FURUNO

INSTALLATION MANUAL

INMARSAT B MOBILE EARTH STATION

FELCOM 81A ... (For Class 1)

MODEL FELCOM 81B ... (For Class 2)

This manual provides the information necessary for the installation of the FURUNO FELCOM 81. For best performance please follow the recommended procedures.

FURUNO ELECTRIC CO., LTD.

NISHINOMIYA, JAPAN

•Your Local Agent/Dealer

FIRST EDITION : NOV. 1996
N   : SEP. 5, 2000

00080784900

⚠ SAFETY INSTRUCTIONS

"**DANGER**", "**WARNING**" and "**CAUTION**" notices appear throughout this manual. It is the responsibility of the installer of the equipment to read, understand and follow these notices. If you have any questions regarding these safety instructions, please contact a FURUNO agent or dealer.

The level of risk appearing in the notices is defined as follows:

⚠ DANGER	This notice indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING	This notice indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION	This notice indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury, or property damage.

⚠ WARNING

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

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

Do not approach the radome closer than 6 meters when it is transmitting.

The radome emits radio waves which can be harmful to the human body, particularly the eyes.

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.

Do not install the equipment where flammable gases are stored.

Fire may result.

⚠ CAUTION

Ground the equipment to prevent electrical shock and mutual interference.

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

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

Use the correct fuse.

Use of a wrong fuse can cause fire or equipment damage.
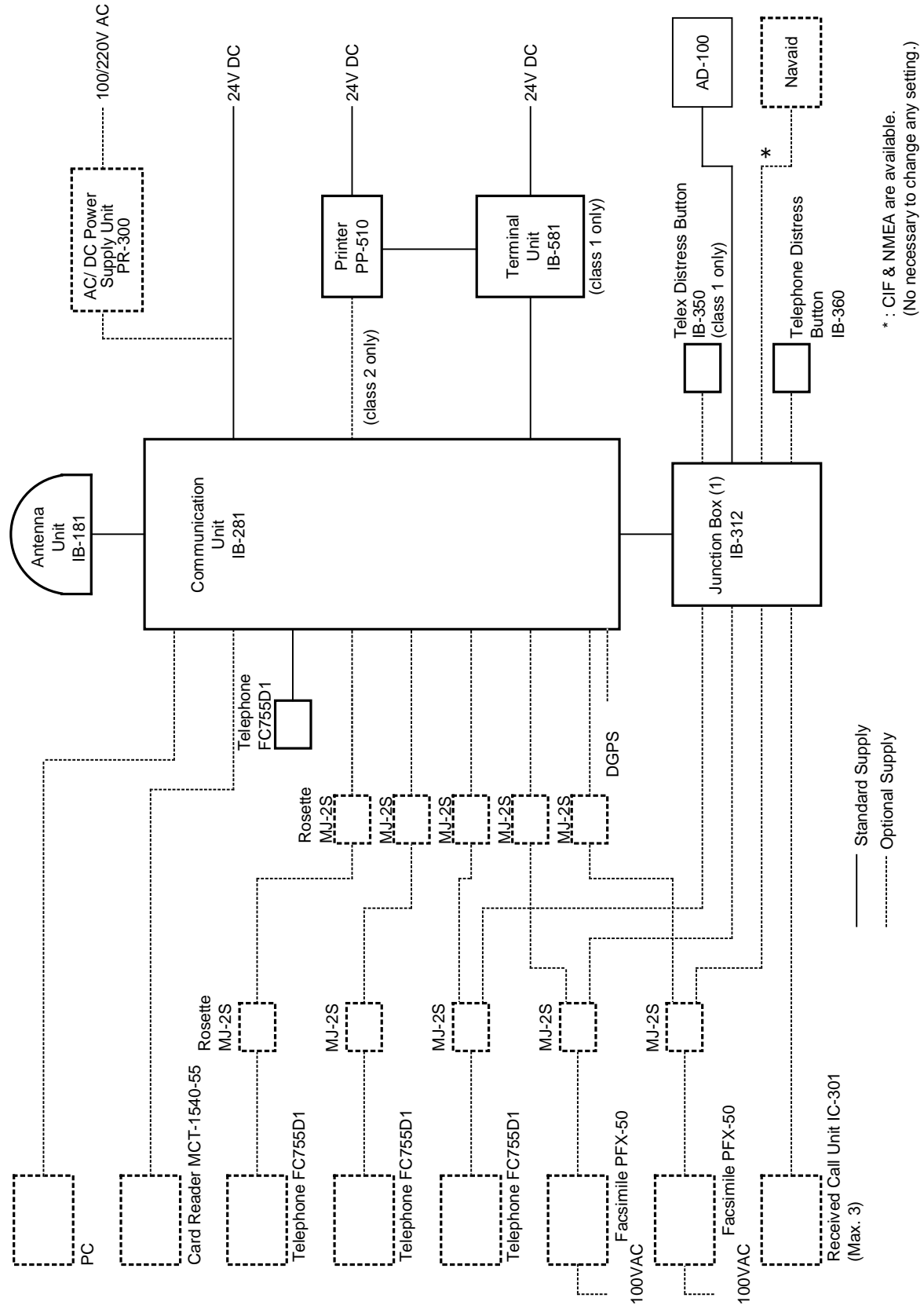
Keep the following compass safe distances.

	Standard	Steering
Antenna Unit	0.5 m	0.4 m
Communication Unit	1.7 m	1.3 m
Terminal Unit	1.4 m	1.0 m
Junction Box	1.1 m	0.9 m
Printer	1.0 m	0.8 m
Facsimile	1.6 m	1.2 m
Telephone	0.5 m	0.4 m

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1. System Configuration and Equipment Lists

Antenna Unit IB-181

Communication Unit IB-281

AC/DC Power Supply Unit PR-300 — 100/220V AC

24V DC

Printer PP-510 (class 2 only) — 24V DC

Terminal Unit IB-581 (class 1 only) — 24V DC

Telephone FC755D1

Rosette MJ-2S
MJ-2S
MJ-2S
MJ-2S
MJ-2S

DGPS

AD-100

Navaid

Telex Distress Button IB-350 (class 1 only)

Telephone Distress Button IB-360

*

Junction Box (1) IB-312

PC

Card Reader MCT-1540-55

Rosette MJ-2S

Telephone FC755D1

MJ-2S

Telephone FC755D1

MJ-2S

Telephone FC755D1

MJ-2S

Facsimile PFX-50
100VAC

MJ-2S

Facsimile PFX-50
100VAC

Received Call Unit IC-301 (Max. 3)

—— Standard Supply
----- Optional Supply

* : CIF & NMEA are available.
(No necessary to change any setting.)

1-1

Complete Set

No	Name	Type	Code No.	Mass (kg)	Qty	Remarks
1	Antenna Unit	IB-181	---	95	1	
2	Communication Unit	IB-281	---	15	1	
3	Terminal Unit	IB-581	---	6	1	Class 1 only w/Installation Materials CP16-01140 (page 1-8)
4	Telephone	FC755D1	---	1.0	1	w/Installation Materials CP16-00511(page 1-11)
5	Junction Box	IB-312	---	1.2	11	w/Installation Materials CP16-01102 (page1-9)
6	Telex Distress Alert Button	IB-350	---	0.5	1	Class 1 only w/Installation Materials CP16-00700 (page 1-12)
7	Telephone Distress Button	IB-360	---	0.5	1	w/Installation Materials CP16-00700 (page 1-12)
8	Spare Parts	SP16-01000	004-441-460		1 set	(page 1-16)
9	Installation Materials (Selection)	CP16-01300	000-043-215		1 set	No antenna cable w/Installation Materials CP16-01101
		CP16-01310	000-043-216			Antenna cable 30m w/Installation Materials CP16-01101
		CP16-01320	000-043-217			Antenna cable 50m w/Installation Materials CP16-01101
		CP16-01330	000-043-218			Antenna cable 100m w/Installation Materials CP16-01101
10	Installation Materials (Selection)	CP16-01111	004-441-420		1 set	For 8D cable (page 1-6)
		CP16-01121	004-441-430			For 12D cable (page 1-7)
		CP16-01131	004-441-770			No antenna cable (page 1-7a)
11	AD Converter	AD-100	---	1.5	1	Gyro Interface

Optional Equipment

No	Name	Type	Code No.	Mass (kg)	Remarks
1	Facsimile	PFX-50	---	8.0	w/Inst. Materials CP16-00590 (page 1-13)
2	Received Call Unit	IC-301	---	0.5	w/Inst. Materials CP16-00700 (page 1-12)
3	Telephone	FC755D1	---	1.0	w/Inst. Materials
4	Modular Jack Box	OP16-10	000-043-278	0.2	
5	Modular Jack Box	OP16-11	000-043-279	0.1	
6	Modular Jack Box	OP16-13	000-043-228	0.1	
7	AC/DC Power Supply Unit	PR-300	---	14.5	For 100-230 V
8	Card Reader	MCT-1540-55	000-043-333	0.17	main body only
		MCT-1540-81	000-043-335		with Inst. Material
9	5-pair cable 10m	CO-SPEVV-SB-C 0.2 × 5P	000-560-452		For junction box
10	5-pair cable 20m		000-103-868		
11	5-pair cable 30m		000-103-869		
12	5-pair cable 40m		000-132-829		
13	5-pair cable 50m		000-132-828		
14	1-pair cable 10m	CO-SPEVV-SB-C 0.2 × 1P	000-110-681		For junction box
15	1-pair cable 20m		000-138-789		
16	1-pair cable 30m		000-138-790		
17	1-pair cable 40m		000-138-791		
18	1-pair cable 50m		000-138-792		
19	Printer	PP-510	---	3.6	For FELCOM 81 B
20	Ribbon Cartridge	SP-16051NB	000-133-029		For Printer
21	Printer Paper	A2 1PLY W	000-134-903		12 total
		A2 2PLY WW	000-134-780		12 total
22	Recordings Paper	K52 257 × 50M25TRU	000-806-564		12 total, B4 size
		K52 216 × 50M25TRU	000-806-565		12 total, A4 size
23	Lifting Metal	OP16-15	004-442-460		Gyro Interface
24	Antenna Cover	QB05-1801-0	100-079-480		
25	Installation Materials	OP16-01602	004-442-900		For DGPS + HSD Modem
26	Transformer	FIT-100	000-139-903	1	220VAC ⇒ 100VAC
27	Vibration Converter Kit	OP16-22	004-438-700		
28	HSD I/F	KLASHOPPER PCMCIA1400	000-142-952		For laptop computer
		KLASHOPPER PCI-400	000-142-951		For desktop computer

FURUNO

CODE NO:	004-441-440	16AF-X-9403 -2
TYPE:	CP16-01101	1/1

工事材料表
INSTALLATION MATERIALS

IB-181   アンテナユニット

ANTENNA UNIT

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	スーパースリーボンド ADHESIVE	140 35 35	1211 50G		1	
			CODE NO.	000-854-118		
2	放射危険ハリマーク CAUTION LABEL	140 150	16-007-7902-0		2	
			CODE NO.	100-216-340		
3	六角セムスBスリ割 HEX. BOLT(SLOTTED WASHER HEAD)	45 φ10	M10X45 SUS304		4	
			CODE NO.	000-807-931		
4	バネ座金 SPRING WASHER	φ28	M16 SUS304		8	
			CODE NO.	000-864-265		
5	ミガキ平座金 FLAT WASHER	φ30	M16 SUS304		8	
			CODE NO.	000-864-134		
6	六角ナット1種 HEX. NUT	φ28 13	M16 SUS304		8	
			CODE NO.	000-863-114		
7	六角ナット3種 HEX. NUT	φ28 10	M16 SUS304		8	
			CODE NO.	000-805-829		
8	アース線 GROUNDING WIRE ASSY.	500	16S0116 IV-14SG *50CM*		1	
			CODE NO.	000-132-825		
			CODE NO.			
			CODE NO.			

DWG NO.
C5609-M01- C

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（略図の寸法は、参考値です。）

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FURUNO

工事材料表
INSTALLATION MATERIALS

アンテナユニット

ANTENNA UNIT

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	ケーブル (クミヒン) CABLE ASSY.	 L=100m	12D-SFA-CV *100M*		1	選択 TO BE SELECTED
			CODE NO.	000-138-866		
2	アンテナケーブル組品 ANTENNA CABLE ASSY.	 L=50m	8D-FB-CV *50M*		1	選択 TO BE SELECTED
			CODE NO.	000-117-599		
3	アンテナケーブル組品 ANTENNA CABLE ASSY.	 L=30m	8D-FB-CV *30M*		1	選択 TO BE SELECTED
			CODE NO.	000-111-547		

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

C5609-M05- B

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FURUNO

工事材料表
INSTALLATION MATERIALS

IB-281

通信制御ユニット
（8D-FB-CVケーブル用）

COMMUNICATION CONTROL UNIT

番号 NO.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	コネクタ CONNECTOR	38 φ20	N-P-8DFB		1	
			CODE NO.	000-111-549		
2	電源コード POWER CODE	L=3M	16S0042-0		1	
			CODE NO.	000-122-400		
3	ケーブル組品 CABLE	L=5M	17JE-573-10ハーネス 16S0068 ＊5M＊		1	
			CODE NO.	000-127-108		
4	＋トラスタッピンネジ +TAPPING SCREW	20 φ6	6X20 SUS304 1種		4	
			CODE NO.	000-802-084		
5	アース板 COPPER STRAP	30 L=1.2M	05-003-0031-0		1	
			CODE NO.	590-300-310		

C5609-M02- C

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

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FURUNO

工事材料表

INSTALLATION MATERIALS

IB-281

通信制御ユニット
（12D-SF-CVケーブル用）

COMMUNICATION CONTROL UNIT

番号 NO.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	電源コード POWER CODE	L=3M	16S0042-0		1	
			CODE NO.	000-122-400		
2	ケーブル組品 CABLE	L=5M	17JE-573-10 ハーネス 16S0068 ＊5M＊		1	
			CODE NO.	000-127-108		
3	コネクタ CONNECTOR	57.9 φ25	N-P-12DSFA		1	
			CODE NO.	000-136-422		
4	＋トラスタッピンネジ +TAPPING SCREW	20 φ6	6X20 SUS304 1種		4	
			CODE NO.	000-802-084		
5	アース板 COPPER STRAP	30 L=1.2M	05-003-0031-0		1	
			CODE NO.	590-300-310		

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FURUNO

CODE NO.	004-441-770	16AF-X-9407 -1
TYPE	CP16-01131	1/1

工事材料表
INSTALLATION MATERIALS

IB-281   通信制御ユニット

COMMUNICATION CONTROL UNIT

番号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	アース板 COPPER STRAP	↕30 L=1.2M	05-003-0031 CODE NO. 590-300-310	1	
2	電源コード POWER CODE	L=3M	16S0042-0 CODE NO. 000-122-400	1	
3	ケーブル組品 CABLE	L=5M	17JE-573-10ハーネス 16S0068 *5M* CODE NO. 000-127-108	1	
4	+トラスタッピンネジ +TAPPING SCREW	←20→ φ6	6X20 SUS304 1種 CODE NO. 000-802-084	4	

DWG NO.
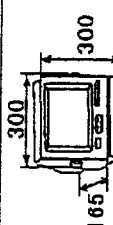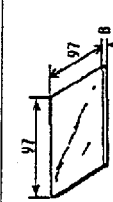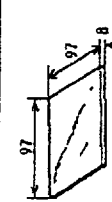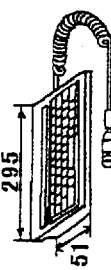C5609-M08- B

FURUNO ELECTRIC CO ., LTD.

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P A C K I N G   L I S T

IB-581 (FELCOM81A/81B)

ユニット UNIT

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ターミナルユニット TERMINAL UNIT		IB-581-01-2.5GY 000-043-224**	1

付属品 ACCESSORIES

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
フロッピーディスク FLOPPY DISK		MF-256HD 000-115-862	1
フロッピーディスク (書き込み品) FLOPPY DISK		05-501-091 004-441-520	1
ミニキーボード MINI KEYBOARD		BTC-5100C PS/2 004-442-400	1

工事材料 INSTALLATION MATERIALS

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
アース線 GROUNDING WIRE		08S0087 000-108-138	1
電源ケーブルDC用 POWER CABLE (FOR DC MAINS)		VCTF0.75X2C *3M* 000-112-543	1
ケーブル組品 CABLE		17JE-573-10ヘ-ネス 16S0068 *5M* 000-127-108	1
↑トラスタッピンネジ ↑TAPPING SCREW		6X20 SUS304 1種 000-802-084	4

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ハリマーク(INMAR) LABEL (INMAR)		16-007-6919-0 100-217-010	1
ファスナ-(3) HOOK LOOP FASTENER		16-007-6814-0 100-237-670	4
ファスナ-(4) HOOK LOOP FASTENER		16-007-6815-0 100-237-680	4
ハリマーク LABEL		16-011-5803-1 100-248-051	1
ハリマーク (C.S.D) LABEL (C.S.D)		16-011-5804-0 100-248-060	1

注記) コード番号末尾の[**]は、共通機種の代表コード番号を表します。
CODE NUMBER ENDED BY "**" INDICATES THE NUMBER OF TYPICAL MODEL.

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

C5609-Z01- D

1-8

FURUNO

CODE NO.	004-441-450	16AC-X-9422 -0
TYPE	CP16-01102	1/1

工事材料表
INSTALLATION MATERIALS

IB-312/313　　　接続箱

JUNCTION BOX

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	ｱｰｽ線 GROUNDING WIRE	L=2M	08S0087		1	
			CODE NO.	000-108-138		
2	+ﾄﾗｽﾀｯﾋﾟﾝﾈｼﾞ +TAPPING SCREW	20 φ5	5X20 SUS304 1ｼﾞｭ		4	
			CODE NO.	000-802-081		
3	圧着端子 CRIMP-ON LUG	16 6	FV1.25-3 ｱｶ		6	
			CODE NO.	000-538-113		
4	ﾛｰｾﾞｯﾄ MODULAR JACK BOX	50 40	MJ-2S ‡GR‡		3	
			CODE NO.	000-132-764		

DWG NO.
C5609-M03- B

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FURUNO

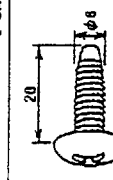| CODE NO.	004-441-780	16AC-X-9420 -1	
TYPE	CP16-01200		1/1

工事材料表
INSTALLATION MATERIALS

PP-510　　　プリンター

PRINTER

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ハリマーク LABEL	62	16-007-6927-0 CODE NO. 100-222-480	1	COMPASS SAFE DISTANCE
2	プリンタ取付板(2)組品 PRINTER FIXTURE	263.4 96.8 28	CP16-00502 SPCC 2.5GY5/1.5 #5-N CODE NO. 004-434-410	1	
3	プリンタ取付板(1)組品 PRINTER FIXTURE	263.4 28 96.8	CP16-00501 SPCC 2.5GY5/1.5 #5-N CODE NO. 004-434-400	1	
4	ケーブル組品 CABLE ASSY.	300	16S0184 CODE NO. 000-138-539	1	ターミナルユニット用 / FOR TERMINAL UNIT
5	電源ケーブル組品 POWER CABLE ASSY.	L=5m	16S0084(VCTF-0.75X3C *5M*) CODE NO. 000-132-249	1	
6	ハリマーク(INMAR) LABEL (INMAR)	60 20	16-007-6919-0 CODE NO. 100-217-010	1	
7	+トラスタッピンネジ +TAPPING SCREW	20 φ5	5X20 SUS304 1シュ CODE NO. 000-802-081	4	

DWG NO.
C5609-M07- D

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FURUNO

工事材料表
INSTALLATION MATERIALS

FC755D1　　　　　電話機

TELEPHONE

番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	＋ナベ Pタイトネジ SCREW	14　φ3	3X14 SWCH18A MFZN-2-C		1	
			CODE NO.	000-800-172		
2	＋トラスタッピンネジ +TAPPING SCREW	16　φ4	4X16 SUS304		4	
			CODE NO.	000-802-080		
3	壁掛金具 MOUNTING BASE	103　123	FC755WM		1	
			CODE NO.	000-808-704		
4	ハリマーク(INMAR) LABEL (INMAR)	60　20	16-007-6919-0		1	
			CODE NO.	100-217-010		
5	ハリマーク(SLIDE) LABEL(SLIDE)	20　25	16-007-6405-0		1	
			CODE NO.	100-222-470		
6	ハリマーク LABEL	62　9	16-007-6927-0		1	
			CODE NO.	100-222-480		
7	受話器固定具 HANDSET FIXTURE	30　50	16-011-7101-1		1	
			CODE NO.	100-273-831		
8	キーシール LABEL	25　30	16-011-7111-0		1	
			CODE NO.	100-273-850		
9	シート(TEL.) SHEAT(TEL.)	86　98	16-011-7112-0		1	
			CODE NO.	100-273-860		
10	接着テープ VULCANIZING TAPE	30　28	16-011-7103-0		1	
			CODE NO.	100-273-940		

DWG NO.
C5609-M13- A

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FURUNO

CODE NO.	004-438-420	16AG-X-9413 -0
TYPE	CP16-00512	1/1

工事材料表
INSTALLATION MATERIALS

FC755DI　　　　　電話機

TELEPHONE

オプション工事材料
FOR OPTION MOUNTING

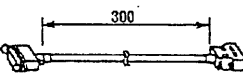| 番 号 NO.	名 称 NAME	略 図 OUTLINE	型名／規格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	+トラスタッピンネジ +TAPPING SCREW	16　φ4	4X16 SUS304		4	
			CODE NO.	000-802-080		
2	取付板 MOUNTING BASE	103　123	16-011-7102-0		1	
			CODE NO.	100-273-840		

DWG NO.
C5609-M14- A

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1 － 11A

| FURUNO | | | | CODE NO. | 000-041-315 | | 16AC-X-9412-1 |
| | | | | TYPE | CP16-00700 | | |

| 工 事 材 料 表 | | FELCOM 80/81 | | | | | |
| INSTALLATION MATERIALS | | インマルサット－Ｂ船舶地球局 INMARSAT-B MES | | | | | |

番号 No.	名 称 N A M E	略 図 OUTLINE	型 名 / 規 格 DESCRIPTIONS		数量 Q'TY	用途／備考 REMARKS
1	＋トラスタッピングネジ TAPPING SCREW	16 ⌀4	4X16 1シ2 SUS304		2	
			CODE NO.	000-802-080		
2	＋ナベセムスネジB WASHER HEAD SCREW	6 ⌀3	M3X6 SWRM MFZN2-C		4	
			CODE NO.	000-800-362		
3	圧着端子 CRIMP-ON LUG	16 6	FV1.25-3 アカ RED		6	
			CODE NO.	000-538-113		
			CODE NO.			
			CODE NO.			
			CODE NO.			
			CODE NO.			
			CODE NO.			
			CODE NO.			
			CODE NO.			

IB-350　遭難警報発呼器
(TELEX)　DISTRESS ALERT BUTTON
IB-360　遭難電話ボタン
(TELEPHONE) TELEPHONE DISTRESS
IC-301　着信指示器
(RECEIVED CALL)
（略図の寸法は、参考値です。）

| 図 番 DWG. NO. C5589-M14-B | （1/1） |

FURUNO ELECTRIC CO., LTD

1-12

FURUNO

CODE NO.	000-043-321	16AC-X-9414
TYPE	CP16-00590	

工 事 材 料 表 / INSTALLATION MATERIALS　　PFX-50　ファクシミリ FACSIMILE

番号 No.	名 称 N A M E	略 図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	アース線 GROUNDING WIRE	L=2m	08S0087-0　　　　　　　　CODE NO. 000-108-138	1	
2	フック押え板 HOOK FIXTURE	38　38　5	16-007-6521-0 KDG1800 BLKクロ　　CODE NO. 100-230-510	1	
3	マジックテープ（1） HOOK LOOP FASTENER	135　25.4	16-007-6523-0 SJ-3571(LOOP)　　CODE NO. 100-230-520	2	本体底面 貼りつけ用 STICKED TO BOTTOM
4	マジックテープ（2） HOOK LOOP FASTENER	135　25.4	16-007-6524-0 SJ-3572(HOOK)　　CODE NO. 100-230-530	2	卓上に 貼りつけ用 STICKED TO TABLE
5	マジックテープ（3） HOOK LOOP FASTENER	200　25.4	16-007-6525-0 SJ-3571(LOOP)　　CODE NO. 100-230-540	1	本体底面 貼りつけ用 STICKED TO BOTTOM
6	マジックテープ（4） HOOK LOOP FASTENER	200　25.4	16-007-6526-0 SJ-3572(HOOK)　　CODE NO. 100-230-550	1	卓上 貼りつけ用 STICKED TO TABLE
7	ハリマーク（PFX） LABEL	149　18	16-007-6931-0　　　　　CODE NO. 100-230-560	1	英文用 キーラベル ENGLISH KEY LABEL
8	ハリマーク（INMAR） LABEL	60　20　B C M	16-007-6919-0　　　　　CODE NO. 100-217-010	1	"B"マークを貼る STICK "B" LABEL
9	ハリマーク LABEL	62　9	16-007-6927-0　　　　　CODE NO. 100-222-480	1	COMPASS SAFE DISTANCE
			CODE NO.		

（ 略 図 の 寸 法 は 、 参 考 値 で す 。 ）

図 番 DWG. NO. C5589-M15-A	(1/1)

F U R U N O　E L E C T R I C　C O . , L T D

1-13

		CODE NO.	000-043-226		16AF-X-9501-1
		TYPE	FP16-00200		

付 属 品 表 ACCESSORIES		IB-581	ターミナルユニット TERMINAL UNIT		

番号 No.	名 称 N A M E	略 図 O U T L I N E	型 名 ／ 規 格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	ミニキーボード MINI KEY BOARD		BTC-5100 PS/2 CODE NO. 004-424-000	1	
2	フロッピーディスク FLOPPY DISK	97 97 8	MF2-256HD CODE NO. 000-115-862	1	空デイスク FOR EMPTY DISK
3	フロッピーディスク （書込品） FLOPPY DISK	97 97 8	16-501-091 CODE NO. 004-441-520	1	プログラム バックアップ FOR PROGRAM BACK UP
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		
			CODE NO.		

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      FELCOM 81A/81B
FOR  FELCOM 81A/81B
```

（略図の寸法は、参考値です。）

	(1/1)
図 番 DWG. NO.	C5609-F01-B

FURUNO ELECTRIC CO., LTD

1-14

CODE NO.	000-043-258	16AC-X-9501-1
TYPE	FP16-00100	

付 属 品 表 ACCESSORIES	PP-510	プリンター PRINTER			
番号 No.	名 称 N A M E	略 図 O U T L I N E	型 名 ／ 規 格 DESCRIPTIONS	数量 Q'TY	用途／備考 R E M A R K S
1	プリンタ用紙 RECORDING PAPER	214 Ø128	A2 1PLY W CODE NO. 000-134-903	1	
			 CODE NO.		
			 CODE NO.		
			 CODE NO.		
			 CODE NO.		
			 CODE NO.		
			 CODE NO.		
			 CODE NO.		
			 CODE NO.		

図 番 DWG. NO. C5589-F01-C	(1/1)

FURUNO   ELECTRIC   CO., LTD

FURUNO	CODE NO.	004-441-460		16AF-X-9301-0
	TYPE	SP16-01000	BOX NO.	P

SHIP NO.	SPARE PARTS LIST FOR		U S E		SETS PER VESSEL
	IB-281	通信制御ユニット COMMUNICATION UNIT	FELCOM 81	インマルサットB船舶地球局 INMARSAT B SES	

ITEM NO.	NAME OF PART	O U T L I N E	DWG. NO. OR TYPE NO.	QUANTITY			REMARKS/CODE NO.
				WORKING		SPARE	
				PER SET	PER VES.		
1	管入りヒューズ GLASS TUBE FUSE	30 φ6	FGBO 15A AC125V	1		2	000-549-014

MFR'S NAME	FURUNO ELECTRIC CO., LTD	DWG. NO.	C5609-P01-A	1/1

1-16

2. Mounting of Units

This chapter describes how to mount the units of the system, including optional equipment.

2.1 Antenna Unit

Mounting considerations

General

Interfering objects (especially metallic objects such as masts) near the antenna can, in the worst case, prevent reception or transmission. Further, RF radiation of the antenna will affect the human body. Keep these and the following guidelines in mind when selecting a mounting location for the antenna unit.

Secure unobstructed path in all directions

The ideal mounting location secures an unobstructed path between the antenna unit and the satellites, from horizontal to zenith. In other words, whatever the direction the antenna unit is pointing there are no interfering objects within the main beam (12 degrees). While this might be feasible on some vessels, on others it is impossible due to space considerations. The antenna unit should be located at least 3 meters away from masts having a diameter less than 15 centimeters.

Select a location low in vibration

Freq. Range	Max. Amplitude (Half Vibration)
4 to 10Hz	2.54mm (max. 9.8 m/s^2)
10 to 15Hz	0.76mm (max. 6.86 m/s^2)
15 to 25Hz	0.40mm (max. 9.8 m/s^2)
25 to 33Hz	0.23mm (max. 9.8 m/s^2)

The maximum permissible vibration amplitude in three axis direction should be as shown in the table at left. Consult with the shipyard to determine the mounting location which meets the requirements shown in the table.

The table at left is taken from Inmarsat's System Definition Manual (SDM) and defines frequency and maximum vibration amplitude.

2-1

Locate away from passengers and crew

Radio waves can be harmful to the human body. Since safe distances vary by country and ship construction there is no uniform formula for calculating safe distance. However, below are general guidelines.

- Unprotected persons should not approach an area in which the radiation level is higher than 100 W/ m^2 . For an Inmarsat B antenna, the radiation level is less than 100 W/ m^2 at 1 meter distance from the radome surface.

- Unprotected persons should not approach within 6 meters of a transmitting Inmarsat antenna.

⚠ WARNING

Do not approach within 6 meters of the antenna radome when it is transmitting. Microwave radiation can be harmful to the human body, particularly the eyes.

2-2

Minimum distance from other antennas

If installed within 5m of radar antenna, the antenna unit must not be within the radar beam.

15°
15°

More than 5m

10°
10°

① HF antennas, communication/navigation antennas

HF antennas should be at least 5 meters from an Inmarsat B antenna. VHF, satellite navigation antenna and other communication antennas should be at least 4 meters away.

② Radar

The radar antenna should be at least 5 meters away to protect the Low Noise Amplifier in the FELCOM 81 antenna. However, if this distance cannot be secured be sure the FELCOM 81 antenna unit is not within the radar beam.

Magnetic compass safe distance

Locating the antenna unit too close to a magnetic compass can affect compass performance. The compass safe distance is 0.5 meters.

Other mounting guidelines

Other important mounting guidelines are

- Locate the antenna unit away from exhaust stacks (foreign material on the radome can interfere with reception and transmission).

- Keep the unit away from heat sources.

- Locate the unit away from places where fuels and chemical solvents are stored.

- Keep in mind the cable length from the communication unit. Maximum length is 100 meters.

2-3

General Mounting (construction of mast)

General

To facilitate servicing, construct a mast more than 1 meter in height from the deck. The paragraphs which follow provide guidelines for selection and construction of the mast.

Refer to the outline drawing on page D-1 for details.

Guardrail, platform

When the mast is tall, fit it with a guardrail and platform (or steps), for the serviceman's safety and convenience.

For servicing ease, the distance between the deck (or platform) to the antenna unit should be about 1 meter. (In most installations the serviceman stands on the platform while checking the radome. Thus this distance should be secured for ease of servicing.)

The guardrail should be as high as possible for sufficient safety.

Mast strength

The mast material must be sufficiently strong to meet the demands of the marine environment. It should satisfy the following requirements.

① It must be able to support radome mass plus at least 2.5 centimeters of ice and snow. Special consideration should be given if the unit is operated in areas of heavy snow or freezing temperature.

② Mast bending moment must be able to withstand expected maximum pitching, rolling and wind pressure.

To prevent resonance at low frequencies (about 5 Hz), four stays can be fixed between the mast and the mounting base.

Wind Pressure

Mass

Bending Moment

Mast

Item	Mass, Moment
Antenna unit mass	95kg
Platform, guardrail mass	
Expected ice and snow	
Maximum wind pressure (Wind speed 75m/s hr)	2328N
Maximum bending moment (Wind speed 75m/s hr)	1630N•m
Maximum bending moment (Wind speed 75m/s hr, at max. rolling angle)	1721N•m
Maximum bending moment (Wind speed 75m/s hr, at max. rolling angle including 0.5G speed added by rolling.)	1972N•m

Mounting base

A mounting base is installed between the mast and the antenna unit. Below are guidelines for installation of the mounting base.

(1) The face of the mounting base should be flat as possible (tolerance: within 2 millimeters of the horizontal plane).

(2) The mounting base should be parallel with ship's horizontal plane (tolerance: ± 1 degree).

(3) The fixing bolts of the mounting base should be parallel with the ship's keel line (tolerance: ± 2 degrees).

(4) Weld a ground bolt (stainless steel, M12 x 40, local supply) to the mast within 50 cm of the ground terminal on the antenna unit. (The length of the ground wire (supplied) is 50 centimeters.)

2-5

Changing hatch direction

The standard hatch direction is stern, as shown in ① in the figure below.

If the hatch cannot face the stern, it may face port, starboard or bow direction as shown in ② , ③ and ④ in the figure below. Note that the location of the cable gland changes with hatch direction. After changing hatch direction, change the disc position setting for the limit switch. See page 5-1.

① Stern (standard)   ② Starboard   ③ Bow   ④ Port

Cable Gland

Ship's Bow and Hatch Direction (Ship's bow up:Top view)

Mounting

Unpacking, visual inspection Carefully unpack the radome and check for damage.

Procedure

① Run lifting rope through eye bolts and shackles.

② Cover the portion of the radome which contacts the lifting rope with protective material (rubber mat, etc.), to prevent damage to the radome when hoisting it to the mounting location.

③ Hoist the antenna unit to the mounting location.

④ Fix the antenna unit to the mounting base (see note below) with nuts, keeping in mind hatch direction (standard direction is stern).

Lifting Rope

(Can be supplied together with shackles.)

④ Radome

② Protective Material

FURUNO

① Eye Bolt

Shackle

Eye Bolt

Antenna Bottom

Mounting Base

Flat Washer

Spring Washer

Coat here with silicone sealant.

Mounting Base

10mm Nut

13mm Nut

FIXING OF RADOME

⑤ If neccessary, replace eye bolts with Hex. bolts (supplied).

Note 1: Coat all bolts and nuts with silicone sealant to prevent electrolytic corrosion.

Note 2: Do not use a rubber gasket on the mounting base. The face of the mounting base should be flat as possible (tolerance: within 2mm of the horizontal plane). If tolerance is more than 2mm, insert a metal spacer between the antenna bottom and the mounting base.

Attach electromagnetic wave caution lavel

Stickers which warn of electromagnetic waves are supplied with the installation materials. Attach them as follows

① To the radome mast where it can easily be seen.

② In a noticeable location in the stairwell leading to the deck where the antenna unit is installed.

Removing ropes

The Stabilizer in the radome is tied by two ropes to prevent damage to it during shipment and installation. Cut and remove them after installation.

Rope

SPLITTER case

Base of Antenna Unit

Note: Turn on the switch on SPLITTER case after mounting antenna unit.

2.2 Communication Unit

Mounting considerations

Vibration conditions

The mounting location should satisfy the conditions of vibration amplitude tabulated below.

Frequency Range (Hz)	Maximum Amplitude (Half vibration)
4 to 15	0.76 (max. 6.86 m/s²)
15 to 25	0.40 (max. 9.8 m/s²)
25 to 33	0.23 (max. 9.8 m/s²)
33 to 40	0.13 (max. 8.23 m/s²)
40 to 50	0.07 (max. 6.86 m/s²)

Half Vibration

Environmental conditions

The mounting location should satisfy the following conditions.

• The usable temperature range is -15 to +55 ℃ .

• Select a location which is well ventilated.

• The location should be clean, and moderate and stable in temperature and humidity.

• Be sure to leave sufficient space around the unit for maintenance and checking.

• Locate the unit well away from high power HF band radiotelephones and antenna feeders.

• Separate the unit at least 1.4 meters from a magnetic compass.

• Be sure the mounting location is strong enough to support the weight of the unit (15 kg) under conditions of vibration normally encountered on the vessel.

2-9

Mounting

Procedure

Before mounting the unit, lay cables, fabricate connectors and establish the ground system. Then, mount the unit as follows.

1. Fix the mounting base to the mounting location with four tapping screws.

2. Lay the unit on the top of the mounting base.

3. Fix the unit to the mounting base with bolts, spring washers and flat washers. Confirm that the unit is firmly fastened by pushing and pulling it by hand.

Mounting
Base

2.3 Telephone

General

The telephone can be installed on a tabletop or a bulkhead. Select a location where the unit can easily be operated.

- For installation on a wooden table, use the mounting base and tapping screws (supplied).
- For installation on a steel table, fix the telephone with nuts and bolts.
- For bulkhead mounting, use the bulkhead mounting base (supplied with telephone accessories).

Mounting location

Select a location where temperature and humidity are moderate and stable. Secure sufficient space around the unit for ease of operation and maintenance.

Mounting

The mounting dimensions are given in the outline drawing at the end of this manual. Determine the mounting location, leaving sufficient space around the unit, and then fix the mounting base to the mounting location. The mounting base is different for bulkhead and tabletop mounting, however the mounting procedure is the same for all.

Mounting Base (Table top: Use installation materials. Bulkhead: Use telephone accessories.)

Secure mounting base with tapping screws.

Attach handset supporter here.

Unfasten this screw.

Bottom View

Mounting Base Stopper

To remove the telephone from mounting base, press the mounting base stopper, and slide telephone forward.

Handset Supporter

Catch

1. Fix the mounting base to the mounting location with four tapping screws (4 × 16).

2. On the underside of the telephone, unfasten the screw shown in the figure at left. (The screw may be discarded.) Attach double-sided tape (supplied) to the handset supporter. Fasten the handset supporter to the underside of the telephone with a screw (supplied : 3 × 14).

3. The catch in the receiver cradle functions to hang up the handset completely. Set the catch in the upward position as shown below. (To detach the handset from the hanger, slide the handset upward.)

4. Set the telephone to the four catches in the mounting base and then slide it toward you until you hear a click.

5. Attach the "SLIDE" label (supplied) to the handset.

6. Attach English language label (supplied) to the telephone.

2-11

2.4 Terminal Unit (for class 1 only)

Mounting location

- Leave sufficient space around the unit to permit checking and maintenance.
- Locate the unit where temperature and humidity are stable and moderate.
- Locate the unit at least 5 meters from high power communications equipment and its feeder and antenna to prevent mutual interference.

Mounting main unit

1. Fix the hanger to the table with four tapping screws.
2. Attach connectors to bottom panel.
3. Fix the unit to the hanger by two knobs.

Mounting keyboard

1. Attach the four "hook loop fastener 3" (small ones) to the bottom of the keyboard.
2. Attach the four "hook loop fastener 4" (large ones) to the "hook loop fastener 3" attached to the keyboard bottom.
3. Remove seals from the hook loop fastener 4.
4. Set the keyboard on the mounting location and press down firmly.

2.5 Printer

Fix to mounting location with the two mounting fixtures (supplied).

2-12

2.6 Junction Box IB-312

The usual mounting location is behind the Communication Unit on the bulkhead. It connects to the Communication Unit with a 2 meter cable. Keep this length in mind when selection a mounting location.

The terminal board is behind the lid at the top of the unit. Leave sufficient space at the top of the unit to both open the lid and access the terminal board.

To fix the unit, open the lid and fix the unit to the mounting location with four tapping screws.

2.7 Telex Distress Alert Button IB-350

The IB-350 is usually installed near the Terminal Unit. For location away from communications room, install it where it can be easily seen. Fix it to the mounting location with tapping screws.

This unit is available in two mounting types: flush mount or bulkhead mount. The location of the cable gland depends on unit; at the rear of the flush mount unit, or at the base of the bulkhead unit.

φ 5 Fixing Hole

Terminal Board

Cable Entry

Cable Entry

φ 4.5 Cosmetic Panel Fixing Hole

BULKHEAD TYPE
(Cover removed)

FLUSH MOUNT TYPE
(Cover removed)

2-14

2.8 Telephone Distress Button IB-360

This unit is physically identical to the IB-350. For mounting instructions see the outline drawing at the end of this manual.

Note that this unit does not transmit the distress alert but changes the communication priority of the No.1 telephone to "DISTRESS". Therefore, it should be mounted near the No. 1 telephone.

2.9 Mounting of Optional Equipments

Mounting the Facsimile PFX-50

Refer to the drawing below. Use only the installation materials supplied.

1. Attach the "rough" velcro fasteners to the mounting location as shown in the drawing below.

2. Attach the "smooth" velcro fasteners to the underside of the PFX-50 as shown in the drawing below.

3. Set the PFX-50 on the mounting location and press down firmly.
   (Equipment should not move by ship's vibration.)

4. Attach key label to facsimile key panel.

- Velcro fastener (1)
  (× 2) for PFX-50
- Velcro fastener (2)
  (× 2) for mounting location

Attach the velcro fastener to the underside

- Velcro fastener (3)
  (× 1) for PFX-50
- Velcro fastener (4)
  (× 1) for mounting location

2-15

**Received call unit
IC-301**

This device alerts shipboard personnel (by aural alarm) to incoming telephone calls and telex and facsimile messages. For location away from communications room, install it where it can be easily seen. Fix it to the mounting location with tapping screws or wood screws.

This unit is available in two mounting types: flush mount or bulkhead mount. The location of the cable gland depends on unit; at the rear of the flush mount unit, or at the base of the bulkhead unit.

**AC/DC power
supply unit
PR-300**

This unit rectifies AC to DC and supplies 24VDC to the Communication Unit, Terminal Unit, Printer, etc. Mount it at a suitable location for supplying power to these units.

2-16

2.10 Checking the Installation

General Before turning on the system, check for proper installation, following the procedure shown below.

Standard Equipment

Communication unit Are all connectors firmly fastened?
Is the copper strap firmly fastened?

Junction boxes IB-312 Are all connections on the terminal board correctly made?
Are all cables properly grounded by cable clamp?
Is the unit properly grounded?

Telex Distress Alert Button/Telephone Distress Button Are all connections on the terminal board correctly made?

Antenna unit Is the unit properly grounded?

Printer Is the unit firmly fastened by mounting fixtures?

Telephone Is the mounting base firmly fastened?
Is the unit firmly fastened to the mounting location (bulk-head, tabletop)?

Optional Equipment

Facsimile Is the unit firmly fastened?

Received call unit Are all connections on the terminal board correctly made?

A-D Converter AD-100 NAV. Data Are all connections on the terminal board correctly made?

Printer PP-510

Antenna Unit
IB-281

class 2

5m *4

Class 1 3m

Terminal Unit
IB-581

Class 1 only

*2

Ground

*3

3m

Keyboard

Telephone
FC755D1

Communication Unit
IB-281
(Rear Panel)

30/50/100m

(page
3-2)
*1

5m

TX/RX RF

VDU

TEL1 TEL2 TEL3

DATA

TEL4 TEL5 TEL6

5m

CARD READER

PRINTER JUNCTION BOX

Ship's Mains
24V DC

Copper
Strap

3m

Telex Distress Alert Button
(Bulkhead)

2m

Pinch cores.

Terminal Board

IB-350

*1

*1(Crimp-on lug)

A/D Converter (Heading)

*1(3-4 page)

Navaid(Navigation data)

Junction Box (1)
IB-312

Ground

Telephone Distress
Button
(Bulkhead)

IB-360

Terminal Board

*1(Crimp-on lug)

*1: Requires attachment of connector.
*2: For 30 or 50 m cable, connector factory-fitted.
   Run the cable 600 ± 20mm from the cable entry
   on the antenna base.
   For 100 m cable, attach connector in field.
*3. Attach connectors before fixing the terminal unit to the hanger.
*4. Requires IB-581 for class 2 set up.
   PC(DOS/ V PC) may be used in instead of IB-581.

3-1

How to attach the antenna cable connector N-P-8DFB

Outer Sheath   Dimensions in millimeters.
Armor   Inner Sheath Shield

50   30

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

Cover with heat-shrink tubing and heat.

30   10

Cut off insulator and core by 10mm.

Twist shield end.

Clamp Nut   Gasket (reddish brown)   Clamp

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

Aluminum Foil

Fold back shield over clamp and trim.

Trim shield here.

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

Insulator

Fold back aluminum foil onto shield and trim.

Trim aluminum tape foil here.

1

5

Expose the insulator by 1mm.

Expose the core by 5mm.

Pin
Clamp Nut   Shell

Solder through the hole.

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.)

3-2

How to attach the antenna cable connector N-P-12DSFA

Outer Sheath   Dimensions in millimeters.   Remove outer sheath and armor by the
    Armor   Inner Sheath Shield   dimensions shown left.
                                    Expose inner sheath and shield by the
    80   12   dimensions shown left.

Twist shield end.

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

Nut   Gasket   Clamp
Washer

1.8 ———————— Expose the insulator by 1.8mm.

4.5 ———————— Expose the core by 4.5mm.

Pin
Clamp Nut   Shell

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.)

Solder through
the hole.

3-3

Junction Box IB-312

Connections

You will need a small slotted-head screwdriver to open terminals. Insert the screwdriver in terminal to open it. Then insert wire core. For cables with shields be sure the shields are well grounded in the cable clamps.

Cover

Terminal
Board

Cable clamp for
grounding cable shield

To Communication Unit

Nylon clamp for
fixing cable

Use this screw for
grounding.

grounding wire

Procedure

1. Insert driver from direction ①.
2. Tilt slightly toward ②.
3. Insert cable core to ③.

Core 3mm

3-4

Wiring at the Antenna Unit 3-5

Fixing of antenna cable

Lead in the antenna cable 600 ± 20mm from the cable entry in the antenna base. Connect the coaxial connector and fix it by the cable clamp.

Ground

A ground wire (IV-14, 50cm) comes with the antenna unit. Connect it to fixing bolt at the base of the radome and the ground bolt on the mast.

Antenna Base

Mast

Ground wire (50cm)

Weld bolt.

Coat here with silicone sealant.

Grounding

3-5

4. Connection of Optional Equipment

4.1 Facsimile PFX-50

General

The PFX-50 is connected to the Communication Unit with a 3 meter connection cord w/modular plug. (Actual length may vary.)
If a longer connection cord is necessary use modular jack.

4.2 Received Call Unit IC-301

General

Three IC-301 units can be mounted. The IC-301 is physically identical to the IB-350. For connections on the terminal board, see the interconnection diagram on page S-2.

4.3 AC/DC Power Supply Unit PR-300

Connect input and output power cable by referring to the interconnection diagram on page S-1.

Changing tap connections

Change the tap connections of transformer according to input voltage.

Changing the power fuse

Change the power fuse according to input voltage as follows.

Input	Output
100/110 VAC	10 A
200/220 VAC	5 A

Figure 8 AC-DC power supply unit PR-300, rear view

Ground

Connect a ground wire between ship's superstructure and a ficing screw on the PR-300.

⚠ CAUTION

Ground the equipment to prevent electrical shock and mutual interference.

4-2

4.4 Card Reader

Card Reader Configuration

The card reader useable with the FELCOM 81 is the MCT-1540-81 (Code No. 000-043-335). Extension cable and modem are optionally available.
The card reader without installation materials is also available (Type MCT-1540, Code No. 000-043-333).

Name	Type	Code no.	Remarks
Main Unit	MCT-1540	000-043-332	
Installation Materials	CP16-01400	004-435-030	Cable, Connector, Velcro fastener
Extension Cable	CP16-01010	004-434-970	No armor 50m cable with connectors (option)
	CP16-01020	004-434-980	No armor 100m cable with connectors (option)
	CP16-01030	004-434-990	No armor 150m cable with connectors (option)
Modem	CP16-01040	004-435-000	option

Mounting the Card Reader

· The card reader should be installed nearest the most frequently used telephone.

· The card reader connects to the communications unit (IB-281) of the FELCOM 81 with two connection cables (supplied) whose total length is 6.5 meters. Longer lengths are optionally available.

Connection of Card Reader

· Power
Power the card reader with 100 VAC power. An AC adaptor comes with the card reader for plugging the equipment in an electrical outlet.

· Connection cable 1
Connect the 8-pin connector to the card reader and the 25-pin connector to the converter connector.

· Connection cable 2
Connect one end of the cable (type 16S0214, 5 m) to the CARD READER connector on the communications unit and the other end to the converter connector.

If the standard connection cables are not long enough, longer cables are optionally available, or use the internal modem (option). Install longer cable when the distance to the communications unit is between 5 and 150 meters and use the modem when the distance is between 150 and 1000 meters. See page S-2a for details.

4-4

Setting up Tele-phones/Fac-similes

Set up telephones and facsimiles according to call appli-cation desired.

<u>Application</u>

1. Non-credit card call only: Only non-credit card call can be made; credit card call cannot be made.

2. Credit card call/non-credit card call:

                    Both credit card and non-credit card calls can be made.

3. Credit card call: Only credit card can be used to make call.

Preset

1. Pick up receiver of No.1 telephone.
2. Dial setting desired.

' No.1 telephone cannot be set for credit card only call.

' Beep sounds for correct setting. Busy signal is emitted for error.

    <u>*94</u>   <u>P1</u>   <u>P2</u>   <u>#</u>

Code number   End code

P1	P2
0: All terminals	0: Non-credit card call only
1: No.1 Telephone	1: Credit card call/non-credit card call. (This is the default setting.)
2: No.2 Telephone	
3: No.3 Telephone	
4: No.4 Telephone	2: Credit card call/non-credit card call
5: No.5 Telephone	
6: No.6 Telephone	3: Credit card call only
	4: Credit card call only

3. Hang up the receiver.

4-5

4.5 DGPS

An L-band DGPS receiver may be connected.
This requires a connector fixing plate for DGPS.

CP16-01602 (Code No.: 004-442-900)

Name	Type	Code No.	Qty
Connector fixng plate	CP16-01606	004-442-910	1
Cable assy	PH5P-L200-SMP2P	000-141-558	1
	PH2P-L300-SMR2P	000-141-559	1
Pan head screw	M4 × 8	000-881-445	4

1. Turn off the communication unit.
2. Detach the cover.
3. Detach the dummy plate from the rear panel.

Connector fixing plate

Detach dummy plate and fasten connector fixing plate with screws used to fasten dummy plate.

Rear panel of communication unit

Dummy plate

4. Fasten the connector fixing plate (supplied) to the rear panel with the screws used to fix the dummy plate.
5. Detach all connectors from the rear panel; dismount the power supply unit and the panel.

4-6

6. Connect the HSD CTRL connector from the connector
   fixing plate to JI5 on the REAR PANEL Board.

7. Attach the rear panel and put the power supply unit
   back .
8. Connect the cable assy.(supplied) between J7 on the
   CPU2 Board and J10 on the RF CONV Board.

4-7

9. Connect the four plugs from the connector fixing plate to the RF CONV Board.

RF CONV Board

Connector fixing plate		RF CONV Board
TX IF	↔	J9
RX IF	↔	J7
REF	↔	J8
DGPS OUT	↔	J11

10. Attach the cover.
11. Plug in all connectors to the rear panel.

4-8

5. Initial Settings

5.1 Hatch Direction and Heading Adjustment

Adjust heading as follows when the hatch direction is not stern.

① Stern (standard)   ② Starboard   ③ Bow   ④ Port

Cable Gland

Ship's Bow and Hatch Direction (Ship's bow up: Top view)

In case of ② , ③ and ④ above, rotate the disc so that the limit switch turns on when the parabola antenna comes to bow.

Procedure
1. Rotate the parabola antenna to bow direction.
2. Unfasten four screws on the disc.
3. Rotate the disc so that the projection hits the limit switch and turns it on.
4. Fasten screws on disc.

Disc

Limit Switch

Projection

Unfasten four screws.

Base of Antenna Unit

5-1

5.2 Setting of Telephone

Change dialing format from dial to pushbutton as follows.
(The handset should be hung in the hanger.)

FC622SLIWG

1. Press the [STO] key.

2. Press the [#] key.

3. Press the [*] key to display "Pb."

4. Press the [STO] key again.

FC755D1

1. Insert tip of a mechanical pencid under plastic cover to remove cover, and then remove memo paper.

2. Use the tip of the mechanical pencil to set DIP Switch.

DIAL : Selects dialing format; dial pulse (20PPS) or push button. Select push button (PB).

3. Restore memo paper and plastic cover.

5-2

5.3 Setting for Antenna Cable Length

Adjust the potentiometer R135 (LV) on the RF CONV board of the Communication Unit according to the antenna cable length as follows. (This changes the output level of the RF CONV board.)

RF CONV Board   R135
                  LV

Antenna Cable Length (m)	R135	Cable Type	Cable attenuation factory
10 to 40	Marked point	8DFB-CV	1.8 to 1.9 dB/10 m
40 to 50	Fully clock-wise		
50 to 100		12DSFA-CV	0.9 to 0.95 dB/10 m

Default setting: Marked point

R135

Marked point

Communication Unit

RF CONV Board

5-3

5.4 Attaching the Compass Safe Distance and Inmarsat B Seals

Attach the compass safe distance seals (supplied with installation materials) for the units shown below.

When the same units (for example: telephone, facsimile, etc.) are used for other than FELCOM 81, attach ""sealsⓑ to them to distinguish.

5-4

5.5 Facsimile PFX-50 Setting

Turn on the power while dialing [*], [1], [3] to initialize the PFX-50's memory. Change the dial mode to "push button" with the MODE switch. (Choose position "T".)

Dial Mode

MODE Switch

Chosse "T".

5-5

5.6 Personal Computer Connection

You can use a personal computer as the terminal unit for the FELCOM81, by installing the contents of a program disk on the PC.

Note: Basic knowledge of DOS commands is required.
Requirement; Type :   16-501-091
                     Code No: 004-441-520

Booting up by disk drive

1. Format a floppy disk (command "format / s ").
   Refer to PC operator's manual about formatting.

2. Copy the following three files from program disk to formatted floppy disk :
           B_TERM.EXE
           CONFIG.SYS
           AUTOEXEC.BAT
3. Rewrite "AUTO EXEC .BAT" file.
    b_term   / tb : \ telex / r → b_term
   Delete portion underlined above.
   Turn off the power. Turn on the power. Confirm that the software boots up by disk drive properly.

Booting up by hard disk drive

1. Make the directory "F81" on the hard disk (drive C).
    Refer to PC manual about how to make a directory.

2. Copy "B_TERM. EXE"of program disk to "F81" directory.

3. Turn off the power. Turn on the power.
    Execute "b_term" in the "F81" directory.

Note: You need about 500 kB of RAM to boot the program. Therefere, when booting up by hard disk, minimize the contents of "CONFIG.SYS " file.

5-6

6. System Setup

6.1 Setting Up

Overview

Set up the terminal unit, editor screen and communication unit (Class 2).

When there is no navigation input or gyro input, enter them manually referring to operator's manual.

Turn on the Main Unit and Terminal Unit. After a while, the Main Menu, shown below, appears.

```
        ↓
File  Edit  Telex  Setup   ------              ---------- BRK
------------------------------- (Nov-10-96 16:25) ----------
```
                                                         ↘ Date

Standby Display

Setting up   **Key Operation**

1. Terminal Unit · · · · · · · · · · · · · · · · `F4` ⇒ `3`
   Entry of date,
   answerback code, etc.
              ↓
        See next page.

2. Editor Screen · · · · · · · · · · · · · · · `F4` ⇒ `4`
   Line numbering ON/OFF,
   Selection of cursor type, etc.)

3. Communication Unit · · · · · · · · · · · `F4` ⇒ `6`
   Selection of ocean region,
   Telephone/Fax setting, etc.)

6-1

6.2 Registering Answerback Code (Class 1 only)

Overview   Enter ship's answerback code at installation.

The answerback code cannot be changed once registered. Confirm the code before pressing the ⌨Enter key.

Procedure   Press ⌨F4 , ⌨3 and ⌨8 in this order at standby-display.

Cursor ⟶

```
█


   !! ATTENTION: CAN NOT REENTER !!
```

Enter your ship's answerback code given by Inmarsat, then press the ⌨Enter key.
[Normally, answerback code consists of telex IMN (IMN: Inmarsat Mobile Number) given by Inmarsat and four characters requested by applicant.]

How to enter
Telex IMN No.   4 characters
(9 digits)

(Ex.) 343164830   JFKS   X

6-2

2. Copy the following three files from program disk to formatted floppy disk :

> B_TERM.EXE
> CONFIG.SYS
> AUTOEXEC.BAT

3. Rewrite "AUTO EXEC .BAT" file.

   b_term / tb : \ telex / r → b_term

   Delete portion underlined above.

   Turn off the power. Turn on the power. Confirm that the software boots up by disk drive properly.

Booting up by hard disk drive

1. Make the directory "F81" on the hard disk (drive C).
   Refer to PC manual about how to make a directory.

2. Copy "B_TERM. EXE"of program disk to "F81" directory.

3. Turn off the power. Turn on the power.
   Execute "b_term" in the "F81" directory.

Note: You need about 500 kB of RAM to boot the program. Therefere, when booting up by hard disk, minimize the contents of "CONFIG.SYS " file.

6-3

7. Card Reader (Option)

7.1 Card Reader Configuration

Name	Type	Code no.	Remarks
Main Unit	MCT-1540	000-043-332	
Installation Materials	CP16-01000	004-437-140	Cable, connector, velcro fastener
Extension Cable	CP16-01010	004-434-970	No armor, No connector 50m
	CP16-01020	004-434-980	No armor, No connector 100m
	CP16-01030	004-434-990	No armor, No connector 150m
Modem	CP16-01040	004-435-000	Optional

7.2 Mounting the Card Reader

Card Reader
MCT-1540-55

Velcro fasteners
for Card Reader

To Mounting Surface

170g

Velcro fasteners
for mounting surface

To Mounting Surface

7-1

- The card reader should be installed nearest the most frequently used telephone.

- The card reader connects to the Communications Unit (IB-281) with two connection cables (supplied) whose total length is 6.5 meters. Longer lengths are optionally available.

7.3 Connection of Card Reader

- Power
  Power the card reader with 100 VAC power. An AC adaptor comes with the card reader for plugging the equipment in an electrical outlet.

- Connection cable 1
  Connect the 8-pin connector to the card reader and the 25-pin connector to the converter connector.

- Connection cable 2
  Connect one end of the cable (type 16S0164, 5 m) to the CARD READER connector on the Communications Unit and the other end to the converter connector.

If the standard connection cables are not long enough, longer cables are optionally available, or use the internal modem (option). Install longer cable when the distance to the communications unit is between 5 and 150 meters and use the modem when the distance is greater than 150 meters. See page S-3 for details.

7-2

7.4 Setting up Telephones/Facsimiles

Set up telephones and facsimiles according to call application desired.

Application

1. Non-credit card call only: Only non-credit card call can be made; credit card call cannot be made.

2. Credit card call/non-credit card call: Both credit card and non-credit card calls can be made.

3. Credit card call: Only credit card can be used to make call.

Preset

1. Pick up receiver of No.1 telephone.
2. Dial setting desired.
- No.1 telephone and No.1 facsimile cannot both be set for credit card only call.
- Beep sounds for correct setting. Busy signal is emitted for error.

*94	P1	P2	#
Code number		End code	

P1	P2
0: All terminals	0: Non-credit card call only
1: No.1 Telephone	1: Credit card call/non-credit card call.
2: No.2 Telephone	(This is the default setting.)
3: No.3 Telephone	
4: No.4 Telephone	2: Credit card call/non- credit card call
5: Facsimile	
6: Facsimile	3: Credit card call only
	4: Credit card call only

3. Hang up the receiver.

7-3

D — 1

FURUNO ELECTRIC CO., LTD.

船首方向 BOW
レドーム RADOME
取付台 MOUNTING BASE
入リ口 ENTRY DOOR
ハッチ HATCH
PLATFORM プラットホーム
ブラットホーム製作例 EXAMPLE OF PLATFORM
1000
ステップ STEP

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
500 < L ≦ 1000	±4
1000 < L ≦ 2000	±5

注記 1) 指定外寸法公差は表1による。
NOTE 1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

TITLE IB-181
名称 アンテナユニット
NAME ANTENNA UNIT
外寸図 OUTLINE DRAWING
16-011-110G-4
FELCOM 81

DRAWN
CHECKED
APPROVED
SCALE 1/20   MASS 90 kg   ±10%
DWG. No.   C5609-G01-G

船首方向 BOW
取付穴 4-φ20 FIXING HOLES
空気穴 2-φ20 VENT HOLES
取付穴 4-φ20 FIXING HOLES
254.5
254.5
500
60°
45°
.09
THICKNESS 厚み t≧8
20 MIN
(120)
600 (φ600)
(φ268)
M10 (SUS W/ NUT)
接地用ボルト/右舷側 GROUND STUD/STBD SIDE
取付台 (造船所手配) MOUNTING BASE (SHIPYARD SUPPLY)
対辺幅または直径 WIDES ACROSS FLAT OR DIAMETER
シリコンシール剤を塗布 APPLY SILICONE SEALANT

取付台 MOUNTING BASE
平座金 FLAT WASHER
バネ座金 SPRING WASHER
M16 NUT ナット (3種)
M16 NUT ナット (1種)
ボルト M16 BOLT
取付ボルト部詳細 DETAILS OF FIXING BOLT

4-M10 EYEBOLTS
吊り上げ用アイボルト詳細 DETAILS OF EYEBOLT

1500
80
φ600
φ1389
φ1445
A A
BOW 船首方向
PORT
STBD
STERN
528
335
ハッチ HATCH
ケーブル導入口 CABLE ENTRY
取付ボルト FIXING BOLTS 4-M16
取付ボルト FIXING BOLTS 4-M16
空気穴 2-φ8 VENT HOLES
接地用ボルト GROUND STUD M10
254.5
254.5
400
400
45°
矢視 A VIEW A

FURUNO

FURUNO ELECTRIC CO., LTD.

寸法範囲 (mm) DIMENSIONS	公差 (mm) TOLERANCE
0＜L≦50	±1.5mm
50＜L≦100	±2.5mm
100＜L≦500	±3mm

表1
TABLE 1

ヒューズ
FUSE

電源
SOURCE

VDU
DATA
GND READER
PRINTER
JUNCTION BOX
GPS OUT
R.I.F
R.A.F
NBF
NSD DTRL

アース端子
GND TERMINAL

背面図
REAR VIEW

#200

373

258

取付穴
4-φ7
FIXING HOLES

240±0.5

69

300±0.5

18

373

7

#100

400

#100

COMPASS
BEARING
ELEVATION
LEVEL
TEL. 1
TEL. 2
TEL. 3
TEL. 4
TEL. 5
TEL. 6
DATA
ARP-WEST
ARP-EAST
POR
READY
POR
FAIL
POWER
ON
OFF
DIMMER
L-CALL

銘板 NAME PLATE

TITLE IB-281
名称 通信制御ユニット
外寸図
NAME COMMUNICATION CONTROL UNIT
OUTLINE DRAWING

DRAWN
CHECKED
APPROVED
FELCOM 81
SCALE 1/8   MASS 21 ±10% kg
DWG No. C5609-G02- D   16-001-2000-G1

注記
1)装備ケーブルは、サービス時ユニットを前方に充分引き出せるよう余裕を持たせること。
2)取付用ネジはM6ボルトまたはコーチボルト呼び径6を使用のこと。
3)#印寸法は最小サービス空間寸法とする。

NOTE
1. KEEP ENOUGH CABLE LENGTH BEHIND UNIT.
2. USE M6 BOLTS OR φ6 COACH BOLTS FOR FIXING.
3. #: RECOMMENDED SERVICE CLEARANCE.

FURUNO

1　　　　　　　2　　　　　　　3

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

274.6

100±0.5　100±0.5

取付穴
5-φ7.5
FIXING HOLES

±0.5 35
±0.5 35
45

#80　300　#80

328

250

145

50

290

165　#80

65

15

300

63.8

(63)

100

112.6

12.8

PRINTER
プリンタ

COM1, COM2

49.4

92

87.8　33　24VDC　キーボード
KEYBOARD

ブレーカ
CERCUIT
BREAKER

アース端子
GND TERMINAL

コネクタ接続部（底面）
CONNECTOR LOCATION
(BOTTOM VIEW)

注記
1）指定なき寸法公差は表1による。
2）装備ケーブルはサービス時本体を前方に十分
　　引き出せるよう余裕をもたせること。
3）取付用ネジはM6ボルトまたはコーチボルト呼び径
　　6を使用のこと。
4）#印寸法は最小サービス空間寸法とする。

NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
2. KEEP ENOUGH CABLE LENGTH BEHIND UNIT.
3. USE M6 BOLTS OR φ6 CORCH BOLTS FOR FIXING UNIT.
4. #: RECOMMENDED SERVICE CLEARANCE.

DRAWN Dec 4'99 T.YAMASAK		TITLE IB-581
CHECKED Dec 2'99	DP-6	名称 ターミナルユニット
APPROVED Dec 2'99	FELCOM 12 FELCOM 81	外寸図
SCALE 1/5	MASS ±10% 6.0 kg	NAME TERMINAL UNIT
DWG. No. C5609-G03- C	16-011-5000-G1	OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO

FURUNO ELECTRIC CO., LTD.

TITLE	BTC-5100C PS/2
名称	キーボード
	外寸図
NAME	KEYBOARD

OUTLINE DRAWING

DRAWN	Dec. 5'92 Tyahasaki
CHECKED	Dec. 5'92 K. Kasuumlcu
APPROVED	Dec. 5'92 Hyamaguchu
SCALE 1/2	MASS 0.7 kg
DWGNo.	C5609-G05- B

40

31.9

Num Caps Scroll

カールコード 1.3 m
CURL CORD 1.3 m

295

151

FURUNO

ケーブル導入口
CABLE ENTRY

取付穴
4-φ6
FIXING HOLES

210±0.5

100±0.5

20

銘 板
NAMEPLATE

#50

43

40

140

#50

#10

260

#10

ケーブル導入口
CABLE ENTRY

アース端子
GND TERMINAL

注記
1) #：推奨する最小サービス空間寸法。
2) 指定なき寸法公差は表1による。
3) 取付用ネジはＭ５ボルトまたはコーチボルト呼び径5x20を使用のこと。
4) 装備ケーブルの端末処理は、装備要領書を参照のこと。

NOTE
1. #: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
3. USE TAPPING SCREWS φ5x20 FOR FIXING THE UNIT.
4. REFER TO INSTALLATION MANUAL FOR FABLICATION OF CABLE ENDS.

表 1   TABLE 1

寸法範囲 (mm) DIMENSIONS	公差 (mm) TOLERANCE
0＜L≦50	±1mm
50＜L≦100	±2mm
100＜L≦500	±3mm

DRAWN July26'00 T.YAMASAKI			TITLE	IB-312
CHECKED July27'00 T.Kim			名称	接続箱 （1）
SPPROVED July27'00 T.Kim	FELCOM 81			外寸図
SCALE 1/3	MASS ±10% 1.5 kg		NAME	JUNCTION BOX （1）
DWG. No. C5609-G04- D	16-011-300G- 2			OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO

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

取付金具
PRINTER FIXTURE

#100

31

376

45

106

191

取付穴
4-φ6.5
FIXING HOLES

(376)
(96)
280
200±0.5
42.5

380
405
425

#100
#50

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M6ボルトまたはコーチボルト呼び径6を使用のこと。

NOTE 1. #: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
3. USE M6 BOLTS OR COACH BOLTS φ6 FOR FIXING UNIT.

DRAWN			
CHECKED		TITLE	PP-510
APPROVED		名称 プリンタ	
SCALE 1/5	MASS 3.8 kg ±10%	外寸図	
DWG. No. C5589-G08-H	16-007-660G-2	NAME PRINTER	
		OUTLINE DRAWING	

FURUNO ELECTRIC CO., LTD.

範囲 DEMENSION	公差 TOL.
L≦50	±1mm
50<L≦100	±1mm
100<L≦500	±1mm

表　1
TABLE　1

157

60±0.5

4-φ5
取付穴
FIXING HOLES

(240)

232

83.5±0.5

61

約109 APPROX.

*100

約98 APPROX.

取付金具
MOUNTING BASE

注 記
　1） 指定外の寸法公差は表１による。
　2） ＊：推奨するサービス空間寸法。
　3） 取付にはトラスタッピンネジ4x16 SUS304を使用のこと。

NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.
2. *:RECOMMENDED SERVICE CLEARANCE.
3. USE TAPPING SCREWS 4x16 SUS304 FOR FIXING THE UNIT.

DRAWN July 26 '00 T.YAMASAKI		TYPE	FC755D1
CHECKED July 27 '00 Y.Kim		名称	電話機 （壁掛装備）
APPROVED July 27 '00 Y.Kim	FELCOM 81		外寸図
SCALE 1/3	MASS ±10% 0.83 kg	NAME	TELEPHONE （BULKHEAD MOUNT)
DWG. No. C5589-G19- B	16-011-710G- 0		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

1   2   3

2-φ5 取付穴
FIXING HOLES

55

28   29   3.5

12

143

133±0.5

PRESS WHEN
YOUR VESSEL
IS IN
DISTRESS.
PUSH FOR
6 SECONDS.

DISTRESS

自船の
遭難時のみ
使用。
6秒間
押し続ける
こと。

115

123

4.5

銘板
NAMEPLATE

φ11

98

108

125

133±0.5

ケーブル導入口
CABLE ENTRY

ケーブル導入口
CABLE ENTRY

フラッシュマウント時
取付穴位置 (2ケ所)

取付穴寸法図
CUTTING DIMENSIONS

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

表 1
TABLE 1

注 記
1) 指定外の寸法公差は表1による。
2) 取付用ネジは＋トラスタッピンネジ4x16を使用のこと。

NOTE
1. TABLE1 INDICATES TOLERANCE OF DIMENSIONS.
2. USE TAPPING SCREWS 4x16 FOR FIXING THE UNIT.

DRAWN July 26 '00 T.YAMASAKI			TITLE	IB-350/360
CHECKED July 27 '00 Y.Kira			名称	遭難警報発呼器/遭難電話ボタン (埋込型)
APPROVED July 27 '00 Y.Kira	FELCOM 81 FELCOM 80			外寸図
SCALE 1/2	MASS 0.54 kg		NAME	TELEX DISTRESS ALART BUTTON/ TELEPHONE DISTRESS BUTTON (FLUSH MOUNT)
DWG. No. C5589-G12- D	15-007-675G- 3			OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

50±0.5

120

98±0.5

11

2

PRESS WHEN
YOUR VESSEL
IS IN
DISTRESS.
PUSH FOR
6 SECONDS.

DISTRESS

自船の
遭難時のみ
使用。
6秒間
押し続ける
こと。

銘板
NAMEPLATE

2-φ5取付穴
FIXING HOLES

#10   100   #10

φ11

43   40

16

#10

16

#50

ケーブル導入口
CABLE ENTRY

φ23   #φ27

φ23

15

ケーブル導入口
CABLE ENTRY

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

表 1
TABLE 1

注　記 1) 指定外の寸法公差は表1による。
　　　2) # : 推奨する最小サービス空間寸法。
　　　3) 取付用ネジは＋トラスタッピンネジ4x16を使用のこと。

NOTE 1. TABLE1 INDICATES TOLERANCE OF DIMENSIONS.
　　　2. #: RECOMMENDED SERVICE CLEARANCE.
　　　3. USE TAPPING SCREWS 4x16 FOR FIXING THE UNIT.

DRAWN July 26 '00 T.YAMASAKI		TITLE IB-350/360
CHECKED July 27 '00 Y.K		名称 遭難警報発呼器/遭難電話ボタン(壁掛型)
APPROVED July 27 '00 Y.K	FELCOM 81 FELCOM 80	外寸図
SCALE 1/2　MASS 0.41 kg ±10%		NAME TELEX DISTRESS ALART BUTTON/ TELEPHONE DISTRESS BUTTON (BULKHEAD MOUNT)
DWG. No. C5589-G21- D	15--007-670G- 3	OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO

FURUNO ELECTRIC CO., LTD.

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

#50

240

200

300

295

TITLE	PFX-50
名称	ファクシミリ
	外寸図
NAME	FACSIMILE
	OUTLINE DRAWING

DRAWN	July 7 '00
CHECKED	
APPROVED	
SCALE	1/5	MASS 8 ±10% kg
DWG. No.	C5589-G13- B

マジックテープ
DOUBLE-SIDED TAPE

135

80

(25. 4)

#100

(266)

200

399

(200)

#100

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。

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

A

B

C

1 2 3 4

FURUNO

埋め込み型
FLUSH MOUNT

2-φ5 取付穴
FIXING HOLES

RESET

銘板
NAMEPLATE

ケーブル導入口
CABLE ENTRY

質量
MASS: 0.54 kg ±10%

壁掛け型
BULKHEAD MOUNT

RESET

銘板
NAMEPLATE

2-φ5 取付穴
FIXING HOLES

ケーブル導入口
CABLE ENTRY

ケーブル導入口
CABLE ENTRY

質量
MASS: 0.41 kg ±10%

取付穴位置 取付穴寸法図
FIXING POSITION CUTOUT DIMENSIONS

縮尺 1/4
SCALE: 1/4

注記
1) 指定外の寸法公差は表1による。
2) #：推奨するサービス空間寸法。
3) 取付用ネジはトラスタッピンネジ4x16を使用のこと。

NOTE
1. TABLE1 INDICATES TOLERANCE OF DIMENSIONS.
2. #: RECOMMENDED SERVICE CLEARANCE.
3. USE TAPPING SCREWS 4x16 FOR FIXING THE UNIT.

表 1 TABLE 1

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

TITLE	IC-301
名称	着信指示器
	外寸図
	RECEIVED CALL UNIT
NAME	OUTLINE DRAWING

DRAWN
CHECKED
APPROVED
FELCOM 80
FELCOM 10/11
MASS ±10%
kg

SCALE 1/2
DWG. No. C5530-G05-G

16-005-420G-2
16-007-675G-3

質量
MASS: 0.54 kg ±10%

FURUNO ELECTRIC CO.,LTD.

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1   2   3

A

290

270±1

取付穴 4-φ6
FIXING HOLES

#100

350

230±1

B

30   60

MAX. 22

163   10

C

#100   233   #100

100V 10A
220V 5A   20A

FURUNO
PR-300

ON   ON
OFF   OFF

AC IN   DC IN   DC OUT
L N G   + -   24V
+ - + -

D

注記
1）♯：推奨する最小サービス空間寸法。
2）指定なき寸法公差は表1による。
NOTE:
1. ♯: RECOMMENDED SERVICE CLEARANCE.
2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS.

表1   TABLE 1

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

DRAWN June 19 '00 T.YAMASAKI		TITLE PR-300
CHECKED June 19 '00 T.Kxxx		名称 AC-DC電源ユニット
APPROVED June 19 '00 T.Kxxx		外寸図
SCALE 1/4 MASS ±10% 14.5 kg		NAME AC-DC POWER SUPPLY UNIT
DWG. No. C5003-G02- D		OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

70

長丸穴
6-4.2x7
OVAL HOLES

端子台
TERMINAL
BOARD

背面ケーブル導入口
REAR CABLE ENTRY

120

50

20

30

12

下面ケーブル導入口
BOTTOM CABLE ENTRY

36.5

8

20

背面ケーブル導入口
REAR CABLE ENTRY

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

DRAWN July 6'00 T.YAMASAKI		TITLE 名称 NAME	OP16-10 (BJ-2W/WV7011W)
CHECKED July 7'00 Y.Kim			ボックスローゼット
APPROVED July 7'00 Y.Kim	FELCOM 81		外寸図
SCALE 1/1	MASS ±10% 0.14 kg		MODULAR JACK BOX (EXPOSED TYPE)
DWG. No. C5079-G02- F			OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

2-5×12長丸穴 FIXING HOLES

120

83.5

70

69.4

70以上

7.7

(17.7)

10

40.4

41以上

品番 ITEM	品 名 NAME	材 質 MATERIAL	数 量 Q'TY	図 番 DWG. NO.	適 要 REMARKS
承 認 APPROVED	Nov.26,'93 K.Ota	三 角 法 THARD ANGLE PROJECTION	名 称 TITLE	OP16-11 (BJ-2W) 埋込みローゼット	
検 図 CHECKED	Nov.26,'93 K.Kusunoki	尺 度 SCALE	/	MODULAR JACK BOX (FLUSH TYPE)	
製 図 DRAWN		質 量 WEIGHT	0.1kg	図 番 DWG. NO. C5079-G01-C	

FURUNO ELECTRIC CO., LTD

コネクター
CONNECTOR CN-1
NEC0470-01-230
(HOSIDEN)

コネクター
CONNECTOR CN-2
CMS5008-0902
(SMK)

50

1

38

RS-232C

DC IN

TOKIN

180

DRAWN Jan. 8 '96 Y. EBISU		TYPE MCT-1540-55	
CHECKED Jan 10. '96 K. Kusunoki		名称 カードリーダ	
APPROVED Jan 12 '96 K. ITO	FELCOM80	外寸図	
SCALE /	MASS 0.17 kg	APPLICABLE TO: (MODEL)	BLOCK NO.	NAME CARD READER
DWG NO. C5589-G17- A			OUTLINE DRAWING

FURUNO ELECTRIC CO., LTD.

FURUNO

PP-510 プリンタ
PRINTER

キーボード
KEYBOARD
BTC-5100C PS/2

IB-181 アンテナユニット
ANTENNA UNIT

FC622SL1 WG 電話機 TELEPHONE (No. 1)
FC622SL1 WG 電話機 TELEPHONE (No. 2)
FC622SL1 WG 電話機 TELEPHONE (No. 3)
FC622SL1 WG 電話機 TELEPHONE (No. 4)
PFX-50 ファクシミリ FACSIMILE (No. 1)
PFX-50 ファクシミリ FACSIMILE (No. 2)

IB-581 ターミナルユニット
TERMINAL UNIT

HSDユニット用 (オプション)
FOR HSD UNIT (OPTION)

DGPS受信機
DGPS RECEIVER

IB-281 通信制御ユニット
COMMUNICATION CONTROL UNIT

カードリーダー
HSDコントロール
HSD CONTROL

2B01 RF CONV 16P0130

IB-312 接続箱(1)
JUNCTION BOX (1)

24VDC

PR-300 AC/DC電源
AC/DC POWER SUPPLY

AD-100 A-Dコンバータ
A-D CONVERTER

航法データ
NAV. DATA

IB-350 遭難警報発呼器
TELEX DISTRESS ALERT BUTTON

IB-360 遭難電話ボタン
TELEPHONE DISTRESS BUTTON

IC-301 着信指示器 (ブザー)
RECEIVED CALL UNIT (TEL/TELEX INDICATOR) (No. 1)

IC-301 着信指示器 (ブザー)
RECEIVED CALL UNIT (TEL/TELEX INDICATOR) (No. 2)

IC-301 着信指示器 (ブザー)
RECEIVED CALL UNIT (TEL/TELEX INDICATOR) (No. 3)

FIT-100 ステップダウントランス
STEPDOWN TRANSFORMER

100/110/115, 220/230VAC, 1φ, 50/60Hz
無線用バッテリー 24VDC (BATTERY)
220/230VAC, 1φ 50/60Hz

FC622SL1 WG 電話機 TELEPHONE (No. 4)
PFX-50 ファクシミリ FACSIMILE (No. 1)
PFX-50 ファクシミリ FACSIMILE (No. 2)

ジャイロコンパス
GYROCOMPASS

注記: NOTE:
(99) コネクタ CONNECTOR
端子台 TERMINAL BOARD
ツイストペア線 TWISTED-PAIR
銅板にて接地 GROUNDING COPPER STRAP
IV-8sq. 或いは同等品にて接地 GROUNDING WIRE IV-8sq.
オプション支給 OPTIONAL SUPPLY

*: 造船所殿艤装配 SHIPYARD SUPPLY
*2: 工場にて取付済 FITTED AT FACTORY

*3: コネクタのクランプにてアースに落とす。 GROUND THROUGH CONNECTOR CLAMP.
*4: [太]は本線を示す。 [B] REPRESENTS THICKER WIRES.

*1: 電話(No.4以降)およびファックスは通信制御部又は接続箱(IB-312)のいずれかに接続可能。
TELEPHONE (No. 4 AND AFTER) AND FACSIMILE WILL BE CONNECTED TO COMMUNICATION CONTROL UNIT OR JUNCTION BOX IB-312.

CO-0.2x2P: CO-SPEVV-SB-C 0.2x2P
CO-0.2x5P: CO-SPEVV-SB-C 0.2x5P
UL2484-10P: UL2464 10PxAWG28. φ8.5

TITLE	FELCOM 81A
名称	インマルサット-B 船舶地球局 (クラス1)
	相互結線図
NAME	INMARSAT-B MES (CLASS 1)
	INTERCONNECTION DIAGRAM

DWG. No. C5609-C01-J

FURUNO ELECTRIC CO., LTD.

FURUNO

変換コネクタ
CONVERSION CONNECTOR
LP321 F/F

カードリーダ
CARD READER
MCT-1540-55

FELCOM 80
COMMUNICATION UNIT
IB-280

D-sub 25pin 17JE-23250-02 (D8C) 25pin
17JE-23250-02 (D8C)

CARD READER		FELCOM 80 IB-280
FG 1		1 GND J3
RXD 2		2 TXD PC DATA
TXD 3		3 RXD
CTS 4		4 RTS
RTS 5		5 CTS
DTR 6		6 DSR
DSR 7		20 DTR
GND 8		7 GND

8 pin 1.5 m

16S0164, 5m
コネクタ付き
W/ CONNECTOR

ACアダプタ
AC ADAPTER
100VAC

FELCOM 81
COMMUNICATION UNIT
IB-281

17JE-23090-02 (D8C)
16S0214-0, 5m
コネクタ付き
W/ CONNECTOR

FELCOM 81 IB-281
1 NC J3
2 RD CARD READER
3 TD
4 DTR
5 GND
6 DSR
7 RTS
8 CTS
9 NC

FELCOM 80
あじろ外装ケーブル
不要の場合
CABLE WITHOUT ARMOR

*1
17JE-23250-02 (D8C)   *1 CC3707 (50/100/150m)   *1 17JE-23250-02 (D8C)

FELCOM 81
あじろ外装ケーブル
不要の場合
CABLE WITHOUT ARMOR

*1
17JE-23250-02 (D8C)   *1 CC3707 (50/100/150m)   *1 17JE-23090-02 (D8C)

あじろ外装ケーブル
使用の場合
CABLE WITH ARMOR

*1 構内モデム
MODEM
38360F
DTE/DCE

*1 構内モデム
MODEM
38360F
DTE/DCE

最大 1km MAX.

1	XMT+		XMT+	1
2	XMT-		XMT-	2
	GND		GND	
	RCV+		RCV+	
25	RCV-		RCV-	25

*2   *3
TTYCS-3 or CO-Q2x5P

注記
1) オプション
2) 現地手配
3) P：ツイストペア

NOTES
1. OPTIONAL SUPPLY.
2. LOCAL SUPPLY.
3. TWISTED PAIR

DRAWN	Jun 16 '97 T. YAMASAKI			TITLE	MCT-1540-55
CHECKED	Jun.16'97 K. Kusunoki			名称	カードリーダ
APPROVED	June 16'97 H. yamaguchi	FELCOM 81 FELCOM 80			相互結線図
SCALE	MASS kg			NAME	CARD READER
DWG.No.	C5589-C10- B				INTERCONNECTION DIAGRAM

FURUNO ELECTRIC CO., LTD.

FURUNO

1B11 ANT CHASSIS

1B09 SPLITTER 16P0129

P113 J1 P112 W6 P111

1B10 STABILIZER

PCU

30	LV-	J15
15	CL-	
29	LV+	
14	CL+	
2	COM	

1 HOME J16
38 GND
17 +5V

LEVEL PLATFORM PCS ASSY

1B03 LNA CHASSIS
J032 P032
1B04 LNA1 16P0122
1B05 LNA2 16P0123

J033 P033
TX Y RF

J092 P092 W5 P114
GND/FSK
GND/FSK
RXD/FSK
TXD/FSK
+12VDC
ERP MON
ENABLE
-4dB
-8dB
GND
GND
NC
NC
NC
NC

34 GND J18 U1
AZIMUTH RATE SENSOR
18 AZ RATE
40 +12V

1B01 ANT
P021 J021
T/R RF

1B02 DIP
J022 P022 W1 P031 J031 RX RF

1B06 HPA CHASSIS
1B07 HPA 16P0124
1B08 HPA CONT 16P0125

J023 P023 W2 P061 J061
TX RF

W3 P062 J062

21 LV S1 J12 J13 B1
9 LV S2 LEVEL MOTOR ASSY
41 +12V
11 LV S3
13 LV S4

4 EL S1 J10 J11 B2
7 EL S2 ELEVATION MOTOR ASSY
42 +12V
25 EL S3
27 EL S4

35 GND J9 U2
LEVEL RATE SENSOR
3 LV RATE
+12V

W4
J063 P063 P091 J091
+30VDC
+30VDC
GND
GND
ERP MON
GND
ENABLE
-4dB
-8dB

23 CL S1 J7 J8 B3
22 CL S2 CROSS LEVEL MOTOR ASSY
43 +12V
10 CL S3
12 CL S4

36 GND J6 U3
CROSS LEVEL RATE SENSOR
19 CL RATE
+12V

5 AZ S1 J4 J5 B4
8 AZ S2 TRAIN MOTOR ASSY
44 +12V
26 AZ S3
28 AZ S4

DRAWN	Nov. 7 '96 T. YAMASAKI		TYPE	IB-181
CHECKED	Nov. 12 '96 TAKAHASHI		名称	アンテナユニット
APPROVED	Nov. 12 '96 K. Okamoto	FELCOM81B 1B11		
		FELCOM81A 1B11	回路図	
SCALE	MASS	APPLICABLE TO: (MODEL)	BLOCK NO.	NAME
✕	— kg			ANTENNA UNIT
DWG NO.	C5609-K01- A	16-001-3134- 0		SCHEMATIC DIAGRAM

FURUNO ELECTRIC CO., LTD.

KEYBOARD BTC-5100C PS/2

3B01 CHASSIS

POWER ACE-870C-B1

3B04 VR 16P0145

R1 10k   J1
CONTRAST

R2 10k
BRIGHT

LCD LM64P839

3B02 T.BOARD 16P0167

3B03 FIL. 16P0144

BREAKER   CB1 1A   W4
POWER   S1   W5
W6

CB1 CB2   J2
SW1 SW2   J3
+24V 0V   J4

CR1   L1
C1 0.1μ   C2 0.1μ   C3 47/50   C4 0.1

+24VDC   J1

CPU CARD AR-B1378 F2

FLASH ROM AT29C040
FLASH ROM AT29C040

J1
8 -5V
7 -12V
1,4,5 GND
2,3 +5V
6 +12V

-5V
-12V
GND
+5V
+12V

FDD FD-235HF-7529
+5VDC 1
GND 2
GND 3
N.C. 4

CN2
1 GND
2 REDUCED WRITE CURRENT
3 GND
4 N.C.
5 N.C.
6 N.C.
7 GND
8 INDEX
9 GND
10 MOTAR ENABLE A
11 GND
12 DRIVE SELECT B
13 GND
14 DRIVE SELECT A
15 GND
16 MOTOR ENABLE B
17 GND
18 DIRECTION
19 GND
20 STEP OUTPUT PULSE
21 GND
22 WRITE DATA
23 GND
24 WRITE ENABLE
25 GND
26 TRACK 0
27 GND
28 WRITE PROTECT
29 GND
30 READ DATA
31 GND
32 SIDE1 SELECT
33 GND
34 DISK CHANGE

CN2
1 GND
2 SHFCLK
3 GND
4 LP
5 FLM
6 GND
7 DU3(P0)
8 DU2(P1)
9 DU1(P2)
10 DU0(P3)
11 DL3(P4)
12 DL2(P5)
13 GND
14 DL1(P6)
15 DL0(P7)
16 P8
17 P9
18 P10
19 P11
20 GND
21 P12
22 P13
23 P14
24 P15
25 P16
26 P17
27 GND
28 P18
29 P19
30 P20
31 P21
32 P22
33 P23
34 GND
35 +5(VCC)
36 +5(VCC)
37 +12V
38 +12V
39 GND
40 GND
41 DE
42 ENABLK
43 GND
44 VEE

J3
6 CON1
7 CON2
8 CON3

J2
1 +V_CCFL
2 NC
3 NC
4 -V_CCFL

J4
15 FRAME
14 LOAD
13 CP
12 DISOFF
11 VDD
10 VSS
9 VEE
8 DU0
7 DU1
6 DU2
5 DU3
4 DL0
3 DL1
2 DL2
1 DL3

COM1
DCD 1
RXD 2
TXD 3
DTR 4
GND 5
DSR 6
RTS 7
CTS 8
RI 9

DB2
COM2
DCD 1
RXD 2
TXD 3
DTR 4
GND 5
DSR 6
RTS 7
CTS 8
RI 9

CN6
KEYBOARD CLOCK 1
GND 2
KEYBOARD DATA 3
RESERVED 4
+5VDC 5
RESERVED 6
KEYBOARD

CN3
STROBE 1
DATA0 3
DATA1 5
DATA2 7
DATA3 9
DATA4 11
DATA5 13
DATA6 15
DATA7 17
ACKNOWLEDGE 19
BUSY 21
PAPER EMPTY 23
PRINTER SELECT 25
AUTO FORM FEED 2
ERROR 4
INITIALIZE 6
PRINTER SELECT IN 8
GND 10
GND 12
GND 14
GND 16
GND 18
GND 20
GND 22
GND 24
NC 26
PRINTER

GND

DRAWN			TYPE	IB-581
May 6 '99 T.YAMASAKI			名称	ターミナルユニット
CHECKED				回路図
APPROVED			NAME	
SCALE	MASS kg	APPLICABLE TO; (MODEL)	BLOCK NO.	TERMINAL UNIT
DWG NO. C5609-K03- C	16-001-3132- 3			SCHEMATIC DIAGRAM

FURUNO ELECTRIC CO., LTD.

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