

# **FURUNO**

## **INMARSAT MINI-C MOBILE EARTH STATION**

Model **FELCOM 16**

### ***Installation Manual***

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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/m<sup>2</sup> 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 equipment 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 (default 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	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

# EQUIPMENT LISTS

## Standard Supply

Name	Type	Code No.	Qty	Remarks
Antenna Unit	IC-116	-	1	w/CP16-05511, TP5FBAW-5DFBB
Communication Unit	IC-216	-	1	w/SP16-01401, CP16-02401, FP16-00700
Junction Box*	IC-315	-	1	w/CP16-02501
SSAS Alert Unit*	IC-307	-	2	w/CP16-03101, FP16-00901

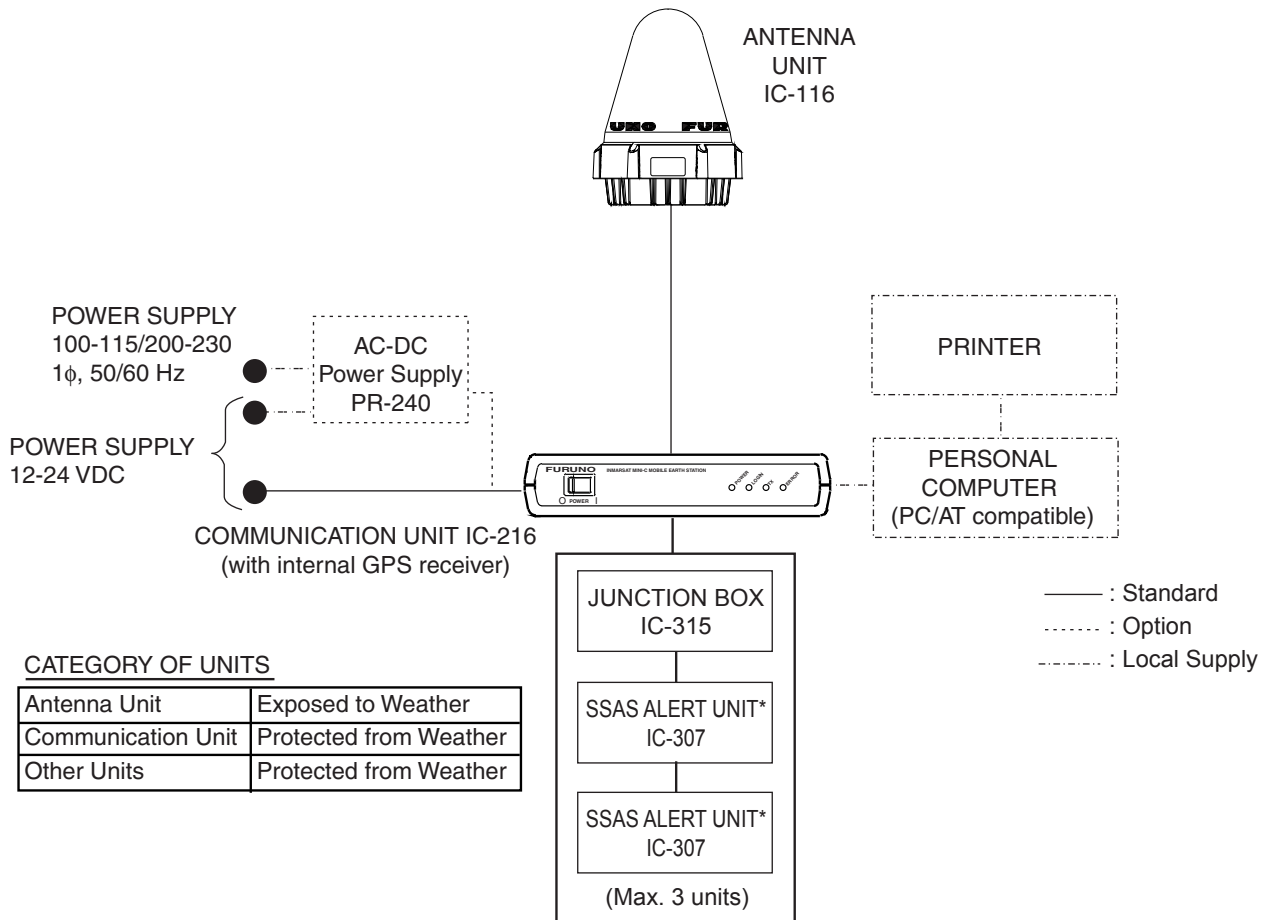
## Optional Supply

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	-	1 set	w/CP24-00151**
5-pair cable	COSPEVVSBC 5PX0.2LF	000-560-452-11	1	For junction box, 10m
		000-103-868-11		For junction box, 20m
		000-103-869-11		For junction box, 30m
		000-132-829-11		For junction box, 40m
		000-132-828-11		For junction box, 50m
Junction Box	IC-315	-	1	
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	
Antenna Base w/Hose Clamp	OP16-72	001-313-420	1	For IC-116
Antenna Base w/Mount Pipe	OP16-73	001-313-430	1	
Antenna Base w/U Bolt	OP16-74	001-313-440	1	
Antenna Base	OP16-75	001-313-450	1	
Installation Materials	CP16-05740	000-021-703	1	15 m
	CP16-05750	000-021-704		30 m
	CP16-05760	000-021-713		50 m, armored cable
	CP16-05770	000-021-714		100 m, armored cable
	CP16-05790	000-021-715		30 m, armored cable

\*: SSAS Specification only.

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

# SYSTEM CONFIGURATION



\*: At least two SSAS Alert Units are required.

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# 1. MOUNTING THE UNIT

## NOTICE

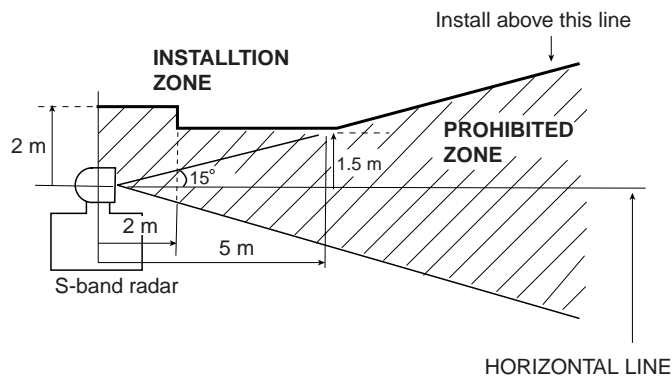
Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.

Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

## 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/s <sup>2</sup> 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.

## 1. MOUNTING THE UNIT

### Mounting

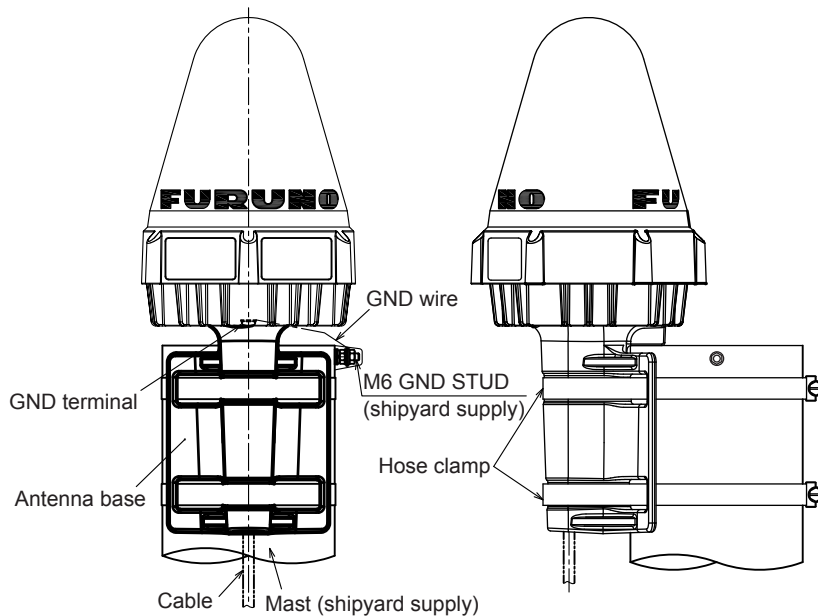
The antenna cable is available in lengths of 15 m, 30 m, 50 m and 100 m (see table below).

Cable length	Type	Remarks
15 m (no armor)	TP58A15W-RG58A/U	TNC connector at both ends
30 m (no armor)	TP5FBAW-5DFB	
30 m (w/armor)	5D-FB-CV-NP	N connector on one end (antenna side)
50 m (w/armor)	8D-FB-CV	
100 m (w/armor)	12D-SFA-LITE-CV	

**Note 1:** Do not shorten these cables. Interference can result, affecting performance.

Locally prepare an antenna mast with a ground stud (M6 bolt welded to 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*

For how to wire the antenna cable, see "Installation and Replacement of Antenna Unit", included with the antenna unit.



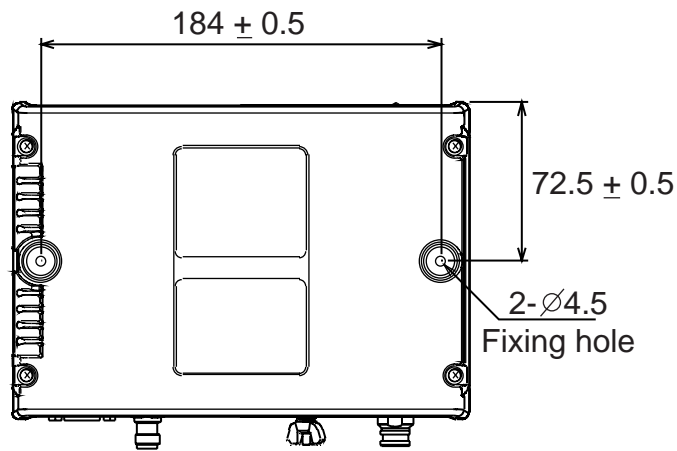
## 1.2 Communication Unit

### 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.

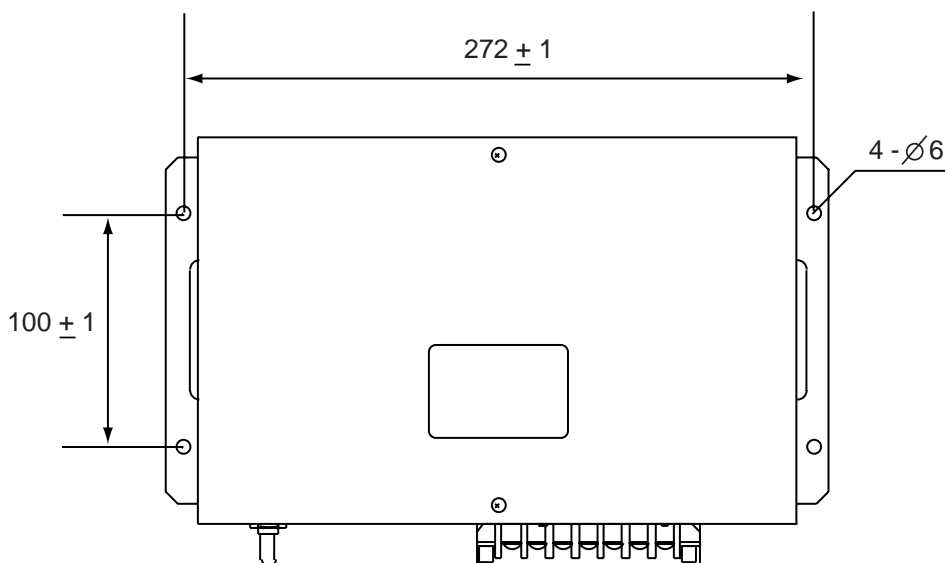
Use two tapping screws (4x40, supplied) to fix the communication unit. You can insert screws from the top and bottom side of the communication unit for bulkhead mounting. After the screwing, attach the cosmetic caps (2 pcs, supplied) to fixing holes to cover the screw head.



*Communication unit, dimensions*

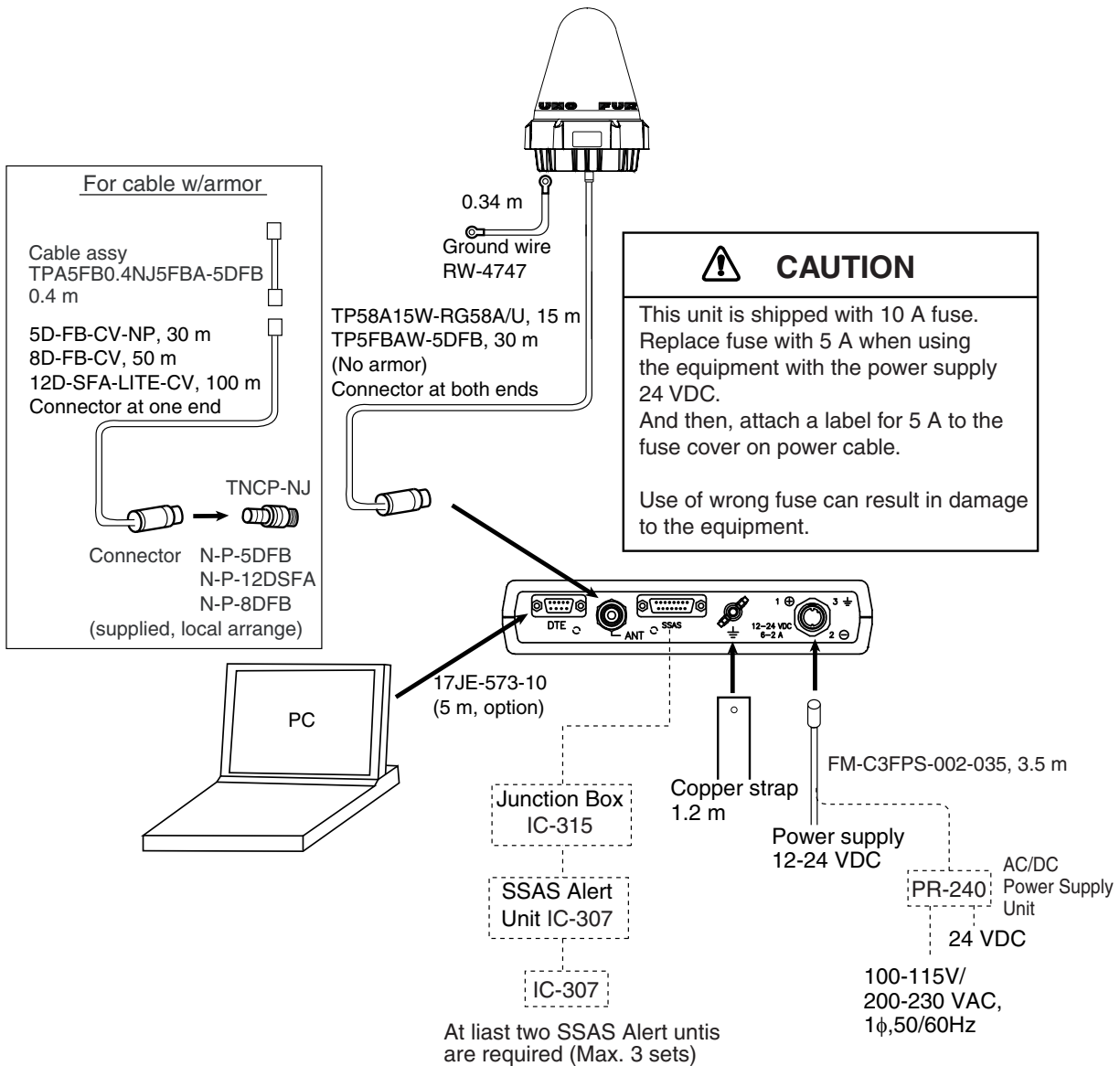
## 1.3 AC/DC Power Supply Unit PR-240 (option)

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



*AC/DC power supply unit, dimensions*

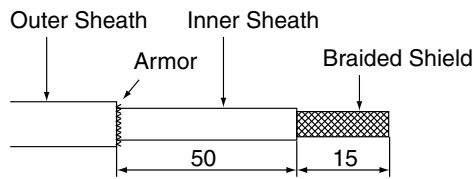
# 2. WIRING



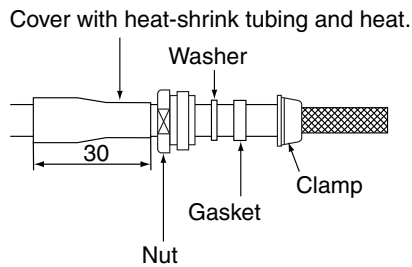
Wiring of FELCOM 16

# 2.1 Antenna Cable Connector at the Terminal Unit

## 5D-FB-CV-NP (30 m)

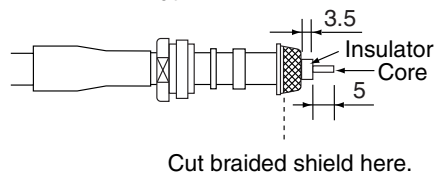


Remove the outer sheath, armor and inner sheath by the dimensions shown.



Set the nut, washer, gasket, clamp onto cable as shown.

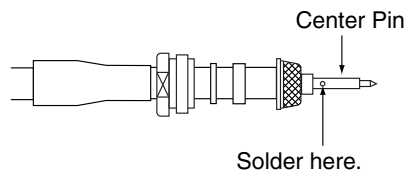
- Be careful not to damage the braided shield.



Fold back the braided shield onto the clamp and trim the shield as shown.

Make the length of insulator 3.5 mm and the length of the core 5 mm.

- Be careful not to damage the core.



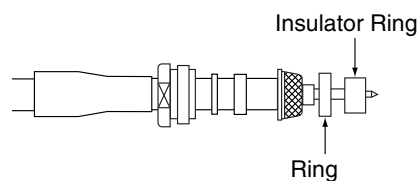
Set the center pin to the core and solder the pin from the hole in the pin.

(Pull the pin with approx. 1 kg of force to check strength of solder joint.)

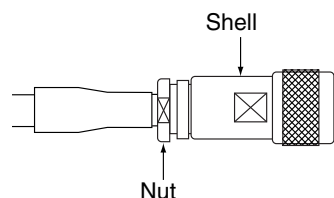
- Be sure the solder is flush with surface of pin.

- Be sure there is no gap between center pin and insulator. Do not push the center pin into the insulator.

- Do the soldering as quickly as possible so as not to deform the insulator.



Set the ring and insulator ring onto the cable.

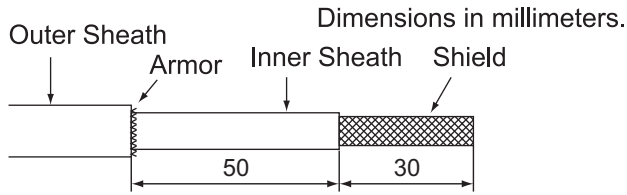


Set the shell to the cable then turn the nut to tighten. (Do not tighten by turning shell.)

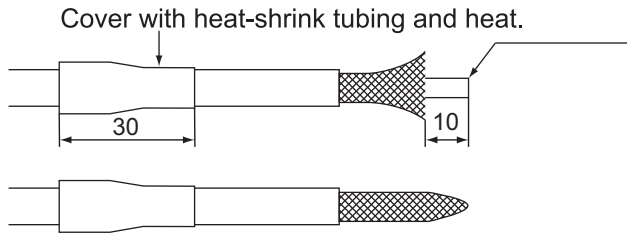
- Use a wrench or the like to tighten the nut securely.

*How to fabricate antenna cable 5D-FB-CV-NP*

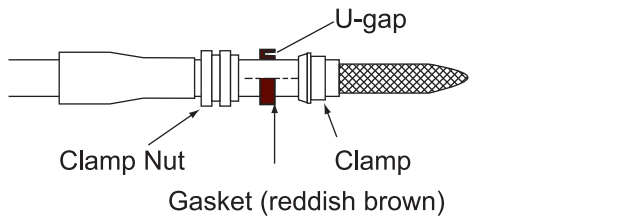
**8D-FB-CV (50 m)**



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

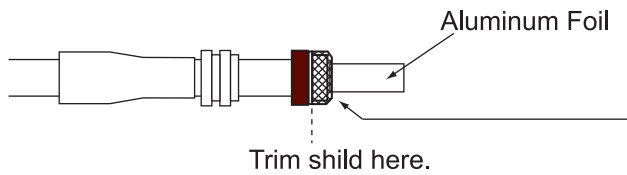


Remove insulator and core by 10 mm.

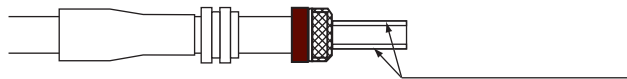


Twist shield end.

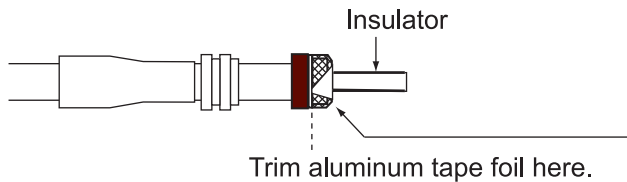
Slip on clamp nut, gasket and clamp as shown left.



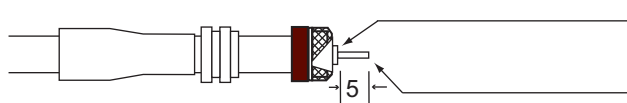
Fold back shield over clamp and trim.



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

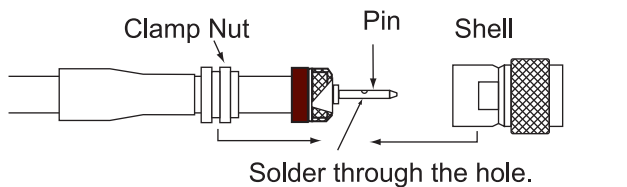


Fold back aluminum tape foil onto shield and trim.



Expose the insulator by 1 mm.

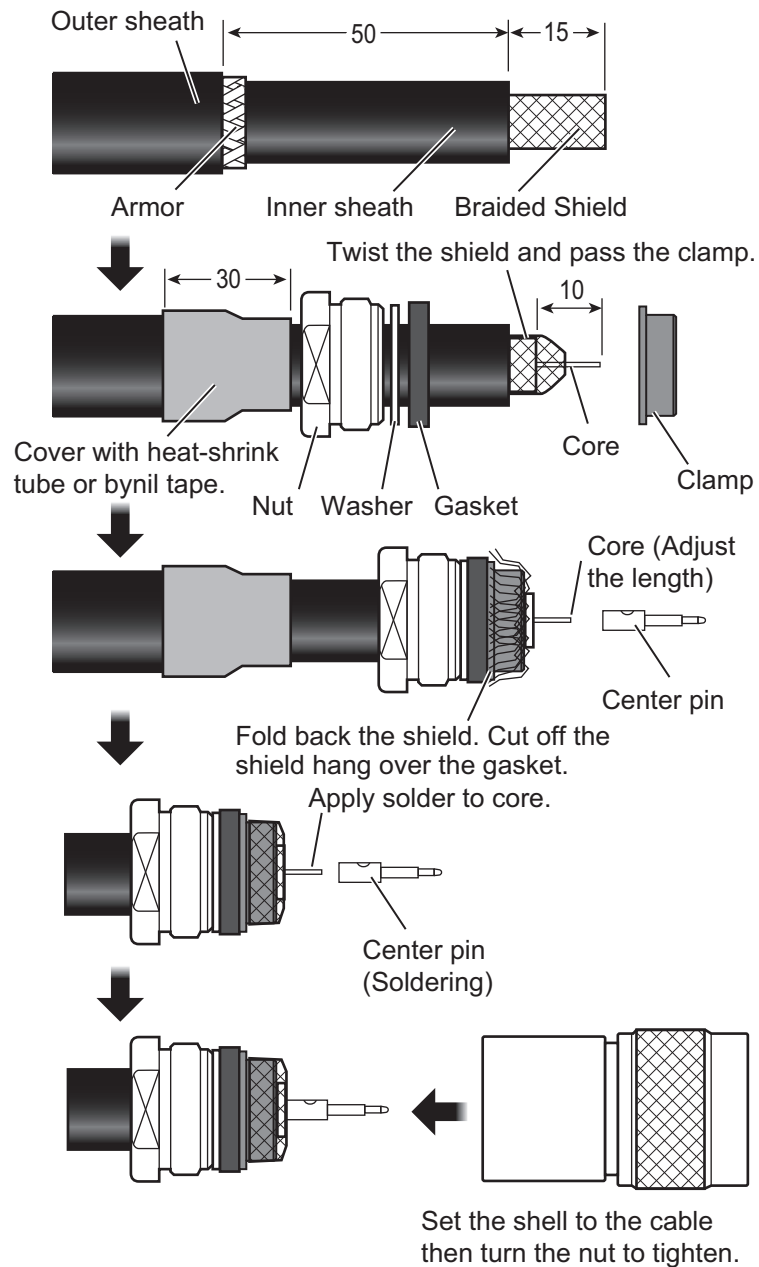
Expose the core by 5 mm.



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*

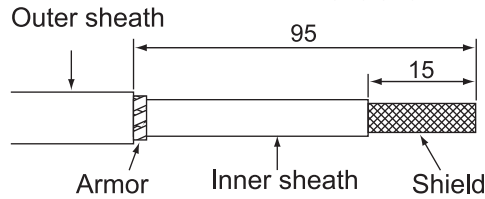
**8D-SFA-CV (50 m)**



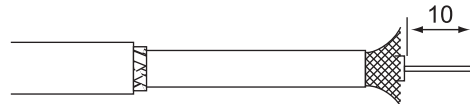
*How to fabricate antenna cable 8D-SFA-CV*

**12D-SFA-LITE-CV (100 m)**

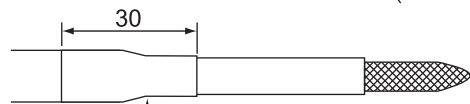
Dimensions in millimeters



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

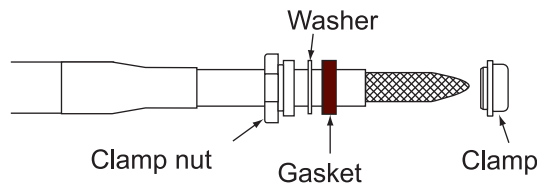


Remove the insulator beneath shield by 10 mm and expose the core.

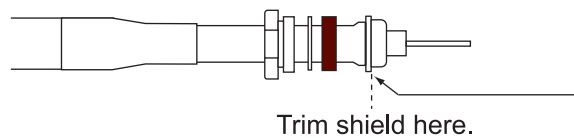


Twist shield end.

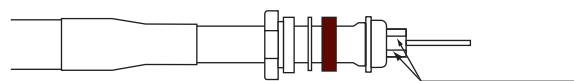
Heat shrinkable tube or vinyl tape.



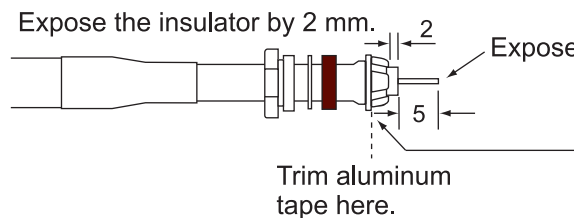
Slip on clamp nut, washer, gasket and clamp as shown left.



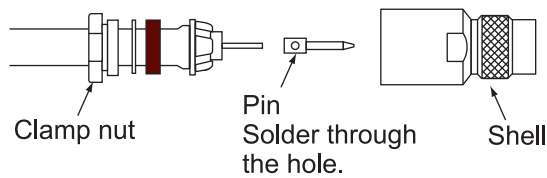
Fold back shield over clamp and trim.



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



Fold back aluminum tape over clamp and trim.



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 them by turning the clamp nut. (Do not tighten by turning the shell.)

*How to fabricate antenna cable 12D-SFA-LITE-CV*

# 3. SETTINGS AFTER THE INSTALLATION

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## 3.1 Installing Software

After installing the equipment, obtain the installation file from “Latest Software Versions” of FURUNO “Tech-Net” to install the software.

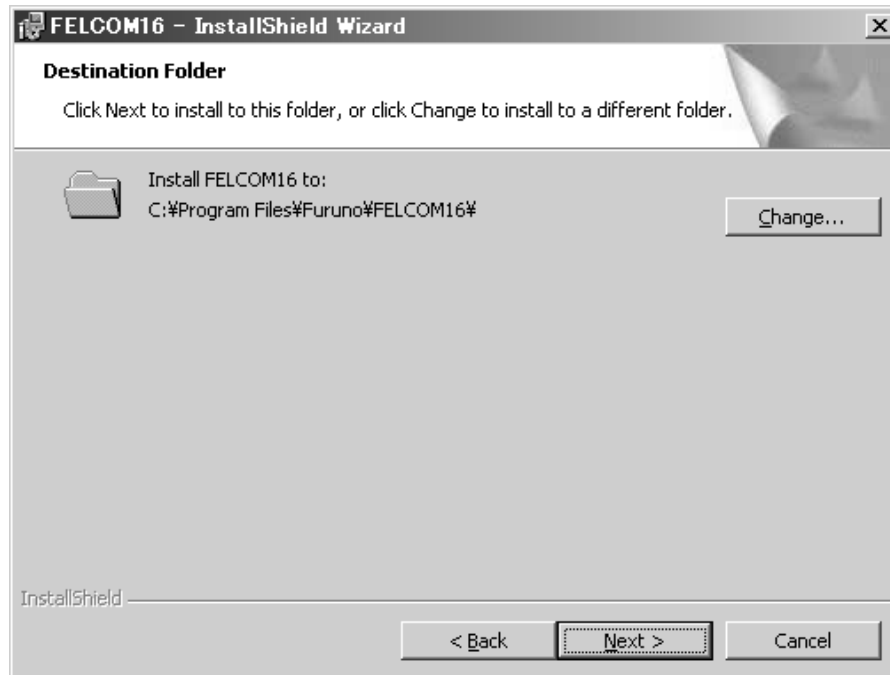
1. Turn on the PC.
2. Download “FELCOM16\_VXX.XX\_setup (.exe)” file from “Latest Software Versions” of FURUNO “Tech-Net” to your desktop, and then double-click it. (XX.XX: Software version)

The setup procedure begins, displaying the figure shown below.

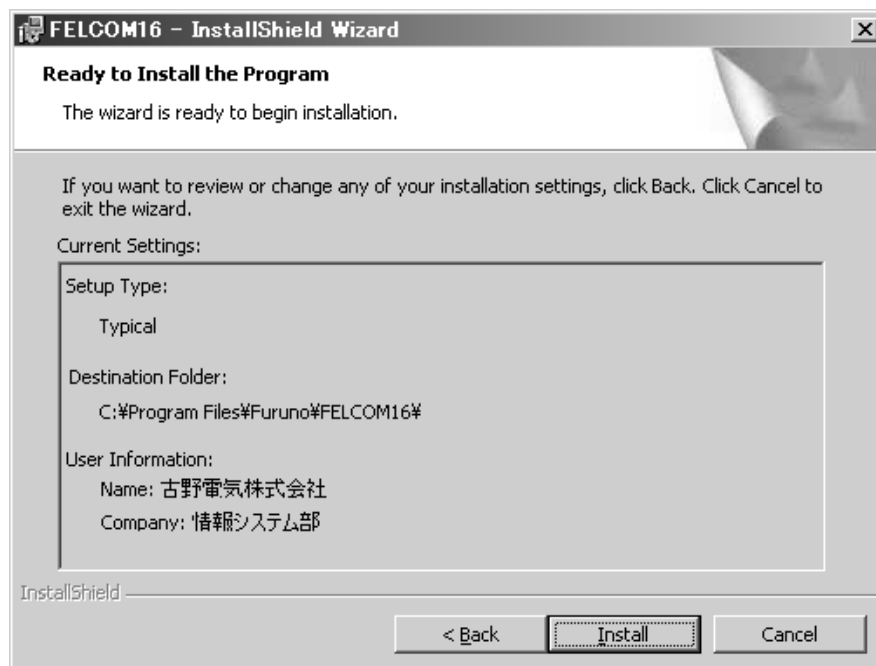


### 3. SETTINGS AFTER THE INSTALLATION

3. Click the [Next] button.

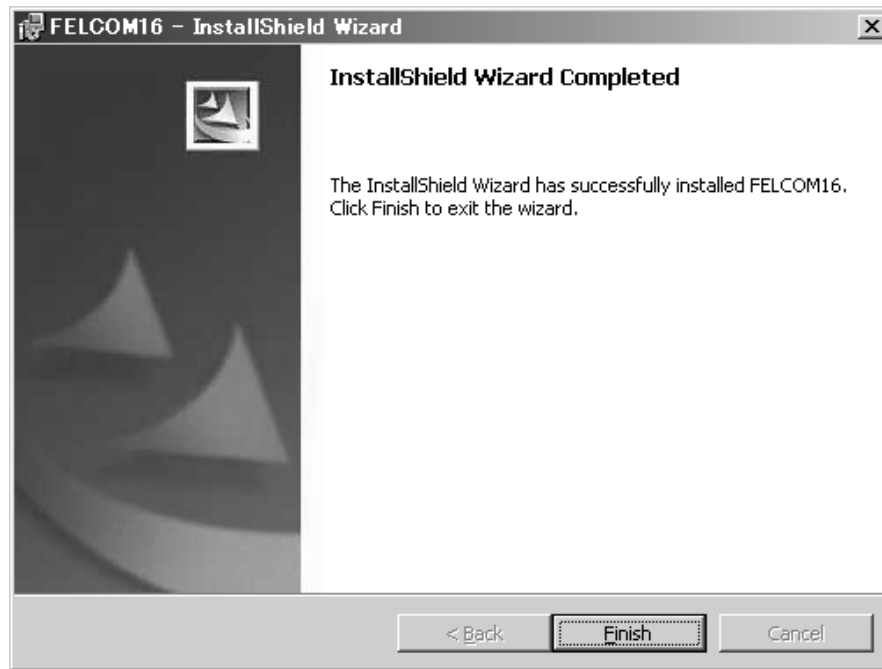


4. Click the [Next] button.





5. Click the [Install] button and the installation begins.



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

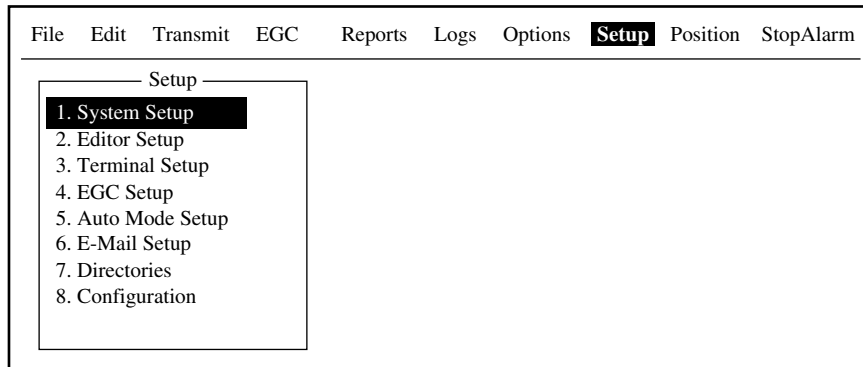


**Note:** To uninstall the F16 application see the operator's manual for the PC.

## 3.2 Setting the IMN (Inmarsat Mobile No.)

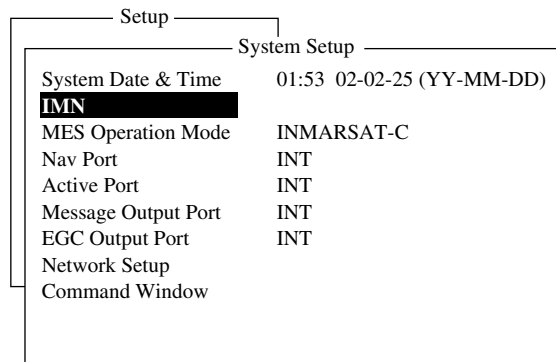
Set your IMN (Inmarsat Mobile No.) using the and PC as below.

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*

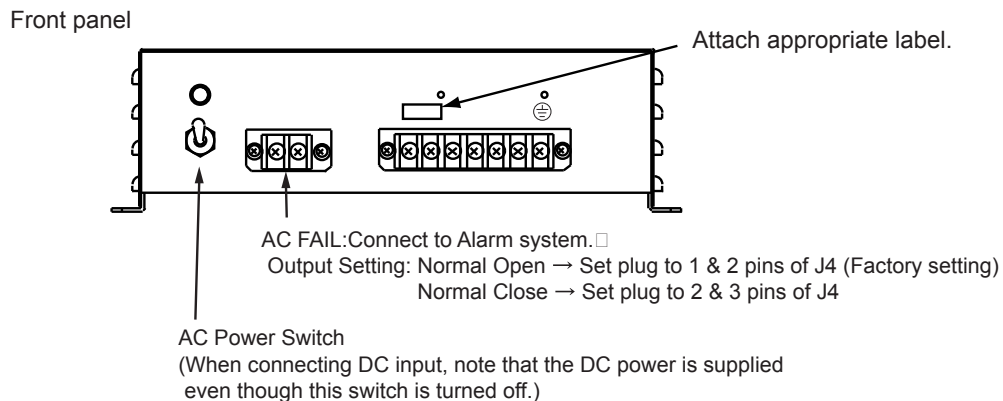
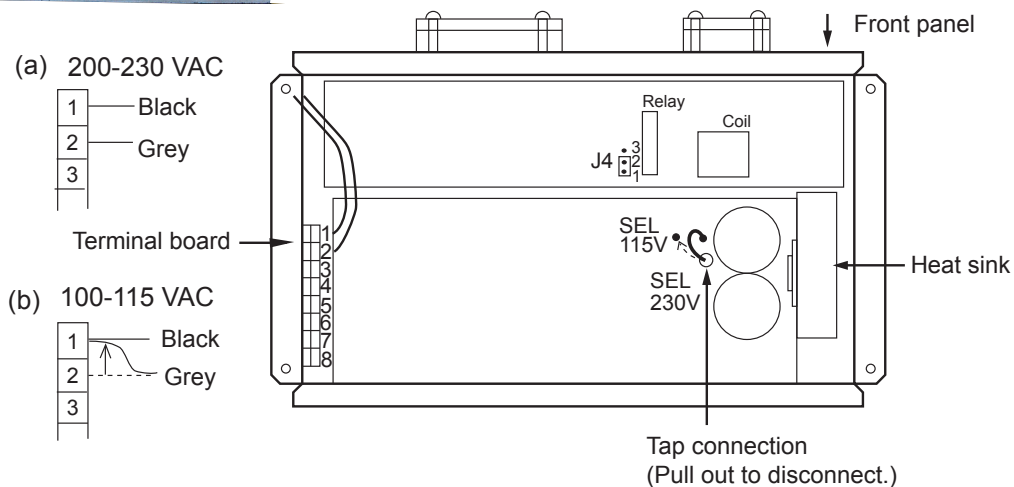
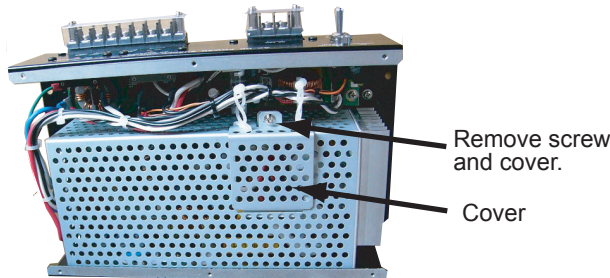
5. Confirm that the IMN is selected, and then press the [Enter] key.  
The entering field appears.
6. Key in your IMN.
7. Press the [Enter] key.
8. Press the [Esc] key to escape from the entering field.
9. Press the [Enter] key.

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.

# 4. CHANGING POWER SUPPLY SPECIFICATIONS

The AC/DC power supply unit PR-240 is shipped ready for connection to a 200-230 VAC ship's mains. If the ship's mains is 100 VAC-115 VAC, change the tap connection and terminal board connection as below. Attach a label supplied as accessories to the front panel according to the ship's mains.

Ship's mains	Tap connection	Terminal board	Label
200-230 VAC	SEL 230 V	Below (a)	200-230 VAC 2.2-1.7 A 1 $\phi$ 50/60 Hz
100-115 VAC	SEL 115 V	Below (b)	100-115 VAC 3.2-2.6 A 1 $\phi$ 50/60 Hz

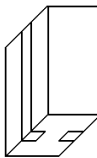
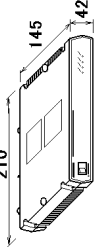


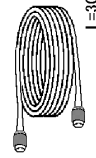



**Note:** The DC output load must be less than 8A.

# PACKING LIST FELCOM16-\*

16AL-X-9854-4

1/1

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
<b>ユニット UNIT</b>			
アンテナユニット式 ANTENNA UNIT		IC-116 000-043-555-00	1
通信制御ユニット COMMUNICATION UNIT		IC-216- 000-043-542-00 **	1
<b>予備品 SPARE PARTS</b>			
予備品 SPARE PARTS		SP16-01401 004-439-530-00	1
<b>付属品 ACCESSORIES</b>			
付属品 ACCESSORIES		FP16-00700 004-439-550-00	1
<b>工事材料 INSTALLATION MATERIALS</b>			
ケーブル組品 CABLE ASSY.		TP5FBAW-5DFB 30M 000-159-523-11	1 (*1)
工事材料 INSTALLATION MATERIALS		CP16-05511 001-189-560-00	1 (*1)


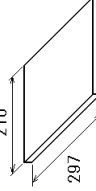




1.コード番号末尾の[\*]\*\*は、選択品の代表コードを表します。

1.CODE NUMBER ENDING WITH " \*\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

2. \*1は、FELCOM16-\* -30専用です。

2. \*1 FOR FELCOM16-\* -30.

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

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
工事材料 INSTALLATION MATERIALS		CP16-02401 004-439-540-00	1
<b>図書 DOCUMENT</b>			
7°リネーションフォーム REGISTRATION FOR SERVICE ACTIVATION		J59-50010-* 7/14 000-807-330-1*	1
ヒューズ変更のお願い NOTIFICATION DOCUMENT		C52-00206-* 7/14 000-147-004-1*	1
取扱説明書 OPERATOR'S MANUAL		OM*-56380-* 000-809-344-1*	1 **
取扱説明書(和) OPERATOR'S MANUAL (JP)		OMJ-56351-* 000-150-358-1*	1 **
装備要領書 INSTALLATION MANUAL		IM*-56380-* 000-809-346-1*	1 **

A-1

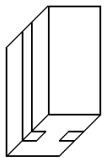

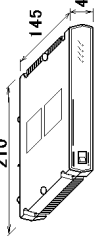
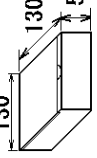


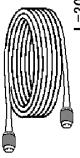
型式/コード番号が2段の場合、下段より上段に代わる過渡期用品であり、どちらかが入っています。なお、品質は変わりません。







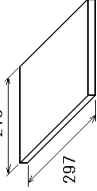
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

C5638-Z03-E

# PACKING LIST FELCOM16-\*\*-SSAS

16AL-X-9855-5 1/1

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
<b>ユニット</b>			
アンテナユニット一式		IC-116	1
ANTENNA UNIT		000-043-555-00	
接続箱一式		IC-315	1
JUNCTION BOX		000-043-557-00	
通信制御ユニット		IC-216-*	1
COMMUNICATION UNIT		000-043-542-00 **	
保安警報発呼器一式		IC-307	2
SSAS ALERT UNIT		000-043-558-00	
<b>予備品</b>			
予備品		SP16-01401	1
SPARE PARTS		004-439-530-00	
<b>付属品</b>			
付属品		FP16-00700	1
ACCESSORIES		004-439-550-00	
<b>工事材料</b>			
ケーブル組品		TP5FBAW-5DFB 30M	1
CABLE ASSY.		000-159-523-11	(*1)

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
<b>工事材料</b>			
INSTALLATION MATERIALS		CP16-05511	1
		001-189-560-00	(*1)
工事材料		CP16-02401	1
		004-439-540-00	
<b>図書</b>			
77°リケーゾンフォーム		J59-50010-* 7/I-I	1
REGISTRATION FOR SERVICE ACTIVATION		000-807-330-1*	
ヒューズ`変更のお願い		C52-00206-* 7/I-I	1
NOTIFICATION DOCUMENT		000-147-004-1*	
取扱説明書		OM*-56380-*	1
OPERATOR'S MANUAL		000-809-344-1*	**
取扱説明書(和)		OMJ-56351-*	1
OPERATOR'S MANUAL (JP)		000-150-358-1*	**
装備要領書		IM*-56380-*	1
INSTALLATION MANUAL		000-809-346-1*	**

1. コード番号末尾の[\*\*]は、選択品の代表コードを表します。
1. CODE NUMBER ENDING WITH "\*\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.
2. \*1は、FELCOM16-\*\*-30-SSAS専用です。
2. \*1 FOR FELCOM16-\*\*-30-SSAS.

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

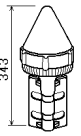

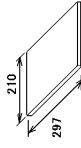
型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。  
TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.

# PACKING LIST

10-115/-HK, 10-116

16AK-X-9872 -3 1/1

A-3

NAME	OUTLINE	DESCRIPTION/CODE No.	QTY
<b>ユニット</b>			
アンテナユニット		10-115*/10-116*	1
<b>付属品</b>			
付属品		FP16-02501	1
<b>図書</b>			
アンテナ交換方法		T10-56351-* 000-173-370-1*	1

コード番号末尾の(\*)は、選択品の代表コードを表します。  
CODE NUMBER ENDING WITH "\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL

型式/コード番号が異なる段の場合、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.)

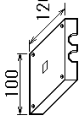


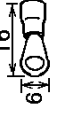

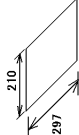
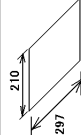
C5635-Z19-C

# PACKING LIST

10-307

16AK-X-9853 -6 1/1

A-4

NAME	OUTLINE	DESCRIPTION/CODE No.	QTY
<b>ユニット</b>			
保安警報発呼器		10-307	1
<b>付属品</b>			
Distress cover		05-073-1111-0 ROHS 100-274-720-10	1
<b>工事材料</b>			
+self-tapping screw		3X10 SUS304 000-162-604-10	4
圧着端子		FV1-25-3 (LF) 000-166-756-10	8
圧着端子		FV2-3 000-157-246-10	2
<b>図書</b>			
10-305/307引き渡し前の注意		C52-00202-*	1
BEFORE DELIVERING TO OWNER		000-809-354-1*	
カバー貼付要領書		C52-00403-*	1
ATTACHMENT OF SWITCH COVER		000-150-849-1*	

型式/コード番号が異なる段の場合、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.)

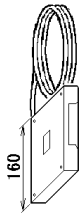

C5635-Z02-D

# PACKING LIST

16AK-X-9854 -3 1/1

10-315

A-5






NAME	UNIT	OUTLINE	DESCRIPTION/CODE No.	QTY
ユニット 接続箱 JUNCTION BOX			10-315 000-043-431-00 CP16-02501	1
工事材料 INSTALLATION MATERIALS			CP16-02501 004-438-930-00	1

型式/コート番号が2段の場合、下段より上段に代わる過渡部品であり、どちらが入っています。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.)

C5635-Z03-D

# FURUNO

A-6

CODE NO. TYPE	16AK-X-9405-3 1/1				
IC-116					
工事材料表 INSTALLATION MATERIALS					
番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS
1	ケーブル組品 COAXIAL CABLE ASSEMBLY		TP58A15W-FR68A/U CODE NO. 000-156-600-10	1	選択 TO BE SELECTED
2	ケーブル組品 CABLE ASSY.		TP5FBW-5DFB 30M CODE NO. 000-159-523-11	1	選択 TO BE SELECTED
3	ケーブル組品 CABLE ASSY.		12D-SFA-CV *100M* CODE NO. 000-138-866-00	1	選択 TO BE SELECTED
4	アジカーブ組品 CABLE ASSY.		8D-FB-CV *50M* CODE NO. 000-168-241-10	1	選択 TO BE SELECTED
5	同軸ケーブル ARMoured COAXIAL CABLE		5D-FB-CV-NP *30M* CODE NO. 000-173-676-10	1	選択 TO BE SELECTED

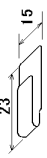

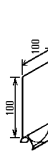
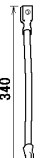
型式/コート番号が2段の場合、下段より上段に代わる過渡部品であり、どちらが入っています。なお、品質は変わりません。  
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(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

FURUNO ELECTRIC CO., LTD.

C5638-M01-D

CODE NO.	004-439-060-00	16AK-X-9401-11
TYPE	CP16-02101	1/1

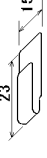
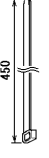
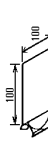

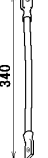
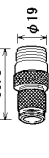

## 工事材料表

INSTALLATION MATERIALS					
番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS
1	ケーブル保護材 CABLE PROTECTION MATERIAL		16-018-125I-1 RONS CODE NO. 100-298-111-10	1	
2	ケーブル結 CABLE TIE		CV-4508 CODE NO. 000-173-169-10	5	
3	フチ結ムテープ SELF-BONDING TAPE		NO.15 CODE NO. 000-174-646-10	1	
4	ケーブル組品 CABLE ASSY.		RW-4747 RW-4747-1 CODE NO. 000-566-000-12 000-566-000-01	1	

型式/コード番号が2段の場合、下段より上段に代わる通線部品であり、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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QUALITY IS THE SAME. DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)  
(略図の寸法は、参考値です。)

CODE NO.	004-439-070-00	16AK-X-9402-12
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 QTY	用途/備考 REMARKS
1	ケーブル保護材 CABLE PROTECTION MATERIAL		16-018-125I-1 RONS CODE NO. 100-298-111-10	1	
2	ケーブル結 CABLE TIE		CV-4508 CODE NO. 000-173-169-10	5	
3	フチ結ムテープ SELF-BONDING TAPE		NO.15 CODE NO. 000-174-646-10	1	
4	コネクタ(N) COAXIAL CONNECTOR (N) TYPE*		N-P-8DFB-CF CODE NO. 000-156-918-10	1	
5	ケーブル組品 CABLE ASSY.		RW-4747 RW-4747-1 CODE NO. 000-566-000-12 000-566-000-01	1	
6	コネクタ(TNC-N) COAXIAL CONNECTOR ADAPTOR		TNCP-NJ CODE NO. 000-156-599-10	1	
7	ケーブル組品 CABLE ASSEMBLY		TPAF5B0.4NUSFBA-5DFB CODE NO. 000-172-382-10	1	

型式/コード番号が2段の場合、下段より上段に代わる通線部品であり、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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QUALITY IS THE SAME. DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)  
(略図の寸法は、参考値です。)



CODE NO.	004-439-080-00	16AK-X-9403-12
TYPE	CP16-02121	1/1

**工事材料表**

INSTALLATION MATERIALS		IC-115/116		数量	用途/備考
番号	名称	略図	型名/規格	QTY	REMARKS
NO.	NAME	OUTLINE	DESCRIPTIONS		
1	ケーブル保護材 CABLE PROTECTION MATERIAL		16-018-1251-1 RONS CODE NO. 100-298-111-10	1	
2	ケーブル結 CABLE TIE		CV-4508 CODE NO. 000-173-169-10	5	
3	ケーブル結着テープ SELF-BONDING TAPE		NO.15 CODE NO. 000-174-646-10	1	
4	コネクタ(N) CONNECTOR		N-SP-12D5FA-CF CODE NO. 000-170-646-10	1	
5	ケーブル組品 CABLE ASSY.		RW-4747 RW-4747-1 CODE NO. 000-566-000-12 000-566-000-01	1	
6	コネクタ(TNC-N) COAXIAL CONNECTOR ADAPTOR		TNCP-NJ CODE NO. 000-156-559-10	1	
7	ケーブル組品 CABLE ASSEMBLY		TPAF5B0.4NUSFBA-5DFB CODE NO. 000-172-382-10	1	

型式/コード番号が2段の場合、下段より上段に代わる過渡製品であり、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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CODE NO.	001-101-960-00	16AK-X-9423-3
TYPE	CP16-05001	1/1

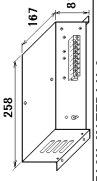

**工事材料表**

INSTALLATION MATERIALS		IC-115/116		数量	用途/備考
番号	名称	略図	型名/規格	QTY	REMARKS
NO.	NAME	OUTLINE	DESCRIPTIONS		
1	ケーブル保護材 CABLE PROTECTION MATERIAL		16-018-1251-1 RONS CODE NO. 100-298-111-10	1	
2	ケーブル結 CABLE TIE		CV-4508 CODE NO. 000-173-169-10	5	
3	ケーブル結着テープ SELF-BONDING TAPE		NO.15 CODE NO. 000-174-646-10	1	
4	コネクタ(N) CONNECTOR		N-P-5DFB-1-CF CODE NO. 000-156-917-10	1	
5	ケーブル組品 CABLE ASSY.		RW-4747 RW-4747-1 CODE NO. 000-566-000-12 000-566-000-01	1	
6	コネクタ(TNC-N) COAXIAL CONNECTOR ADAPTOR		TNCP-NJ CODE NO. 000-156-559-10	1	
7	ケーブル組品 CABLE ASSEMBLY		TPAF5B0.4NUSFBA-5DFB CODE NO. 000-172-382-10	1	

型式/コード番号が2段の場合、下段より上段に代わる過渡製品であり、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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# PACKING LIST

PR-240/-CE-MSA 24AA-X-9852 -10 1/1 A-11

NAME	OUTLINE	DESCRIPTION/CODE No.	QTY
ユニット AC-DC電源 POWER SUPPLY UNIT		PR-240 000-013-636-00 **	1
工事材料 INSTALLATION MATERIALS		CP24-00151 005-931-190-00	1

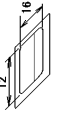

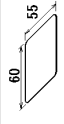
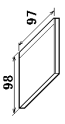
コト番号末尾の「\*\*」は、選択品の代表コードを表します。  
CODE NUMBER ENDING WITH "\*\*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.

型式/コート番号が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.)

C4417-Z02-J

# FURUNO

A-12

CODE NO.		TYPE		16AL-X-9401-4		1/1	
004-448-860-00		OPT16-69					
番号 NO.	名称 NAME	略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS		
1	中国ROHSマフ CHINA ROHS SEAL		05-898-0362-1 CODE NO. 100-339-211-10	1			
2	ハ/Pマフ (ALC) LABEL (ALC)		16-013-1052-0 ROHS CODE NO. 100-281-730-10	4			
3	型式銘板 (ALC) NAMEPLATE (ALC)		16-018-2002-2 CODE NO. 100-320-022-10	1			
4	FD-ROM		16-5-0179 CODE NO. 004-439-850-00	1			

## 改造キット MODIFICATION KIT.


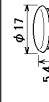
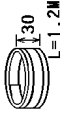
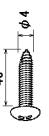


型式/コート番号が2段の場合、下段より上段に代わる過渡期品であり、どちらが入っています。なお、品質は変わりません。  
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(略図の寸法は、参考値です。DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)  
FURUNO ELECTRIC CO., LTD.

C5638-M02-D

CODE NO.	004-439-540-00	16AL-X-9402-6	1/1
TYPE	CP16-02401		

**工事材料表**

IC-216

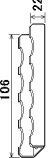
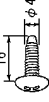
INSTALLATION MATERIALS		略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS
番号 NO.	名称 NAME				
1	ヒューズホルダー FUSE LABEL		03-153-1312-0 R0MS CODE NO. 100-292-140-10	1	
2	キャップ CAP		040-4025 CODE NO. 000-164-331-10	2	
3	銅板 COPPER STRAP		05-003-0031-0 R0MS 05-003-0031-0 CODE NO. 590-300-310-10 590-300-310-00	1	
4	+5787ピッチ SELF-TAPPING SCREW		4X40 SUS304 CODE NO. 000-162-606-10	2	
5	ヒューズ GLASS TUBE FUSE		F660-A 125V 5A PBF CODE NO. 000-155-353-10	1	
6	ケーブル組品 CABLE ASSY.		FM-C3FPS-002-035 FM-C3FPS-002-035 CODE NO. 000-150-079-11 000-150-079-00	1	

型式/コード番号が2段の場合、下段より上段に代わる過渡部品であり、どちらが入っています。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.)

CODE NO.	004-438-930-00	16AK-X-9407-3	1/1
TYPE	CP16-02501		

**工事材料表**

INSTALLATION MATERIALS

INSTALLATION MATERIALS		略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS
番号 NO.	名称 NAME				
1	ケーブル押え(1-3) CABLE CLAMP		16-018-6008-1 R0MS 16-018-6008-1 CODE NO. 100-301-101-10 100-301-101-00	1	
2	+5787ピッチ SELF-TAPPING SCREW		4X16 SUS304 CODE NO. 000-162-605-10	4	


型式/コード番号が2段の場合、下段より上段に代わる過渡部品であり、どちらが入っています。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.)

# FURUNO

CODE NO.	004-439-550-00	16AL-X-9501-2
TYPE	FP16-00700	1/1

## 付属品表

INMARSAT MINI-C  
FELCOM16

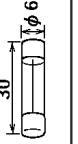
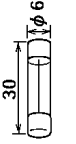
ACCESSORIES		略図 OUTLINE	型名/規格 DESCRIPTIONS	数量 QTY	用途/備考 REMARKS
番号 NO.	名称 NAME		FP16-00601	1	
1	フロッピーディスク FLOPPY DISK				

型式/コード番号が2段の場合、下段より上段に代わる通測部品であり、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. DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)  
(略図の寸法は、参考値です。)

FURUNO ELECTRIC CO., LTD.

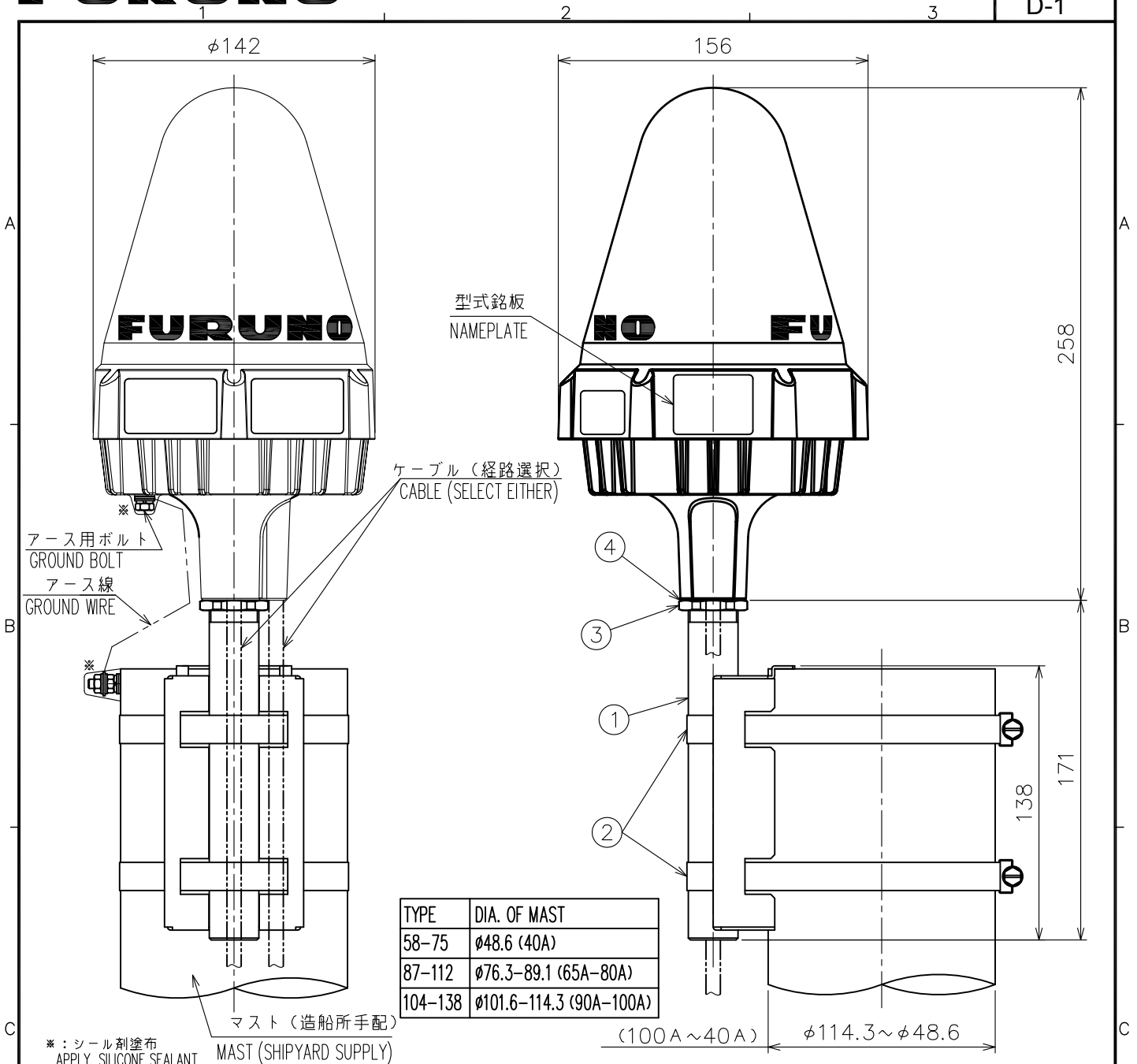
# FURUNO

CODE NO.	004-439-530-00	16AK-X-9302-3
TYPE	SP16-01401	BOX NO. P

SHIP NO.	NAME OF PART	OUTLINE	DRG. NO. OR TYPE NO.	QUANTITY		REMARKS/CODE NO.	SETS PER VESSEL
				WORKING PER SET	SPARE PER VESSEL		
	1 GLASS TUBE FUSE		FG80 125V 10A PBF		1	000-155-826-10	1/1
	2 GLASS TUBE FUSE		FG80-A 125V 5A PBF		1	000-155-853-10	

MFR'S NAME	FURUNO ELECTRIC CO., LTD.	DWG NO.	C5635-P02-D	1/1
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(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)  
型式/コード番号が2段の場合、下段より上段に代わる通測部品であり、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.



TYPE	DIA. OF MAST
58-75	$\phi 48.6$ (40A)
87-112	$\phi 76.3-89.1$ (65A-80A)
104-138	$\phi 101.6-114.3$ (90A-100A)

表2 工事材料 TABLE 2 INSTALLATION MATERIAL

品番 ITEM	品名 NAME	図番 DWG. No.	摘要 REMARK
1	アンテナ固定金具 ANTENNA PIPE	16-018-1311	SUS
2	ホースクランプ HOSE CLAMP	ABA SUS316 12mm	
3	ロックナット LOCK NUT	16-023-2518	
4	ナットシート NUT SHEET	16-023-2519	

- 注記 1) 指定外の寸法公差は表1による。  
 2) アンテナケーブル経路はパイプ内または外のいずれかを選択。  
 3) 対応マスト径は40A ( $\phi 48.6$ ) ~ 100A ( $\phi 114.3$ )

- NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.  
 2. PATH THE ANTENNA CABLE OUTSIDE OR INSIDE THE PIPE.  
 3. MAST DIAMETER: 40A ( $\phi 48.6$ ) TO 100A ( $\phi 114.3$ )

表1 TABLE 1

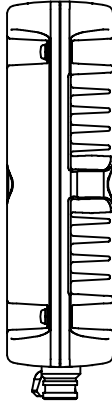
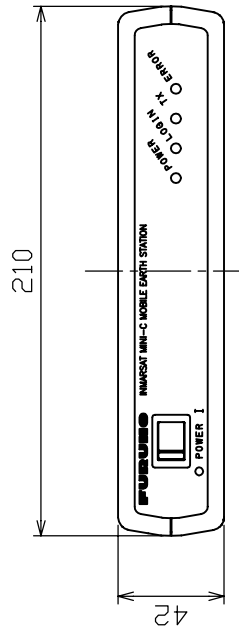
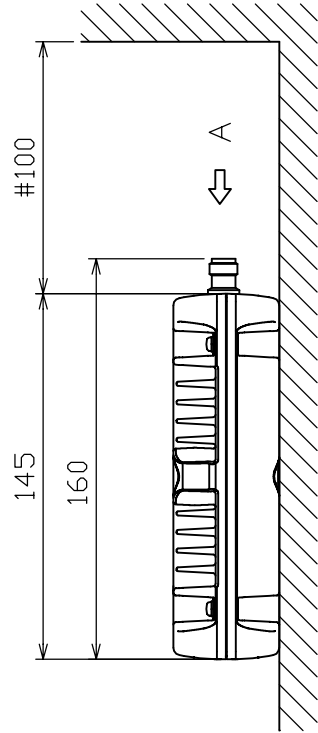
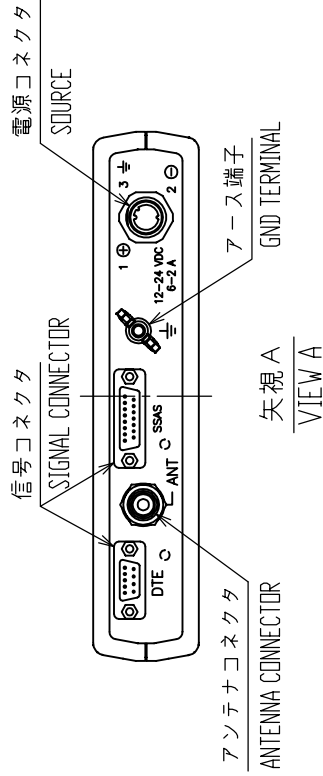
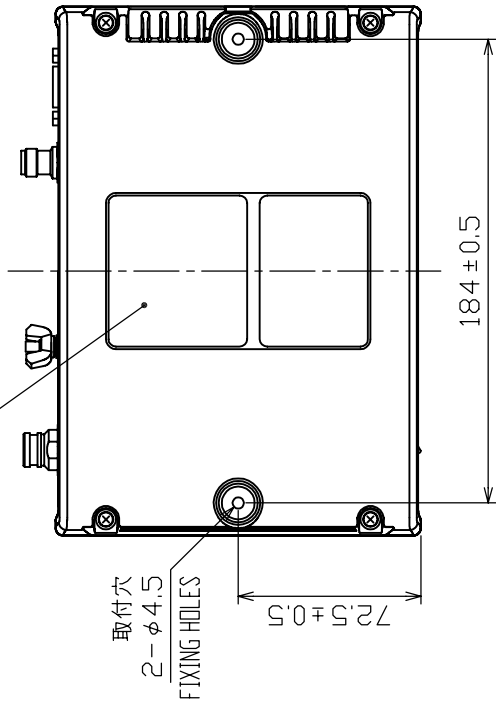
寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	$\pm 1.5$
$50 < L \leq 100$	$\pm 2.5$
$100 < L \leq 500$	$\pm 3$

DRAWN	25/Apr/2012 T.YAMASAKI	TITLE	IC-115/116/118/119	
CHECKED	25/Apr/2012 H.MAKI	名称	アンテナユニット	
APPROVED	30/Apr/2012 Y.NISHIYAMA		外寸図	
SCALE	1/3	MASS	1.8 $\pm 10\%$ kg	
DWG.No.	C5635-G20-F	質量は工材を含む MASS INCLUDES INSTALLATION MATERIALS	NAME	ANTENNA UNIT
		REF.No.	16-023-251G-1	OUTLINE DRAWING

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

銘板  
NAMEPLATE



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 + トラスチック ピンネジ 呼び径 4 × 40 を使用のこと。

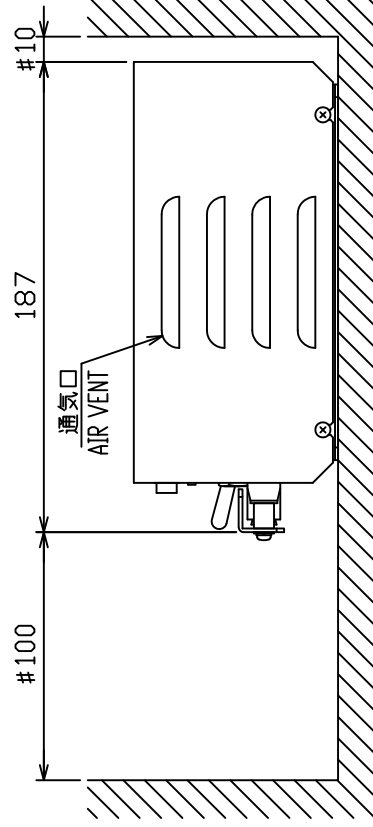
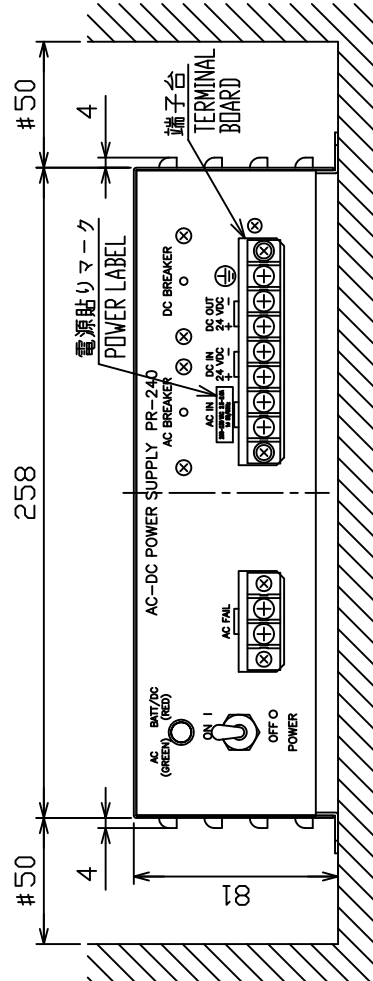
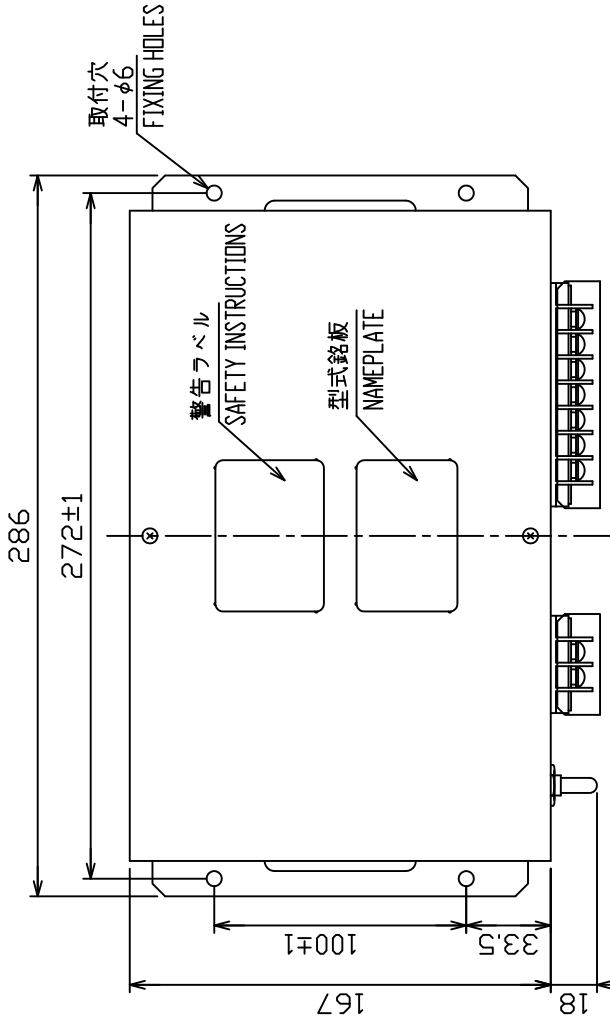
NOTE

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 Takahashi T.	TITLE	IC-216
CHECKED			名称	通信制御ユニット
APPROVED		Y. Hatai	外寸図	
SCALE	1/3	MASS ±10% 1.2 kg	NAME	COMMUNICATION UNIT
FIG. No.		CS5638-G01-D		16-018-200G-3
				OUTLINE DRAWING

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) #印寸法は最小サービスタップピッチと呼び径 4 × 1.6 を使用のこと。  
 3) 取付用ネジは + トラスタップピッチと呼び径 4 × 1.6 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 φ4x1.6 FOR FIXING THE UNIT.

DRAWN	25/Sep/09 T.YAMASAKI	TITLE	PR-240
CHECKED	25/Sep/09 T.TAKENO	名#	AC/DC電源ユニット
APPROVED	26/Oct/09 R.Esumi	外寸図	
SCALE	1/3	NAME	AC/DC POWER SUPPLY UNIT
FIG.No.	C5003-603-J	REF.No.	24-003-500G-4
			OUTLINE DRAWING

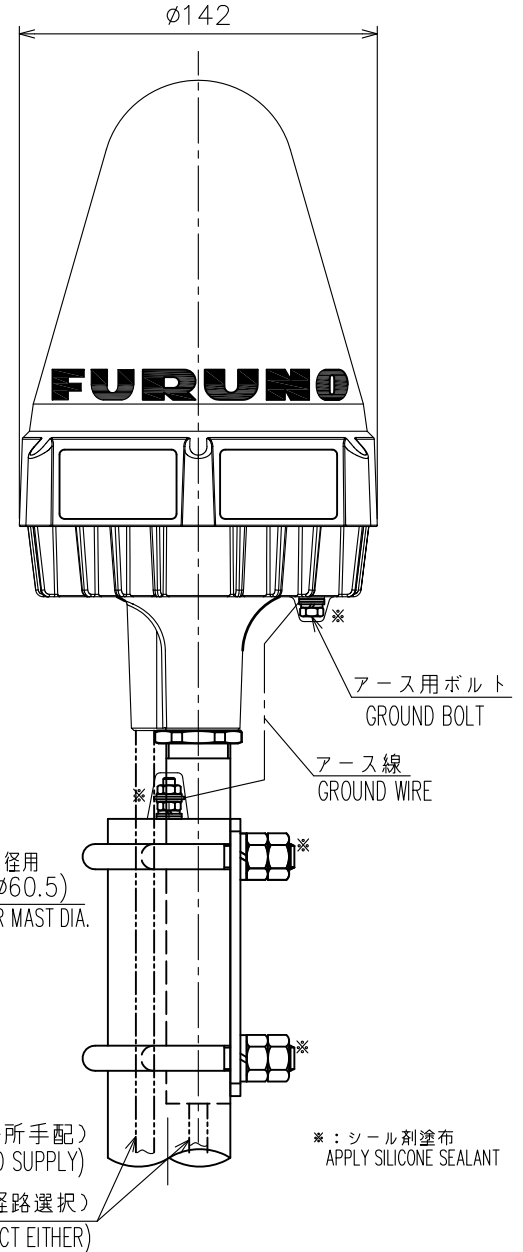
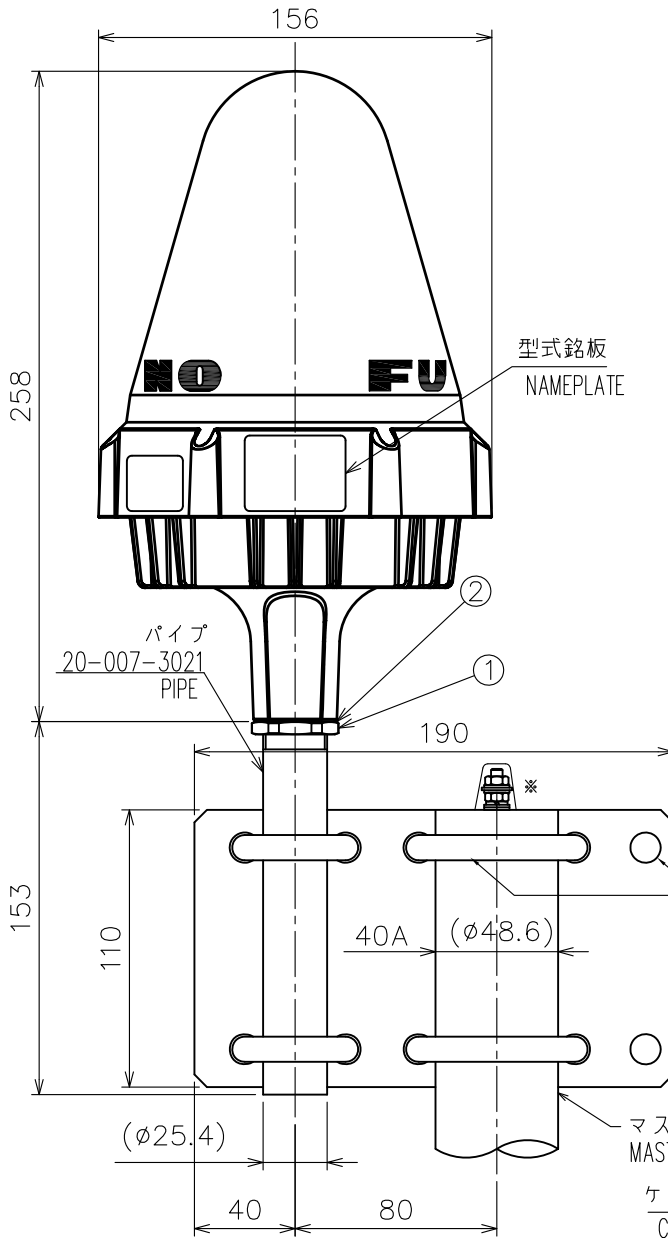
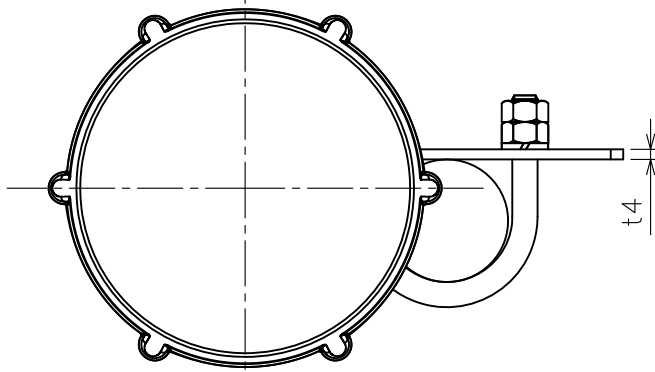
表1 TABLE 1

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

表2 工事材料

TABLE 2 INSTALLATION MATERIAL

品番 ITEM	品名 NAME	図番 DWG. No.
1	ロックナット LOCK NUT	16-023-2518
2	ナットシート NUT SHEET	16-023-2519



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	25/Apr/2012 T.YAMASAKI	TITLE	IC-115/116/118/119
CHECKED	25/Apr/2012 H.MAKI	名称	アンテナユニット (取付板)
APPROVED	30/Apr/2012 Y.NISHIYAMA	外寸図	
SCALE	1/3	MASS	2.3 ±10% kg
DWG. No.	C5635-G19-D	質量は工材を含む。 MASS INCLUDES INSTALLATION MATERIALS.	NAME
	REF. No.	16-023-252G-1	ANTENNA UNIT (W/ FIXTURE PLATE)
			OUTLINE DRAWING



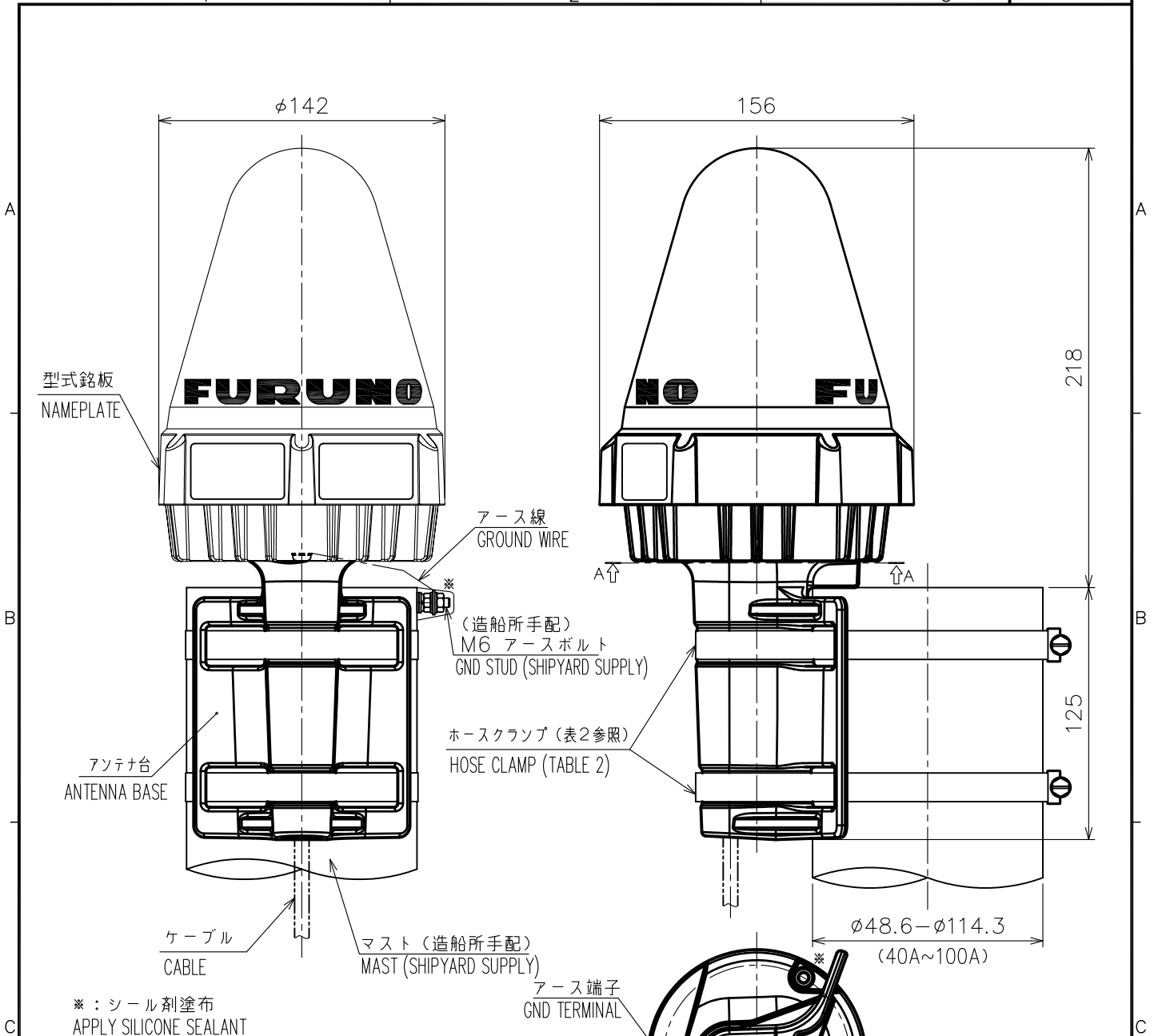


表2 ホースクランプ (オプション)  
TABLE 2 HOSE CLAMP (OPTION)

TYPE	MODEL	CODE No.	DIA. OF MAST
77-95	OP16-76-1	001443450	$\phi 48.6$ (40A)
104-138	OP16-76-2	001443460	$\phi 76.3-89.1$ (65A-80A)
130-165	OP16-76-3	001443470	$\phi 101.6-114.3$ (90A-100A)

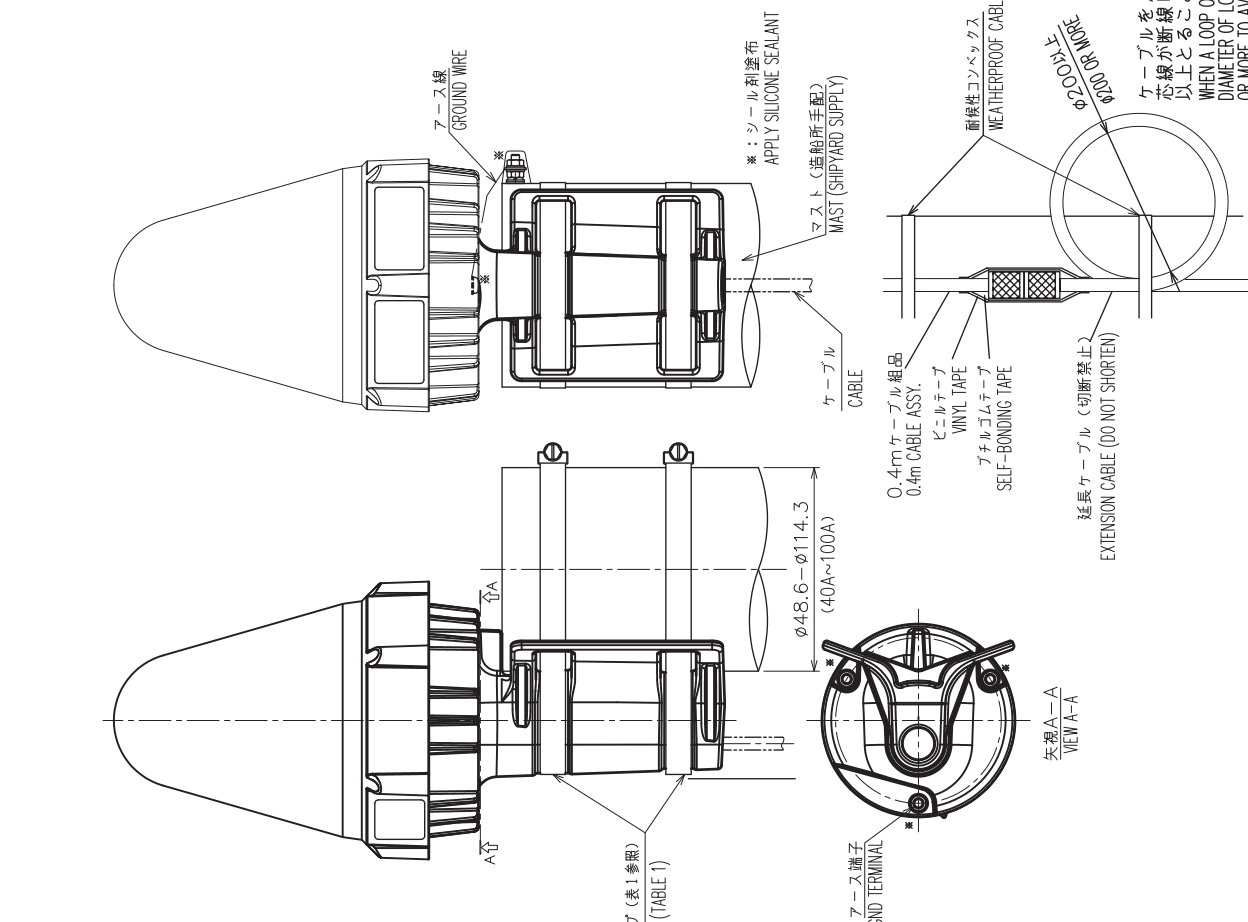
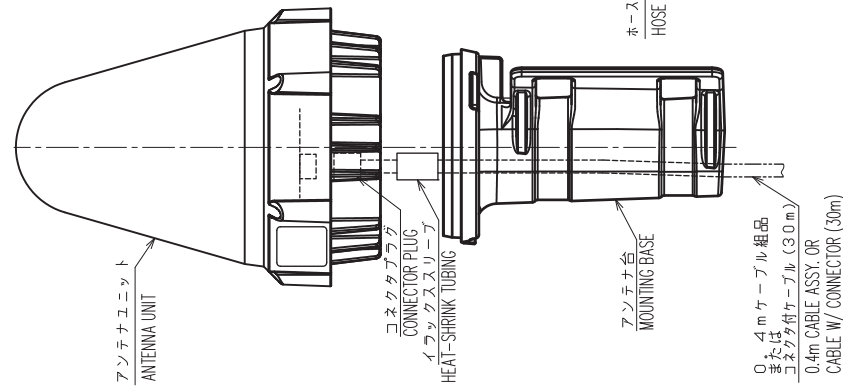
表1 TABLE 1

寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
$L \leq 50$	$\pm 1.5$
$50 < L \leq 100$	$\pm 2.5$
$100 < L \leq 500$	$\pm 3$

注 記 1) 指定外の寸法公差は表1による。  
2) 対応マスト径は40A ( $\phi 48.6$ ) ~100A ( $\phi 114.3$ )

NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.  
2. MAST DIAMETER: 40A ( $\phi 48.6$ ) TO 100A ( $\phi 114.3$ )

DRAWN	15/Feb/2016 T.YAMASAKI	TITLE	IC-115/116/118/119
CHECKED	16/Feb/2016 H.MAKI	名称	アンテナユニット
APPROVED	22/Feb/2016 H.MAKI		外寸図
SCALE	1/3	MASS	1.9 $\pm 10\%$ kg
DWG.No.	C5674-G05-E	質量は工材を含む MASS INCLUDES INSTALLATION MATERIALS	NAME
		REF.No.	16-023-254G-1
			ANTENNA UNIT
			OUTLINE DRAWING



- 手順
- 0.4m ケーブル組品を使用するときは、コネクタプラグをアンテナ上部底のコネクタに接続した後、ケーブルの下からイラックススリーブを通しておく。
  - 0.4m ケーブル組品を使用しないときは、アンテナ台の下から30m ケーブルを通し、イラックススリーブを通してコネクタプラグをアンテナ上部底のコネクタに接続する。
  - イラックススリーブを熱で固着し(110℃以下)、自己融着テープおよびビニルテープで固定する。
  - 固定範囲は50mm以内。高温で熱すると部材の一部を变形させる恐れがあるので注意する。
  - アンテナ台をアンテナ上部にネジ3本で固定する。
  - アンテナ台のネジ部にシール剤を塗布する。
  - 0.4m ケーブル組品を使用するときは、がい兼付ケーブルのコネクタを接続し、自己融着テープ、ビニルテープで固定する。
  - ケーブルをマストに固定し、アース線をマストに接続する。
  - ケーブルは耐候性コンベックスで固定する。
  - ※ 部分をシール剤で完全に覆う。

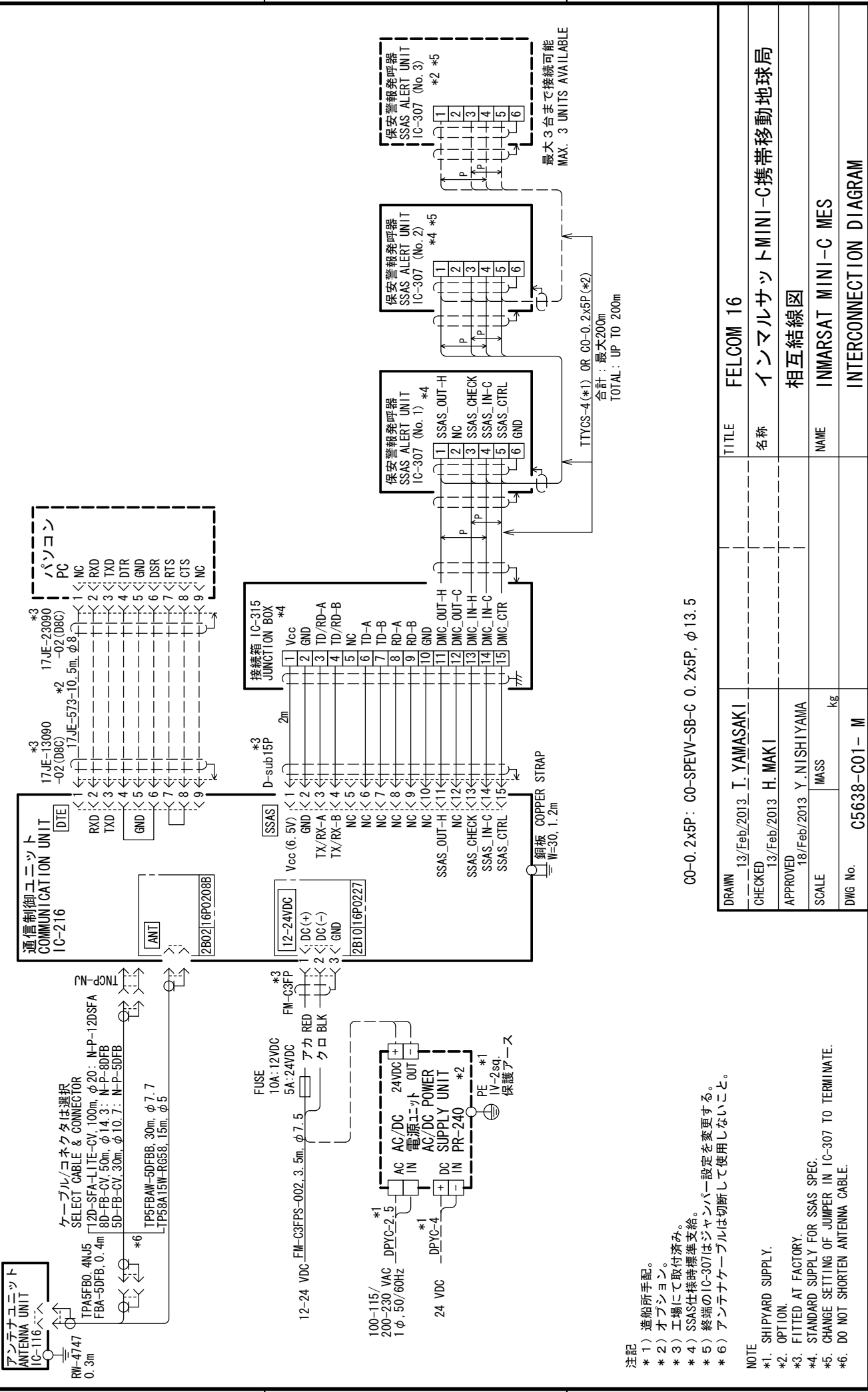
- PROCEDURE
- FOR CONNECTION OF CABLE ASSY (0.4m)  
CONNECT THE CONNECTOR PLUG OF CABLE ASSY. TO ANTENNA UNIT.  
THEN PASS HEAT-SHRINK TUBING FROM THE OTHER SIDE OF CABLE ASSY.  
FOR CONNECTION OF CABLE W/ CONNECTOR (30m)  
PASS THE ANTENNA CABLE THRU THE HOLE IN THE CENTER OF THE ANTENNA BASE. THEN PASS HEAT-SHRINK TUBING ONTO THE CABLE.  
CONNECT THE CABLE PLUG TO ANTENNA UNIT.
  - FIX THE SHRINK TUBE WITH HEAT (+110°C OR LESS) AND BIND WITH SELF-BONDING TAPE AND VINYL TAPE.  
WRAPPING LENGTH: WITHIN 50 mm. DO NOT HEAT WITH HIGH TEMPERATURE TO AVOID DISTORTION OF ANTENNA PARTS.
  - FIX THE MOUNTING BASE TO ANTENNA UNIT WITH 3 SCREWS.  
FASTEN THE GROUND WIRE TO A SCREW OF THEM WITH CRIMP-ON LUG.
  - APPLY SILICONE SEALANT TO SCREWS OF MOUNTING BASE.
  - FIX THE MOUNTING BASE TO MAST WITH TWO HOSE CLAMPS SECURELY.  
CONNECT THE ARMORED CABLE CONNECTOR TO THE CABLE ASSY.
  - WRAP THE CONNECTORS WITH SELF-BONDING TAPE AND VINYL TAPE.  
FIX THE ANTENNA CABLE WITH WEATHERPROOF CABLE TIES AND CONNECT GROUND WIRE TO MAST.
  - COVER SCREW HEADS MARKED \* WITH SILICONE SEALANT.

表1 ホースクランプ (オプション)  
TABLE 1 HOSE CLAMP (OPTION)

TYPE	MODEL	CODE No.	DIA. OF MAST
77-95	OP16-76-1	001443450	φ48.6 (40A)
104-138	OP16-76-2	001443460	φ76.3-89.1 (65A-80A)
130-165	OP16-76-3	001443470	φ101.6-114.3 (90A-100A)

ケーブルをループ状に巻くときは  
芯線が断線しないようにφ200mm  
以上とすること。  
WHEN A LOOP OF CABLE IS FORMED,  
DIAMETER OF LOOP SHOULD BE φ200mm  
OR MORE TO AVOID INJURY FROM STRESS.

DRAWN	18/Feb/2016	T.YAMASAKI	TITLE	C-115/116/118/119
CHECKED	18/Feb/2016	H.MAKI	名称	アンテナユニット (ホースクランプ取付)
APPROVED	22/Feb/2016	H.MAKI	装備要領	
SCALE	1/10	1/10	NAME	ANTENNA UNIT (HOSE CLAMP FIXING)
DWG.No.	C5674-Y01-C			INSTALLATION PROCEDURE



最大3台まで接続可能  
MAX. 3 UNITS AVAILABLE

合計：最大200m  
TOTAL: UP TO 200m

CO-0. 2x5P: CO-SPEW-SB-C 0. 2x5P, φ13. 5

- 注記
- \*1) 造船所手配。
  - \*2) オプション。
  - \*3) 工場にて取付済み。
  - \*4) SSAS仕様標準準給。
  - \*5) 終端のIC-307はジャンパー設定を変更する。
  - \*6) アンテナケーブルは切断して使用しないこと。
- NOTE
- \*1. SHIPYARD SUPPLY.
  - \*2. OPTION.
  - \*3. FITTED AT FACTORY.
  - \*4. STANDARD SUPPLY FOR SSAS SPEC.
  - \*5. CHANGE SETTING OF JUMPER IN IC-307 TO TERMINATE.
  - \*6. DO NOT SHORTEN ANTENNA CABLE.

DRAWN	13/Feb/2013	T. YAMASAKI	TITLE	FELCOM 16
CHECKED	13/Feb/2013	H. MAKI	名称	インマルサットMINI-C携帯移動地球局
APPROVED	18/Feb/2013	Y. NISHIYAMA	相互結線図	
SCALE		MASS kg	NAME	INMARSAT MINI-C MES
DWG No.		C5638-C01-M	INTERCONNECTION DIAGRAM	

**ECF**

(Elemental Chlorine Free)

The paper used in this manual  
is elemental chlorine free.

**FURUNO ELECTRIC CO., LTD.**

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Nishinomiya, 662-8580, JAPAN

• FURUNO Authorized Distributor/Dealer

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(ETMI ) FELCOM16

A : MAR. 2003

J1 : MAR. 25, 2019



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