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FURUNO

INSTALLATION MANUAL

INMARSAT MINI-C MOBILE EARTH STATION

MODEL FELCOM16

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

PRINTED IN JAPAN

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⚠ SAFETY INSTRUCTIONS

⚠ WARNING



Do not open the equipment unless totally familiar with electrical circuits and service manual.

ELECTRICAL SHOCK HAZARD

Only qualified personnel should work inside the equipment.



Do not approach the radome closer than 60 cm when it is transmitting.

Microwave radiation can cause severe injury or illness.
Radiation level:
10 W/m² at 60 cm



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 eqiuipment is being installed.

⚠ CAUTION

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 communication unit.

Use the correct fuse.

Use 10 A fuse (defalt setting) for 12 VDC power supply, or replace the fuse to 5 A (supplied as spare parts) with 24 VDC.

Use of wrong fuse can result in damage to the equipment.

Keep the following compass safe distances.

	Standard	Steering
Antenna Unit IC-116	0.3 m	0.3 m
Communication Unit IC-216	0.3 m	0.3 m
AC/DC Power Supply Unit PR-240-CE	0.9 m	0.6 m



Attach securely protection earth to the ship's body.

The protection earth is required to the power supply to prevent electrical shock

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EQUIPMENT LISTS

Standard Supply

Name	Type	Code No.	Qty	Remarks
Antenna Unit	IC-116	-	1	
Communication Unit	IC-216	-	1	
Junction Box*	IC-315	-	1	w/CP16-02501
SSAS Alert Unit*	IC-307	-	2	w/CP16-03101, FP16-00901
Installation Materials	CP16-02101	004-439-060	1 set	For 15/30 m antenna cable**
	CP16-02111	004-439-070		For 50 m antenna cable**
	CP16-02121	004-439-080		For 100 m antenna cable**
	TP58A15W-RG58	000-146-252	1	15 m antenna cable
	TP5FBAW-5DFBB	000-146-250		30 m antenna cable
	8D-FB-CV	000-117-599		50 m antenna cable
	12D-SFA-CV	000-138-866		100 m antenna cable
	CP16-02401	004-439-540		For communication unit**
Accessories	FP16-00700	004-439-550	1 set	FD-ROM, FD (FP16-00601)
Spare Parts	SP16-01401	004-439-530	1 set	Fuse**

Optional Supply

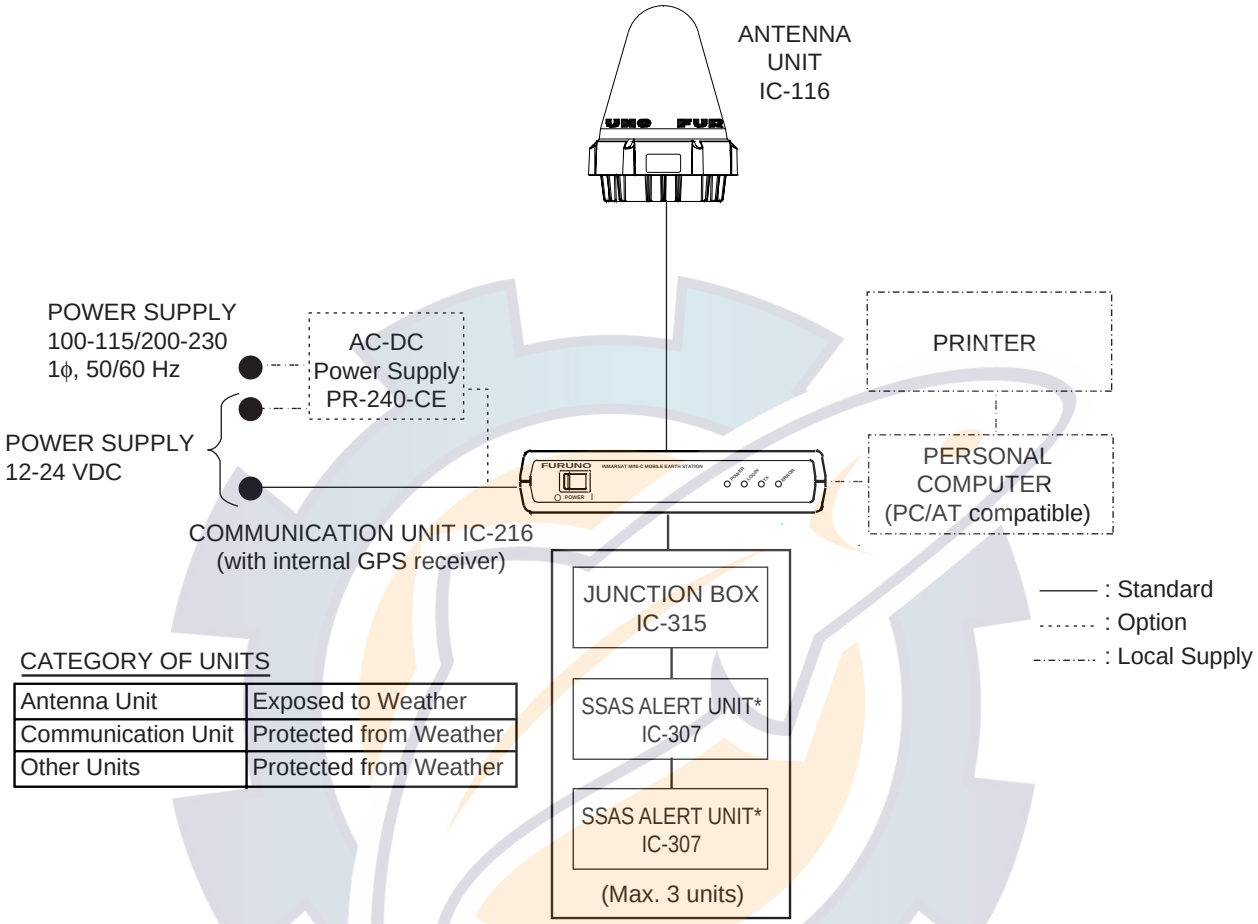
Name	Type	Code No.	Qty	Remarks
Cable assy	17JE-573-10	000-127-108	1	For PC connecting
AC/DC Power Supply Unit	PR-240-CE	-	1 set	w/CP24-00151**
5-pair cable	CO-SPEVV-SB-C 0.2x5P	000-560-452	1	For junction box, 10m
		000-103-868		For junction box, 20m
		000-103-869		For junction box, 30m
		000-132-829		For junction box, 40m
		000-132-828		For junction box, 50m
SSAS Alert Unit	IC-307	000-043-473	1	w/CP16-03101, FP16-00901
Flush Mounting Kit	OP16-28	004-448-010	1	For SSAS alert unit
FFA Modification Kit**	OP16-69	004-448-860	1 set	
PC Terminal Software	OP16-46	004-450-750	1	Russian Language
Antenna Mounting Kit	CP16-03701	004-555-000	1 set	

*: SSAS Specification only.

**: See packing lists at the back of this manual.

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SYSTEM CONFIGURATION



CATEGORY OF UNITS

Antenna Unit	Exposed to Weather
Communication Unit	Protected from Weather
Other Units	Protected from Weather

*: At least two SSAS Alert Units are required.

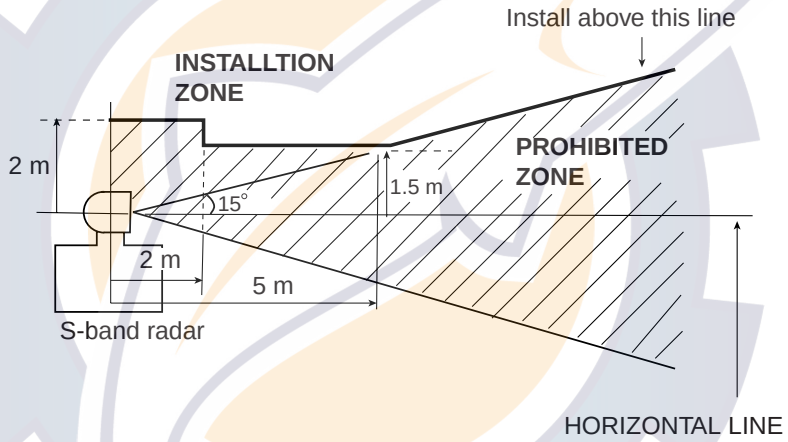
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1. MOUNTING THE UNIT

1.1 Antenna Unit

Mounting Location

- There should be no interfering object within the line-of-sight to the satellite. Objects within line-of-sight to a satellite, for example, a mast may block transmission/reception. Mount the antenna unit as high as possible. This keeps it free of interfering objects and water spray. The location should be well away from a GPS antenna. A GPS receiver may be interfered by the Inmarsat C wave.
- If both Inmarsat-B or F ship earth stations are installed, separate the Inmarsat-B/F antenna at least 8 m.
- Separate the antenna unit from an S-band radar as follows:



S-band radar and installation area

- The allowable vibration level as specified by Inmarsat is as shown in the table below.

Allowable vibration level

Frequency	Level
2 to 10 Hz	2.54 mm Peak Amplitude
10 to 100 Hz	9.8 m/s² Peak Acceleration

- Avoid the location near funnels and stacks; smoke and soot on the radome can lower signal level.
- Separate the antenna unit 5 m from HF, VHF or 27 MHz antenna.

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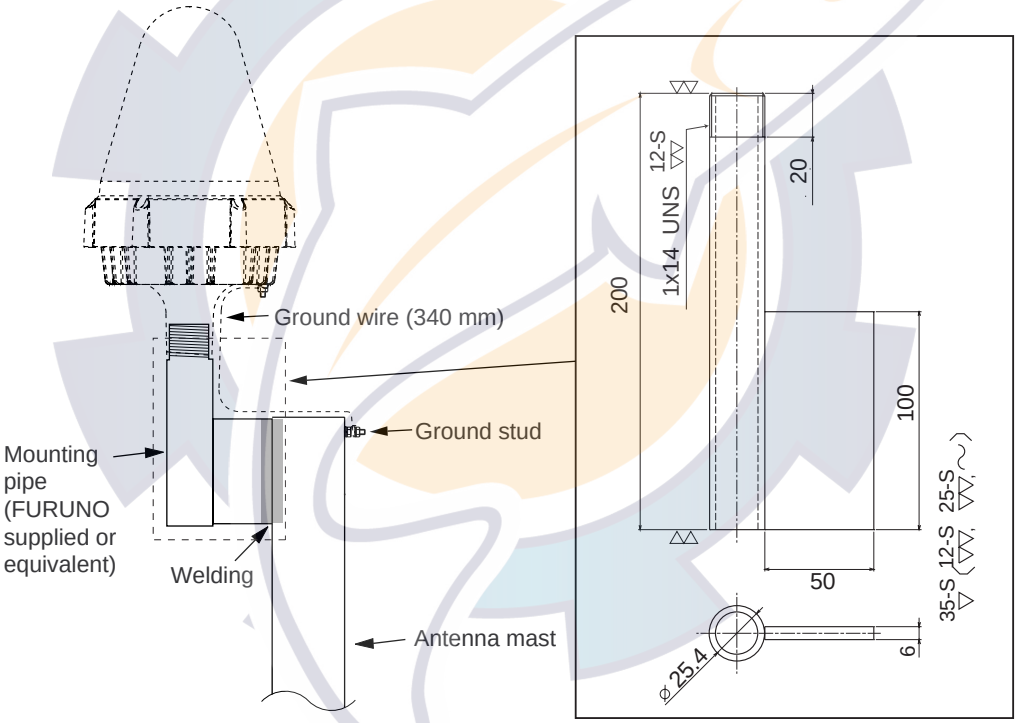
Mounting

Fifteen, 30, 50 or 100 m antenna cable is available. Fifteen and 30 m cable has connectors on both ends, and one connector for 50/100 m cable. **Do not shorten these cables, to prevent interference**. To mount the antenna unit, an exclusive pipe is necessary.

Note: To mount the antenna unit with the optional antenna mounting kit (Type: CP16-03701, Code No.: 004-555-000), see page D-4.

Locally prepare an antenna mast with a ground stud (M6 stainless steel bolt welded to antenna mast) and mounting pipe with threads and plate (See the outline drawing of the mounting plate shown below.) Weld the mounting pipe to the antenna mast.
The distance between the stud and the earth terminal on the antenna unit should be within 340 mm, which also is the length of the supplied ground wire.

Note: Use of the mounting pipe (FURUNO supply or the equivalent) is mandatory in case of FFA version. See the equipment list at the beginning of this manual for information.



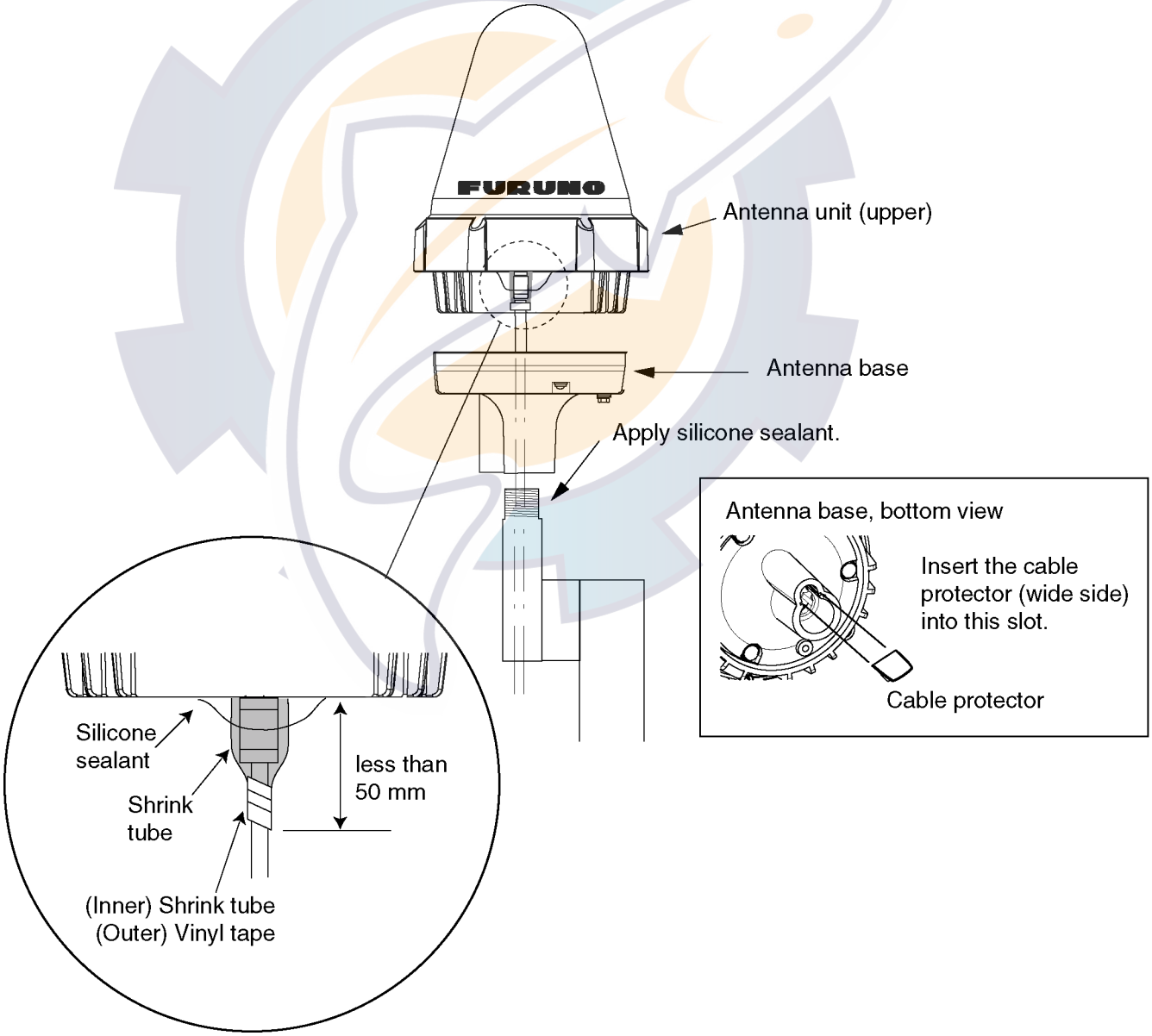
Mounting pipe and antenna mast

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For 15 or 30 m cable

1. Apply silicone sealant (local supply) to the threads of the pipe.
2. Unscrew three screws to remove the antenna base from the antenna unit.
3. Pass the antenna cable through the pipe, antenna base in order.
4. Insert the cable protector (supplied) into the slot at the bottom of antenna base.
5. Screw the antenna base onto the antenna pipe by rotating the antenna base.
6. Pass the antenna cable through the shrink tube (supplied).
7. Attach the antenna cable to the connector at the bottom of the antenna unit (upper).
8. Slide up the shrink tube until it touches the bottom of the antenna unit (upper).
9. Heat the above shrink tube, and then apply silicone sealant around the upper edge of the tube. Also wind self-bonding tape around the lower edge of the shrink tube and then wrap vinyl tape over self-bonding tape.

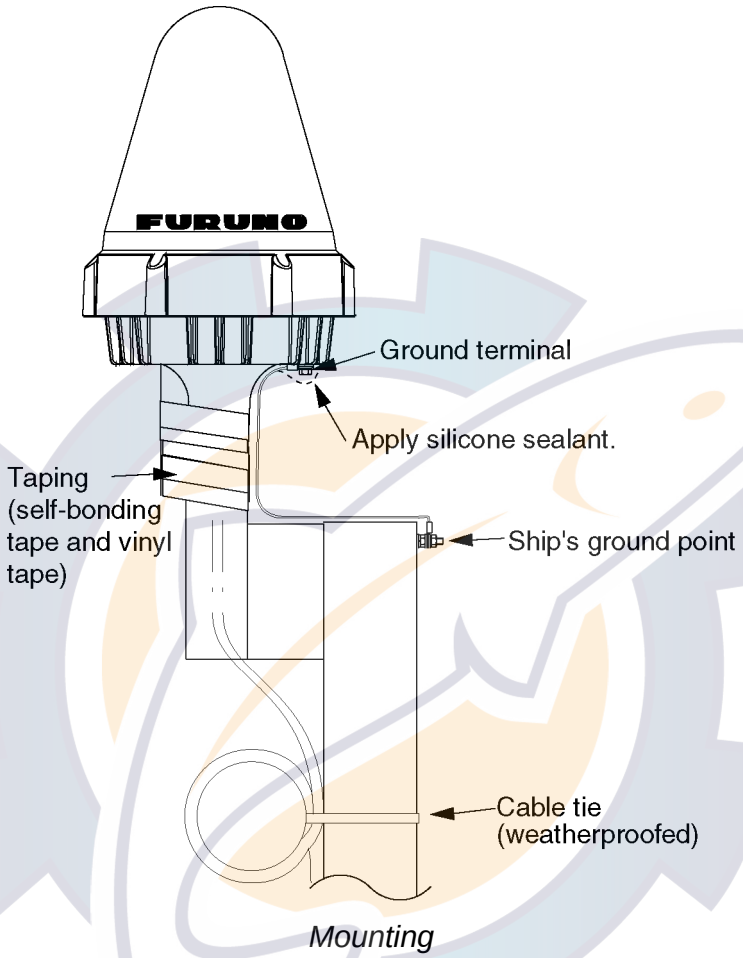
Note: Between the bottom of the antenna unit (upper) and the end of the taping should be less than 50 mm.



Antenna unit, passing the cable through the pipe

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10. Wrap self-bonding tape around the connection of antenna base and pipe, and then wind vinyl tape over self-bonding tape.
11. Remount the antenna unit (upper) on the antenna base. (Torque: 2.6 N·m ± 10%)
12. Fix the ground wire RW-4747 (supplied) between the ground terminal on the antenna unit and the ship's ground point.



Mounting

13. Apply silicone sealant (supplied) to the ground terminal and three screws at the bottom of antenna base.
14. Fix the antenna cable to the mast with a cable tie (local supply).

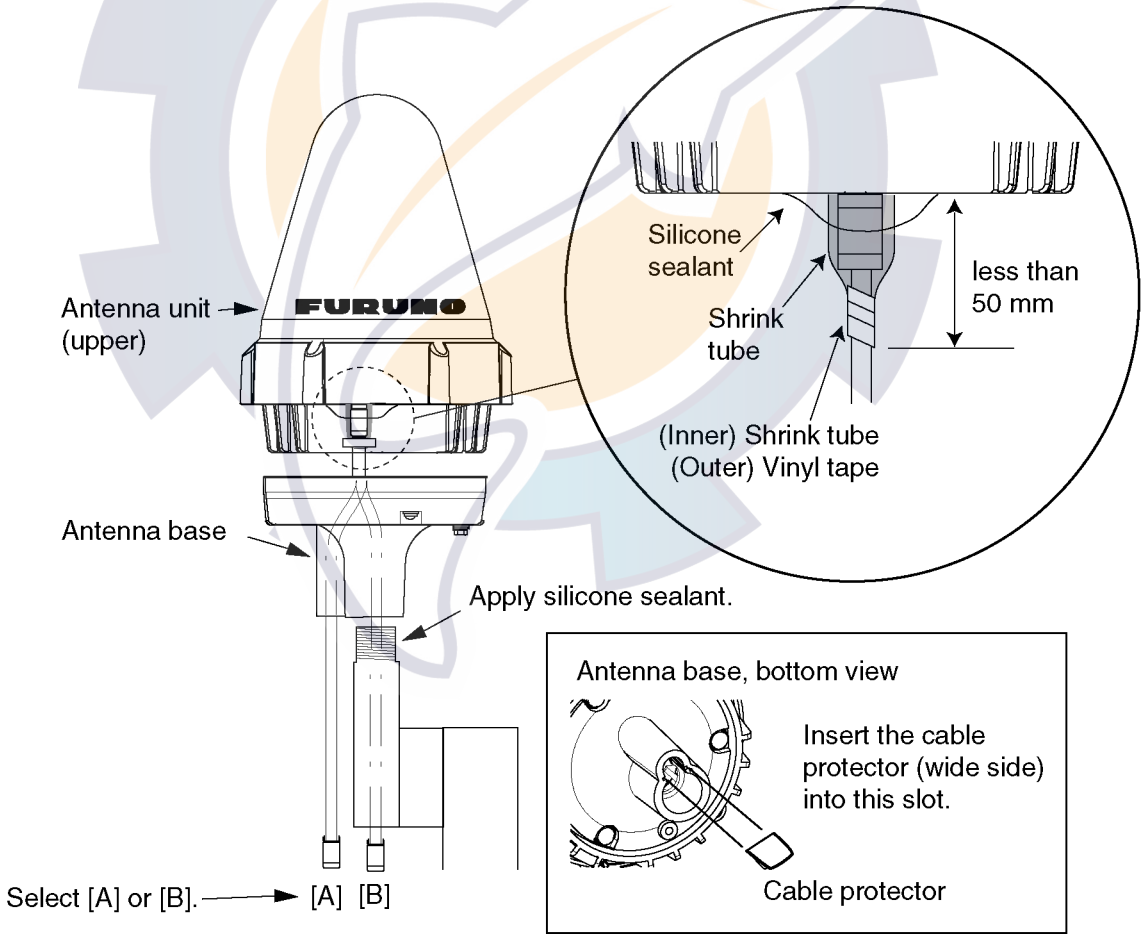
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For 50 or 100 m cable

1. Apply silicone sealant (local supply) to the threads of the pipe.
2. Unscrew three screws to remove the antenna base from the antenna unit.
3. Pass the cable assy TPA5FB0.3NJ5FBA-5DFB (supplied, 300 mm) through the shrink tube (supplied).
4. Attach the above cable assy to the connector at the bottom of the antenna unit (upper).
5. Slide up the shrink tube until it touches the bottom of the antenna unit (upper).
6. Heat the shrink tube, and then apply silicone sealant around the upper edge of the tube, also wind self-bonding tape around the lower edge of the shrink tube and then wrap vinyl tape over self-bonding tape.

Note: Between the bottom of the antenna unit (upper) and the end of the taping should be less than 50 mm.

7. Insert the cable protector (supplied) in to the slot at the bottom of the antenna base.
8. Pass the antenna cable through the pipe, antenna base in order.
   When laying the cable along side the pipe, put the cable aside to pass through the projection in the antenna base. See [A] in the figure shown below.

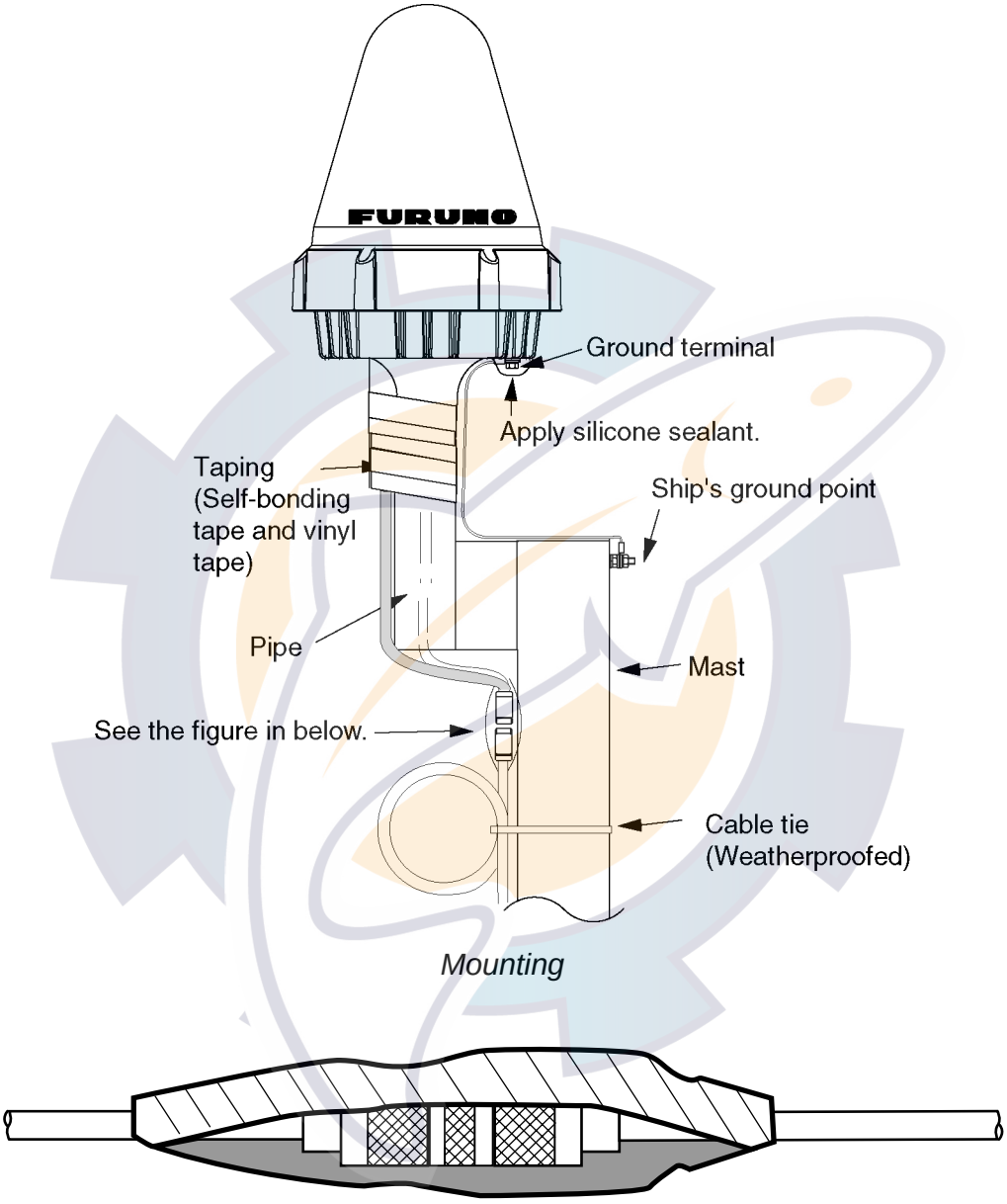


Waterproofing

9. Remount the antenna unit (upper) on the antenna base. (Torque: 2.6 N·m ± 10%)
10. Screw the antenna unit onto the antenna pipe by rotating the antenna unit.
11. Wind self-bonding tape (supplied) at the connection of antenna base and pipe, and then wrap vinyl tape over self-bonding tape.

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12. Fix the ground wire RW-4747 (supplied) between the ground terminal on the antenna unit and the ground stud on the mast.
13. Connect the antenna cable (50 or 100 m) and cable assy (attached at step 4).
14. Wrap the connector with self-bonding tape and then vinyl tape. Bind the cable end with a cable tie (local supply).
15. Fix the cable to the mast with cable tie (local supply).



Mounting

Waterproofing

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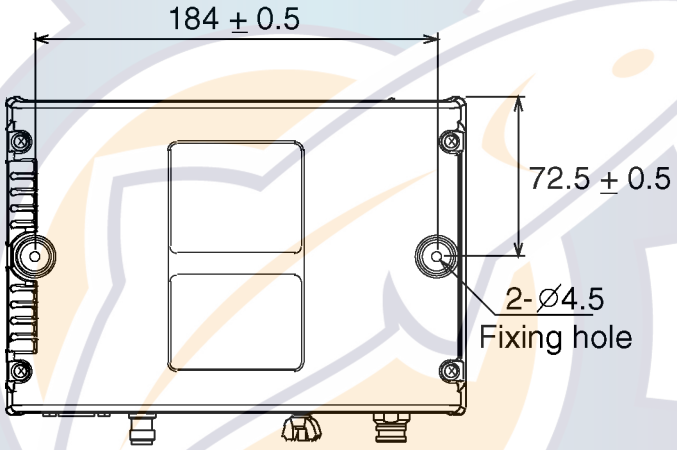
1.2 Communication Unit

Mounting

Select the following place to mount the communication unit.

- Provide sufficient ventilation.
- For maintenance and checking purpose, leave sufficient space at the sides and rear of the unit.

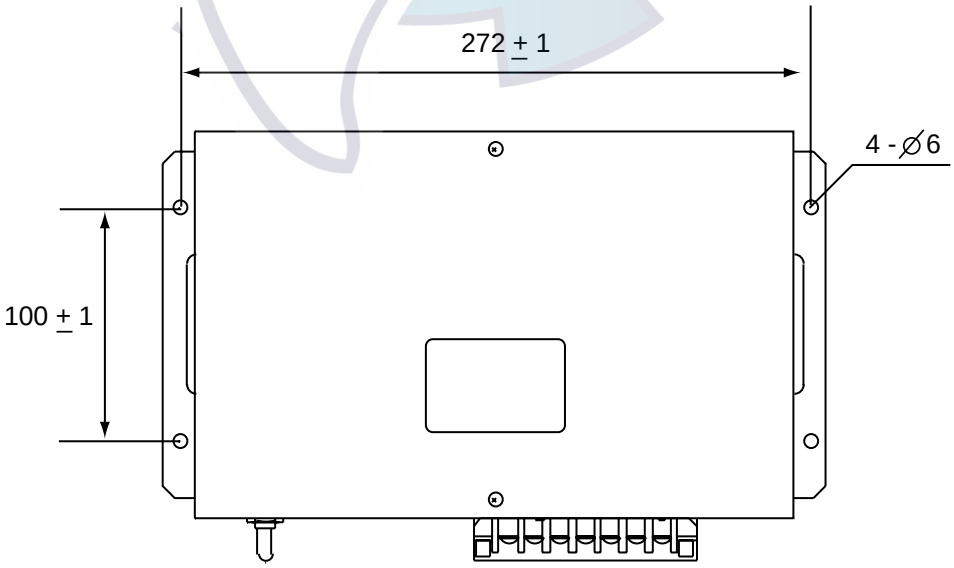
Use two tapping screws (4x40, supplied) to fix the communication unit. You can insert screws from the top and bottom side of the communication unit for bulkhead mounting. After the screwing, attach the cosmetic caps (2 pcs, supplied) to fixing holes to cover the screw head.



Communication unit, dimensions

1.3 AC/DC Power Supply Unit PR-240-CE (option)

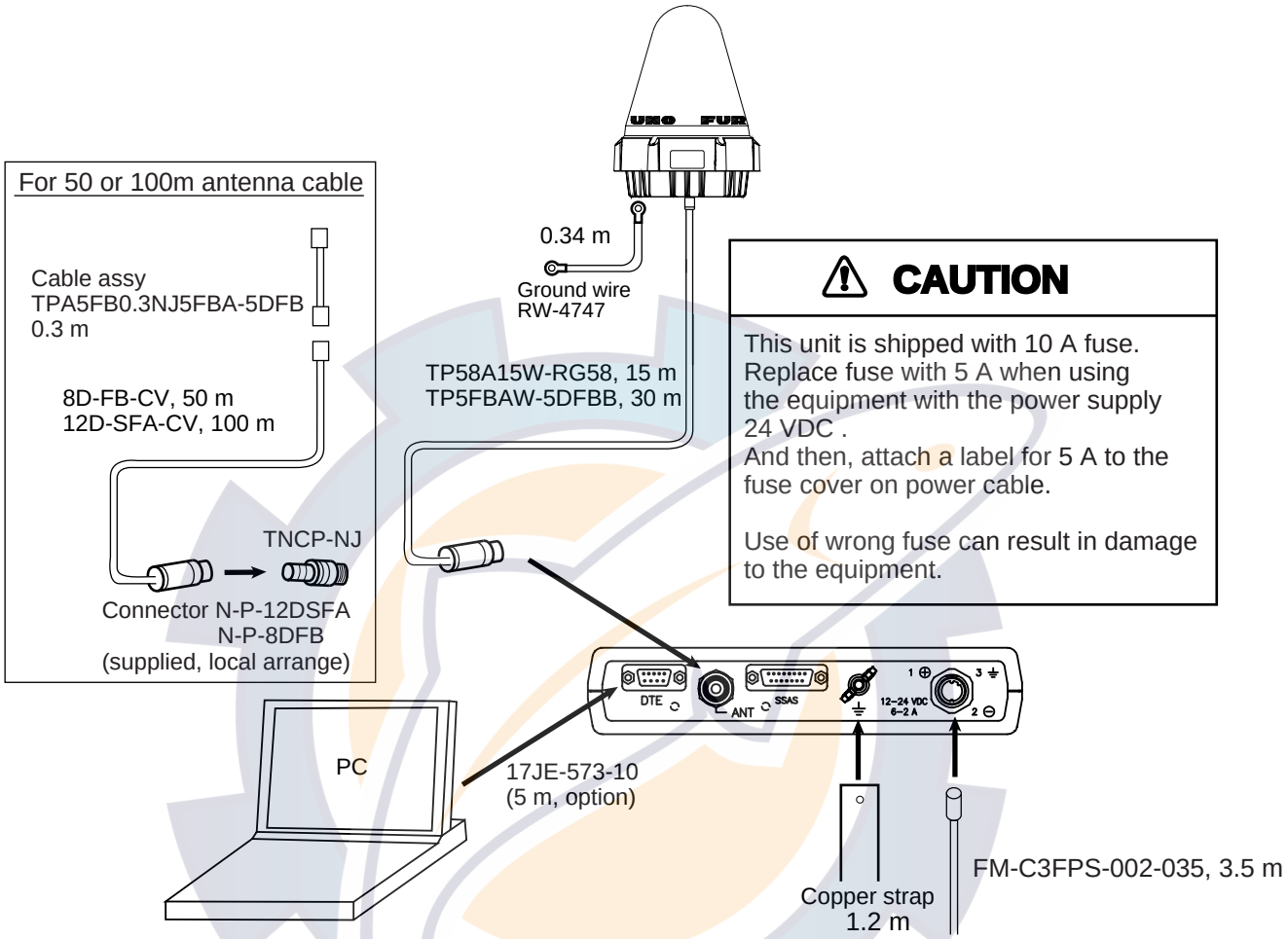
Fix the unit on a table with four tapping screws (4x16).



AC/DC power supply unit, dimensions

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2. WIRING



⚠ CAUTION

This unit is shipped with 10 A fuse.
Replace fuse with 5 A when using the equipment with the power supply 24 VDC .
And then, attach a label for 5 A to the fuse cover on power cable.

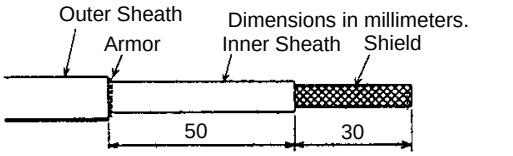
Use of wrong fuse can result in damage to the equipment.

Wiring of FELCOM 16

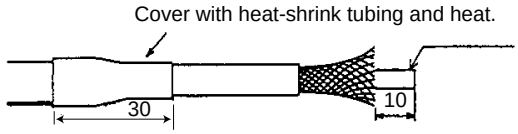
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2.1 Antenna Cable Connector at the Terminal Unit

8D-FB-CV (50 m)



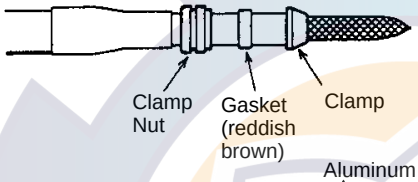
Remove outer sheath and armor by the dimensions shown left.
Expose inner sheath and shield by the dimensions shown left.



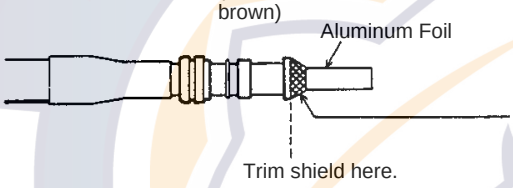
Remove insulator and core by 10 mm.



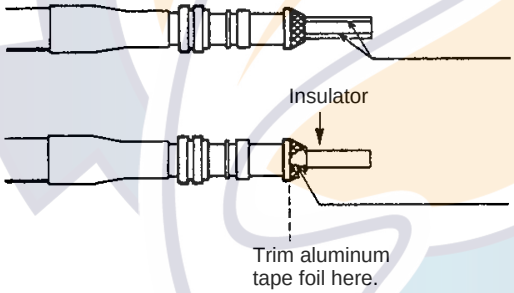
Twist shield end.



Slip on clamp nut, gasket and clamp as shown left.



Fold back shield over clamp and trim.



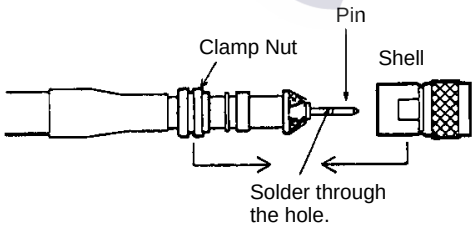
Cut aluminum foil at four places, 90° from one another.

Fold back aluminum tape foil onto shield and trim.



Expose the insulator by 1 mm.

Expose the insulator by 5 mm.



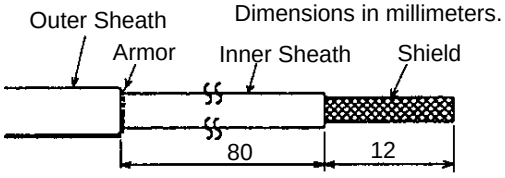
Slip the pin onto the conductor. Solder them together through the hole on the pin.

Insert the pin into the shell. Screw the clamp nut into the shell.
(Tighten by turning the clamp nut. Do not tighten by turning the shell.)

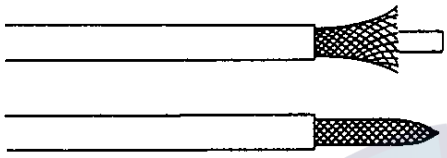
How to fabricate antenna cable 8D-FB-CV (50 m)

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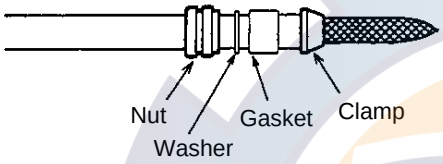
12D-SFA-CV (100)



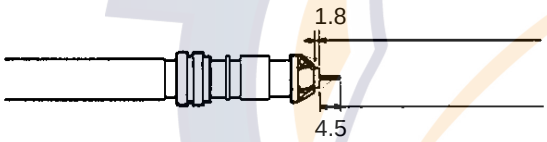
Remove outer sheath and armor by the dimensions shown left.
Expose inner sheath and shield by the dimensions shown left.



Twist shield end.

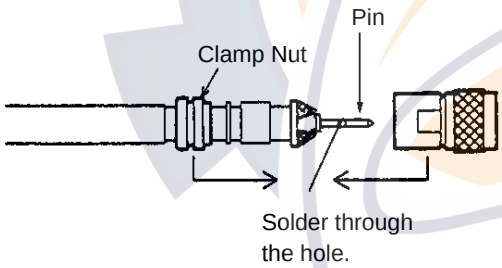


Slip on clamp nut, gasket and clamp as shown left.



Expose the insulator by 1.8 mm.

Expose the core by 4.5 mm.



Slip the pin onto the conductor. Solder them together through the hole on the pin.

Insert the pin into the shell. Screw the clamp nut into the shell.
(Tighten by turning the clamp nut. Do not tighten by turning the shell.)

How to fabricate antenna cable 12D-SFA-CV

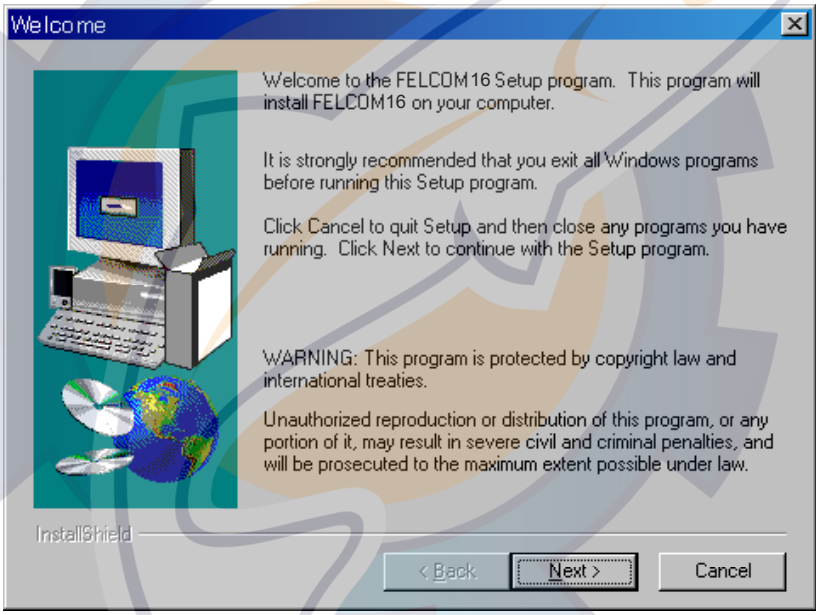
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3. SETTINGS AFTER THE INSTALLATION

3.1 Installing software

After installing the equipment, install the FELCOM 16 software (F16PC) in the PC as follows:

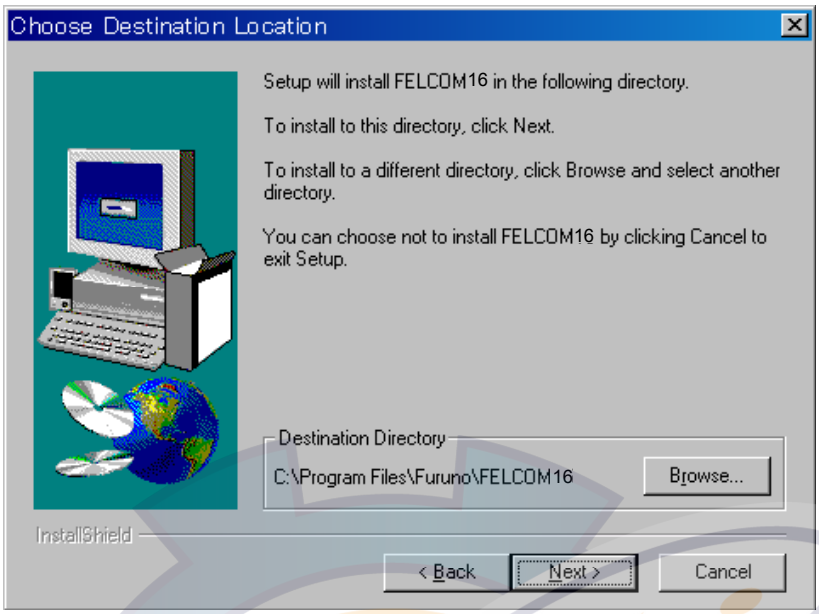
1. Turn on the PC.
2. Set FD-ROM in floppy disk drive.
3. Click the icon of “SETUP.EXE” in the floppy disk. The setup procedure begins, showing the welcome dialog box.



Welcome dialog box

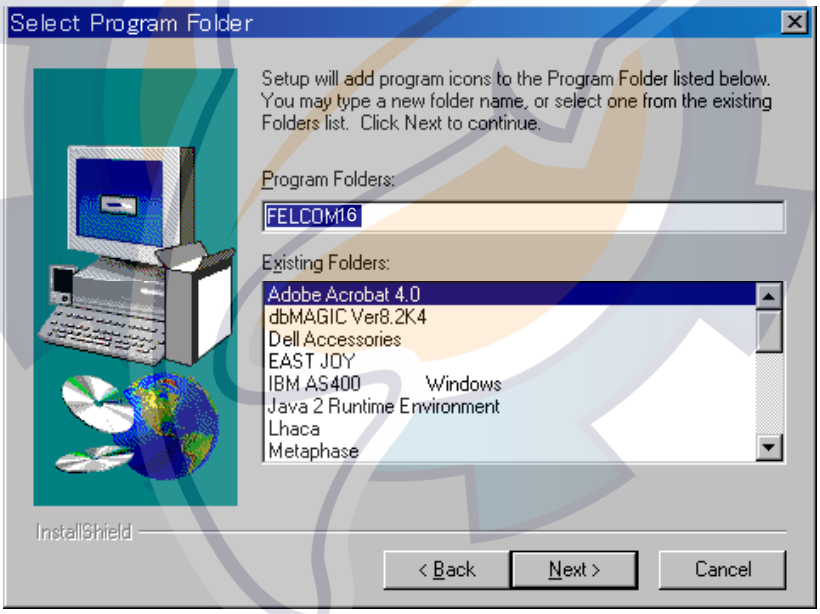
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4. Click the [Next] button.



Choose destination location dialog box

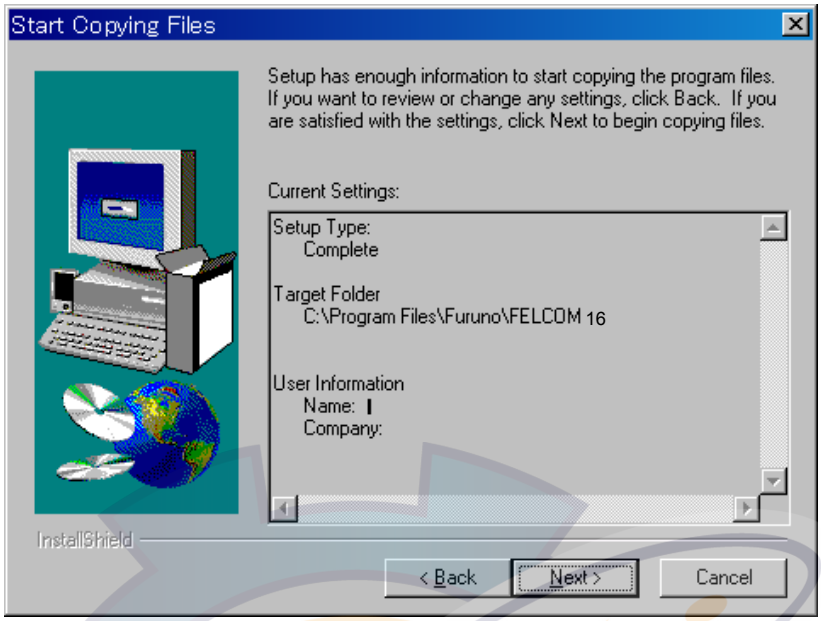
5. Click the [Next] button.



Select program folder dialog box

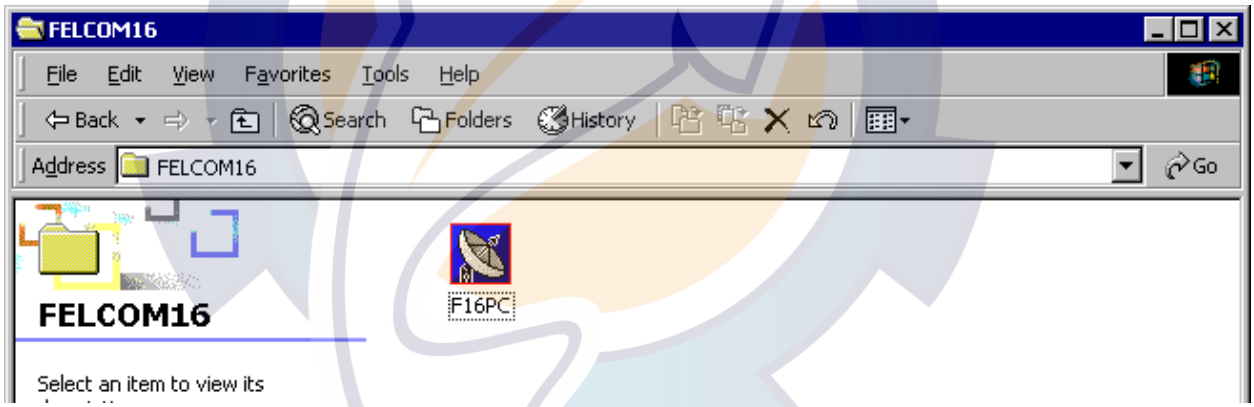
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6. Click the [Next] button.



Start copying files dialog box

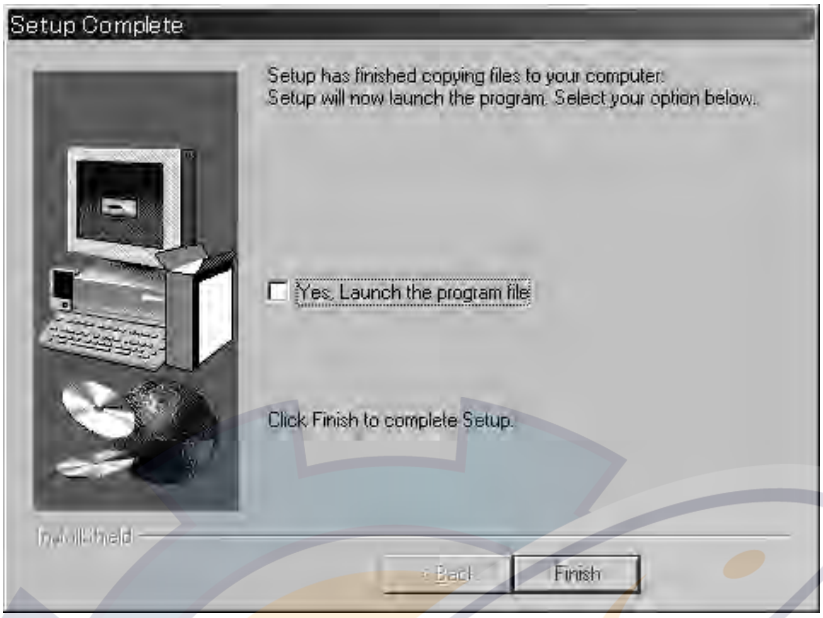
7. Click the [Next] button and the installation begins. When the installation is completed, the FELCOM 16 dialog box appears.



FELCOM 16 dialog box

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8. Click the Close button (☒)at the top right corner of the dialog box. The “Setup Complete” dialog box appears.



Setup complete dialog box

Note: If you want to launch the program file now check the box next to “Yes, Launch the program file.” The application will launch after the completion of step 9.

9. Click the [Finish] button. The FELCOM 16 PC application shortcut is created on the desktop.



F16PC

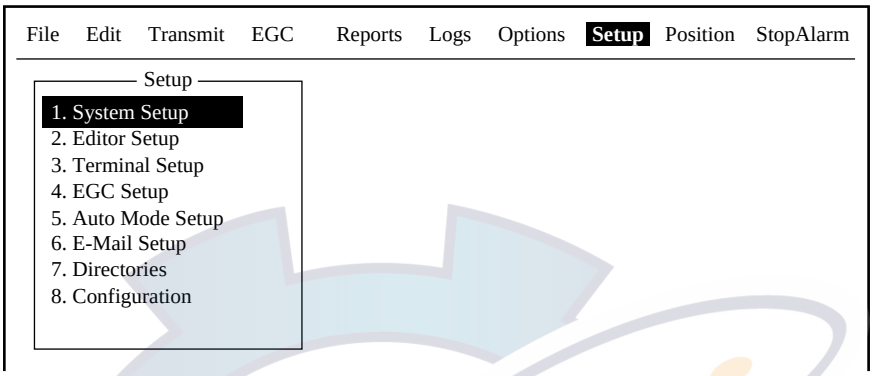
Note: To uninstall the F16 application see the operator’s manual for the PC.

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3.2 Setting the IMN (Inmarsat Mobile No.)

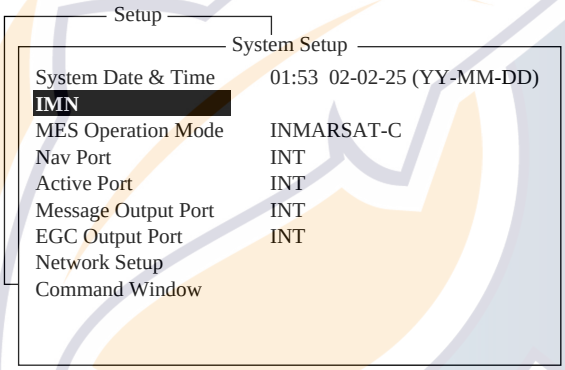
Set your IMN (Inmarsat Mobile No.) using the and PC as below.

1. Power on the communication unit and PC in order.
2. Double click [F16PC] on the screen to start the program.
3. Press the [F8] function key to show the Setup menu.



Setup menu

4. Press [1] key to display the System Setup menu.



System Setup menu

5. Confirm that the IMN is selected, and then press the [Enter] key.
   The entering field appears.
6. Key in your IMN.
7. Press the [Enter] key.
8. Press the [Esc] key to escape from the entering field.
9. Press the [Enter] key.

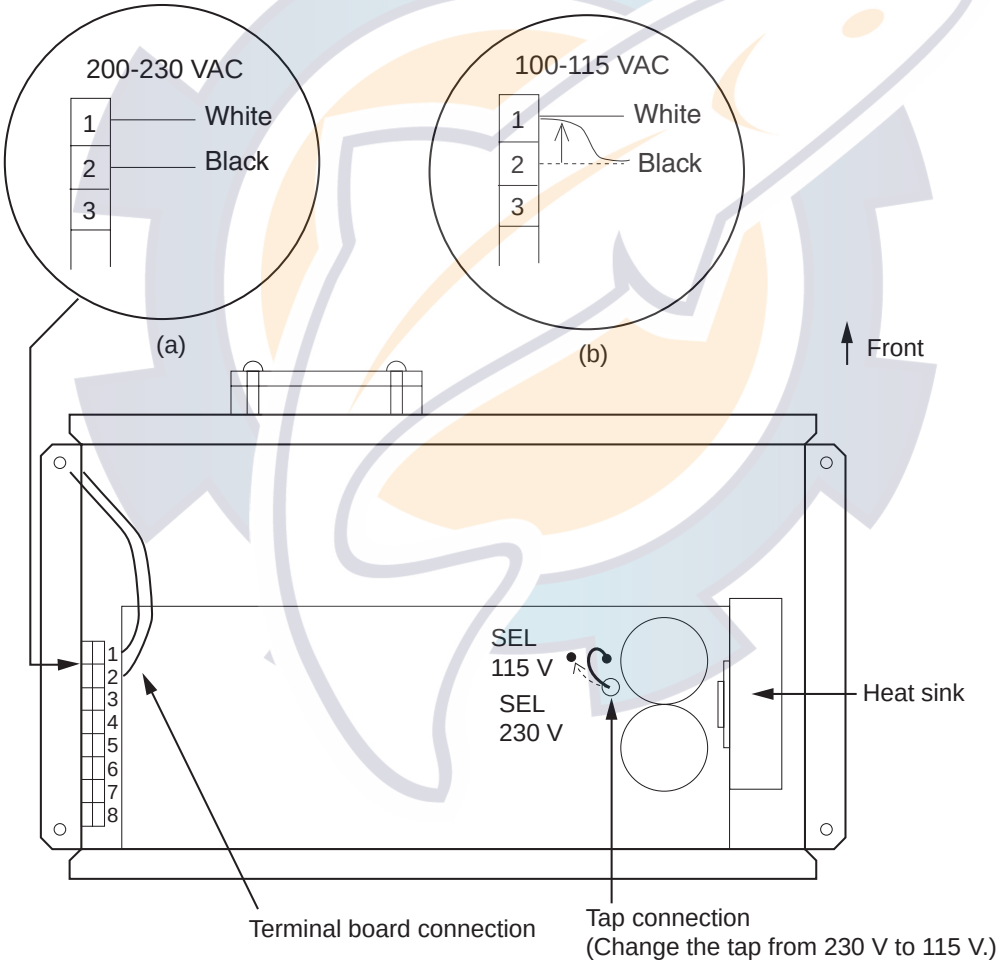
To clear the IMN, press [I] [M] [N] in order while pressing the [Alt] key down at step 6.
When using the FELCOM 16 for VMS (Vessel Monitoring System), DNID (Data Network ID) has to be downloaded via the LES (Land Earth Station). This arrangement is normally done by authority of VMS.

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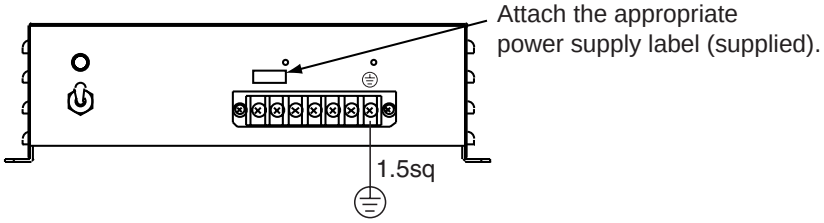
4. CHANGING POWER SUPPLY SPECIFICATIONS

The power supply PR-240-CE (option) is shipped with 220 VAC (200-230 VAC) setting. If the power supplys are 100 VAC – 115 VAC, change the tap connection and terminal connection as follows.

Power supply	Tap connection	Terminal board connection #1 & #2	Power supply label
100-115 VAC	SEL 115 V	b	AC100-115V 2.3-2.0A 1ϕ 50/60kHz
200-230 VAC	SEL 230 V	a	AC200-230V 1.15-1.0 A 1ϕ 50/60kHz



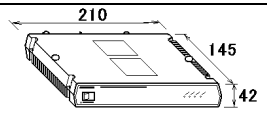
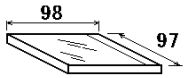
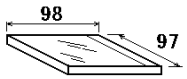
Top view (Cover removed)

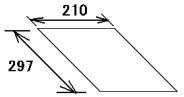
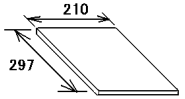
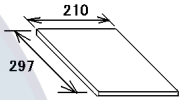
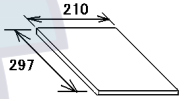
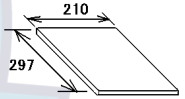


PACKING LIST

IC-216-J*/IC-216E

16AL-X-9851-8 1/1

NAME	OUTLINE	DESCRIPTION/CODE №	Q'TY
ユニット UNIT			
通信制御ﾕﾆｯﾄ COMMUNICATION UNIT		IC-216* 000-043-419 **	1
予備品 SPARE PARTS		**SP16-01401**	
予備品 SPARE PARTS		SP16-01401 004-439-530	1
付属品 ACCESSORIES		**FP16-00700**	
FD-ROM組品 FLOPPY DISK ROM		16-5-0166 004-439-740	1
ﾌﾛｯﾋﾟｰﾃﾞｨｽｸ組品 FLOPPY DISK		FP16-00601 004-439-400	1
工事材料 INSTALLATION MATERIALS		**CP16-02401**	
工事材料 INSTALLATION MATERIALS		CP16-02401 004-439-540	1
図書 DOCUMENT			

NAME	OUTLINE	DESCRIPTION/CODE №	Q'TY
ﾋｭｰｽﾞ変更のお願い NOTICE FOR FUSE REPLACEMENT		C52-00206-* 000-147-004	1
装備要領書 INSTALLATION MANUAL		IM*-56380-* 000-809-346 **	1
ｱﾌﾟﾘｹｰｼｮﾝﾌｫｰﾑ REGISTRATION FOR SERVICE ACTIVATION		J5-95001-0* 000-807-330	1
取扱説明書 OPERATOR'S MANUAL		OM*-56351-* 000-150-358 **	1
取扱説明書 OPERATOR'S MANUAL		OM*-56380-* 000-809-344 **	1

1.ｺｰﾄﾞ番号末尾の[**]は、選択品の代表型式/ｺｰﾄﾞを表します。
CODE NUMBER ENDED BY "**" INDICATES THE NUMBER OF TYPICAL MATERIAL.

（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

16AL-X-9851

A-1

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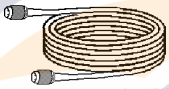
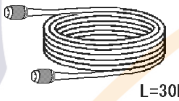
FURUNO

CODE NO.		16AK-X-9405 -2
TYPE		1/1

工事材料表

INSTALLATION MATERIALS

IC-116

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ｹｰﾌﾞﾙ組品 CABLE ASSY.	 L=100M	12D-SFA-CV *100M* CODE NO. 000-138-866	1	選択 TO BE SELECTED
2	ｹｰﾌﾞﾙ組品 CABLE ASSY.	 L=50M	8D-FB-CV *50M* CODE NO. 000-117-599	1	選択 TO BE SELECTED
3	ｹｰﾌﾞﾙ組品 CABLE ASSY.	 L=15M	TP58A15W-RG58 *15M* CODE NO. 000-146-252	1	選択 TO BE SELECTED
4	ｹｰﾌﾞﾙ組品 CABLE ASSY.	 L=30M	TP5FBAW-5DFBB *30M* CODE NO. 000-146-250	1	選択 TO BE SELECTED

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（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

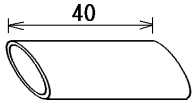
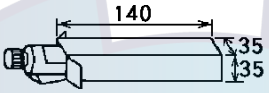
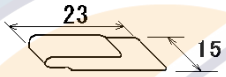
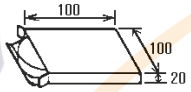
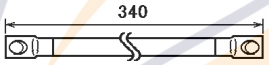
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FURUNO

CODE NO.	004-439-060	16AK-X-9401 -2
TYPE	CP16-02101	1/1

工事材料表

INSTALLATION MATERIALS

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ｲﾗｯｸｽｽﾘｰﾌﾞ SCM2 SHRINK TUBING		07-1220 ｸﾛ *40MM* CODE NO. 000-147-037	1	
2	ｽﾘｰﾎﾞﾝﾄﾞ SEALANT		1211 50G CODE NO. 000-854-118	1	
3	ｹｰﾌﾞﾙ保護材 CABLE PROTECTOR		16-018-1251-1 CODE NO. 100-298-111	1	
4	ﾌﾞﾁﾙｺﾞﾑﾃｰﾌﾟ SELF-BONDING TAPE		NO.15 CODE NO. 000-835-526	1	
5	ｱｰｽ線 GROUNDING WIRE		RW-4747-1 03S4747-2 CODE NO. 000-566-000	1	

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（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

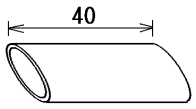
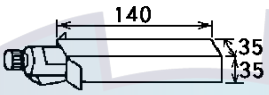
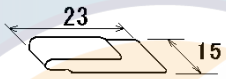
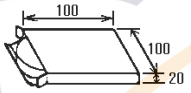
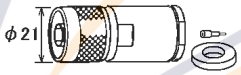
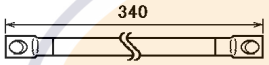
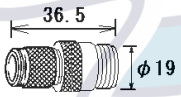
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FURUNO

CODE NO.	004-439-070-00	16AK-X-9402 -4
TYPE	CP16-02111	1/1

工事材料表

INSTALLATION MATERIALS

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ｲﾗｯｸｽｽﾘｰﾌﾞ SCM2 SHRINK TUBING		07-1220 ｸﾛ *40MM* CODE NO. 000-147-037-00	1	
2	ｹﾐｼｰﾙ/ｽﾘｰﾎﾞﾝﾄﾞ SILICON RUBBER/SEALANT		S-8400W(50Gﾁｭｰﾌﾞ) 1211 50G CODE NO. 000-158-483-00 000-854-118-00	1	
3	ｹｰﾌﾞﾙ保護材 CABLE PROTECTOR		16-018-1251-1 CODE NO. 100-298-111-00	1	
4	ﾌﾞﾁﾙｺﾞﾑﾃｰﾌﾟ SELF-BONDING TAPE		NO.15 CODE NO. 000-835-526-00	1	
5	ｺﾈｸﾀ(N) CONNECTOR		N-P-8DFB-CF N-P-8DFB CODE NO. 000-156-918-10 000-111-549-00	1	
6	ｱｰｽ線 GROUNDING WIRE		RW-4747-1 03S4747-2 CODE NO. 000-566-000-01	1	
7	ｺﾈｸﾀ CONNECTOR		TNCP-NJ TNCP-NJ CODE NO. 000-156-599-10 000-146-177-00	1	
8	ｹｰﾌﾞﾙ組品 CABLE ASSY.		TPA5FB0.3NJ5FBA-5DFB CODE NO. 000-159-524-10	1	

型式/ｺｰﾄﾞ番号が２段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。 なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

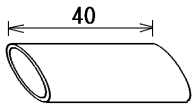
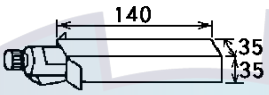
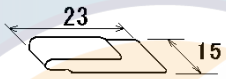
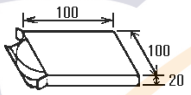
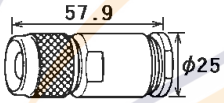
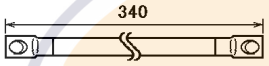
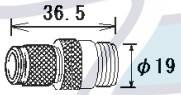
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FURUNO

CODE NO.	004-439-080-00	16AK-X-9403 -4
TYPE	CP16-02121	1/1

工事材料表

INSTALLATION MATERIALS

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ｲﾗｯｸｽｽﾘｰﾌﾞ SCM2 SHRINK TUBING		07-1220 ｸﾛ *40MM* CODE NO. 000-147-037-00	1	
2	ｹﾐｼｰﾙ/ｽﾘｰﾎﾞﾝﾄﾞ SILICON RUBBER/SEALANT		S-8400W(50Gﾁｭｰﾌﾞ) 1211 50G CODE NO. 000-158-483-00 000-854-118-00	1	
3	ｹｰﾌﾞﾙ保護材 CABLE PROTECTOR		16-018-1251-1 CODE NO. 100-298-111-00	1	
4	ﾌﾞﾁﾙｺﾞﾑﾃｰﾌﾟ SELF-BONDING TAPE		NO.15 CODE NO. 000-835-526-00	1	
5	ｺﾈｸﾀ(N) CONNECTOR		N-P-12DSFA CODE NO. 000-136-422-00	1	
6	ｱｰｽ線 GROUNDING WIRE		RW-4747-1 03S4747-2 CODE NO. 000-566-000-01	1	
7	ｺﾈｸﾀ CONNECTOR		TNCP-NJ TNCP-NJ CODE NO. 000-156-599-10 000-146-177-00	1	
8	ｹｰﾌﾞﾙ組品 CABLE ASSY.		TPA5FB0.3NJ5FBA-5DFB CODE NO. 000-159-524-10	1	

型式/ｺｰﾄﾞ番号が２段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。 なお、品質は変わりません。

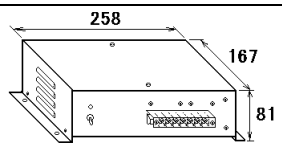
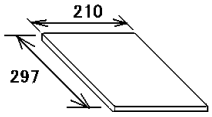
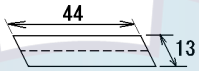
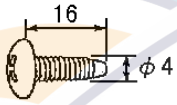
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（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

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PACKING LIST

PR-240-CE

NAME	OUTLINE	DESCRIPTION/CODE №	Q'TY
ユニット UNIT			
AC-DC電源 POWER SUPPLY UNIT		PR-240-CE 000-053-879	1
工事材料 INSTALLATION MATERIALS		**CP24-00151**	
PR-240-CE電源変更手順書 POWER MODIFICATION PROCEDURES		C52-00205-A 000-147-013	1
ﾃﾞﾝｹﾞﾝﾊﾘﾏｰｸ POWER LABEL		24-003-4101-3 100-299-773	1
+ﾄﾗｽﾀｯﾋﾟﾝﾈｼﾞ SELF-TAPPING SCREW		4X16 SUS304 1ｼｭ 000-802-080	4

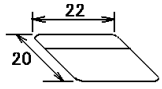
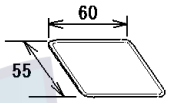
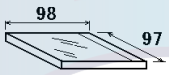
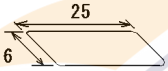
（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

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FURUNO

CODE NO.	004-448-860	16AL-X-9401 -0
TYPE	0P16-69	1/1

改造キット
MODIFICATION KIT.

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ﾊﾘﾏｰｸ(ALC) LABEL		16-013-1052-0 CODE NO. 100-281-730	4	
2	型式銘板(ALC) NAME PLATE		16-018-2002-1 CODE NO. 100-320-021	1	
3	FD-ROM FLOPPY DISK ROM		16-5-0179 CODE NO. 004-439-850	1	
4	FFAｼｰﾙ SEAL		FFA CODE NO. 000-150-470	3	

16AL-X-9401

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（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

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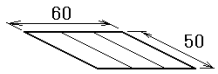
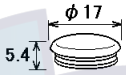
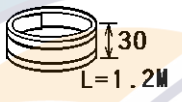
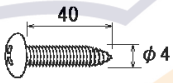
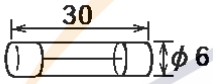
FURUNO

CODE NO.	004-439-540-00	16AL-X-9402 -1
TYPE	CP16-02401	1/1

工事材料表

INSTALLATION MATERIALS

IC-216

番号 NO.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ﾋｭｰｽﾞﾊﾘﾏｰｸ FUSE LABEL		03-153-1312-0 CODE NO. 100-292-140-00	1	
2	ｷｬｯﾌﾟ CAP		040-4025 040-4025 CODE NO. 000-164-931-10 000-515-249-00	2	
3	ｱｰｽ板 COPPER STRAP		05-003-0031 CODE NO. 590-300-310-00	1	
4	+ﾄﾗｽﾀｯﾋﾟﾝﾈｼﾞ SELF-TAPPING SCREW		4X40 SUS304 4X40 SUS304 CODE NO. 000-162-606-10 000-809-373-00	2	
5	ﾋｭｰｽﾞ FUSE		FGBO-A 125V 5A PBF FGBO-A 5A AC125V CODE NO. 000-155-853-10 000-549-064-00	1	
6	ｹｰﾌﾞﾙ組品 CABLE ASSY.		FM-C3FPS-002-035 CODE NO. 000-150-079-00	1	

型式/ｺｰﾄﾞ番号が２段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。　なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

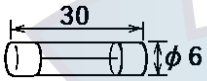
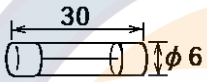
（略図の寸法は、参考値です。　DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

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FURUNO

CODE NO.	004-439-530	16AK-X-9302 -0 1/1
TYPE	SP16-01401	BOX NO. P

SHIP NO.	SPARE PARTS LIST FOR	U S E	SETS PER VESSEL

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	ﾋｭｰｽﾞ FUSE		FGBO-A 5A AC125V			1	000-549-064
2	ﾋｭｰｽﾞ FUSE		FGBO 10A AC125V			1	000-549-065

MFR'S NAME	FURUNO ELECTRIC CO.,LTD.	DWG NO.	16AK-X-9302	1/1

(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

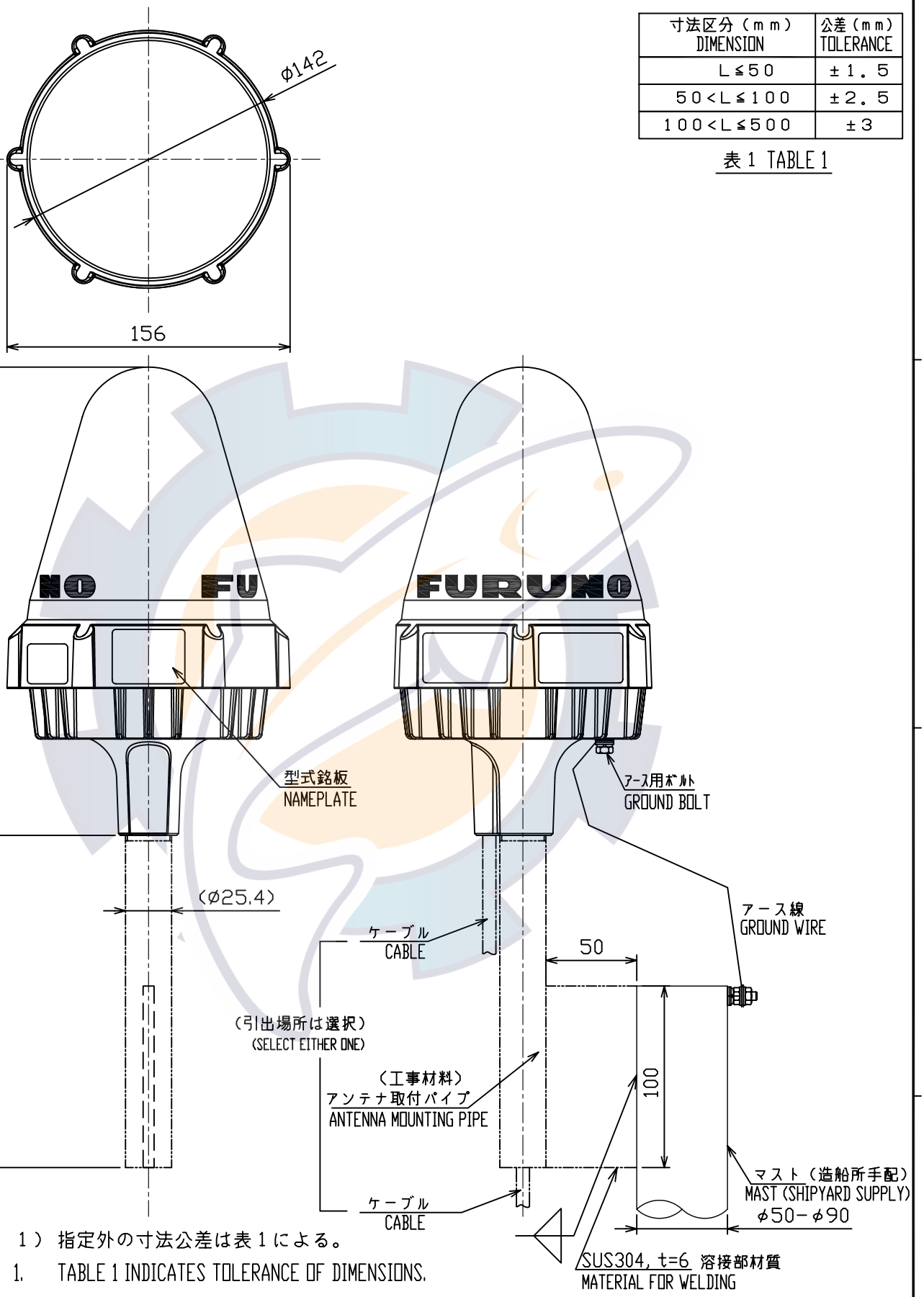
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FURUNO

D-1

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

表1 TABLE 1



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.

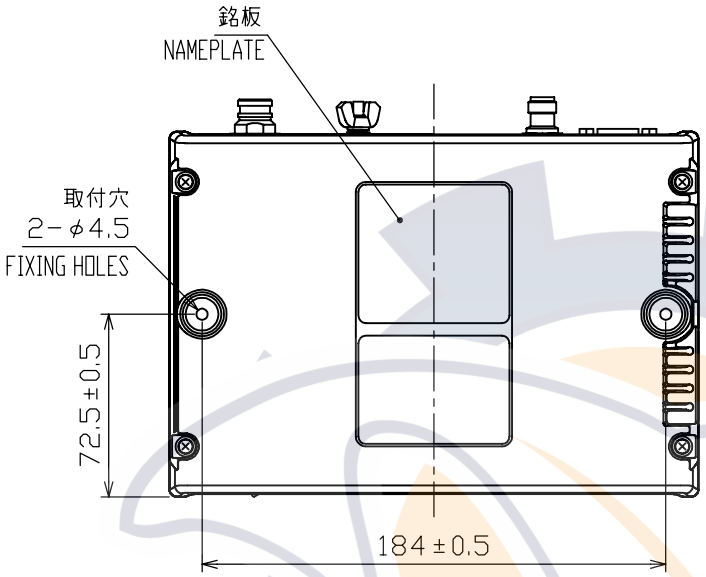
DRAWN Dec. 9 '05 T.YAMASAKI		TITLE	IC-115/116
CHECKED Dec. 12 '05 T.TAKENO		名称	アンテナユニット
APPROVED Dec.19'05 T.Matsuyuchi	FELCOM 15/16		外寸図
SCALE 1/3 MASS 1.4 ±10% kg	質量はパイプ工材を含まず。 MASS W/O MOUNTING PIPE.	NAME	ANTENNA UNIT
DWG No. C5635-G01- D	16-018-100G-1		OUTLINE DRAWING

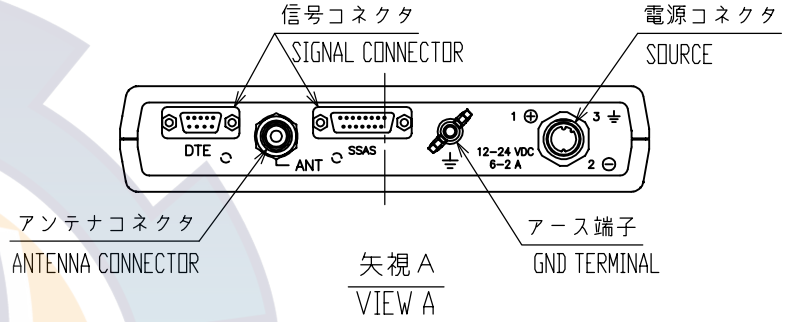
FURUNO ELECTRIC CO., LTD.

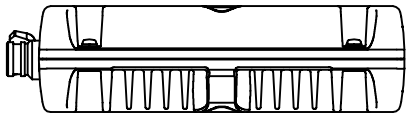
FURUNO

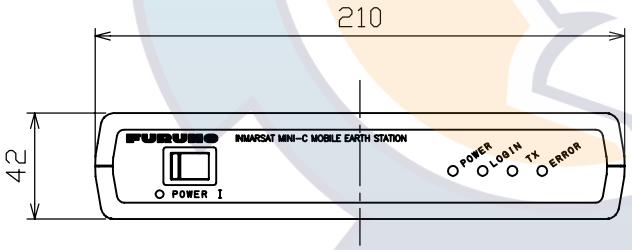
表１ TABLE 1

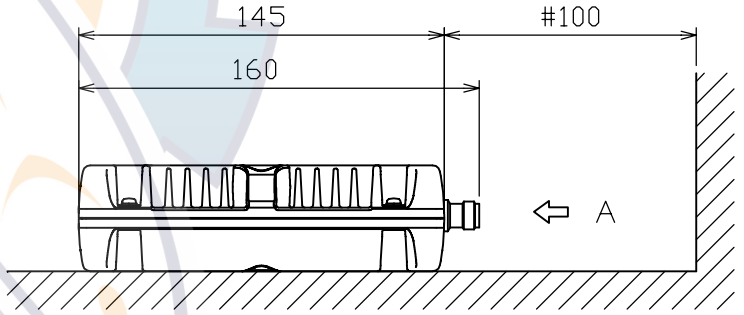
寸法区分（ｍｍ） DIMENSIONS	公差（ｍｍ） TOLERANCE
L≦50	±1．5
50<L≦100	±2．5
100<L≦500	±3











注　記

１）＃印寸法は最小サービス空間寸法とする。
２）指定外の寸法公差は表１による。
３）取付にはＭ４ボルト、または＋トラスタッピンネジ
　　呼び径４×４０を使用のこと。

NOTE

1. #: MINIMUM SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
3. USE M4 BOLTS OR TAPPING SCREWS 4x40 FOR FIXING THE UNIT.

DRAWN Feb. 9 '04 E. MIYOSHI			TITLE IC-216
CHECKED Takahashi T.			名称 通信制御ユニット
APPROVED Y. Hatai		FELCOM 16	外寸図
SCALE 1/3	MASS 1.2 ±10% kg		NAME COMMUNICATION UNIT
DWG No. C5638-G01- D		16-018-200G-3	OUTLINE DRAWING

D-2

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FURUNO

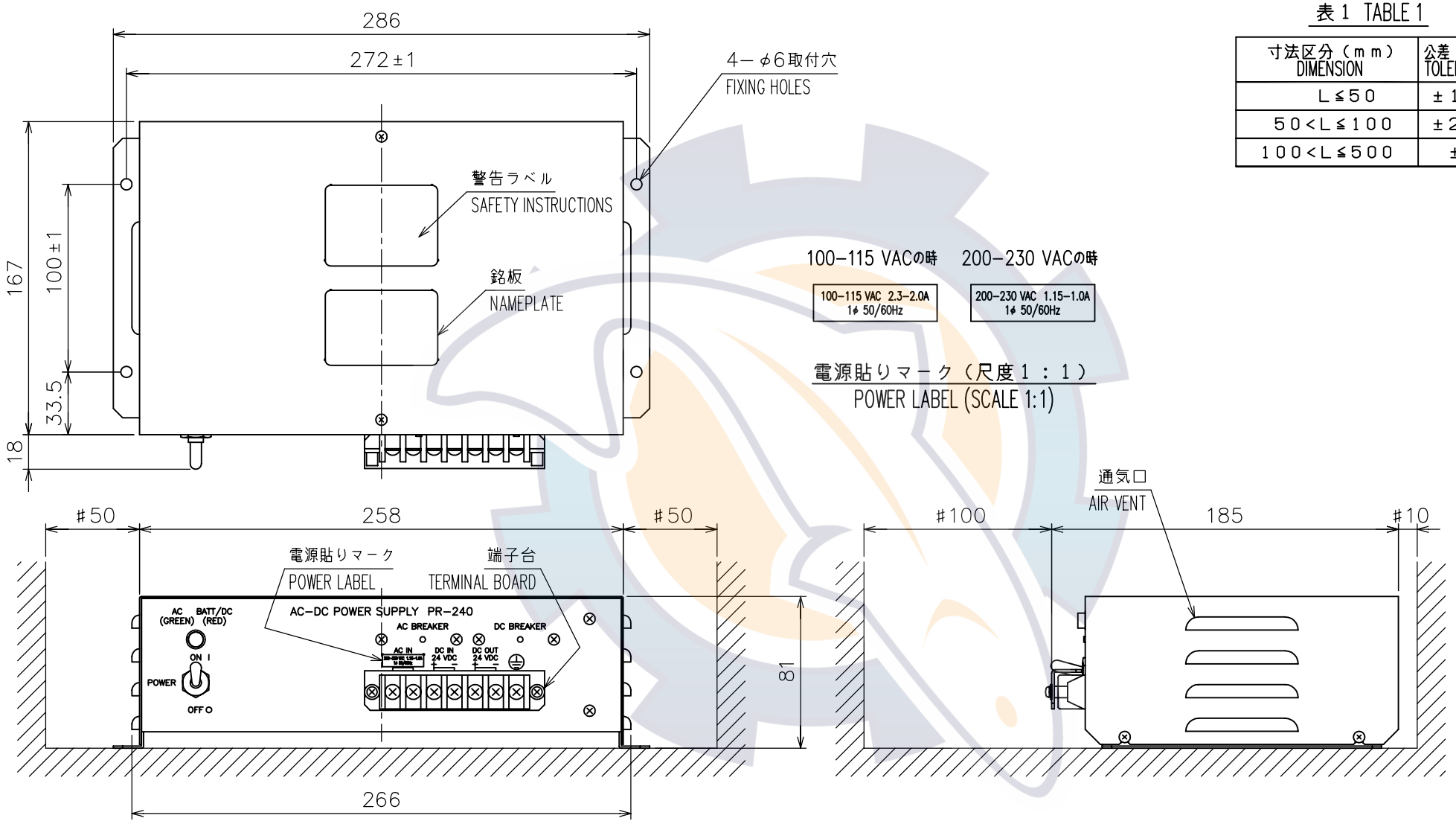


表１ TABLE 1

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）指定なき寸法公差は表１による。
２）#印寸法は推奨する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４ｘ１６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 4x16 FOR FIXING THE UNIT.

DRAWN Mar. 3 '04 T.YAMASAKI		TITLE	PR-240-CE
CHECKED Mar. 3 '04 T.TAKENO		名称	AC/DC電源ユニット
APPROVED Mar.11'04 H.Hayashi			外寸図
SCALE 1/3	MASS 2.8 ±10% kg	NAME	AC/DC POWER SUPPLY UNIT
DWG No. C5003-G03- F	24-003-500G-3		OUTLINE DRAWING

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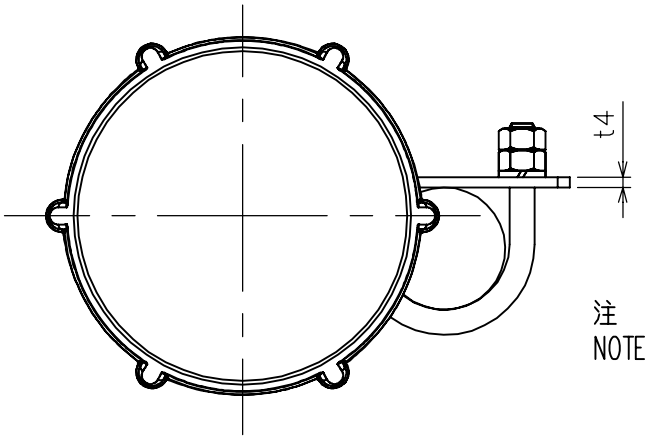
D-3

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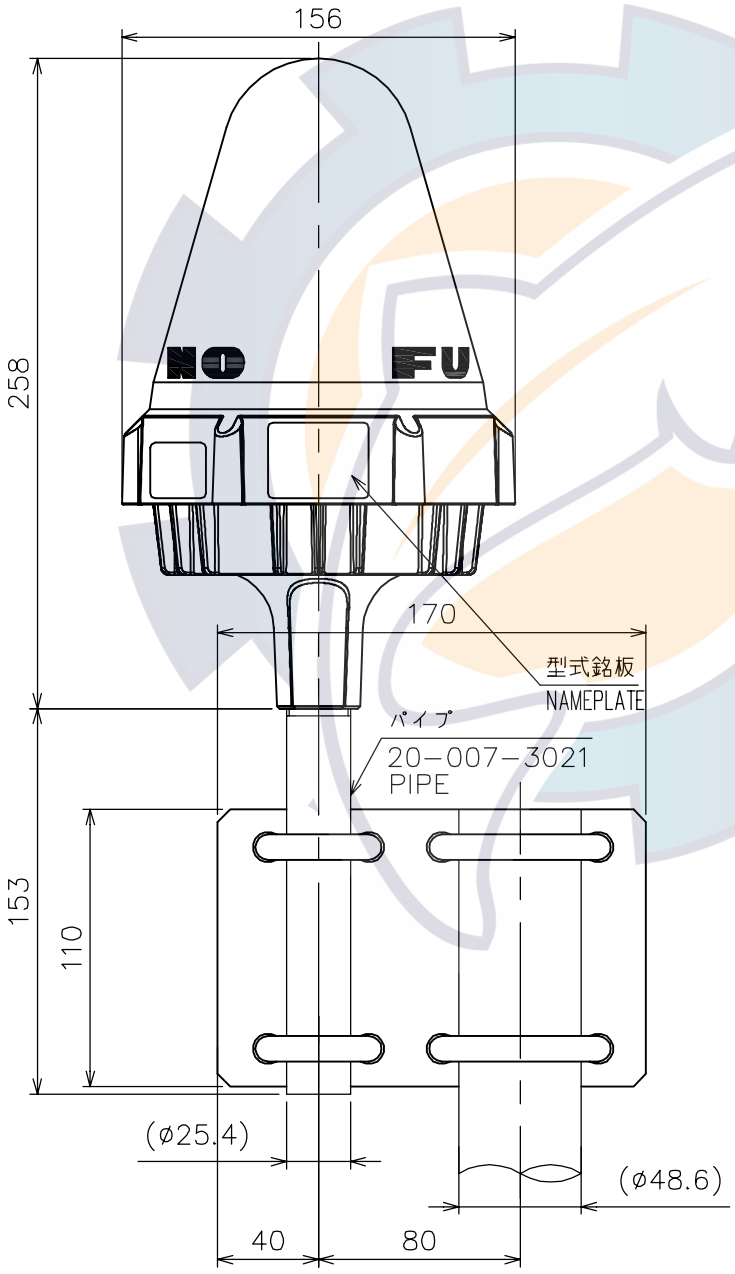
www.reelschematic.com

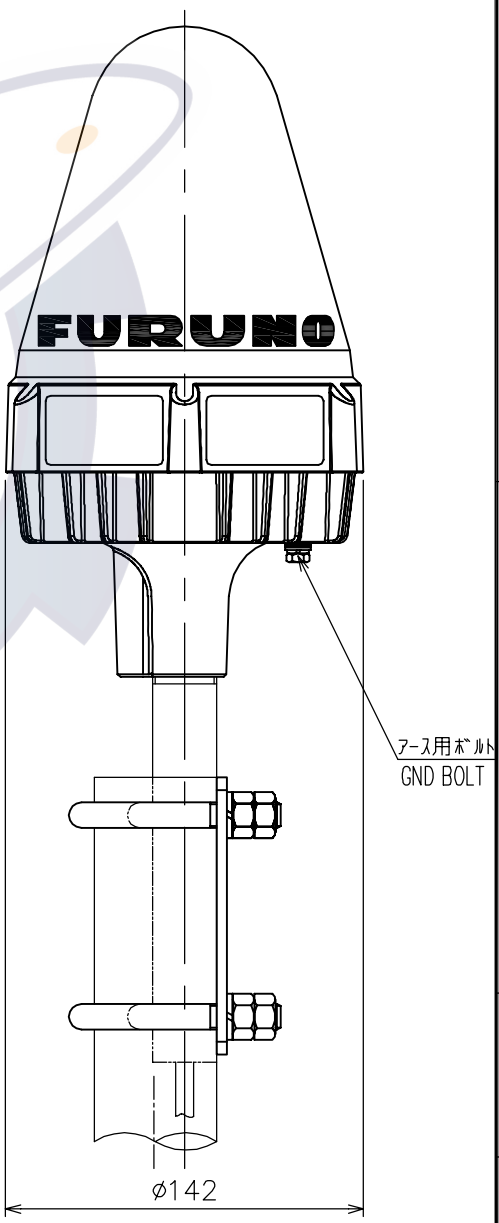
表 1 TABLE 1

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



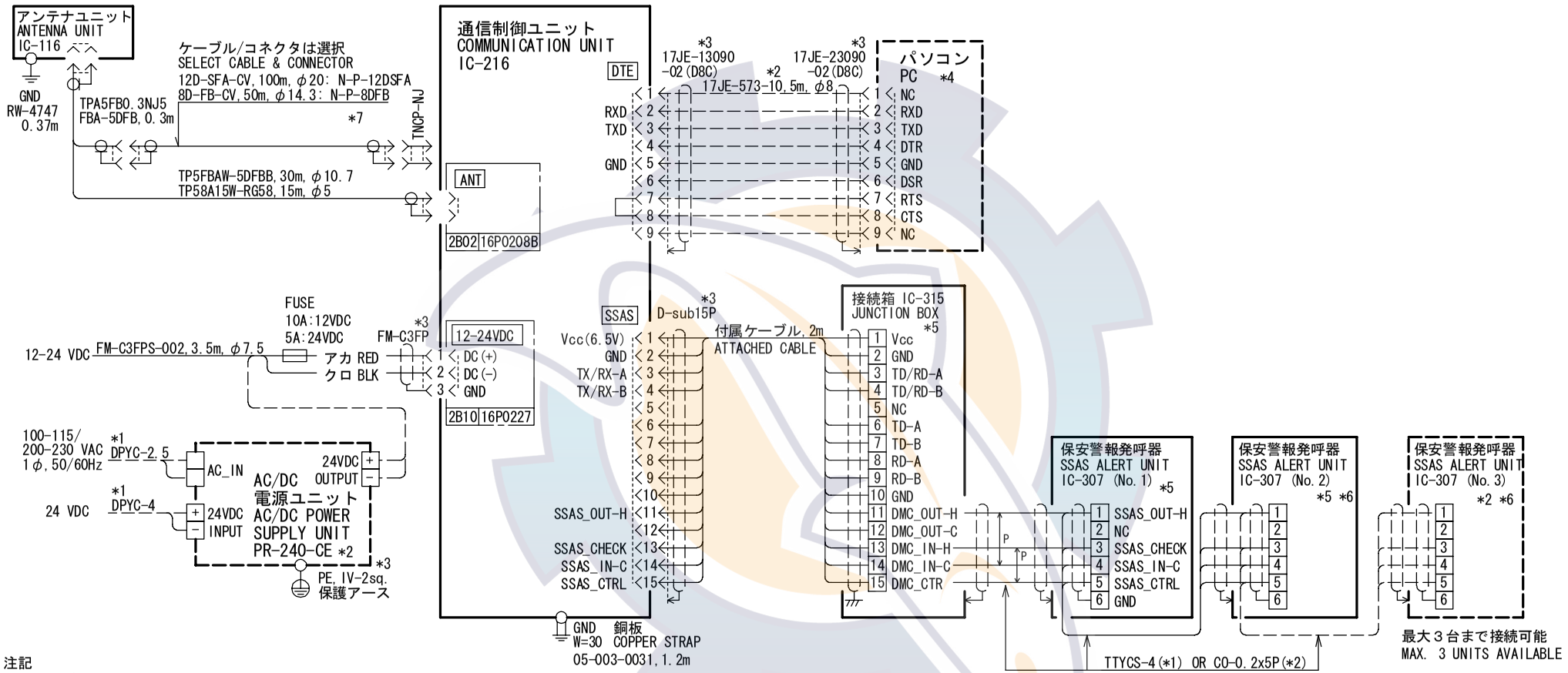
注　記　1）指定外の寸法公差は表 1 による。
NOTE　1.　TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.





DRAWN Mar. 13, '06 E.MIYOSHI			TITLE IC-115/116
CHECKED TAKAHASHI.T			名称 アンテナユニット
APPROVED Y. Hatai	FELCOM 15/16		外寸図
SCALE 1/3	MASS 2.2 ±10% kg		NAME ANTENNA UNIT
DWG No. C5635-G19- A	16-018-101G-1		OUTLINE DRAWING

FURUNO



注記
＊１）造船所手配
＊２）オプション
＊３）工場にて取付済み
＊４）ユーザー手配
＊５）SSAS仕様時標準支給
＊６）終端のIC-307はジャンパー設定を変更する。
＊７）アンテナケーブルは接断して使用しないこと。

NOTE
*1. SHIPYARD SUPPLY
*2. OPTION
*3. FITTED AT FACTORY
*4. USER SUPPLY
*5. STANDARD SUPPLY FOR SSAS SPEC
*6. CHANGE SETTING OF JUMPER IN IC-307 FOR TERMINATOR.
*7. DO NOT SHORTEN ANTENNA CABLE.

CO-0.2x5P: CO-SPEVV-SB-C 0.2x5P, φ13.5

DRAWN	Feb.9,'06 E.MIYOSHI	TITLE	FELCOM 16
CHECKED	TAKAHASHI.T	名称	インマルサットMINI-C携帯移動地球局
APPROVED	Y. Hatai		相互結線図
SCALE	MASS kg	NAME	INMARSAT MINI-C MES
DWG No.	C5638-C01- J		INTERCONNECTION DIAGRAM

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S-1

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