FURUNO DEEPSEA WORLD

VIA INMARSAT™

FURUNO®

Inmarsat-B MOBILE EARTH STATION

Models FELCOM 81A/81B

The future today with FURUNO's electronics technology.

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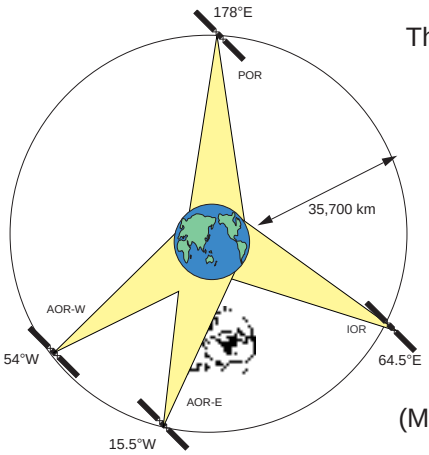
Catalogue No. W-3237c

FELCOM 81

FELCOM 81A: (Class 1) GMDSS compatible version
FELCOM 81B: (Class 2) No-Telex version

Inmarsat-B System

The International Maritime Satellite Organization (*Inmarsat*) is a Partnership of member countries, founded in 1979. With the purpose of providing global communications for ships, land mobile and aircraft, using satellites to overcome the problems that exist with conventional radio communications, Inmarsat operates a network consisting of the *space segment, ground segment* and *mobile earth stations*.



The Inmarsat space segment consists of 4 satellites orbiting above the equator at the same speed as the earth rotates. They thus remain fixed above the same location on the earth. A satellite orbits at an altitude of 35,700 km as it sees 1/3 of the earth's surface. The satellites work as repeater stations between the coast earth stations (CESs) and mobile earth stations (MESs) on different channels for different services- Inmarsat-A, B, C and M.

Inmarsat-B System Feature

- Digital counterpart of the Inmarsat-A system providing all Inmarsat-A services
- Lower traffic charges - about half of Inmarsat-A for telephone, facsimile and data communication by reduced system operation cost. Telex charge is also about half thanks to doubled data speed.
- *Addressing information* to ensure that a call is received only by the intended party. *Scramble* technique inherent in system ensures that no other MES can intercept a call (complete privacy).

Charges

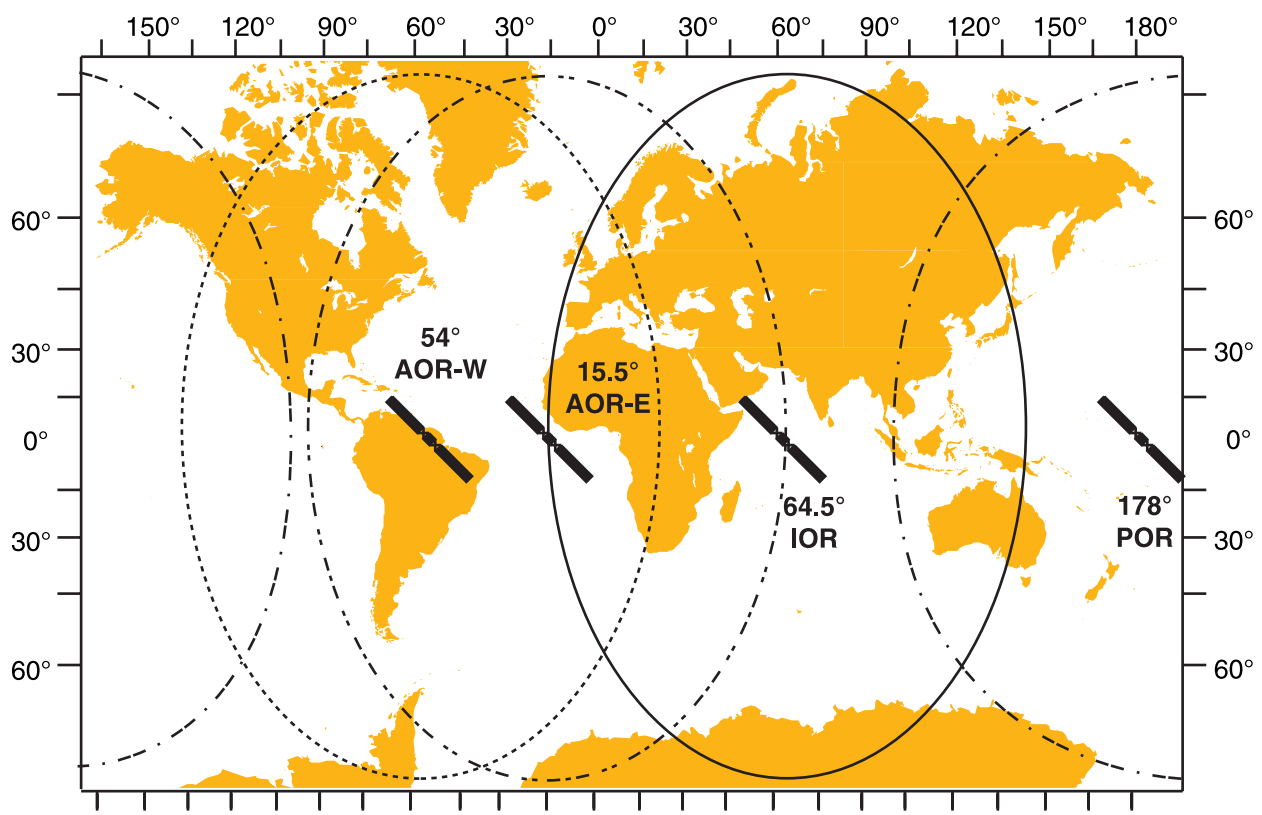
(Example of charges for Direct call from Mobile Station to Japan via KDD)

	Inmarsat-B	Inmarsat-A
Telephone	US$3-4/minute	US$6-7/minute
Telex	US$3-4/minute	US$4.3/minute
Data	As for telephone	As for telephone

(US$1=JPY 117 as of January 23, 1997)

(KDD Inmarsat service, as of March 1st, 1996)

Global Coverage



FELCOM 81 Feature

- Highly reliable antenna design.
  - Non-rewinding antenna with inclinometers which maintain uninterrupted communications during 360 degree course change of ship
  - Robust antenna post
- Automatic antenna positioning and automatic setup of component units
- 9.6 kbps data communication
- 9.6 kbps high speed fax
- Optional 64 kbps HSD (High Speed Data) modern
- Radionav data through digital interface by IEC 1162
- Basic system works on 24 VDC
- Optional credit card reader is available
- Worldwide service network

The FELCOM 81 is an advanced ship earth station terminal for vessels that require quality worldwide communications. It provides the overall range of Inmarsat-B communication services such as Two-way duplex telegraphy (telex), Shore-to-ship one-way telegraphy, Two-way duplex telephone networks, Facsimile and Data Transmission over telephone networks, E-mail via Internet, Distress and urgency communications, and other services the Inmarsat-B system provides to maritime users.

The FELCOM 81 is available in Class 1 and 2 configurations. The class 1 configuration (FELCOM 81A) provides telephone, facsimile, telex, polling and data reporting services and satisfies GMDSS requirements. The class 2 configuration (FELCOM 81B) consists of only the components required for telephone and facsimile services.

The FELCOM 81A, class 1 system is made up of an Antenna, Terminal Unit, Communication Unit, Printer and a Telephone. The FELCOM 81B, class 2 system consists of the same units, less the Terminal Unit and the Printer.

For users to enjoy many features that Inmarsat can provide, various options are available such as facsimile and additional telephones and 64 kbps HSD Modem. For user's convenience, payment for use can be made by credit card when an optional Credit Card Reader is installed.

To avoid a false distress alert (IMO A.808(19)), two dedicated distress alert units, IB-350 (Telex) and IB-360 (Telephone) are supplied.

Improved non-rewinding antenna a
reliability and high performance.
between ships, offices, mobile and

Essential Component Units

Antenna Unit IB-181

The stylish radome contains a helix radiator with a 1 m parabola and electronics for transmit and receive functions. Antenna stabilization is achieved by using the three-axis active method as well as employing a quick response vertical gyroscope. This mechanism allows the antenna to keep pointing to an appropriate satellite during ship's movement and course changes.

Electronic circuits on the antenna pedestal are coupled with the post via a rotary joint. This arrangement eliminates antenna rewind thereby ensuring uninterrupted communications during a course change of the vessel. Maximum attention is paid to the design of the antenna stabilizing mechanism and the supporting post. The layout is such that it allows an easy access to the major components in the radome for service personnel.

Terminal Unit IB-581
(Standard for Class 1 system)

This is a dedicated monitor unit designed by FURUNO for the Inmarsat system and narrow-band direct-printing system. It fully satisfies the EMC requirements set forth in IEC60945. The 9.5" monochrome LCD display provides clear and non-glaring views with adjustable brightness for night and day use. The unit functions as a monitor telex terminal as well as an interactive control for the Communication Unit IB-281. For 9.6 kbps data communications are operated without needing an extra unit. A PC is required to set up the FELCOM 81B (class 2) system where the IB581 is not normally used.

Communication unit IB-281

The communication unit comprises RF and IF amplifiers, signal processing circuitry, voice coder/decoder (*codec*) which converts the talker's voice to a digital signal and vice versa, interfaces for fax, radionav and gyro-compass, etc. Antenna tracking is done automatically after initial setting of the compass on this unit. The system program is contained in this unit. A call inhibition key is provided to inhibit an unauthorized call. Arranged on the front panel are LEDs showing which ocean region is selected, synchronized status on NCS common channel, and receiving and transmitting level. The failure light warns about any abnormality of intersatellite tracking. Failures are located by the selfcheck program.

and stabilization mechanism for Quality communications provided d private phones

64 kbps HSD Modem IB-681

An optional HSD modem IB-681 provides the Inmarsat-B with High Speed Data service at 56 or 64 kbps. It offers 64 kbps connections to international ISDN and may be utilized for a wide range of applications such as high-speed data/video/graphics transfer, multiplex voice/data/fax, videoconferencing, Lan interconnections, telepresence, telemedicine, tele-education, etc.

Facsimile machine

This is a G3 fax machine as used in offices and the home. Faxes are printed on thermal paper. Up to 10 sheets of A4 or A5 size documents may be stacked in the automatic document feeder. Any compatible machine may be used without Inmarsat type test, but the user should be aware of National Regulations on EMC.

Telephone

One telephone set is standard supply. It permits direct calls to any telephone number on the national and international public switched telephone networks (PSTNs). After selecting an Ocean Region and a Coast Earth Station Code, the rest is as easy as using an ordinary telephone set. Re-dialing and abbreviated dialing are also available. 5 additional ports are provided for telephone or facsimile and additional ID numbers. Received calls can be transferred to another telephone within the system, and they may be used as an intercom.

Printer PP-510

The PP-510 Inmarsat-approved printer is required for the Class 1 configuration. The PP-510 is a serial impact dot matrix printer; all incoming and outgoing telex messages are automatically printed.

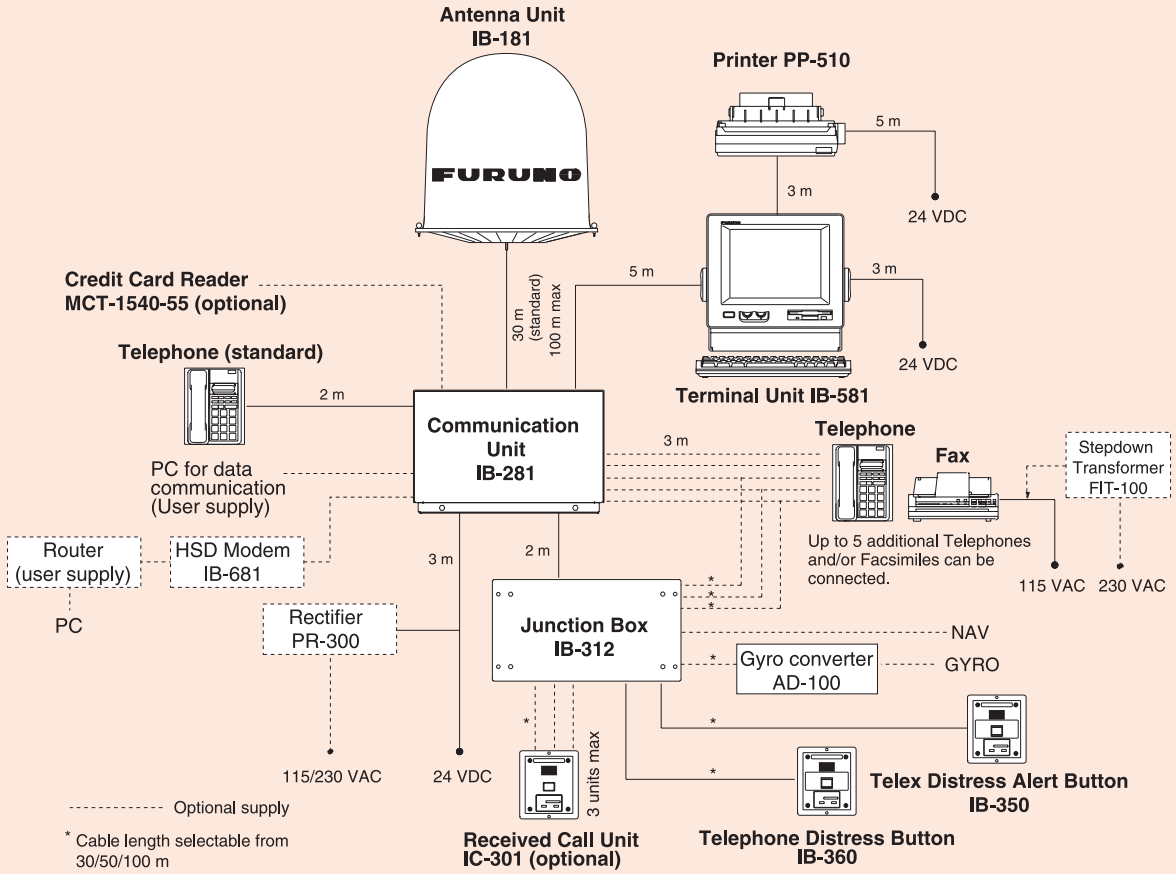
Dedicated Distress Alert Units

The dedicated distress alert units for telephone and telex modes, respectively, are used to initiate distress calls from where the ship is normally navigated, and other designated positions. They fully meet IMO A.808(19) to protect against any false alert transmission.

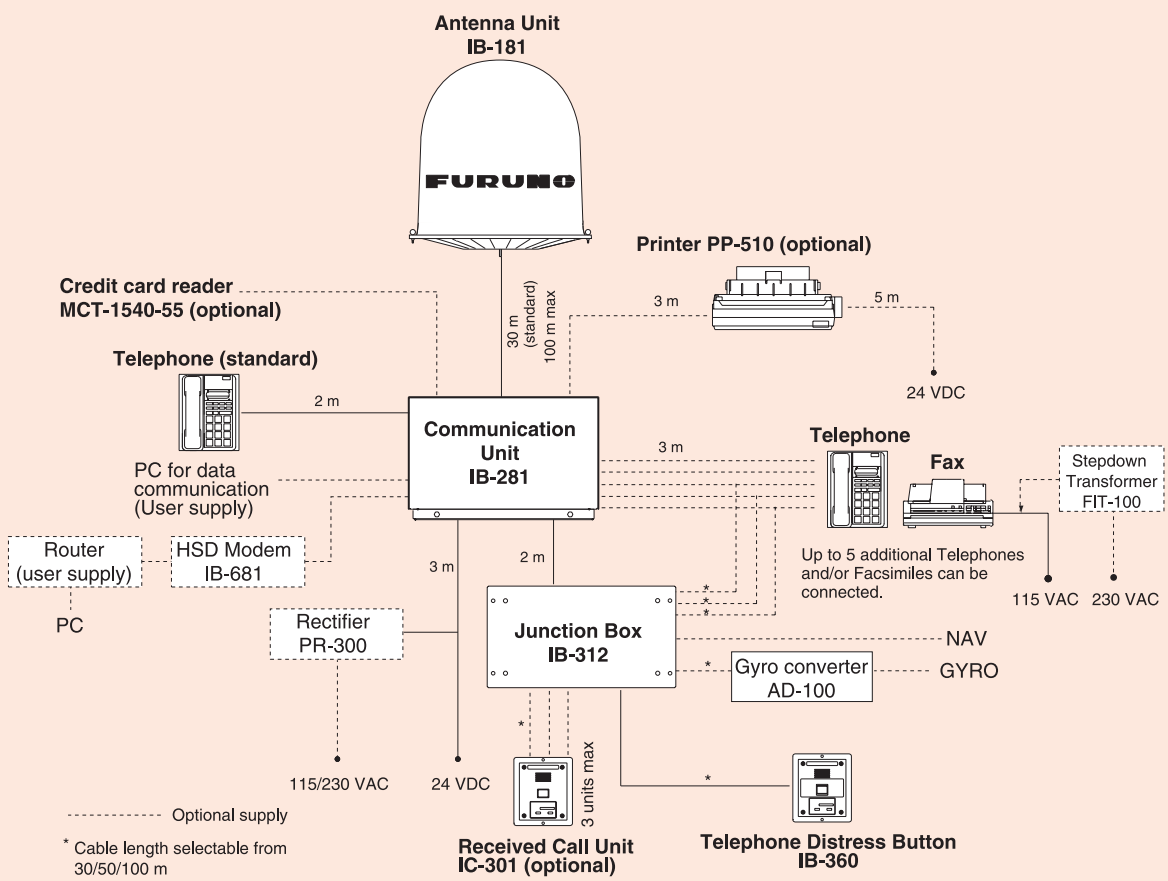
Telex Distress Alert Button IB-350

Telephone Distress Alert Button IB-360

Interconnection diagram for the FELCOM 81A (Class 1)—GMDSS compatible version

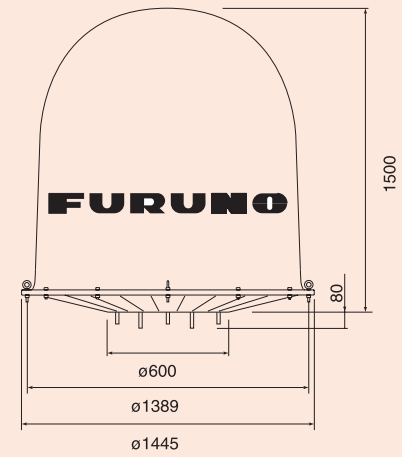


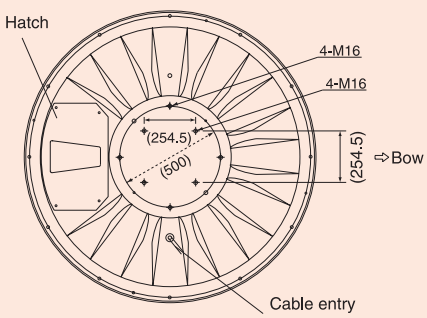
Interconnection diagram for the FELCOM 81B (Class 2)—No-Telex version



Unit Dimensions and Weight (unit in mm)

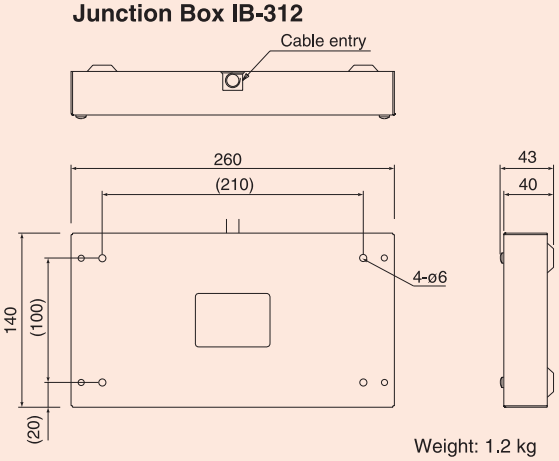
Antenna Unit IB-181





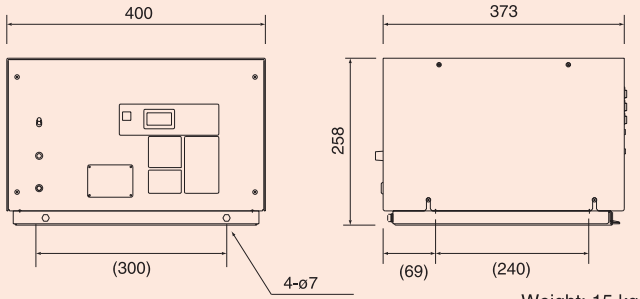
Weight: 95 kg

Junction Box IB-312



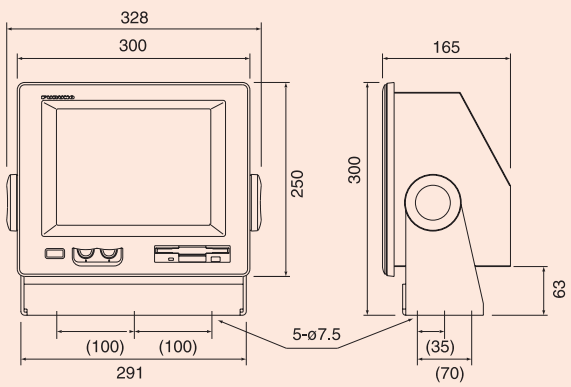
Weight: 1.2 kg

Communication Unit IB-281



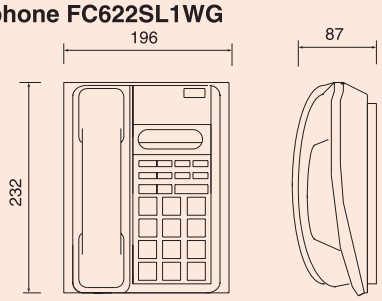
Weight: 15 kg

Terminal Unit IB-581



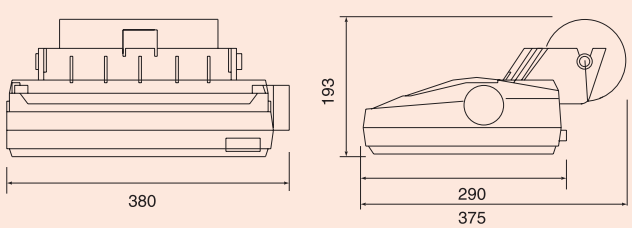
Weight: 6 kg

Telephone FC622SL1WG



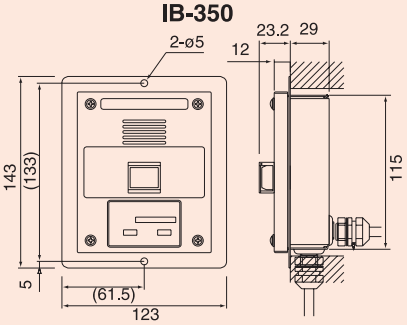
Weight: 0.75 kg

Printer PP-510



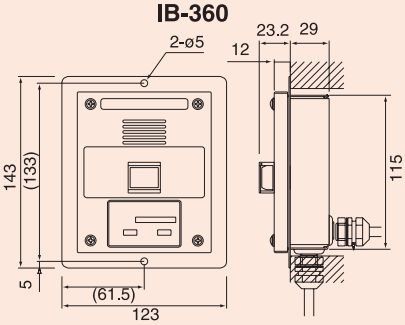
Weight: 3.3 kg

Telex Distress Alert Button IB-350



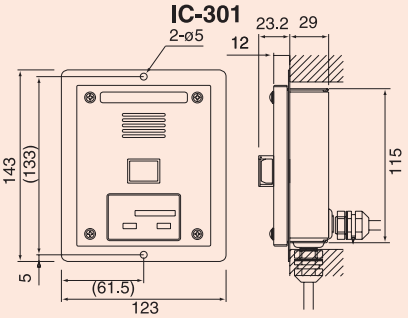
Weight: 0.5 kg

Telephone Distress Button IB-360



Weight: 0.5 kg

Received Call Unit IC-301



Weight: 0.5 kg

SPECIFICATIONS OF FELCOM 81A/81B

Rules and Regulations
Complies with Inmarsat SDM, IMO A.808 (19), A. 694(17), IEC 945

System Parameters
Frequency TX: 1626.5 - 1646.5 MHz
RX: 1525.0 - 1545.0 MHz
Voice codec Digital coding/decoding
Power supply 24 VDC, 300 W max

Antenna Unit
Type Helix rod with ø1 m reflector
Stabilization Three-axis active stabilization
Tracking 360° non-rewind, 90° elevation
Output power EIRP 33, 29, 25 dBW as designated by CES
Ship's motion Roll: ±30°/8 s, Pitch : ±10°/6 s,
Yaw: ±8°/50 s, Rate of turn: 6°/s

Terminal Unit (FELCOM 81A)
Type IBM-PC/AT compatible PC with FDD
CPU i386SX, 40 MHz
Display 9.5" monochrome LCD (640 x 480 dots)

Printer Compulsory for Class 1
Type PP-510
Serial impact dot matrix (thermal transfer)
Printing speed Draft: 200 char/s, NLQ: 50 char/s
Power supply 24 VDC

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Equipment List

Standard supply (FELCOM 81A, Class 1)

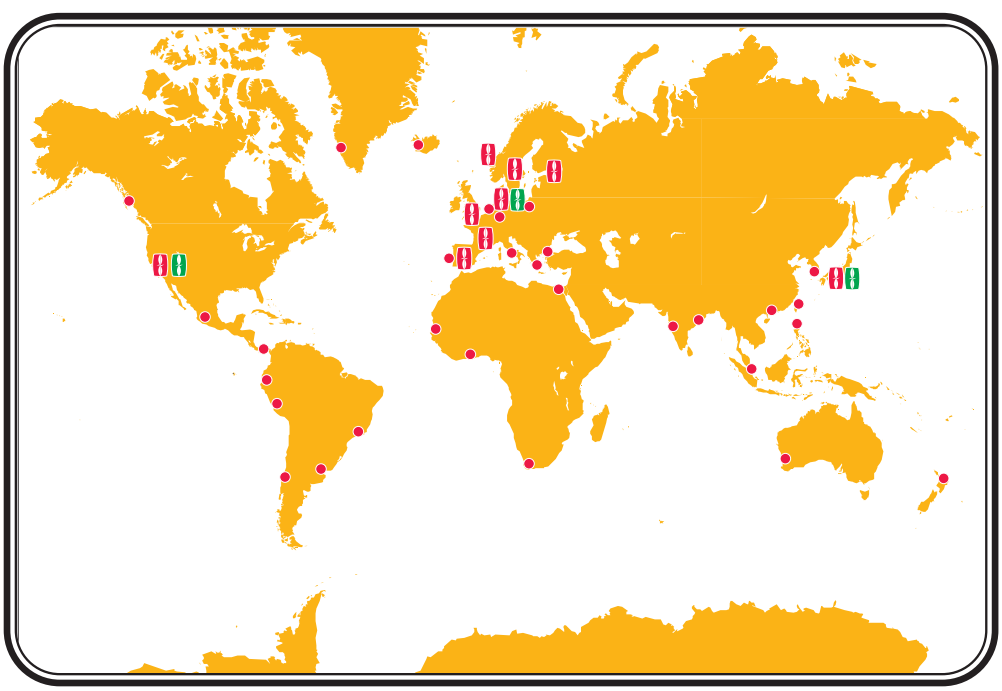
1.	Antenna Unit IB-181	1 unit
2.	Communication Unit IB-281	1 unit
3.	Terminal Unit IB-581	1 unit
4.	Telephone FC622SL1WG	1 set
5.	Printer PP-510	1 unit
6.	Junction Box IB-312	1 pc
7.	Telephone Distress Button IB-360	1 pc
8.	Telex Distress Alert Button IB-350	1 pc
9.	Gyro Converter AD-100	1 unit
10.	Installation material, accessories, spare parts	1 set

Standard supply (FELCOM 81B, Class 2)

1.	Antenna Unit IB-181	1 unit
2.	Communication Unit IB-281	1 unit
3.	Telephone FC622SL1WG	1 set
4.	Junction Box IB-312	1 pc
5.	Telephone Distress Button IB-360	1 pc
6.	Gyro Converter AD-100	1 unit
7.	Installation material, accessories, spare parts	1 set

Optional (FELCOM 81A/B)
1. Rectifier PR-300 for AC mains
2. Facsimile PFX-50
3. Stepdown Transformer FIT-100 for 230 VAC mains
4. Received Call Unit IC-301 (Alarm for telephone/telex/fax)
5. Additional Telephone FC622SL1WG
6. Additional Printer PP-510
7. Credit Card Reader MCT-1540-55
8. Modular Jack Box MJ-2S
9. 64 kbpt HSD Modem IB-681

WORLDWIDE SERVICE NETWORK



FURUNO's Worldwide Service Organization provides spare parts and professional technical back-up for DEEP SEA vessels. The Service Organization is composed of three Continental Service Centers located in Denmark, the USA, and Japan with over 40 national agents. These agents are responsible for co-ordination of service for FURUNO equipment on board vessels at DEEP SEA ports through out their territory.

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