INSTALLATION GUIDANCE

S-VDR

VR-3000S

FURUNO ELECTRIC CO., LTD.

SPECIFICATIONS OF VOYAGE DATA RECORDER VR-3000/ SIMPLIFIED VOYAGE DATA RECORDING VR-3000S

The Voyager Data Recorder (VDR) is a recording system required on certain categories of ships from 1st July 2002 by the revised SOLAS Chapter V. The Simplified Voyager Data Recorder (S-VDR) is a recording system required by IMO MSC.163(78). VR-3000 fully complies with the IMO Resolution A. 861 (20) and IEC 61996 testing standard. VR-3000S fully complies with the IMO MSC.163(78) and IEC/PAS 61996 testing standard.

1 GENERAL

1.1	Recording Period	12 hours, IEC 61996.4.5.4 - A. 861.5.3.3
1.2	Recording Medium	Solid state component in a protected capsule
1.3	Reserve Power Source	Lead acid battery (12 VDC, 16 AH x 2 pcs.) IEC 61996.4.5.3 - A. 861.5.3.2

2 DATA COLLECTING UNIT (DCU): VR-3010

2.1	CPU	Intel Pentium M 1.6GHz	
2.2	Memory	512 M byte of PC-333 SDRAM	
2.3	Interface	IEC 61162-1/2	: 2ch
		IEC 61162-1/NMEA0183	: 6ch
		RADAR I/F	: 4ch max, option for VR-3000S
		AUDIO(MICROPHONE)	: 6ch (775 mV AC/600 ohm)
		AUDIO(VHF)	: 2ch (775 mV AC/600 ohm)
		Remote Ack Input	: 1ch (Dry Contact a/b)
		System Fail Output	: 1ch (Dry Contact a/b)
		Local Ack Output	: 1ch (Dry Contact a/b)
		Ethernet 100Base-T	: 2ch (For Live Player, Junction Box)

3 DATA RECORDING UNIT (DRU): VR-5020

3.1	Chassis	Protective capsule
3.2	Shock Resistance	50G x 11 ms
3.3	Penetration Resistance	250 kg weight, dropped from 3 m height
3.4	Fire Resistance	1100ºC for 1 hour, 260ºC for 10 hours
3.5	Submersible	6000 m
3.6	Acoustic Beacon	DK120 / Replaced every 6 years

4 JUNCTION BOX: IF-8530 (OPTION FOR VR-3000S)

4.1	Interface	IEC 61162-1/2:	2ch
		IEC 61162-1/NMEA0183:	6ch
		DIGITAL (10-32Vm, contact (a/b)):	64ch
		ANALOG (0-+10V, ±10V, 4-20mA):	16ch
		Ethernet 100Base-T:	1ch (for DCU)
4.2	Power Supply	24 VDC 1A, from DCU	

5 MICROPHONE: VR-5011

5.1	AGC Amplifier Output	775 mV AC/600 ohm
5.2	Frequency Response	less than 6 dB=(150 Hz-6 kHz)
5.3	Audio Coverage	Cylindrical area of approx. 10 m in diameter
		Distance: approx. 2 m
5.4	On-board Beeper	1s in 12 hours period (built in)

6 POWER SUPPLY

100-230 VAC, 1 phase, 50/60 Hz, 2.0-0.9A
(w/Emergency Power Supply)
24 VDC, 7.5A Max

7 ENVIRONMENTAL CONDITION

7.1 Ambient Temperature (IEC 60945)

Data collecting unit (VR-3010)	-15pC to +55pC
Data recording unit (VR-5020)	-25pC to +55pC (IEC 61996)
Others	-15pC to +55pC

7.2 Relative Humidity 93% at 40pC

7.3 Waterproofing (IEC 60952)

Data collecting unit (VR-3010)	IP20
Data recording unit (VR-5020)	IPX7 (IEC 61996)
Junction box (IF-8530)	IP20
Remote alarm panel (VR-3016)	IP20
Microphone (VR-5011)	IP20

7.4 Vibration (IEC 60945)
- 2 - 5 Hz and up to 13.2 Hz with an amplitude of
  o1 mm o10% (7 m/s^2 maximum acceleration at 13.2 Hz)
- 13.2 - 100 Hz with a constant maximum acceleration of 7 m/s^2

8 COATING COLOR

8.1	Data Collecting Unit (VR-3010)	2.5GY5/1.5
8.2	Data Recording Unit (VR-5020)	Fluorescent orange
8.3	Junction Box (IF-8530)	2.5GY5/1.5
8.4	Remote Alarm Panel (VR-3016)	N3.0
8.5	Microphone (VR-5011)	2.5GY5/1.5

SPECIFICATIONS OF A-D CONVERTER
AD-100

This is a kind of gyrocompass repeater. It indicates gyrocompass reading data like ship's heading on 4-digit LED display. It converts gyro repeater signal into digital coded bearing data. The digital bearing data are used for navigational equipment such as radar, GPS navigator and autopilot.

1 GENERAL

1.1	Input signal	Gyro repeater signal	
		(AC Synchronous, DC Synchronous or Step-by-step)	
		Dipswitch is provided to select the input signal.	
1.2	Input voltage	AC type:	20VAC to 135VAC (rotor)
			20VAC to 135VAC (stator)
			50/60Hz, 400Hz or 500Hz
		DC type:	20VDC to 100VDC (rotor)
			20VDC to 100VDC (stator)
		Step-by-step: 20VDC to 100VDC	
1.3	Tracking speed	30°/sec	
1.4	Bearing display	4 digit LED display	
1.5	Data output		
	AD-10 format:	Photo-coupler driver type, 4-digit BCD code,	
		MSB transmission order	
	NMEA0183:	HDT, VHW, RS-485 level, Ver1.5/2.0, 4800bps or 38,400bps	
		Talker: AG or HE selectable	
1.6	Output ports	AD-10 format: 6 ports, NMEA0183 format: 1 port	
1.7	Data transmission interval		
	AD-10 format:	Selectable 25ms or 200ms use (25ms for radar only)	
	NMEA0183:	Selectable 25ms, 100ms, 200ms or 1 s	

2 ENVIRONMENTAL CONDITIONS

2.1	Ambient temperature	-25°C to +55°C
2.2	Relative humidity	95% (at 45°C)
2.3	Waterproofing	IPX2

3 POWER SUPPLY

3.1	AC- synchronous	20 VAC to 135 VAC, 50/60/400/500Hz, 5VA or
3.2	DC-step/synchronous	20 VDC to 100 VDC, 5W (supplied from gyrocompass)

4 COATING COLOR

Panel: N3.0, Cover: 2.5GY5/1.5

On Board Check List for the Simplified VDR for minimum carriage requirement

Ship's Name: A051018 FURUNO

Class:

Please fill in the blue-colored items

Necessity of data to be recorded is depending on each ship classification society.
Therefore, please get an approval of data to be recorded from each ship classification society by using check list.
Should have any questions, please contact proper ship classification society.

	Data to be recorded	Product	Maker/Type	Check Points		Installation Caution
1	Date and time Ship's position and datum used	GPS		Interface (IEC-61162)	Yes	<GPS data> IEC61996-2 Annex A obliges to record following data. 1) Date and time：IEC61163：$--ZDA 2) Ship's position and datum used：IEC61163:$--GNS and $--DTM ・Experience shows that $--GLL or $--GGA can be used instead of 2) $--GNS. ・Geodetic data of $-DTM should be recorded. ※If an equipment can not output above data, equipment needs to be replaced.
2	Speed (through the water and/or over the ground)	Speed Log		Interface (IEC-61162)	Yes	<Speed log data> IEC61996-2 Annex A obliges to record following data. 1)Speed (through the water and/or over the ground)：IEC61162：$--VBW ・If Pulse data or any other data will be output, "IEC61162:$--VBW" should be input by using Signal interface. ・FEC plans to recommend some specific equipment.
3	Heading (from compass)	Gyro/ Magnetic compass		Interface (IEC-61162)	Yes	<Gyro compass data> IEC61996-2 Annex A obliges to record following data. 1)Heading(ture) IEC61162：$--HDT ・If Step, Synchro or any other data will be output, "IEC61162:$--HDT" should be input by using AD-100.
4	Bridge audio (by one or more microphones on the bridge)	FURUNO supply as standard.	-	-	( ) ch	<Bridge audio recording> Please install more than one microphone exclusive for VDR in a work station inside of W/H. Work station is defined in IEC91996-2 3.1.9 as follows. 3.1.9 bridge work station ・center line conning ・chart table ・bridge wing(s) ・helms ・main radar ・communication ・As long as voices in W/H can be recorded properly, it is not needed to install microphones to all places. ・Experience shows that closed wing type ship and CLASS-NK ship which voyages at high latitude has microphones in bridge wing(s). ・VR-3000S can connect from 1 to 6 microphones.
5	Communications audio	GMDSS VHF		-	( ) ch	<Communications audio recording> VHF Radio telephone communication voice should be recorded. ・Number of radio telephone which should be recorded is not defined. In general, two radio telephones which are obliged to install in GMDSS are recorded. ・If present VHF equipment has no output port for Communication audio, please ask the manufacturer to modify it. ・If FM8500/8700 is installed, please use IF-5200. ・VR-3000S has two input ports.

6	Radar, post-display selection	RADAR		RGB output is available?	Yes / No	<Radar data - Post-display > It is obliged to record display image of one of radars. ・RADAR type is not defined. Please connect No. 1 radar to S-VDR. ・It is requested to record RADAR display image without any change. It is not requested to record data according to IEC 61162. ・In case that interfaces are not available, RADAR display image record can be omitted by inputting AIS data. ※If RADAR is replaced after S-VDR has been installed, Radar display image should be recorded.
				Are the Radars FURUNO's procucts?	No	Please confirm the following points whether the images of RADAR can be connected or not, when Rarars are the products of other maker's instead of FURUNO's. 1) Is Horizontal SYNC Polarity Positive or Negative? 2) Is vertical SYNC Polarity Positive or Negative? 3) What's the value of Horizontal Resolution? 4) What's the value of Vertical Resolution? 5) Is Pixel Rate within the range between 0 --- 162MHz? 6) Is interlace type Not Interlace or Interlace? 7) Is Sync Type Separate SYNC, SYNC on Green, SYNC HD (Composite SYNC), or SYNC VD (Composite SYNC)? 8) What's the value of Horizontal SYNC Frequency? The value can be achieved by the following formula [Horizontal SYNC Frequency (kHz)] = [Pixel Rate (kHz)] / [Horizontal Low Counter + Horizontal High Counter] 9) What's the value of Refresh Rate (Vertical SYNC Frequency)? The value can be achieved by the following formula [Vertical SYNC Frequency (kHz)] = [Horizontal SYNC Frequency (kHz)] / [Vertical Resolution]
7	AIS Information	AIS		Interface (IEC-61162)	Yes / No	<AIS data / AIS> If RADAR display image data can not be recorded, AIS data should be input. If AIS data should be recorded, IEC61996-2 Annex A obliges to record following data. 1)AIS-VHF data-link message IEC61162 : $--VDM 2)AIS-VHF data-link own-vessel message IEC61162 : $--VDO
8	Depth	Echo sounder		Interface (NMEA/IEC-61162)	Yes / No	<Other Item data> Regarding following equipment, if IEC61162 format as defined in IEC61996-2 Annex A can be output, it is requested to record to S-VDR.If it is not applied to Annex A, it is not necessary to record data. 1) Echo sounder IEC61162 : $--DPT 2) Main alarms IEC61163 : $--ALR 3) Rudder order/response IEC61164 : $--RSA 4) Rudder order/response automatic IEC61165 : $--HTC and $--HTD 5) Engine order/response IEC61166 : $--RPM and $--XDR 6) Hull openings, watertight/fire door status IEC61167 : $--XDR 7) Accelerations and hull stress IEC61168 : $--XDR or $--ALR 8) Wind speed and direction IEC61169 : $--MWV
9	Main alarms (mandatory alarms on the bridge)	Alarm unit		Interface (NMEA/IEC-61162)	Yes / No	
10	Rudder order and response	Auto Pilot		Interface (NMEA/IEC-61162)	Yes / No	
11	Engine order and response	Engine Control Unit		Interface (NMEA/IEC-61162)	Yes / No	
12	Hull openings status (all mandatory information required to be displayed on the bridge)			Interface (NMEA/IEC-61162)	Yes / No	
13	Water tight and fire door status (all mandatory information required to be displayed on the bridge)			Interface (NMEA/IEC-61162)	Yes / No	
14	Accelerations and hull stresses (If fitted)			Interface (NMEA/IEC-61162)	Yes / No	
15	Wind speed and direction (If fitted)			Interface (NMEA/IEC-61162)	Yes / No	

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COMPLETE SET	VR-3000S VOYAGE DATA RECORDER			
No.	NAME	TYPE	MASS	Q'TY	REMARKS
1	DATA COLLECTING UNIT(DCU)	VR-3010	45	1	
2	DATA RECORDING UNIT(DRU)	VR-5020-6	37	1	W/DRU VIBRATION ISOLATION ASSY.
3	MICROPHONE WITH FLUSH MOUNT PANEL	VR-5011	0.3	4	
4	REMOTE ALARM PANEL	VR-3016	1.0	1	
5	VDR AUDIO INTERFACE	IF-5200	1.0	1	OPTION
6	AD CONVERTER	AD-100	2.0	1	OPTION
7	INSTALLATION MATERIALS	1394M1A1 *30m*	-	1	IEEE1394CABLE VR-3010⇔VR-5020
8	INSTALLATION MATERIALS	CP24-00601	-	1	DATA COLLECTING UNIT VR-3010
9	INSTALLATION MATERIALS	CP24-00801	-	1	REMOTE ALARM PANEL VR-3016
10	PACKING LIST	RI-3010-1/4CH 000-042-180-00	-	1	OPTION RADAR INTERFACE KIT
11	ACCESSORIES	FP24-00201	-	1	
12	ACCESSORIES	FP24-00203	-	1	
13	SPARE PARTS	SP24-00201	-	1	

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1394M1A1.30m(FIX)

DATA RECORDING UNIT
VR-5020

DATA COLLECTING UNIT
VR-3010

(OPTION)
000-042-180-00
RI-3010-1/4CH

BNOx5-DSUB15-L700x2
BNOx5-DSUB15-L700x2

RADAR INTERFACE
RI-3010

ANALOG RGB(MAX.4ch)

SERIAL(MAX.8ch)

24VDC OUT

AUDIO

*IV-8sq.

*DPYC-1.5

220VAC,1φ,60Hz

*TTYCS-4

REMOTE ALARM PANEL
VR-3016

*TTYCS-1

DGPS

*TTYCS-1

SPEED LOG

*TTYCS-4

AIS

*TTYCS-1

GYROCOMPASS : NMEA

*TTYCS-1

(OPTION)
AD-100
AD CONVERTER

*IV-8sq.

*MPYC-7

GYROCOMPASS : STEP

(RGBHV)

*5C-2V x5

If available
X or S-BAND RADAR

*TTYCS-4

(OPTION)
IF-5200
VDR AUDIO INTERFACE

(OPTION)

*TTYCS-4

No.1 VHF

*TTYCS-1

No.1 VHF

*TTYCS-10

MIC(VR-5011)

*TTYCS-10

MIC(VR-5011)

*TTYCS-10

MIC(VR-5011)

*TTYCS-10

MIC(VR-5011)

MIC VR-5011(MAX. 6 SETS)

NOTE
* : SHIPYARD SUPPLY
: CONNECTOR (: FACTORY-FITTED)
: CRIMP-ON LUG (: FACTORY-FITTED)
: GROUNDING COPPER STRAP
: GROUNDING WIRE IV-8sq.

DRAWN 060420SAK			TITLE VR-3000S
CHECKED 060421RYE			NAME VOYAGE DATA RECORDER
APPROVED 060421TOM			SYSTEM DIAGRAM
			REMARKS
DWG.No. ****-****-SS4	E4437-D01- 2		

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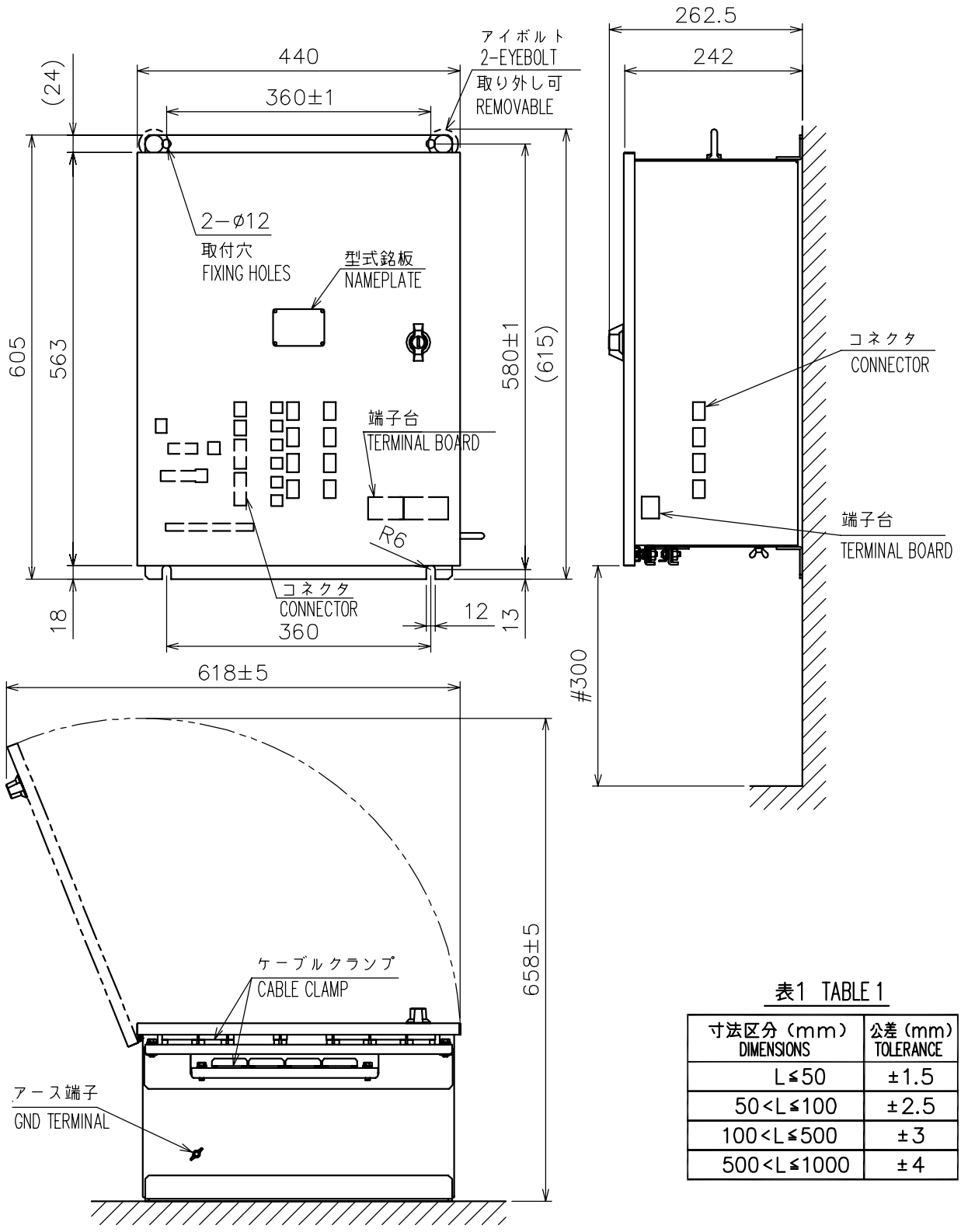

表1 TABLE 1

寸法区分（mm） DIMENSIONS	公差（mm） TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3
500<L≦1000	±4

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M8ボルトまたはコーチボルト呼び8を使用のこと。

NOTE 1. #: MINIMUM SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
3. USE M8 BOLTS OR COACH SCREWS ø8 FOR FIXING THE UNIT.

DRAWN Dec. 12, '05 E. MIYOSHI		TITLE	VR-3010
CHECKED TAKAHASHI.T		名称	データ収集部
APPROVED Y. Hatai	VR-3000/3000S		外寸図
SCALE 1/8 MASS 46 ±10% kg		NAME	DATA COLLECTION UNIT
DWG.No. C4437-G01- A	REF.No. 24-009-100G-1		OUTLINE DRAWING

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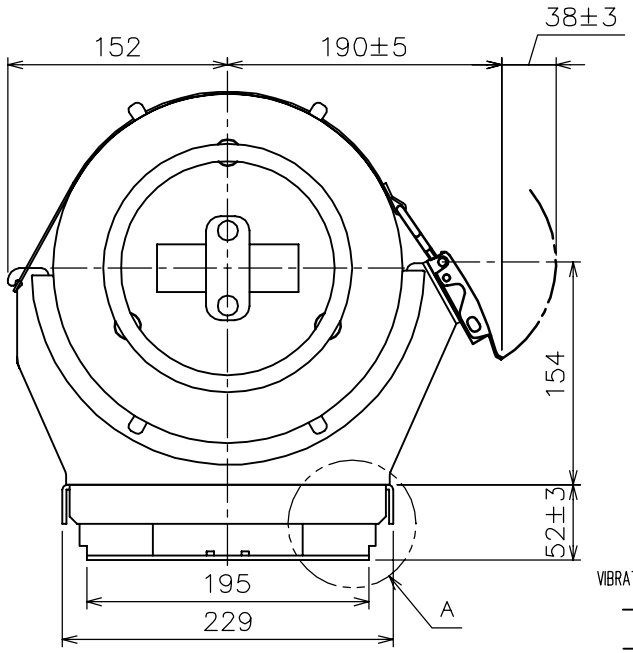
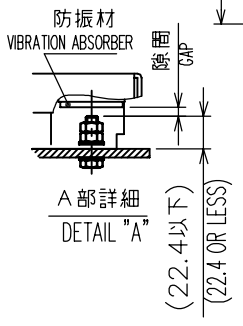
表 1 TABLE 1

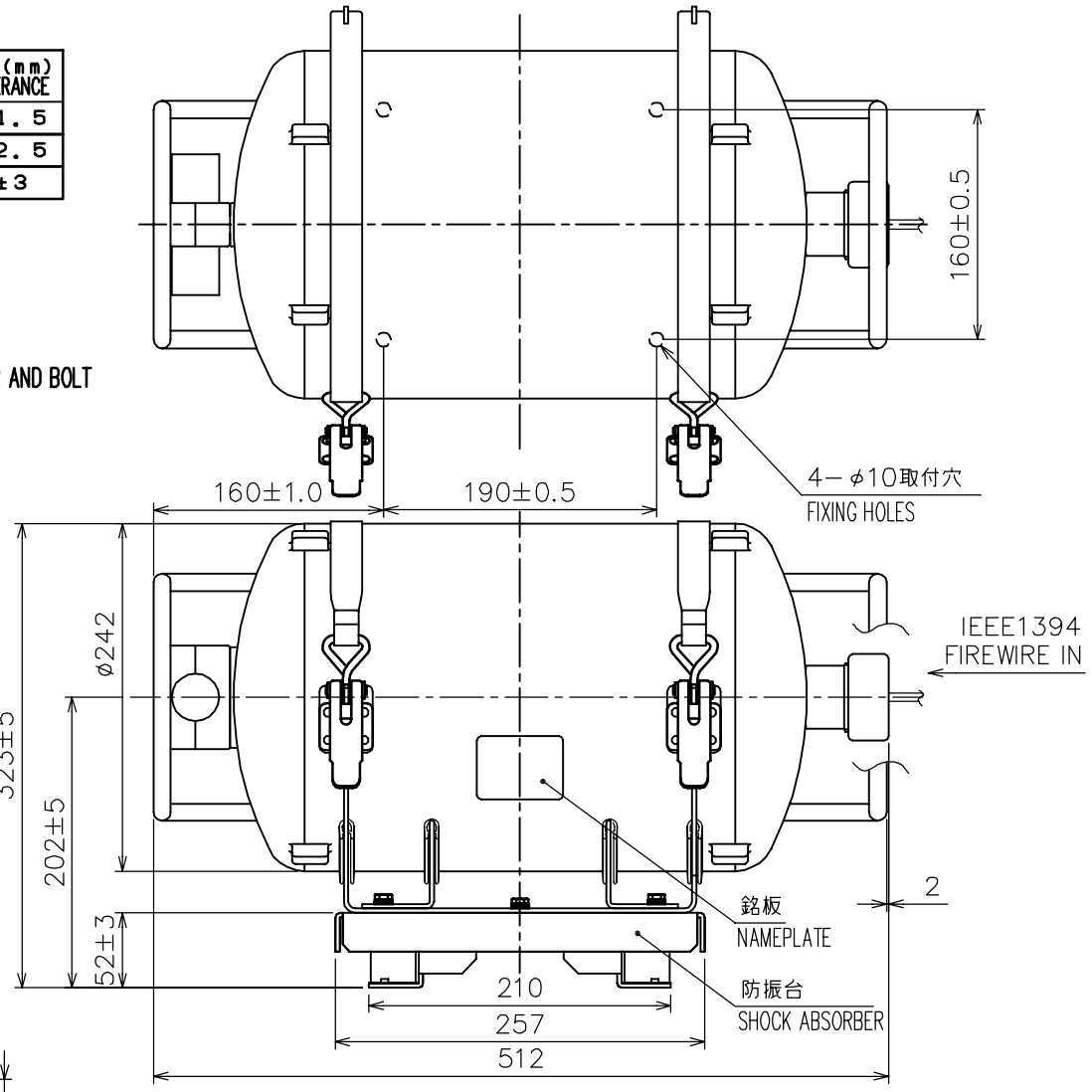
寸法区分（mm） DIMENSIONS	公差（mm） TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3

注　記　1）　指定外の寸法公差は表 1 による。
　　2）　取付用ネジはＭ８ボルトを使用のこと。
　　また、防振材との隙間は３ｍｍ以上確保すること。（Ａ部参照）

NOTE　1.　TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
　　2.　USE M8 BOLTS FOR FIXING. FURTHER, THE GAP BETWEEN VIBRATION ABSORBER AND BOLT SHOULD BE AT LEAST 3 mm. REFER TO "A".







DRAWN Oct. 20, '04 E. MIYOSHI		TITLE	VR-5020
CHECKED TAKAHASHI. T		名称	データ記録器
APPROVED	VR-5000		外寸図
SCALE 1/5 MASS 37 ±10% kg		NAME	DATA RECORDING UNIT
DWG.No. C4418-G02- G	24-004-100G-2		OUTLINE DRAWING

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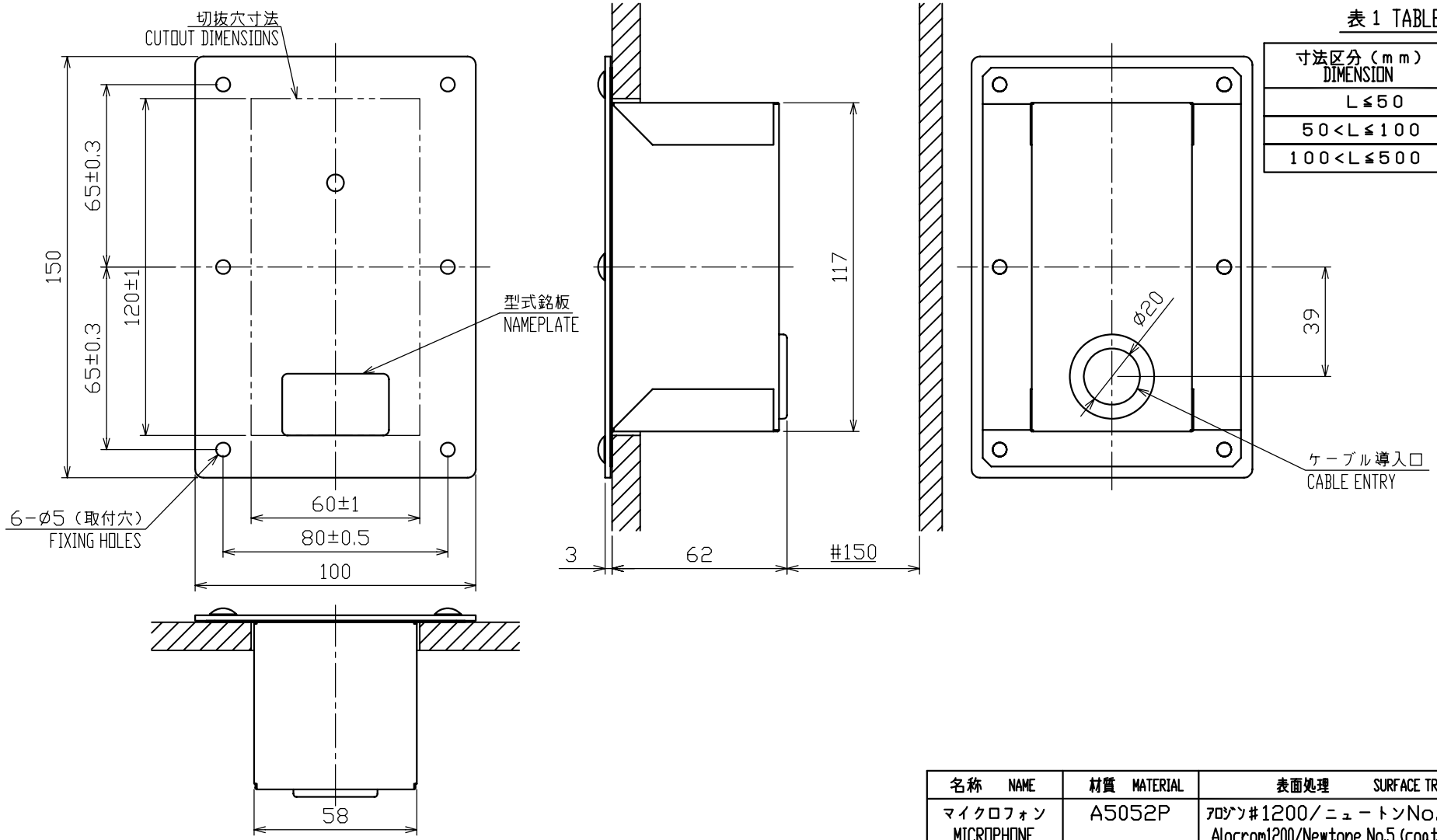

表 1 TABLE 1

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

名称 NAME	材質 MATERIAL	表面処理 SURFACE TREATMENT
マイクロフォン MICROPHONE	A5052P	ｱﾛｼﾞﾝ#1200／ニュートンNo.5（塗装） Alocrom1200/Newtone No.5 (coating color)

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）取付用ネジは＋トラスタッピンネジ呼び径４×１６を使用のこと。

NOTE 1. #: MINIMUM SERVICE CLERANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
3. USE TAPPING SCREWS ø4x16 FOR FIXING THE UNIT.

DRAWN	Feb. 25 '05 T.YAMASAKI		TITLE VR-5011
CHECKED	Feb. 25 '05 T.MATSUGUCHI		名称 マイクロフォン
APPROVED	T.Matsuguchi	VR-5000	外寸図
SCALE	1/2 MASS 0.3 ±10% kg		NAME MICROPHONE
DWG.No.	C4418-G04- E	14-058-991G-1	OUTLINE DRAWING

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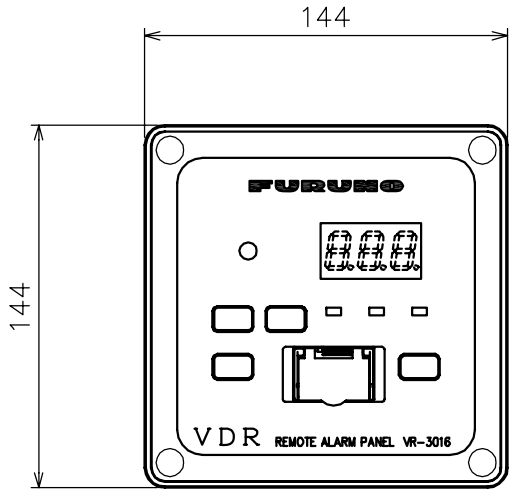
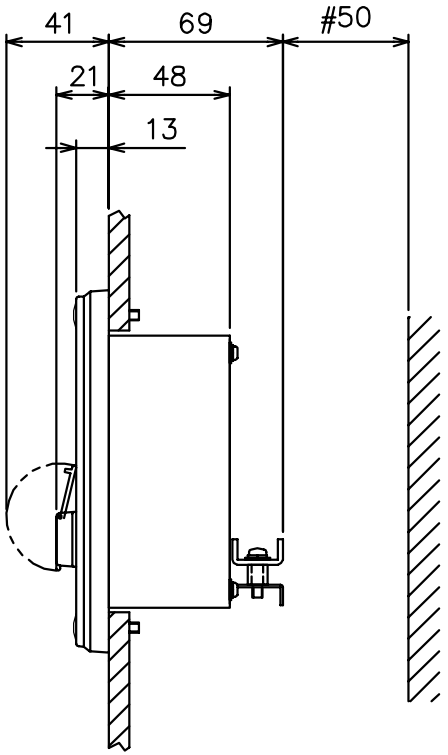
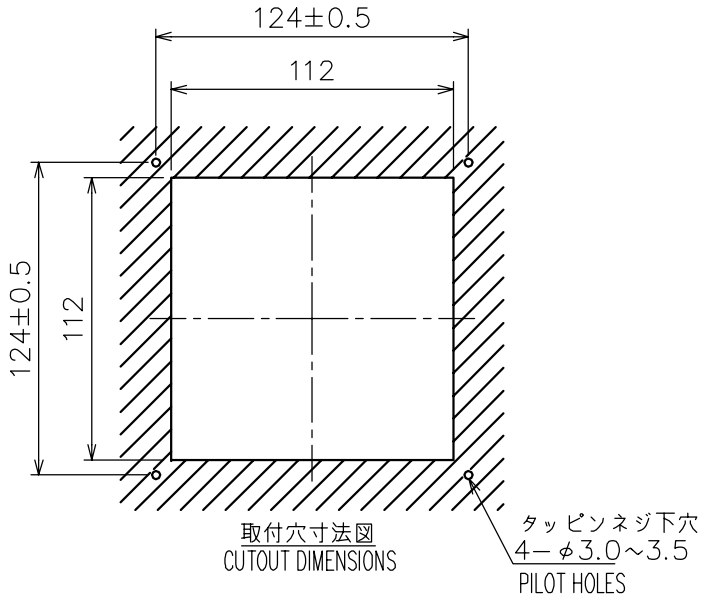
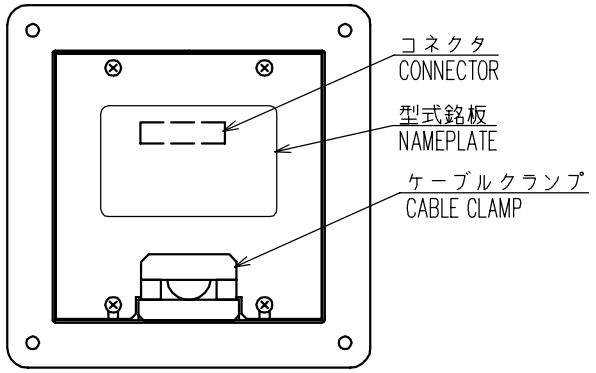
表1 TABLE 1

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） 取付用ネジは付属のナベタッピンネジ呼び径4×16を使用のこと。

NOTE 1. #: MINIMUM SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
3. USE SELF-TAPPING SCREWS 4x16 FOR FIXING THE UNIT.

DRAWN Dec. 12, '05 E. MIYOSHI			TITLE VR-3016
CHECKED TAKAHASHI.T			名称 リモートアラームパネル
APPROVED Y. Hatai		VR-3000/3000S	外寸図
SCALE 1/3	MASS 1.0 ±10% kg	質量にはケーブルは含まれていない。 CABLE NOT INCLUDED IN MASS.	NAME REMOTE ALARM PANEL
DWG.No. C4437-G02- A		REF.No. 24-009-200G-1	OUTLINE DRAWING

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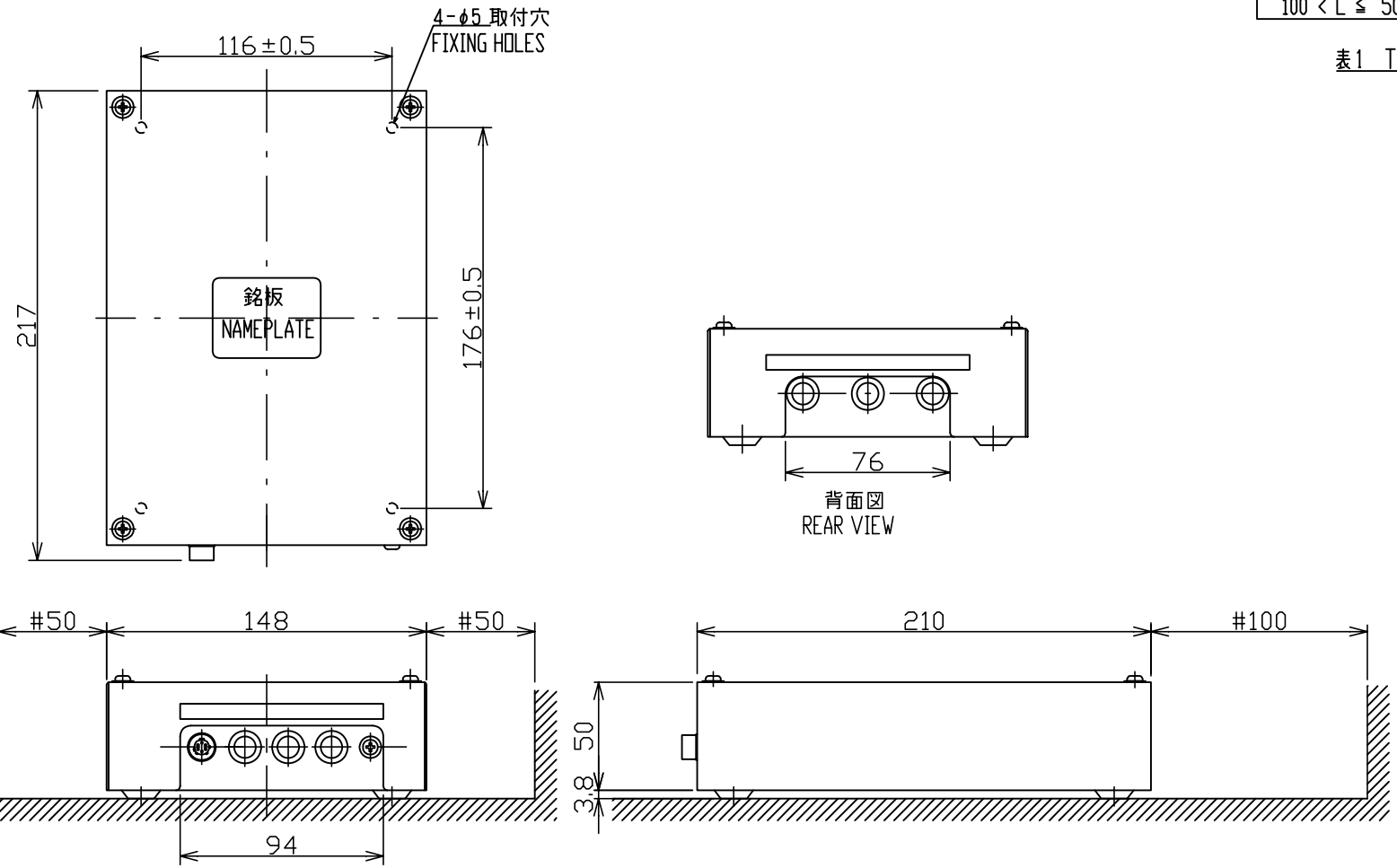
寸法区分(mm) DIMENSION	公差(mm) TOLERANCE
0 < L ≦ 50	±1.5
50 < L ≦ 100	±2.5
100 < L ≦ 500	±3

表1 TABLE 1



注記
1）#：推奨する最小サービス空間寸法。

NOTE
1. #: RECOMMENDED SERVICE CLEARANCE.

DRAWN Nov. 7 '02 T.YAMASAKI			TITLE IF-5200
CHECKED Nov. 7 '02 Y.KIMURA			名称 インターフェイス
APPROVED Y. Kimura	VR-5000		外寸図
SCALE 1/3	MASS 1.0 ±10% kg		NAME VHF AUDIO INTERFACE
DWG No. C4418-G03- B			OUTLINE DRAWING

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Y. Kimura

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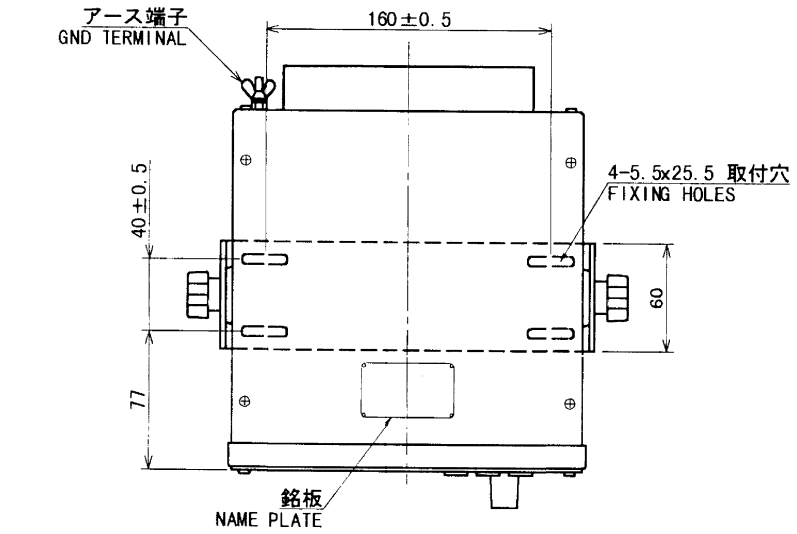
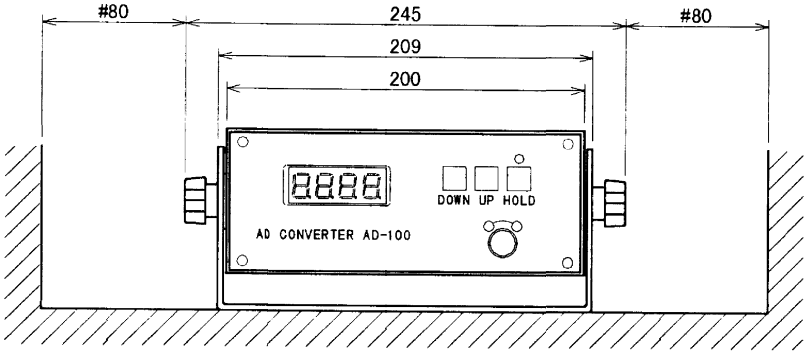
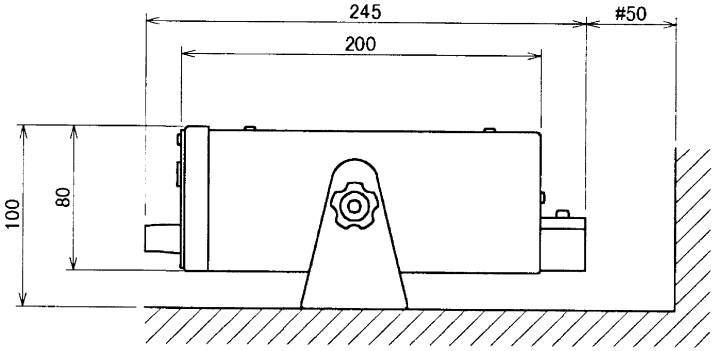
表1 TABLE 1

寸法区分(mm) DIMENSION	公差(mm) TOLERANCE
0 < 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）#：推奨する最小サービス空間寸法。

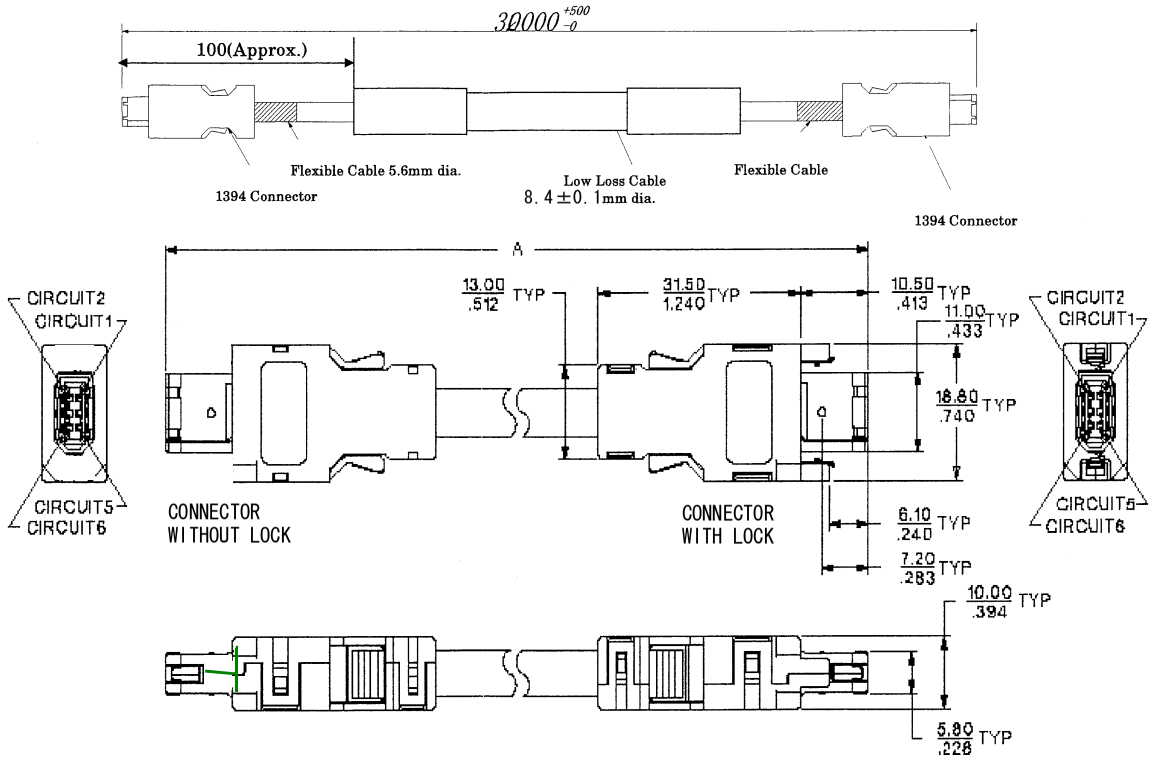
NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
2. #: RECOMMENDED SERVICE CLEARANCE.

DRAWN Apr/7'00 T.YAMASAKI		TITLE AD-100
CHECKED Apr/7'00 Y.Kuni		名称 A-Dコンバータ
APPROVED Apr/7'00 Y.Kuni		外寸図
SCALE 1/4 MASS ±10% 2.0 kg		NAME A-D CONVERTER
DWG. No. C4340-G01- E		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO

Unit:mm



DON'T CUT THE CABLE.

表1 TABLE 1

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

注記
1）指定なき寸法公差は表1による。

NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

DRAWN			TITLE 1394M1A1
CHECKED			
APPROVED			外寸図
SCALE 1/1	MASS ±10% kg		NAME IEEE1394 CABLE ASSY.
DWG.No.			OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

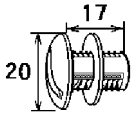
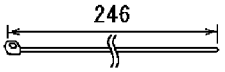
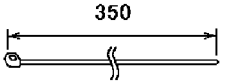
FURUNO

CODE NO.	004-383-210-00	24AE-X-9404 -2
TYPE	CP24-00601	1/1

工事材料表

INSTALLATION MATERIALS

DATA COLLECTING UNIT
VR-3010

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ｽﾅｯﾌﾟ/ﾜｲﾔｰｸﾐﾋﾝ SNAP/WIRE ASSEMBLY		020170A0000-L410 CODE NO. 000-161-454-10	1	
2	ﾎﾞﾙﾄｷｬｯﾌﾟ COSMETIC CAP		CP-30-BC-10 CODE NO. 000-808-408-00	2	
3	ｺﾝﾍﾞｯｸｽ PLASTIC BAND		CV-250N CODE NO. 000-570-326-00	10	
4	ｺﾝﾍﾞｯｸｽ PLASTIC BAND		CV-350N CODE NO. 000-595-297-00	10	

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.）

FURUNO ELECTRIC CO ., LTD.

C4437-M04-A

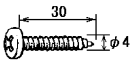
FURUNO

CODE NO.	004-384-960-00	24AE-X-9401 -0
TYPE	CP24-00801	1/1

工事材料表

INSTALLATION MATERIALS

REMOTE ALARM PANEL
VR-3016

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ｷｬｯﾌﾟ CAP		040-3025 CODE NO. 000-515-248-00	4	
2	+ﾅﾍﾞﾀｯﾋﾟﾝﾈｼﾞ SELF-TAPPING SCREW		4X30 SUS304 1ｼｭ CODE NO. 000-809-321-00	4	

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.

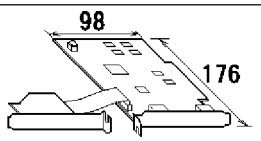
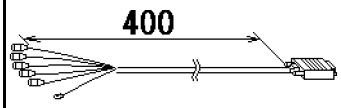
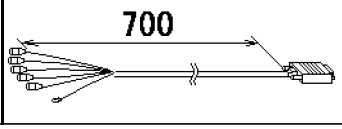
（略図の寸法は、参考値です。　DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

FURUNO ELECTRIC CO ., LTD.

C4437-M01-A

PACKING LIST

RI-3010-1/4CH

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
ﾚｰﾀﾞｰｲﾝﾀｰﾌｪｲｽ INTERFACE BOARD FOR RADER		RI-3010 000-159-458-00	1
工事材料 INSTALLATION MATERIALS			
ｺﾈｸﾀ組品 CONNECTOR ASSY.		BNCX5-DSUB15-L400 000-159-595-10	2
ｺﾈｸﾀ組品 CONNECTOR ASSY.		BNCX5-DSUB15-L700 000-159-596-10	2

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.

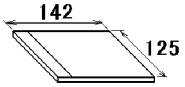
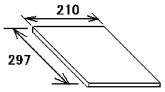
（略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

FURUNO

CODE NO.	004-383-300-00	24AE-X-9501 -1
TYPE	FP24-00201	1/1

付属品表

ACCESSORIES

番 号 NO.	名　称 NAME	略　図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	CD-ROM CD-ROM		2450032* CODE NO. 004-658-230-00	1	
2	取扱説明書 OPERATOR'S MANUAL		OME-44182-* CODE NO. 000-156-099-0*	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.）

FURUNO ELECTRIC CO ., LTD.

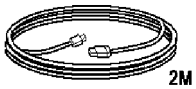
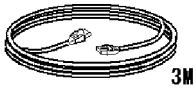
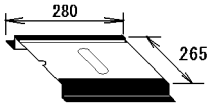
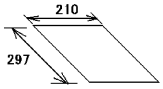
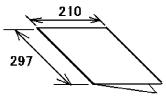
C4437-F01-B

FURUNO

CODE NO.	004-555-560-00	24AE-X-9503 -0
TYPE	FP24-00203	1/1

付属品表

ACCESSORIES

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(IEEE1394) CABLE		AIE896 CODE NO. 000-151-843-00	1	
2	LANｹｰﾌﾞﾙ(ﾌﾞﾙｰ) LAN CABLE ASSEMBLY		ALT-03BX CODE NO. 000-159-485-00	1	
3	ｶｰﾄﾞﾎﾙﾀﾞｰ CARD HOLDER		C-26-ﾀﾃｰﾆ-1 CODE NO. 000-155-571-00	1	
4	ｴﾗｰｺｰﾄﾞﾋｮｳ ERROR CODE TABLE		C42-00407-* CODE NO. 000-159-488-0*	1	
5	ﾃﾞｰﾀﾁｭｳｼｭﾂﾖｳﾘｮｳ DATA EXTRACTION PROCEDURE		C42-00408-* CODE NO. 000-159-489-0*	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.

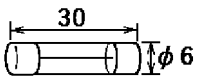
（略図の寸法は、参考値です。　DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

FURUNO ELECTRIC CO ., LTD.

FURUNO

CODE NO.	004-555-540-00	24AE-X-9301 -0 1/1
TYPE	SP24-00201	BOX NO. P

	SPARE PARTS LIST FOR	U S E	SETS PER VESSEL
	DATA COLLECTING UNIT VR-3010		

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 125V 10A PBF			2	000-155-826-10

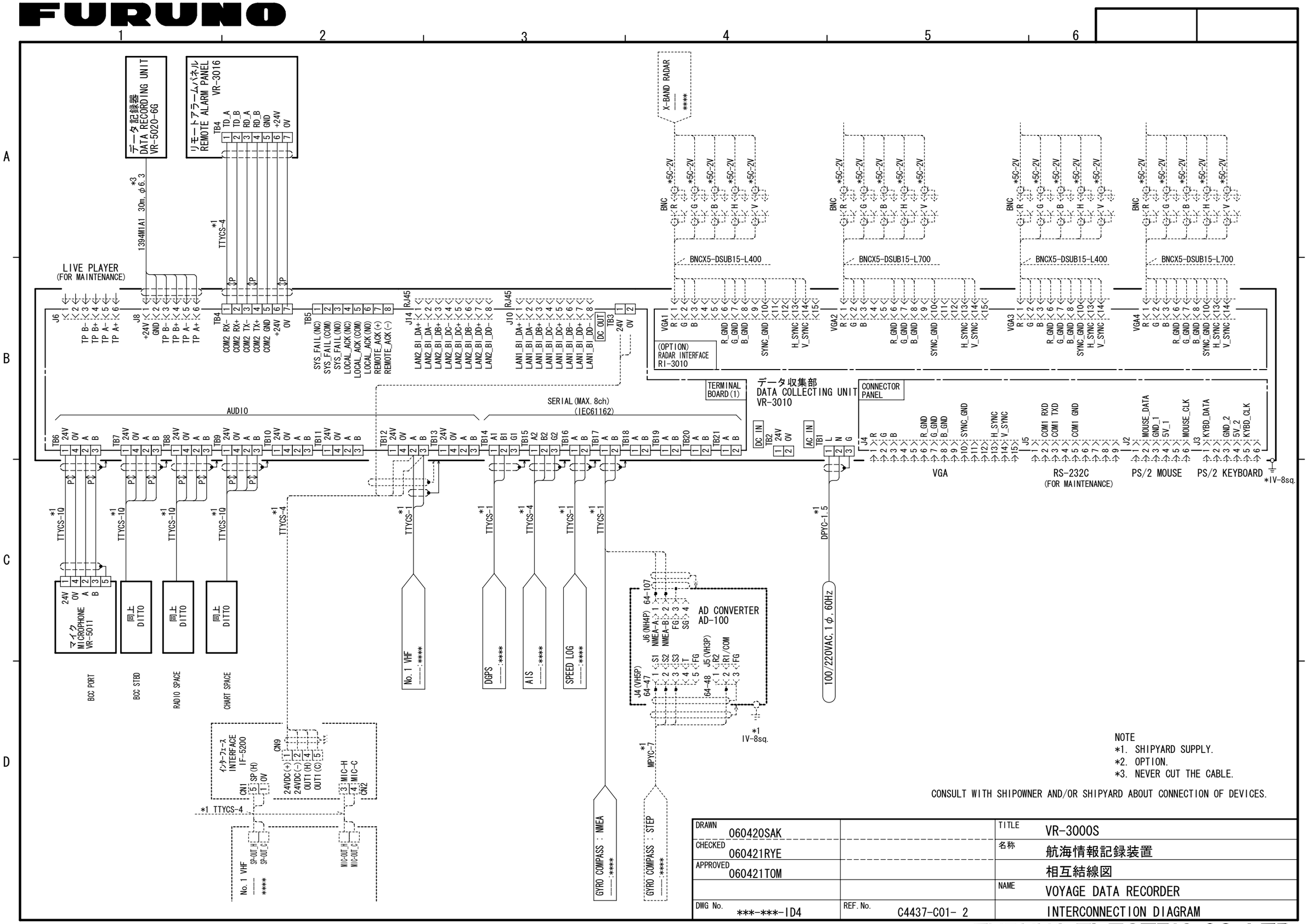
MFR'S NAME	FURUNO ELECTRIC CO.,LTD.	DWG NO.	C4437-P01-A	1/1

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

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.

FURUNO



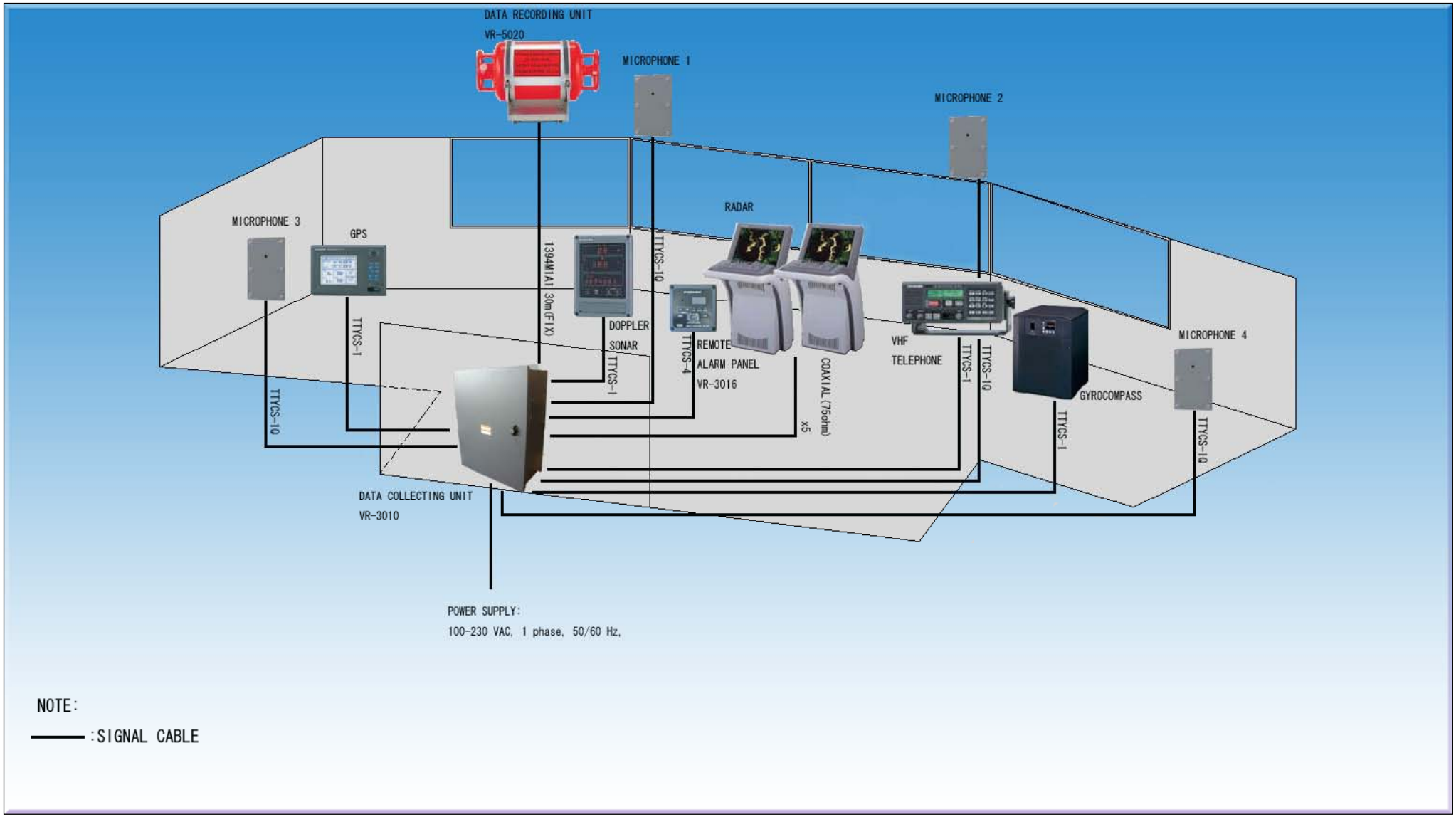
NOTE
*1. SHIPYARD SUPPLY.
*2. OPTION.
*3. NEVER CUT THE CABLE.

CONSULT WITH SHIPOWNER AND/OR SHIPYARD ABOUT CONNECTION OF DEVICES.

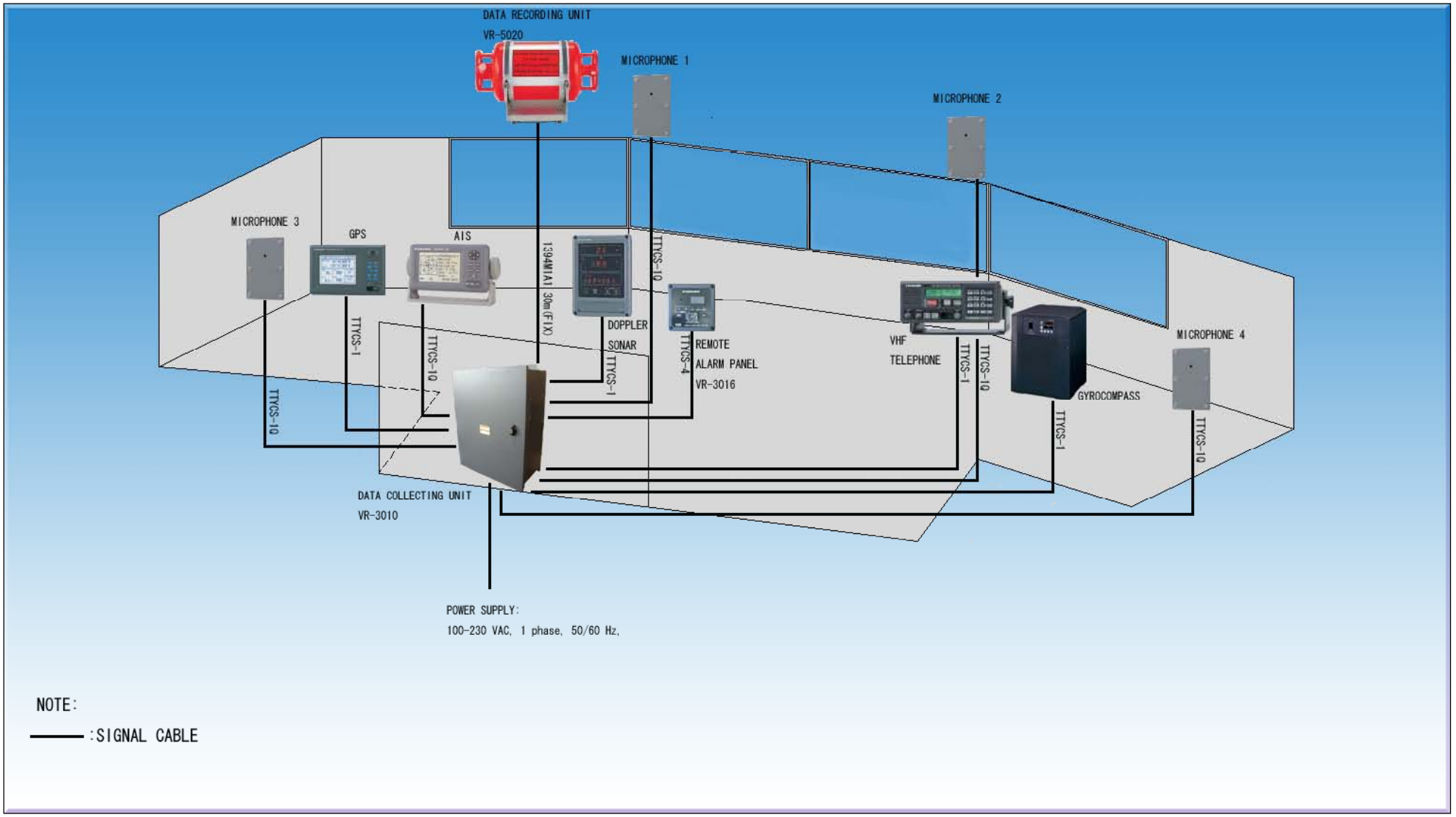
DRAWN 060420SAK		TITLE	VR-3000S
CHECKED 060421RYE		名称	航海情報記録装置
APPROVED 060421TOM			相互結線図
		NAME	VOYAGE DATA RECORDER
DWG No. ***-***-ID4	REF. No. C4437-C01- 2		INTERCONNECTION DIAGRAM

FURUNO ELECTRIC CO., LTD.

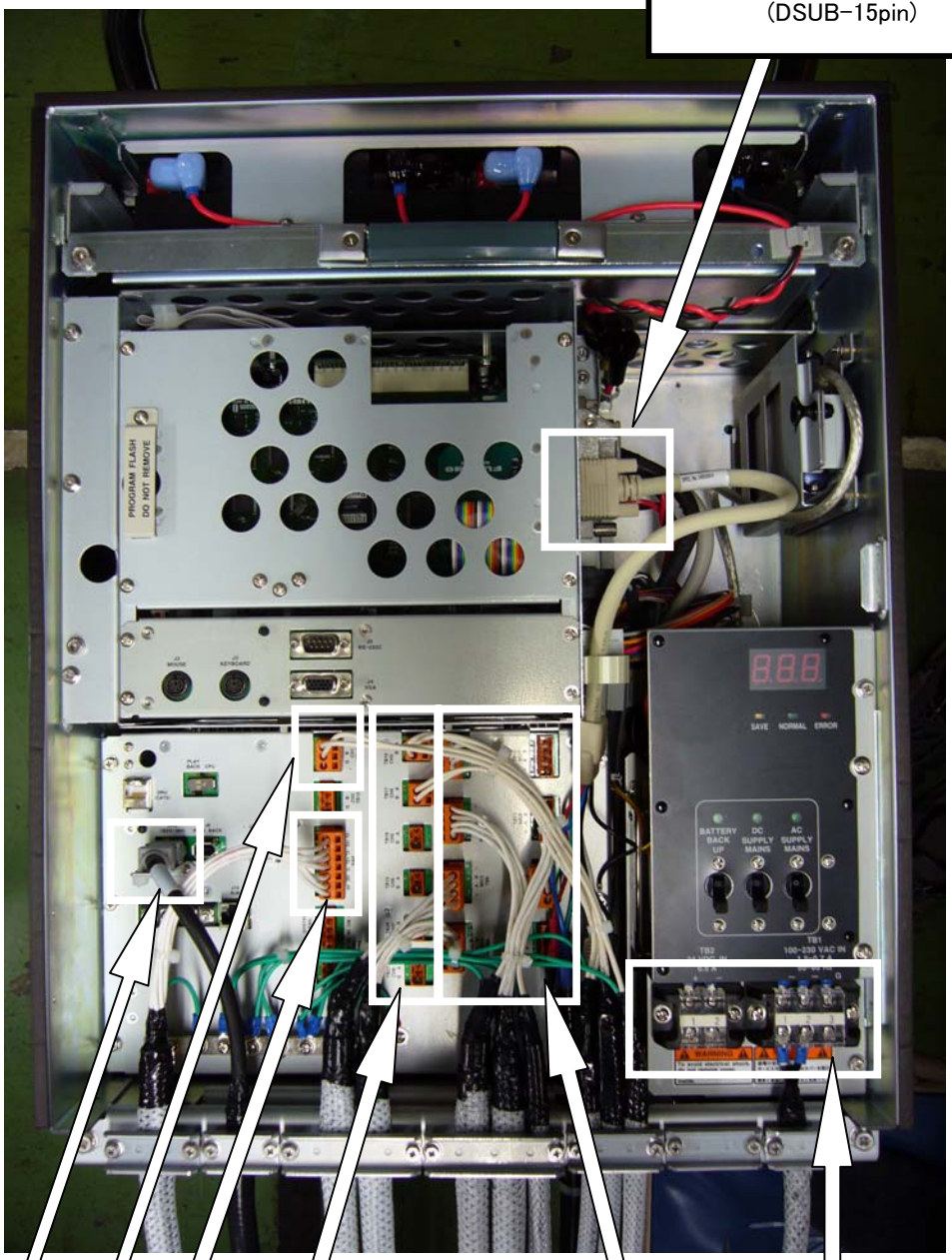
S-VDR(VR-3000S) BLOCK DIAGRAM FOR RADAR



S-VDR(VR-3000S) BLOCK DIAGRAM FOR AIS



Wiring method of S-VDR RADAR-CONNECTION Ver.
(RADAR video signal input Version : Minimum input situation)



VGA1～VGA4
RADAR image input connector
(DSUB-15pin)

TB16～21 : IEC-61162 Signal input
<=== Input demand equipment

TB4 : RAP Connection
<===> VR-3016

TB14 : GPS Signal input
It's necessary to input GPS-SIGNAL into this terminal.

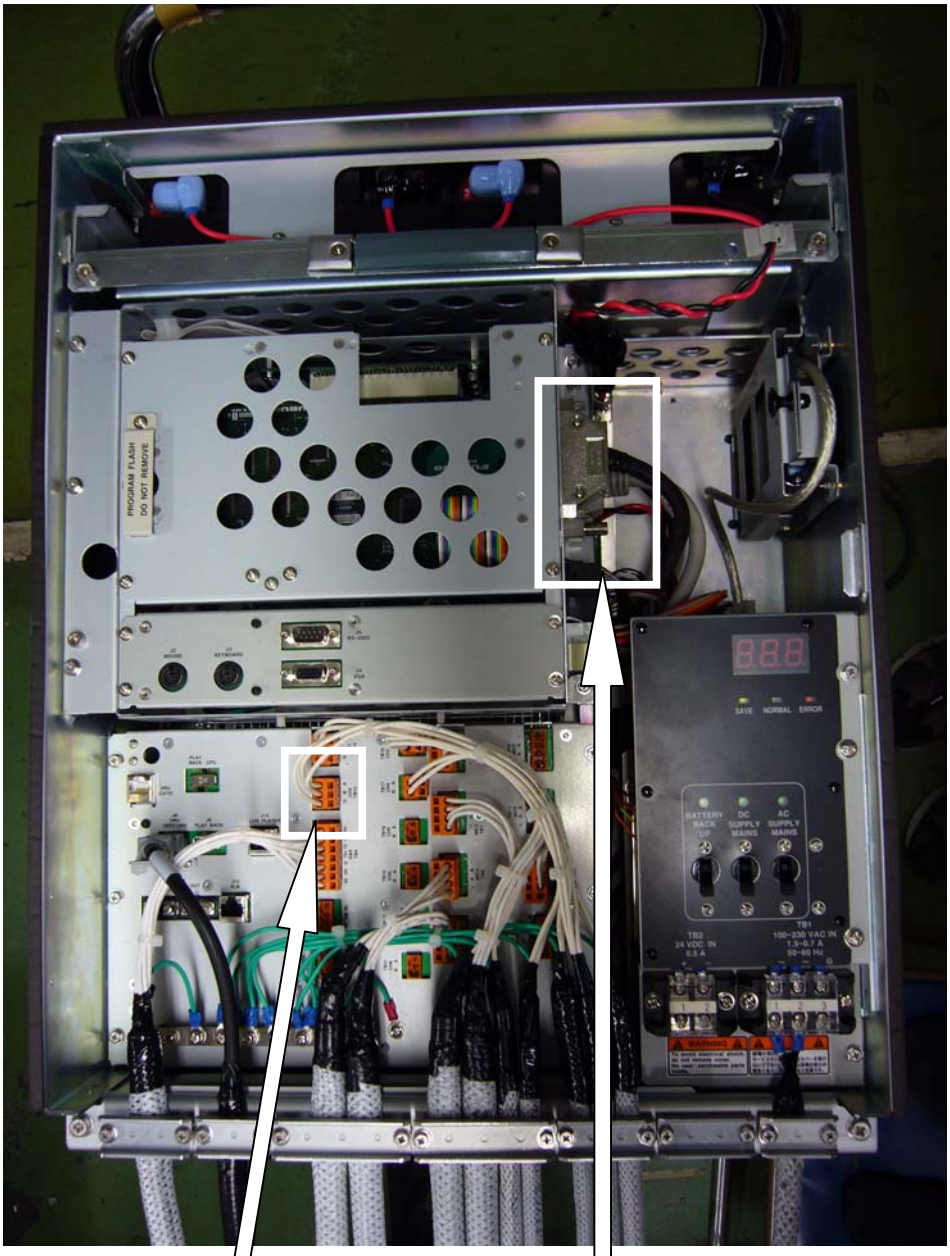
IEEE-1394 CABLE
<===> VR-5020

TB6～11 : VDR-MIC inpit
The numbers of microphones change according to the arrangement and the size of W/H.

TB12,13
VHF sound of GMDSS equipment is inputted.
(Input of one set is indispensable)

Power supply input terminal
100-230VAC,1φ,60/50Hz
or
24VDC
(Either is chosen)

Wiring method of S-VDR AIS-CONNECTION Ver.
(AIS signal input Version : Minimum input situation)



TB-15 : AIS Signal input
This port corresponds by 38400bps.
Therefore, the signal of AIS is inputted into this terminal without fail.

No RADAR image is inputted here.

<Caution>

- In case that interfaces are not available, RADAR display image record can be omitted if AIS data is inputted.
- If AIS data should be recorded, IEC61996-2 Annex A obliges to record the following data.
  1)AIS-VHF data-link message IEC61162 : $--VDM
  2)AIS-VHF data-link own-vessel message IEC61162 : $--VDO

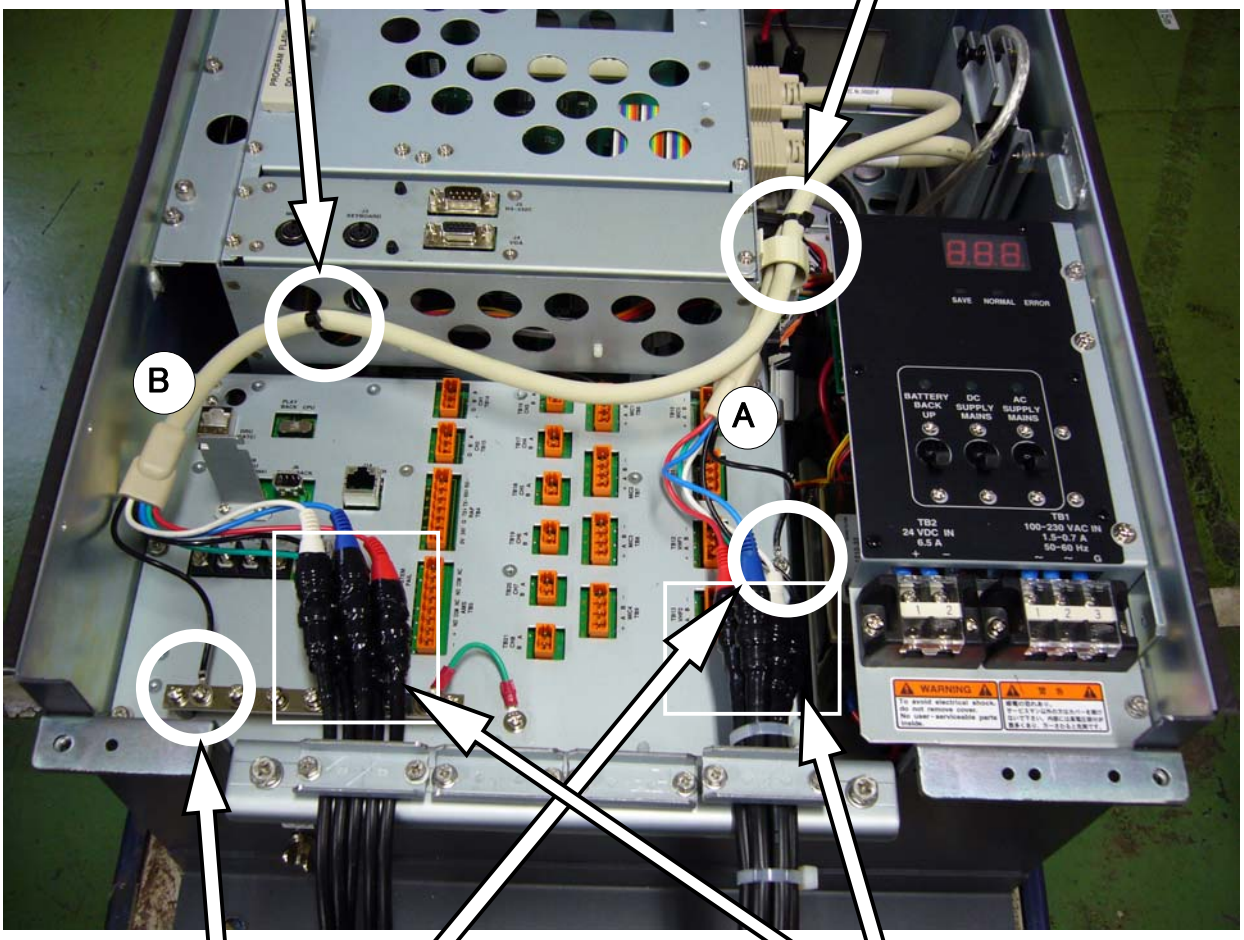
Wiring method of BNCX5-DSUB15:CONNECTOR-ASSY
(RADAR video signal input cable)

<Caution>
RADAR-INTERFACE-BOARD : RI -3010 (000-159-458-00),
RGBHV CABLE : BNCX5-DSUB15-L400 (000-158-870-00) and
BNCX5-DSUB15-L700 (000-158-871-00) are not contained in the standard composition of SVDR.
Please follow the request of each Vessel concerning the above equipments arrangement.

A : BNCX5-DSUB15-L400 (Cable length : 400mm)
B : BNCX5-DSUB15-L700 (Cable length : 700mm)
- The 400mm cable wires right-hand side. And the 700mm cable wires left-hand side.
- When connecting with one RADAR, the suitable cable length can be chosen.

The cable is fixed by PLASTIC-BAND using ventilation holes.

It lets CABLE-CLIP pass.
Two or more cables are bound together with PLASTIC-BAND, letting them passing through CABLE-CLIP.



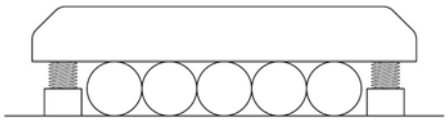
G-LINE of CABLE-A is connected by using the terminal panel's fixing screw.
G-LINE of CABLE-B is connected with Earth-bar.

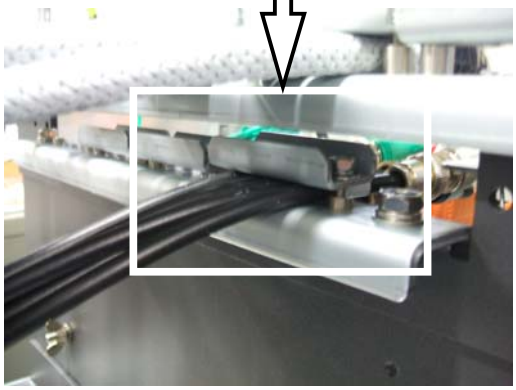
BNC-CONNECTOR must be insulated with vinyl insulation tape etc.

Wiring method of coaxial cable
(RADAR video signal input cable)

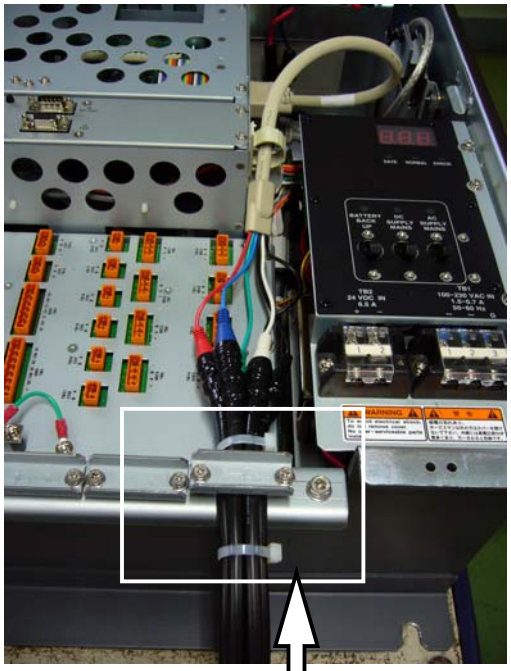
The case with 3C-2V coaxial cable

Five coaxial cables are clamped as shown in the following figure.

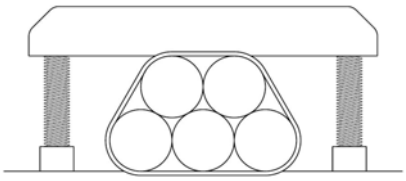


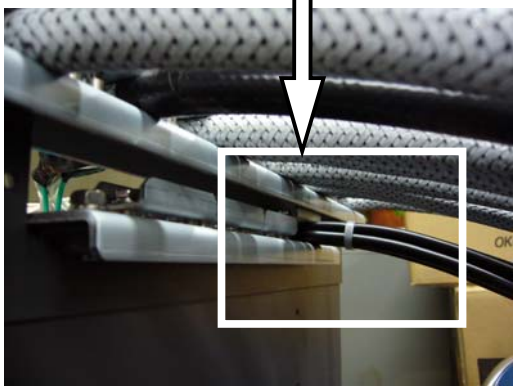


The case with 5C-2V coaxial cable

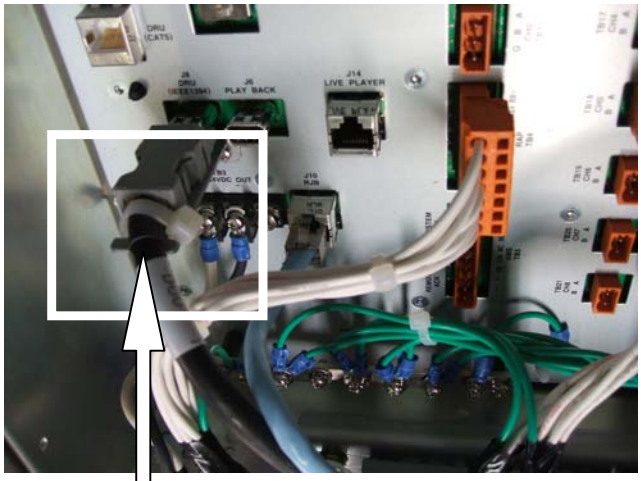


They are bound together with PLASTIC-BAND at the area of front and back of the clamp.





Wiring method of IEEE-1394 cable : VR-3010 SIDE
(Data transmission cable : Between VR-3010 and VR-5020)

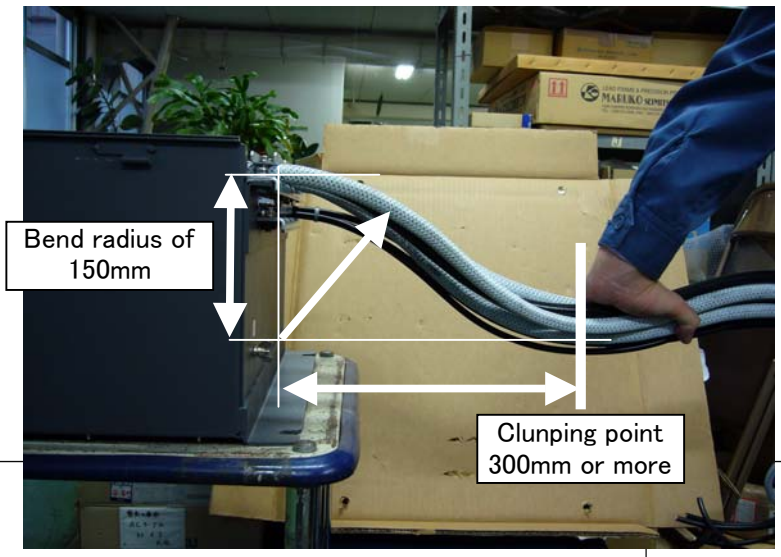


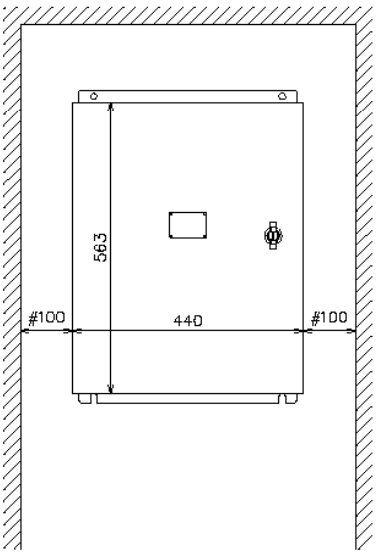
Make sure that the cable is tightly connected to the port with the guide of PLASTIC-BAND.

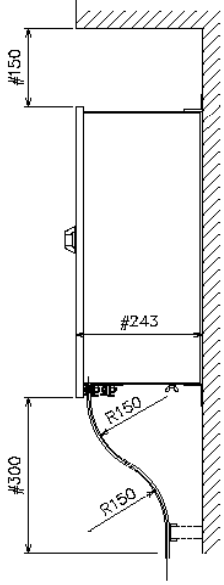
Wiring method of Shielded cable cable and Ground

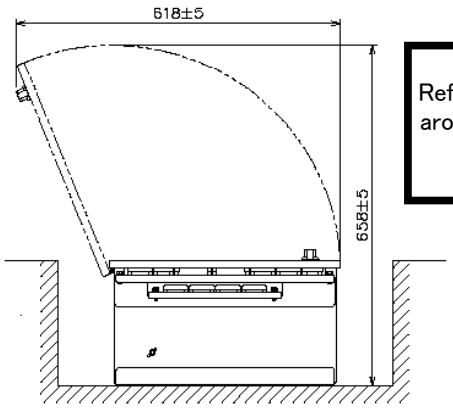
- The Cable-Armor portion to be clamped.
- The shield to be connected to a ground bar.
- Use a green color cable as the ground cable. (The size to be 1.25sq or more)
- Wago-Connector should be connected to the terminal stand after removing the chip to avoid damage of the terminal stand.
- To be inserted in terminal stand certainly after completing connection with the connector chip.
- The processing part of the cable to be protected by a vinyl tape.

Wiring method of External wiring curvature
(VR-3010)



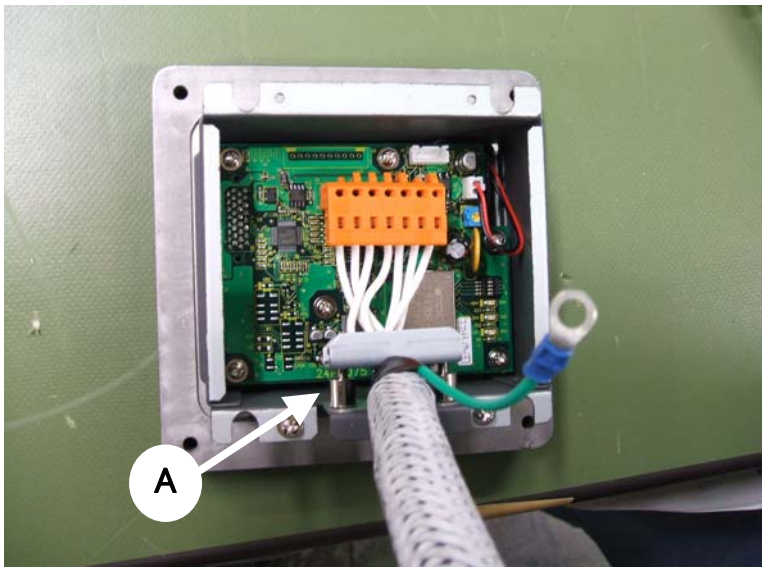


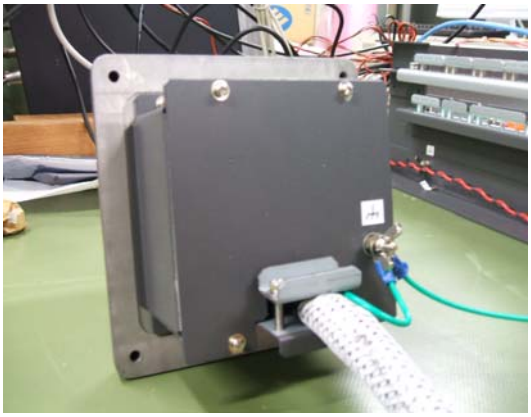




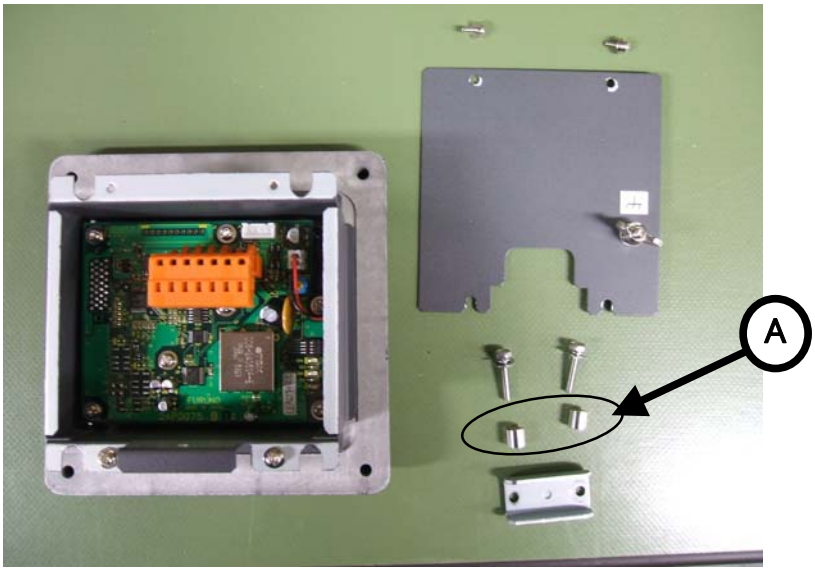
Refer to the drawing to have some space around the equipment and allow the door of the equipment open wide.

Wiring method of REMOTE ALARM PANEL
(VR-3016)





- The Cable-Armor portion to be clamped.
- The shielded cable is connected to the shield screw of the back panel.
- Use a green color cable as the ground cable. (The size to be 1.25sq or more)
- Wago-Connector should be connected to the terminal stand after removing the chip to avoid damage of the terminal stand.
- To be inserted in terminal stand certainly after completing connection with the connector chip.
- If the spacer "A" does not work when the space are too wide (as shown in the above) the spacer is not necessary.
- The processing part of the cable to be protected by a vinyl tape.



After installing Remote Alarm Panel (VR-3016) ,
attach the below SHEET, as you can see in the below picture.

The below SHEET can be copied, cut and attached directly.

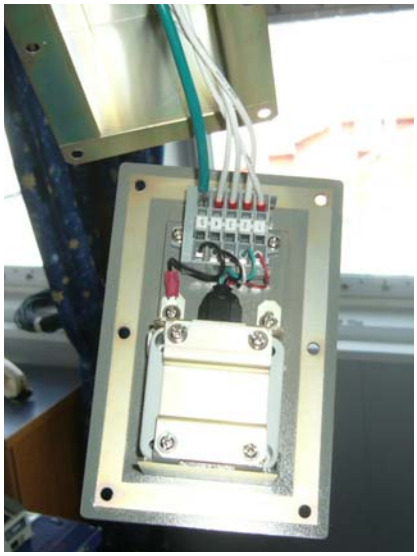
Function of SAVE Key

The exact same data are recorded in DRU (VR-5020) and in the Hard Disk incorporated in DCU (VR-3010).

When removing HD, finalizing procedure has to be performed by pressing SAVE key of RAP (VR-3016).

The details are given in Operator's Manual.

Wiring method of MICROPHONE
(VR-5011)



- Refer to the "Processing method of multi-core cable end" for processing of a cable.
- Connection of a shield is indispensable.
- The processing part of the cable is protected by a vinyl tape.

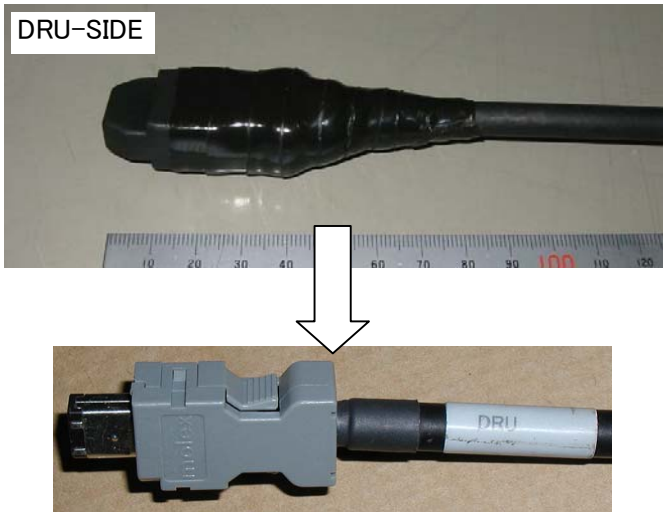
Wiring method of MICROPHONE
(VR-5011 + VR-5012) : Provisional

- When equipping Open-wing with a microphone, a waterproofing box (VR-5012) and a microphone (VR-5011) are combined.
- Waterproofing processing of the part of "A" is carried out. Waterproofing putty or silicone is used.

Wiring method of IEEE-1394 cable : VR-5020 SIDE
(Data transmission cable : Between VR-3010 and VR-5020)

- Never cut this cable.
- Since the cable configurations are different at DCU (VR-3010) side and DRU (VR-5020) side, take care of handling the cable.

DRU-SIDE



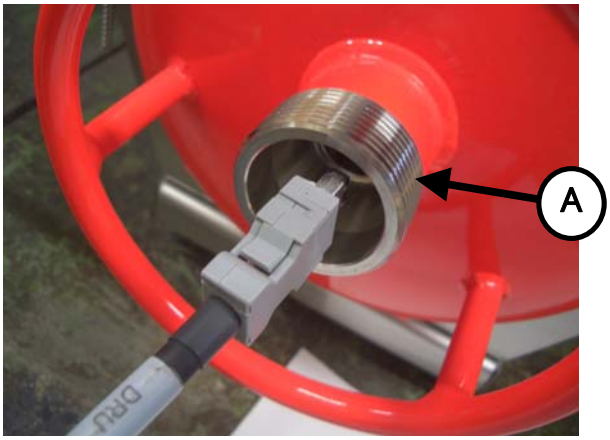
- DRU(VR-5020) side PLUG is delivered with a waterproofing coat.
  Never remove this coat until the last minute to connect to DRU.
- Never damage the cable or plug when removing the waterproofing coat.

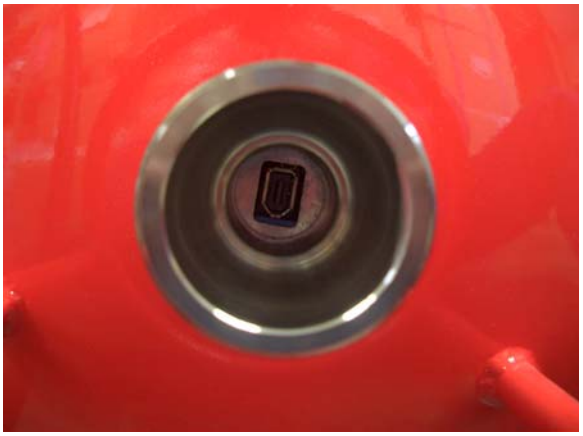
DCU-SIDE

- There is no coat for the DCU(VR-3010) side PLUG.

- Let Cap-nut, Teflon Washer and Gum Bush into the cable in advance.

- Put some Gold Grease inside and outside of Gum Bush, screw part “A”.

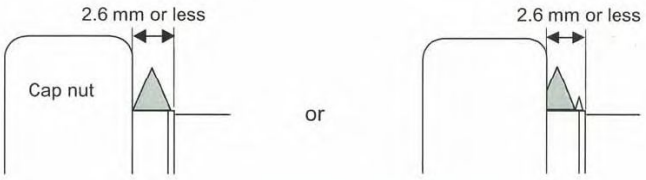


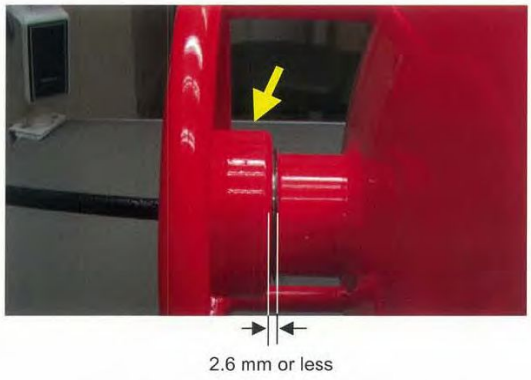


- Make sure that the direction of IEEE1394 connector in DRU(VR-5020) is correct.

- Connect tightly as the cable plugs are perfectly matched.
- Push Gum Bush into with a hand.

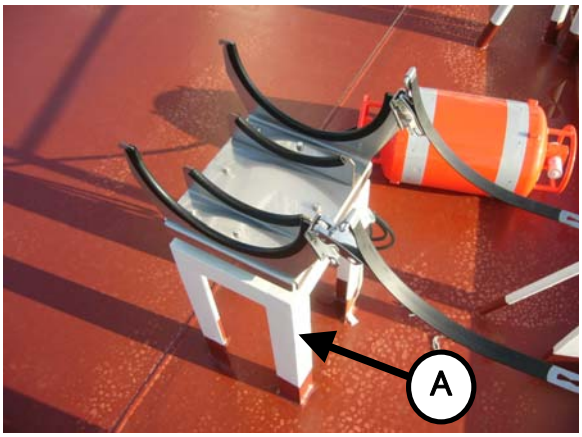
- Apply enough silicon (KE45) to the surface of Teflon Washer and penetration part of cable.





- The DRU cap nut is tightened until one thread or two threads are left visible.
- The cap cannot be tightened up to the end of the thread.

- Waterproof perfectly with silicon (KE45).



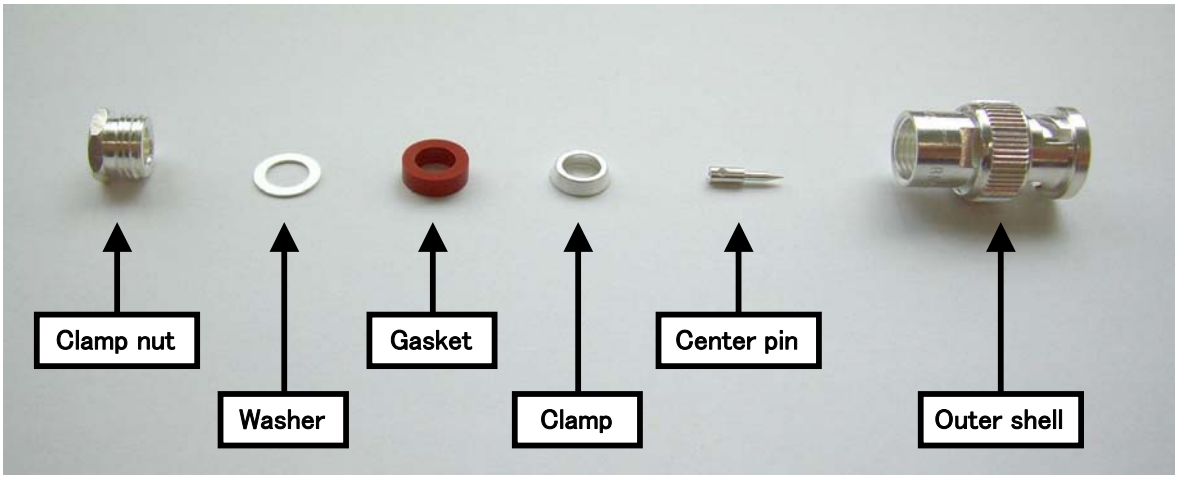
- Mounting base shown as “A” to be supplied by Shipyard.
- Install DRU at the Compass Deck.
- Install DRU at the place to be collected easily, when the vessel sinks due to an accident.
- Never install other equipments around the DRU.

- Never cut the cable even if the cable has some redundancy.
- Put the cable together with a PLASTIC-BAND and fix it to the handle.

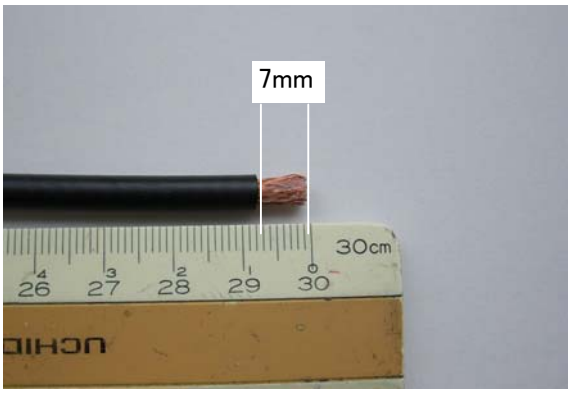
- The method shown left is not the best way.
- Connect the cable to DRU in appropriate length after processing the redundancy of the cable below the deck.

- Remember to fit the Rocker Pins on.

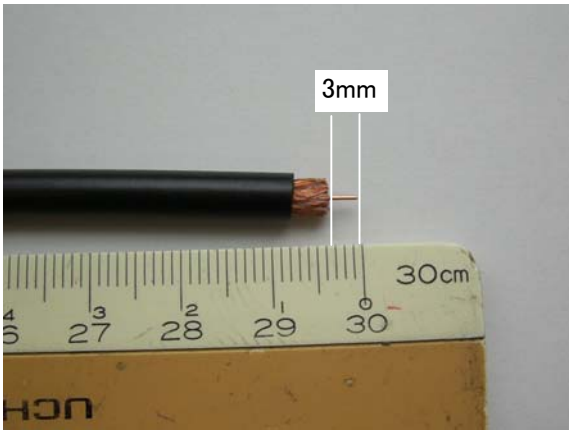
Processing method of BNC connector
(RADAR video signal input cable)



- Let Clamp-nut, Washer, and Gasket into a coaxial cable in advance.

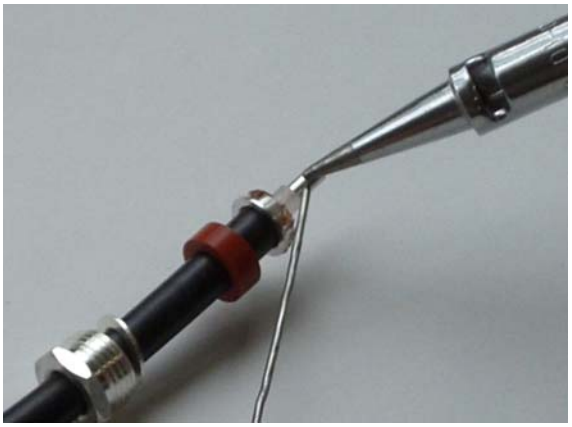


- The cable outer cover sheath to be stripped 7mm.

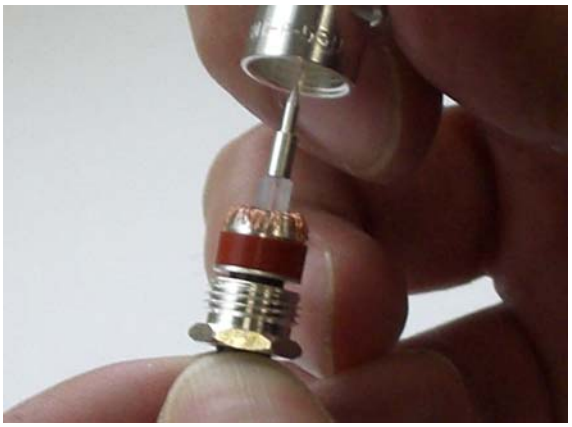


- The coaxial shield and an insulator to be stripped 3mm from the tip.

- Clamp is set and a coaxial shield is turned up.
- The overflowing coaxial shield to be cut to an even length.



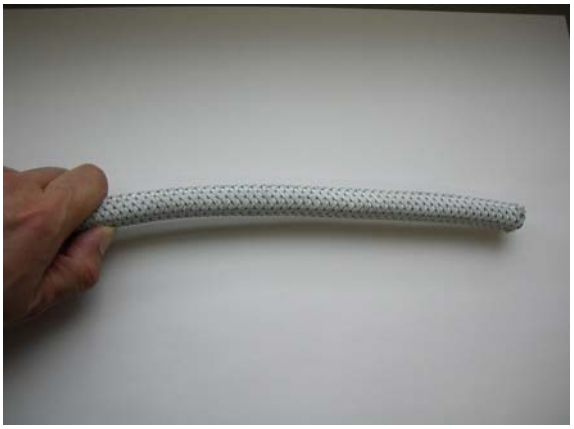
- Center-pin is inserted into a core cable. And solder is carried out.
- Make sure that Center-pin does not separate.



- Outer-shell is put firmly.

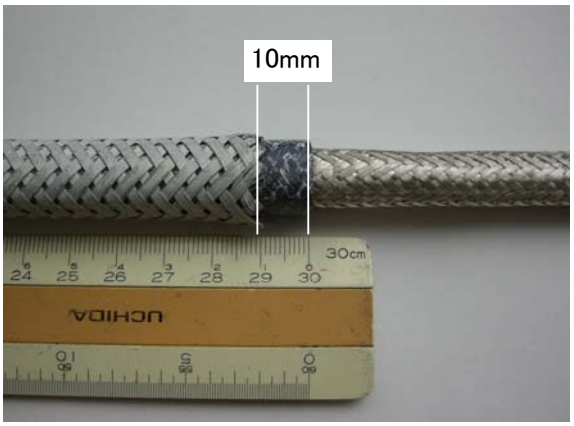
- Completion

Processing method of multi-core cable end



・Prepare the cable to skin.

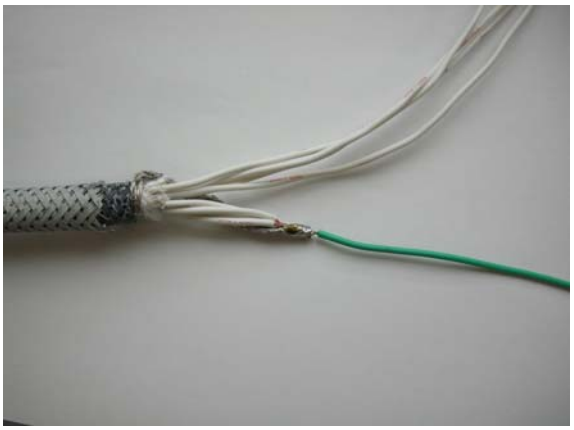
・Outside armor is stripped.



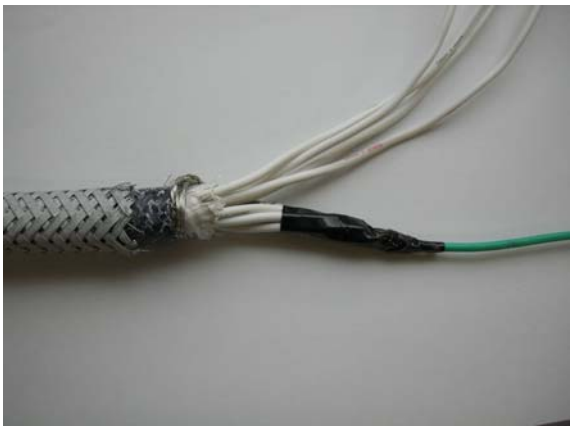
・The vinyl sheath to be stripped from a 10mm place from the end of outside armor.

・The shield is divided and an inner cable is pulled out.

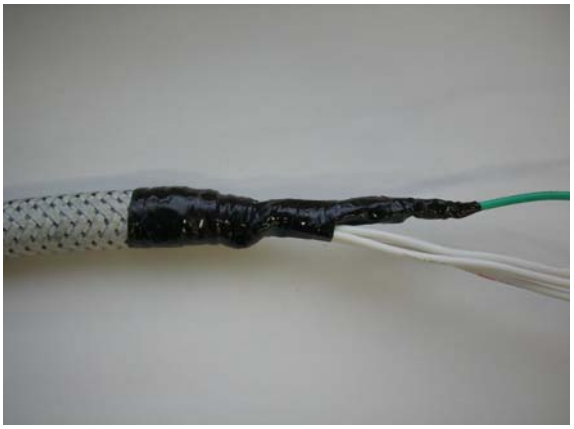
- The internal insulator of a cable is cut.
- The cutting length of an insulator is 10mm.
- The shield is twisted.



- Unnecessary shield and cables are connected to an earth cable after being cut and soldered.

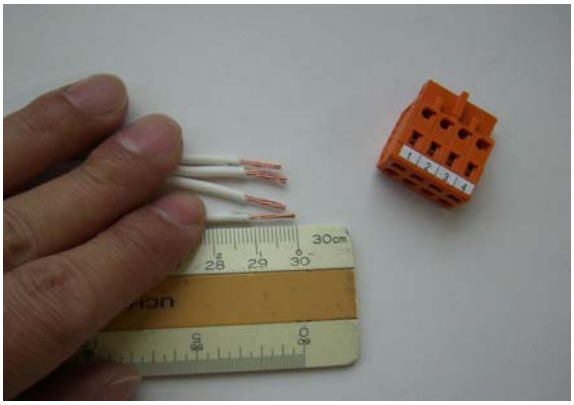


- The connection point of a ground cable is insulated by a vinyl tape.

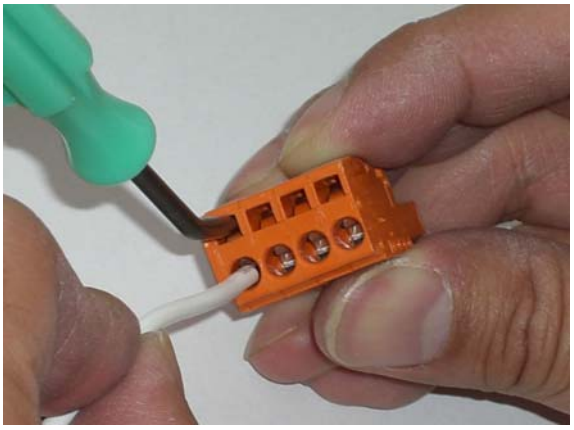


- The processing part of the cable is protected by a vinyl tape.

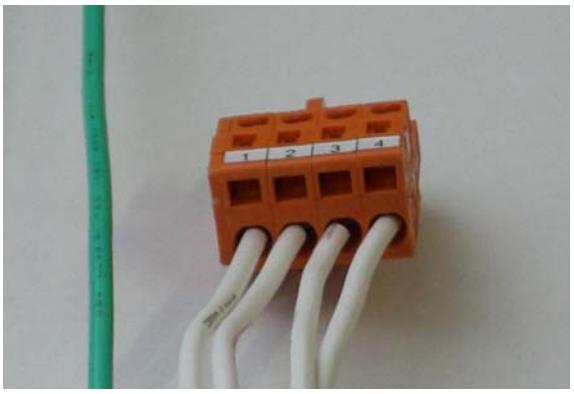
Processing method of Wago connector



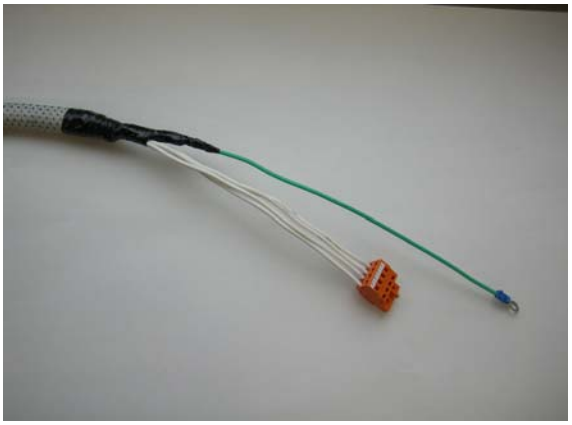
- The Wago terminal chip is removed.
- The tips of cables are skinned by 8~10mm.



- A clip tool is inserted in a Wago terminal chip, and a clip is opened.
- A cable is inserted and a clip tool is drawn out.



- Cables are pulled out and make sure the connection are correctly performed.



- Completion