

Installation Manual Fish Finder Power Amplifier Model DI-FFAMP

A Word to the Owner of the DI-FFAMP



Congratulations on your choice of the FURUNO DI-FFAMP Fish Finder Power Amplifier. The DI-FFAMP is a power amplifier designed for use with the internal fish finder of the TZtouch3 (TZT12F/16F/19F) multi function display. Please carefully read and follow the recommended procedures for installation and maintenance. Thank you for considering and purchasing FURUNO.

Operational cautions




- A separate power supply is required. Take the power from the ship's mains via the ship's switchboard.
- The DI-FFAMP is not turned off when the multi function display is powered off. The power amp's standby power is 6.2 W, so turn it off when it is not in use.
- Bottom Discrimination, RezBoost and ACCU-FISH are disabled when the power amp is in use.
- The amp can be used with two in-hull transducers, R599LM/LH and R111LH. Do not transmit with the transducer out of water, to prevent damage to the transducer.
- Use the multi function display to change the program version of the power amp. Contact FURUNO for information on how to upgrade program version.


Safety Instructions

The installer must read the safety instructions before attempting to install the equipment.

 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

 Warning, Caution	 Prohibitive Action	 Mandatory Action
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 WARNING	
	Do not disassemble or modify the equipment.
Fire, electrical shock or serious injury can result.	
	Use the proper fuse.
Use of a wrong fuse can damage the equipment and may cause fire.	
12VDC	24VDC
15 A	10 A

 CAUTION	
Observe the following compass safe distance to prevent interference to a magnetic compass:	
Standard compass	Steering compass
0.3 m	0.3 m



Equipment list

Name	Type	Code No.	Qty	Remark
Fish Finder Power Amplifier	DI-FFAMP	-	1	
Installation Materials	CP02-09600	000-037-176	1	Cable assy. (3 pcs), EMI core, Fuses (10A/15A), Self-tapping screws

Option

Name	Type	Code No.	Qty	Remark
Booster Box	BT-5-1	000-012-520	1	For 5 kW(10 kW) transducer (single/dual)
	BT-5-2	000-012-521		
Transducer cable (For BT-5)	NCS-2RNCTSB	001-247-169		3m
		001-247-170		20m
		001-247-171		50m
		001-247-172		100m

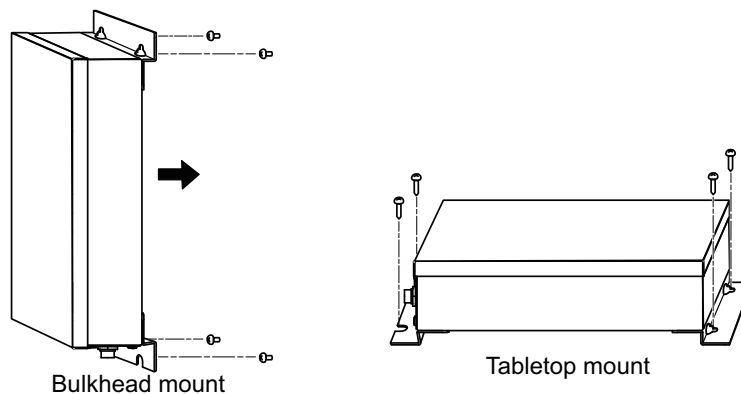
Installation

Select the mounting location considering the following points.

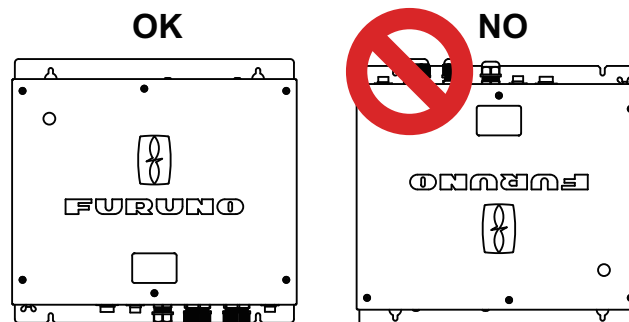
- Locate the unit away from areas subject to water splash.
- Select a location that is well ventilated.
- Observe the compass safe distances shown on page 1.
- Leave the sufficient service clearance around the unit.

Procedure

1. Drill four pilot holes in the bulkhead (or tabletop) for the self-tapping screws.
2. Screw four self-tapping screws ($\phi 5 \times 20$) into the pilot holes, leave 5 mm protruding.
3. Set unit onto the screws, then tightly fasten the screws to fix the unit in place.



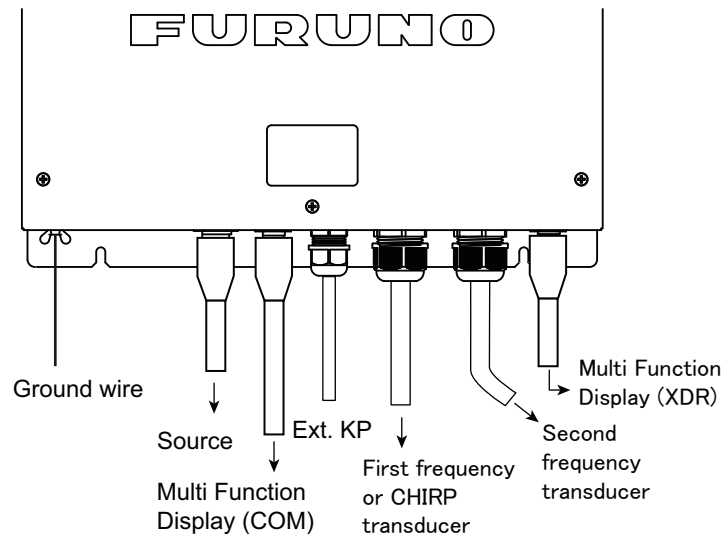
NOTE: For mounting on a bulkhead, the connectors must face downward.



Wiring

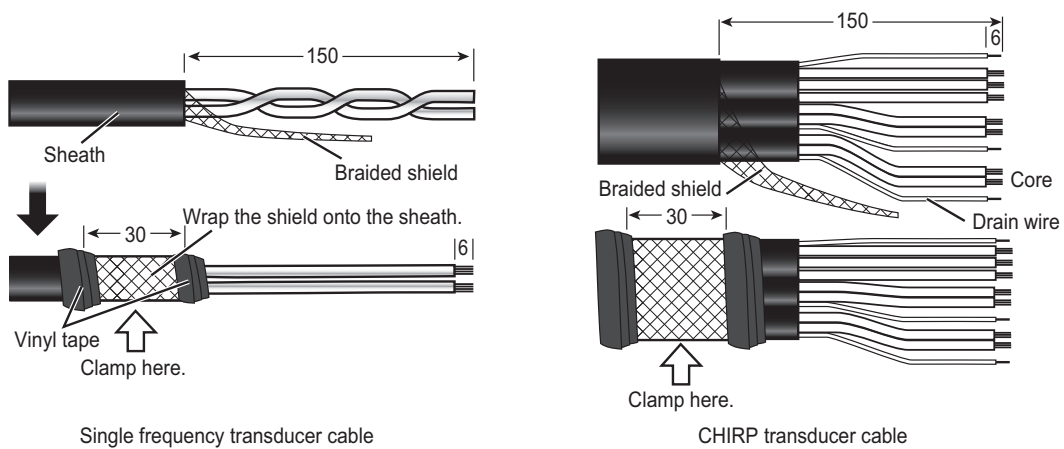
Wiring Outline

The figure below shows general connection for the DI-FFAMP. Refer to the interconnection diagram for details.

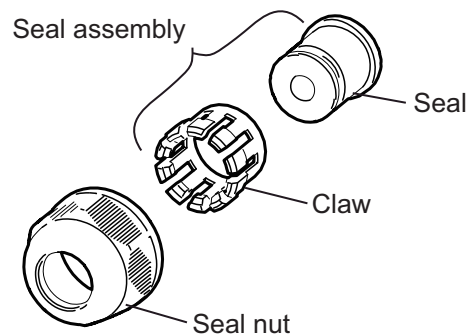


Procedure

1. Unfasten six screws to remove the cover.
2. Fabricate the transducer cable(s) as shown below. Fabricate the cables for both the high and low frequencies. For a CHIRP transducer, fabricate the ID signal cores for both the high and low frequencies.

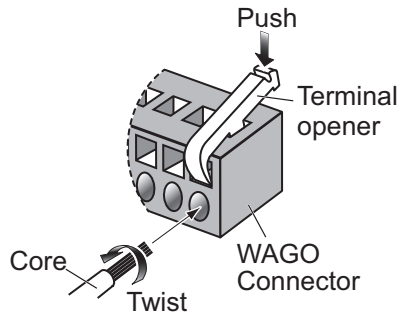


3. Unfasten the seal nut on the cable entry for transducer cable.
4. Pass the seal nut, claw and seal onto the transducer cable, in that order.



5. Push the seal assembly into the seal nut, then tighten the super gland.

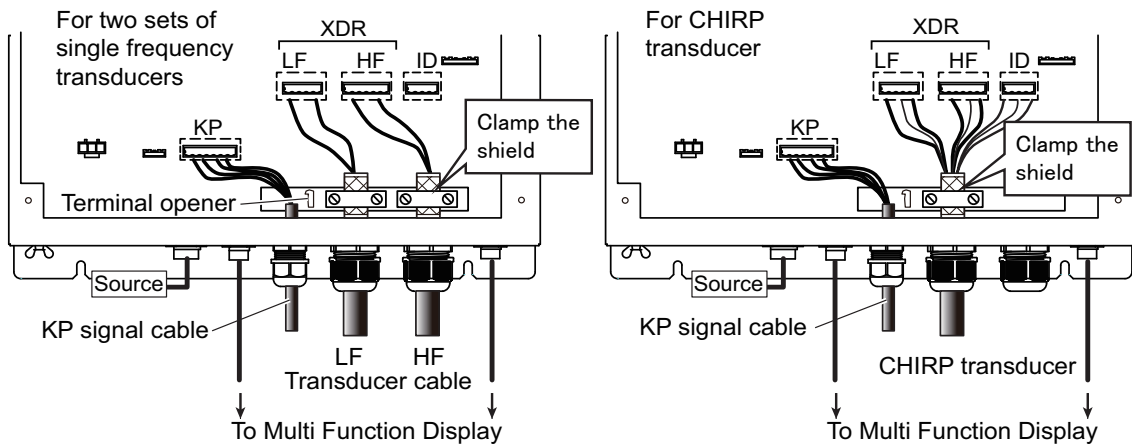
- Remove the WAGO connectors from PCB, then attach the transducer cable to the connector.



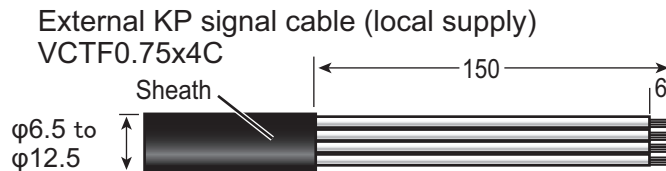
Procedure

1. Twist core.
2. Insert terminal opener and push.
3. Insert a core into hole.
4. Release the terminal opener.
5. Pull the core to confirm it is correctly inserted.

- Clamp the braided shield with a cable clamp.
- Attach the WAGO connector to the PCB.



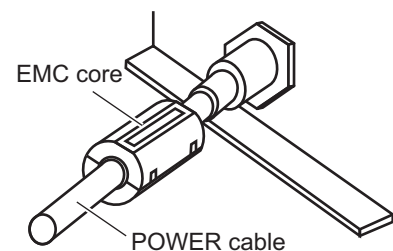
- Fasten the seal nut to fix the transducer cable. The torque shall be 2.0 Nm and the gap between the seal nut and the super gland shall be approx. 3 mm.
- Fabricate the external KP signal cable as shown below. (core size 0.75 sq, outer dia 7.6 approx)



- Pass the cable through the seal nut and seal assembly, like you did with the transducer cable.
- Push the seal assembly into the seal nut, then tighten the super gland.
- Tighten the seal nut to fasten the cable. The torque shall be 2.0 Nm and the gap between the seal nut and the super gland shall be approx. 3 mm.
- Attach the WAGO connectors to the PCB.
- Reattach the cover and fasten the screws to fix the cover. Power cable (FRU-3P-FF-A002M-050C, 2m) and signal cables from Multi Function Diaplay (FRU-F12F12-050C, 5m and FRU-F7F7-050C, 5m) should be connected with their attached connectors.

NOTE: Attach the EMC core to the power cable near the super gland to prevent noise.

Attach the ground wire (IV-1.25sq, local supply) to the ground terminal with a crimp-on lug (M3, local supply) to prevent interference.



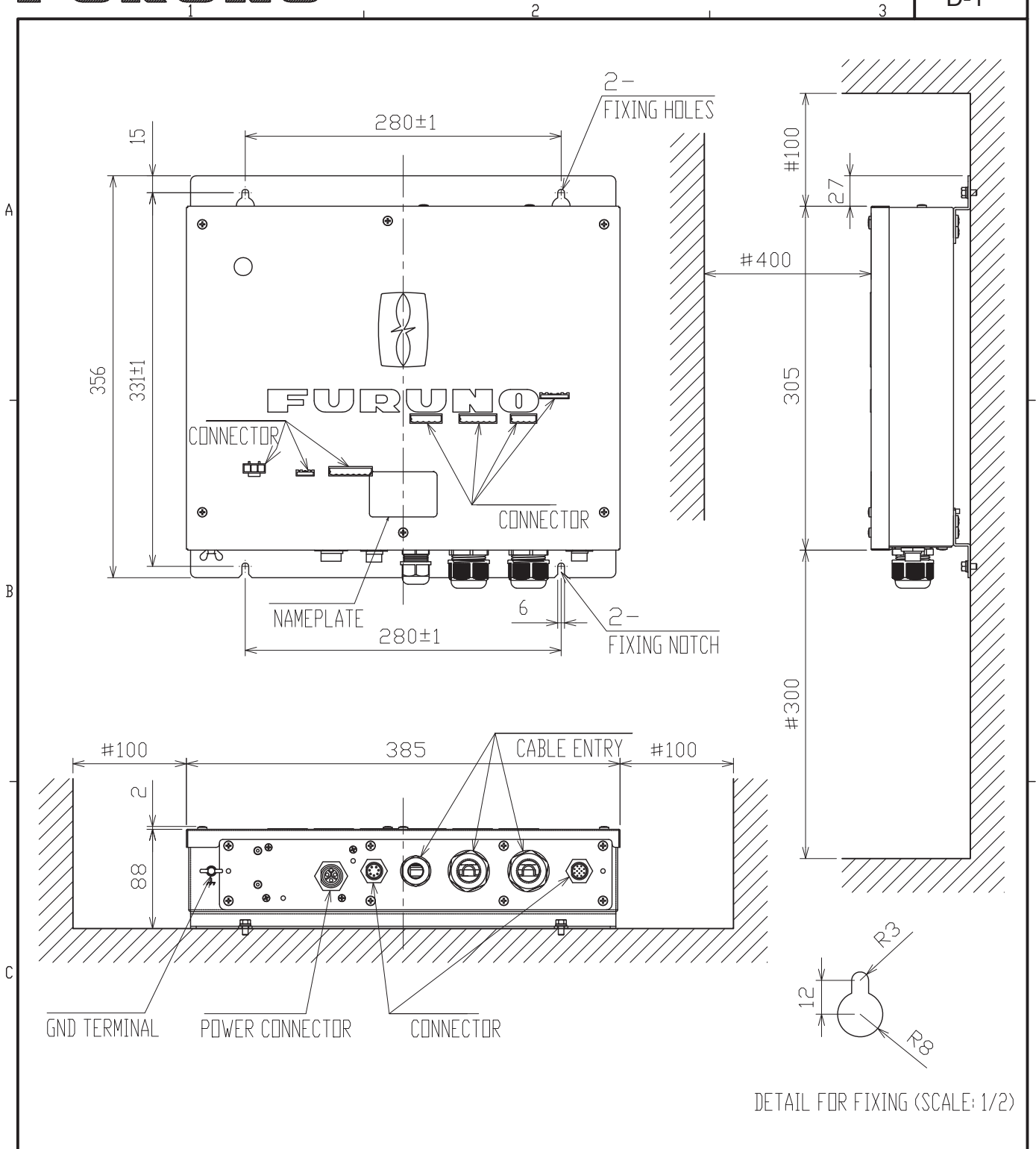
Troubleshooting

The table below provides basic troubleshooting procedures which the user may follow to restore normal operation. If you cannot restore normal operation, do not check inside unit. Have a FURU-NO dealer check the equipment.

Problem	Reason
Cannot turn on power.	<ul style="list-style-type: none">• The power cable is disconnected or damaged. Check the power cable and if it damaged, replace it.• Check the ship's mains and check the switch board is turned off.• Check the fuse on the power cable. If the fuse has blown, find the cause then replace it.
No echo appears but fixed range scale appears.	<ul style="list-style-type: none">• The sensor cable is disconnected or damaged. Check the cable and reconnect or replace it as necessary.
Sensitivity is low.	<ul style="list-style-type: none">• Gain setting is too low. Raise the gain.• Marine life is adhering to the transducer face. Clean the transducer face.• Vessel is in heavily sedimented water.

Specifications

Frequency	26.6 to 242 kHz
Number of channels	2 ch
Output power	3 kW
Power supply	12-24 VDC: 3.2-1.9 A
Environment conditions	
Ambient temperature	-15°C to +55
Degree of protection	IP22
Vibration	IEC60945 Ed.4



DETAIL FOR FIXING (SCALE: 1/2)

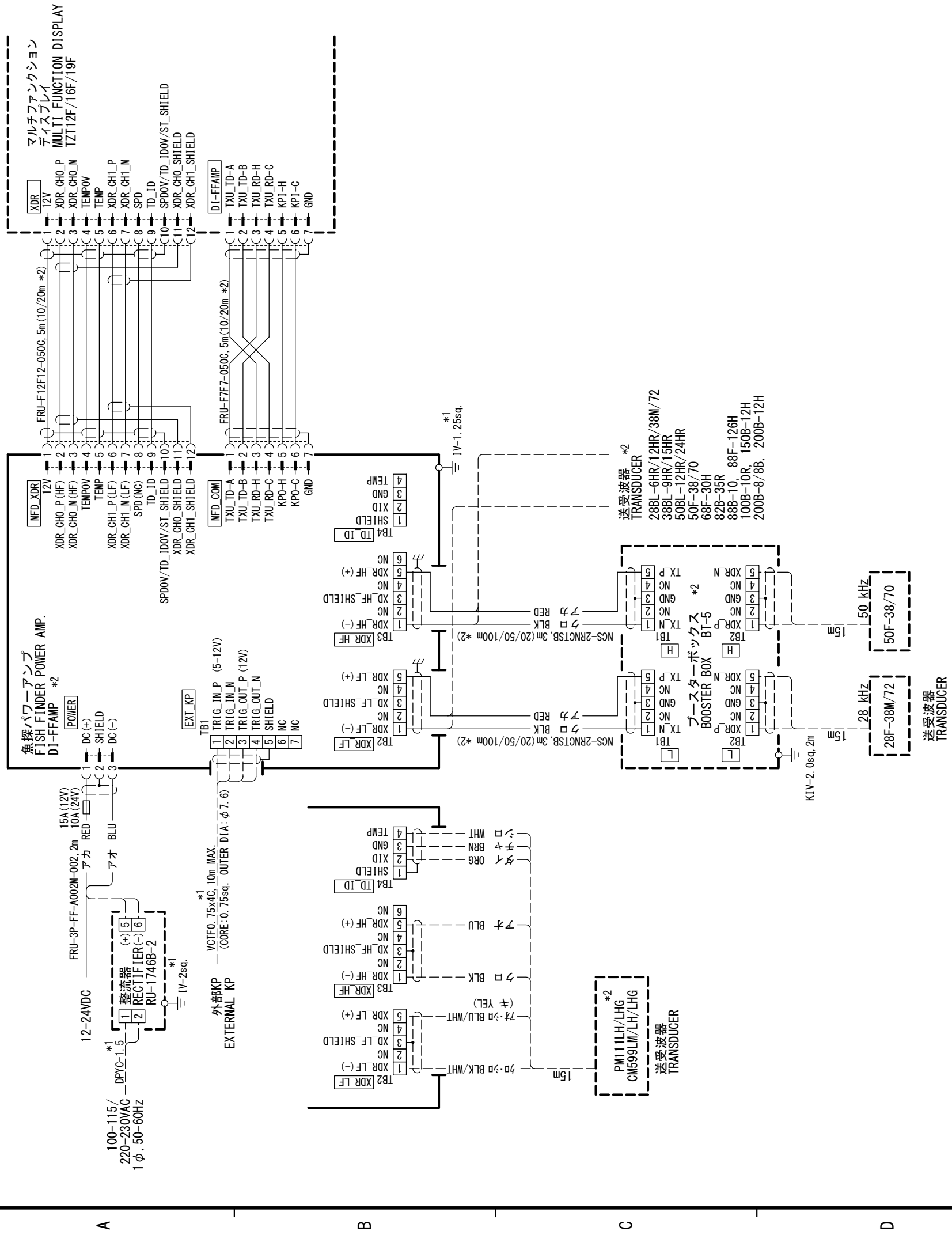
TABLE 1

DIMENSION (mm)	TOLERANCE (mm)
$L \leq 50$	± 1.5
$50 < L \leq 100$	± 2.5
$100 < L \leq 500$	± 3

NOTE

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

DRAWN 8/Nov/2019 T.YAMASAKI	TITLE DI-FFAMP
CHECKED 8/Nov/2019 H.MAKI	
APPROVED 11/Nov/2019 H.MAKI	TZT12F/16F/19F
SCALE 1/5	NAME FISH FINDER POWER AMPLIFIER (BULKHEAD/TABLE TOP MOUNT)
MASS 6.3 ±10% kg	
DWG. No. C4512-G03-B	REF. No. 02-178-500G-1
	OUTLINE DRAWING



注記
 * 1) 造船所手配。
 * 2) オプション。
 NOTE
 *1: SHIPYARD SUPPLY.
 *2: OPTION.

VCTF: Vinyl Cabtyre cord

DRAWN	20/Apr/2020	T. YAMASAKI	TITLE	DI-FFAMP
CHECKED	20/Apr/2020	H. MAKI	名称	魚探パワーアンプ
APPROVED				相互結線図
SCALE	MASS	kg	NAME	FISH FINDER POWER AMPLIFIER
DWG No.	C4510-002-C	REF. No.	02-178-2001-0	INTERCONNECTION DIAGRAM

Transducer list

(W) Output	(kHz) Frequency	Transducer	Hull Material	Thru-hull pipe	Tank
2k/2k	28/200	28BL-6HR, 200B-8/8B	Steel	TFB-7000 (2), TWB-6000 (2)	T-693
			FRP	TWB-1100 (2)	T-693-F
	38/200	38BL-9HR, 200B-8/8B	Steel	TFB-7000 (2), TWB-6000 (2)	T-693
			FRP	TWB-1100 (2)	T-693-F
	82/200	82B-35R, 200B-8/8B	Steel	TFB-7000 (2), TWB-6000 (2)	T-649
			FRP	TRB-1100 (2)	T-649-F
88/200	88B-10, 200B-8/8B	Steel	TFB-7000 (2), TWB-6000 (2)	T-649	
		FRP	TRB-1100 (2)	T-649-F	
3k/2k	107/200	100B-10R, 200B-8/8B	Steel	TFB-7000 (2), TWB-6000 (2)	T-649
			FRP	TRB-1100 (2)	T-694-F
3k/3k	28/38	28BL-12HR, 38BL-15HR	Steel	TFB-7000 (2), TWB-6000 (2)	T-681
			FRP	TRB-1100 (2)	T-681-F
	28/50	28BL-12HR, 50BL-12HR	Steel	TFB-7000 (2), TWB-6000 (2)	T-681
			FRP	TRB-1100 (2)	T-681-F
	28/88	28BL-12HR, 88F-126H	Steel	TFB-7000 (2), TWB-6000 (2)	T-682
			FRP	TRB-1100 (2)	T-682-F
	28/150	28BL-12HR, 150B-12H	Steel	TFB-7000 (2), TWB-6000 (2)	T-683
			FRP	TRB-1100 (2)	T-683-F
	38/50	38BL-15HR, 50BL-24HR	Steel	TFB-7000 (2), TWB-6000 (2)	T-681
			FRP	TRB-1100 (2)	T-681-F
2k/2k	38-75/ 130-210	PM111LH	Steel	TFB-7000 (1)	T-712
			FRP	TRB-1100 (1)	T-712-F
3k/2k	28-60/ 130-210	CM599LH	Steel	TFB-7000 (1)	T-712
			FRP	TRB-1100 (1)	T-712-F
	28-60/80-130	CM599LM	Steel	TFB-7001 (1)	T-712
			FRP	TRB-1100 (1)	T-712-F

(W) Output	(kHz) Frequency	Transducer	Hull Material	Thru-hull pipe	Tank
5k/5k*1 w/BT-5	28/50	28F-38M, 50F-38M	Steel	TFB-7000 (2), TWB-6000 (2)	T-653
			FRP	TRB-1100 (1)	T-653-F
	28/50	28F-38M, 50F-38	Steel	TFB-7000 (2), TWB-6000 (2)	T-653
			FRP	TRB-1100 (1)	T-653-F
		28F-72, 50F-70	Steel	TFB-7000 (2), TWB-6000 (2)	T-673
			FRP	TRB-1100 (1)	T-673-F

*1 Not only 5 kW, but also 10 kW transducers. However 10 kW transducer's output is 3 kW or less