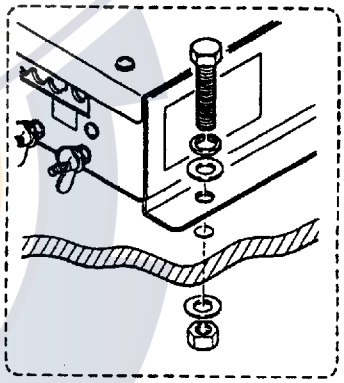
Overhead

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2) Mounting Dimensions



All dimensions are in millimeters. For added support, use nuts, bolts and washers instead of tapping screws. Secure sufficient space around the unit for maintenance and checking.



3) Mounting the Unit

Fix the unit to the mounting location with four tapping screws (supplied).
For added support, use nuts, bolts and washers instead of the tapping screws.

2. FABLICATING CABLES

Use twisted pair cable (CO-SPEVV-SB-C 0.2SQ-2P) or armored 2-core cable (DPYC-1.25) for log signal input/output. For power supply, use 2-core cable VCTF-0.5 × 2C or DPYC-1.25.

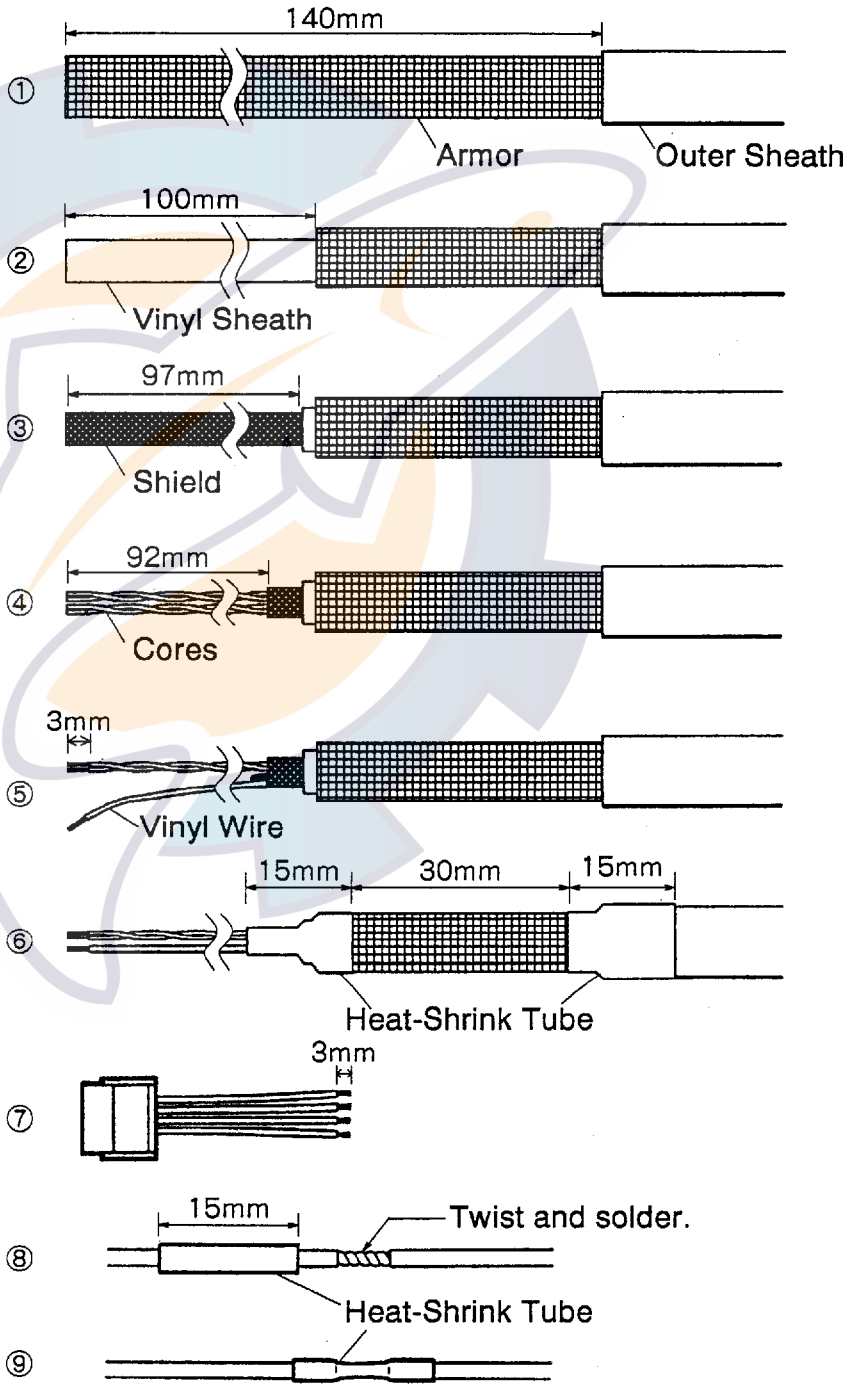
1) Twisted Pair Cable

a. Remove the outer sheath, armor, inner sheath and shield as illustrated. (① through ④)
b. Remove the insulation of cores by 3mm. Cut and solder unused cores to the shield. (⑤)
c. Solder a ground wire to the shield. (⑤)

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d. Dress the shield and the outer sheath with heat-shrink tube, leaving 30mm of shield and outer sheath exposed. (⑥)
e. Heat the heat-shrink tube. (⑥)
f. Remove the insulation of NH connector (supplied) by 3mm. (⑦)
g. Pass the cable core through the heat-shrink tube. Twist and solder the cores. (⑧)
h. Heat the heat-shrink tube. (⑨)

■ *Note: Ground the armor through the cable clamp.*

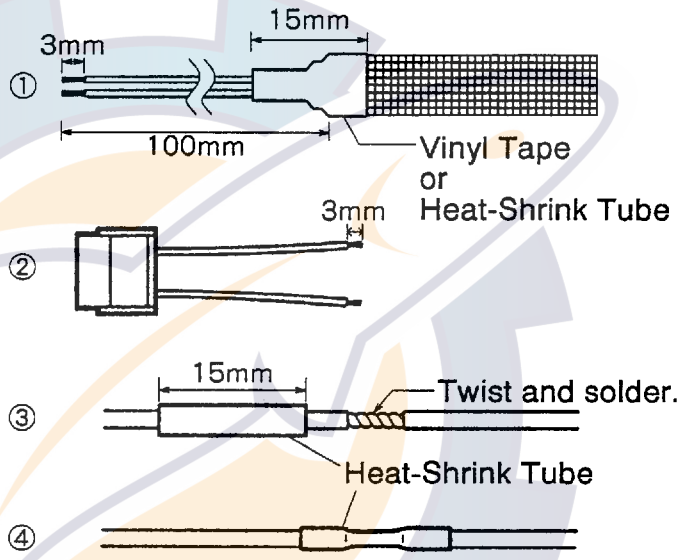


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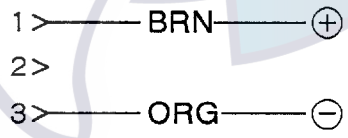
2) DPYC-1.25 Cable

a. Remove armor and sheath by 100mm and dress the end of armor with vinyl tape or heat-shrink tube. (①)
b. Remove the insulation of cores by 3mm. (①)
c. Remove the insulation of NH connector (supplied) by 3mm. (②)
d. Pass the cable core through the heat-shrink tube. Twist and solder the cores. (③)
e. Heat the heat-shrink tube. (④)

■ *Note: Ground the armor through the cable clamp.*



Polarity of Power Supply Connector
(NH Connector Assembly 14-311)



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3. CONNECTION

Set the cable to the cable clamp at the braided shield (armor). Then, insert the NH connector to p.c. board as follows.

Power Supply.....J10
Log Signal Input.....J1
Log Signal Output.....J2 through J9 (anyone can be selected.)

4. GROUNDING

Run 1.25 sq. copper stranded wire or 3cm wide copper strap between the GND terminal on the MD-101 and ship's superstructure.

5. SELECTING LOG INPUT SIGNAL TYPE

Set pin connector JP1 according to type of log input signal. (Refer to next page for location of JP1.)

Input signal Type	Setting of JP1
Contact Closure	"CONTACT"
TTL	"TTL"

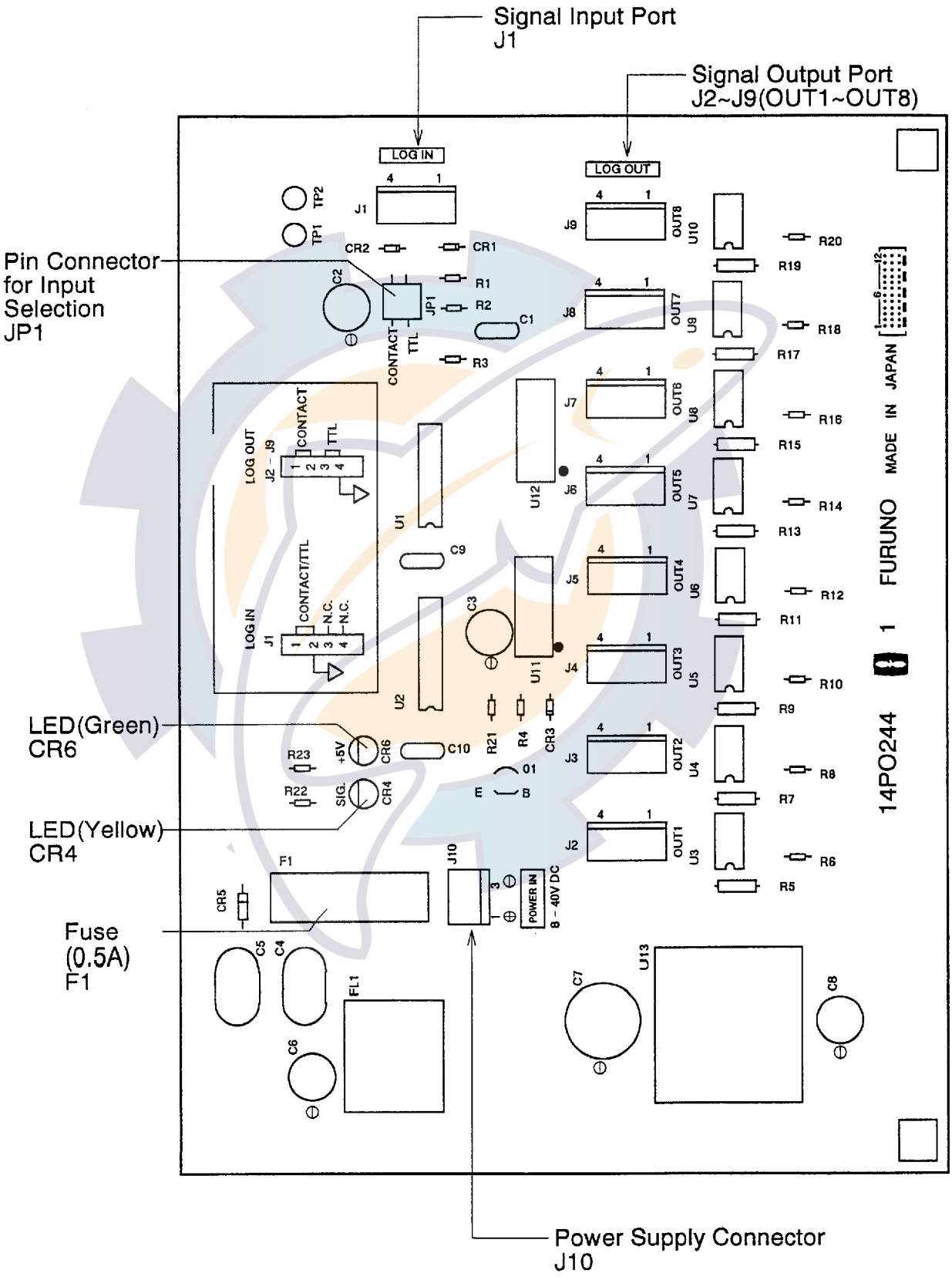
6. CHECKING FOR PROPER OPERATION (observing LEDs)

Green LED (CR6).....Lights when power supply is on.
Yellow LED (CR4) .....Blinks with each log signal input.

When log signal is not input (because ship is dead in water or other reason), try to short and open the circuit between J1 #1 and #2 to restore normal operation. The yellow LED blinks once at each click of J1 #1/#2, if the unit is operating normally.

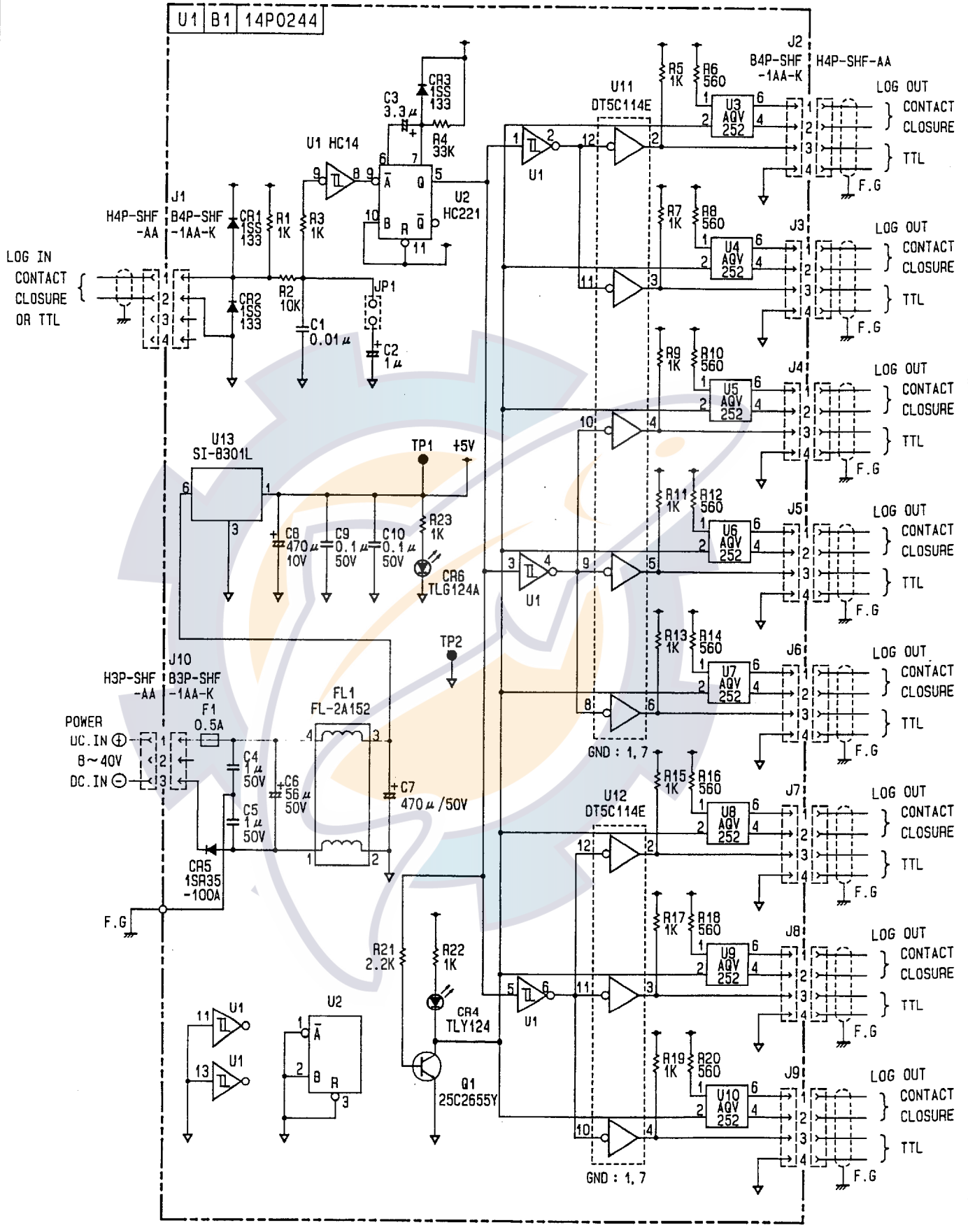
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PARTS LOCATIONS



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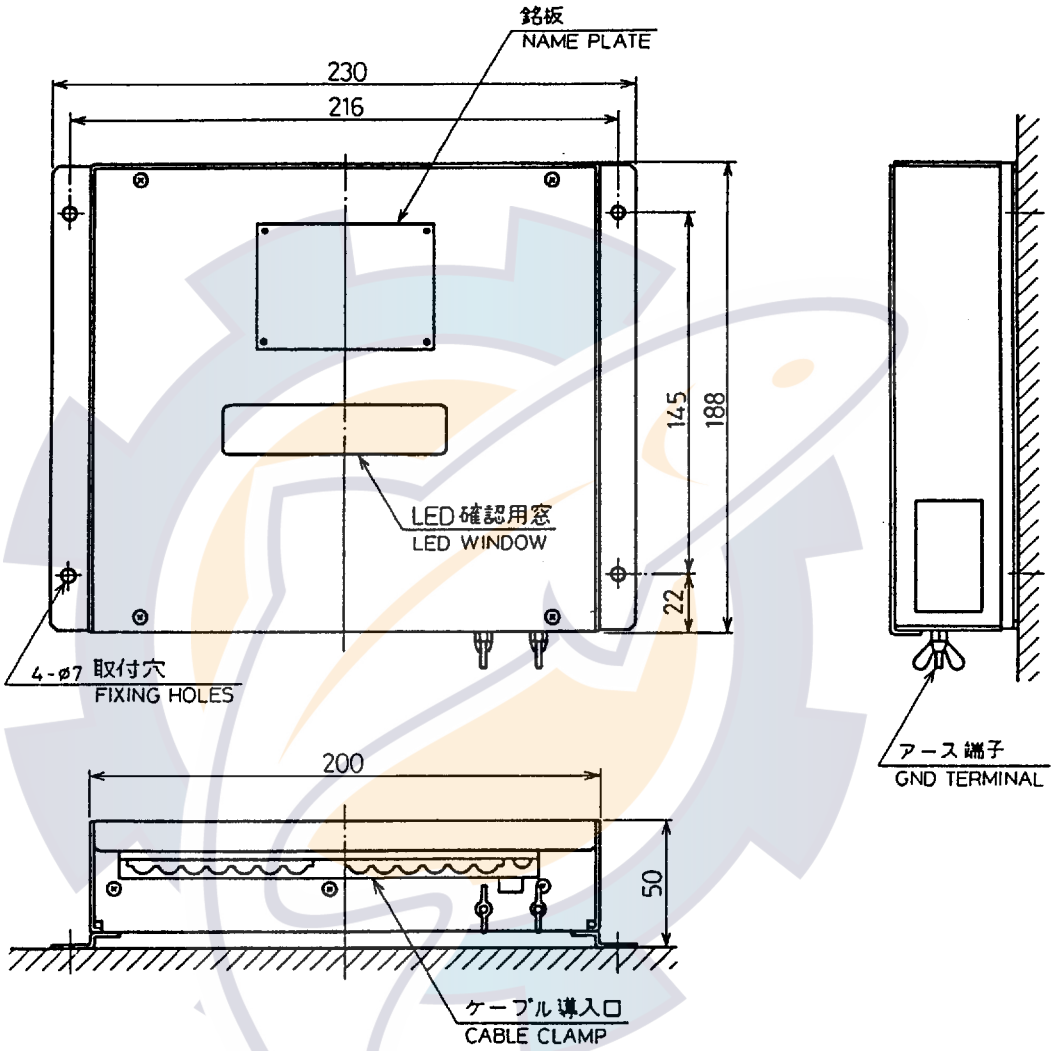


承認 APPROVED	Oct 9 '92 M.IKEDA	名称 TITLE: LOG信号分配器回路図 MD-101 LOG SIGNAL DISTRIBUTOR
検図 CHECKED		
製図 DRAWN	Oct 9 '92	図番 DWG.NO. C4014-K01-A

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FURUNO



品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS

承認 APPROVED	OCT・9・'92 M. IKEDA	三角法 THIRD ANGLE PROJECTION		名称 TITLE	MD-101 LOG 信号分配器外寸図 LOG SIGNAL DISTRIBUTOR
検図 CHECKED	Oct・7・'92 [illegible]	尺度 SCALE	1/3		
製図 DRAWN	OCT・9・'92 I. [illegible]	重量 WEIGHT	1.5 kg	図番 DWG.NO.	C4014-G01-A

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