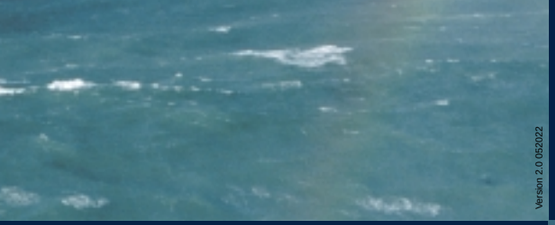

Version 2.0 052022

Capsat®Fleet77 – global maritime connectivity via Inmarsat Fleet F77

Fleet

via inmarsat

www.tt.dk/fleet

Distributor:

Ambizion

Thrane & Thrane

We bring satellite communication down to earth

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Lundtoftegårdsvej 93D • 2800 Kgs. Lyngby
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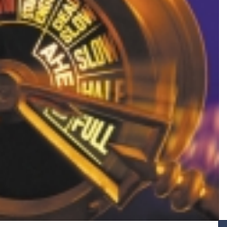
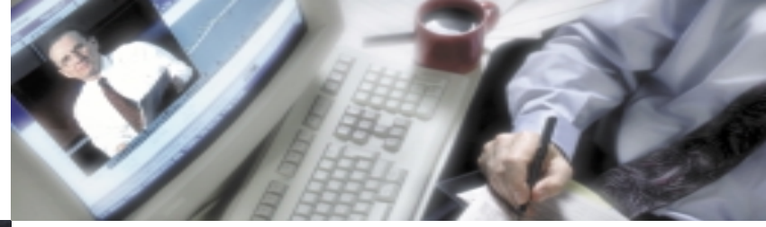


UP-TO-THE-MINUTE KNOWLEDGE IS THE KEY



Capsat®Fleet77 – maritime satellite communication of the future

Fleet managers, ships' captains, and yacht owners need constant and reliable access to up-to-the-minute information critical to the safety and operation of their vessels, and to their business. The Capsat® Fleet77 maritime satellite communications system from Thrane & Thrane meets these needs via the new Inmarsat global Fleet F77 service, a breakthrough in maritime communications.

The Inmarsat Fleet F77 service combines the high quality and speed of an up-to 64 Kbps mobile ISDN service with the flexibility and "always on-line" capability of the Inmarsat Mobile Packet Data Service (MPDS). Together Capsat® Fleet77 and Inmarsat Fleet77 provides unparalleled real time access to information, through the flexible services supported by Inmarsat Fleet F77:

- Speech
- 3.1 kHz audio
- Mini-M voice
- ISDN
- MPDS

Shipboard communications hub

Capsat® Fleet77 offers a fully stabilized antenna with a transceiver that can serve as the hub of your shipboard communications network. This enables constant online access at multiple on-board locations to e-mail services, the Internet, corporate intranets, and Virtual Private Networks (VPNs) from virtually anywhere in the world.

Cost-effective communication

Capsat® Fleet77 is a global communications system that adapts to your changing needs for voice, fax, e-mail or Internet services. Capsat® Fleet77 enables you to select the most cost-effective channel for each individual communication:

ISDN

ISDN services provide a high-capacity channel with a constant data stream at speeds as fast as up-to 64 Kbps. ISDN is normally the best option for up- or down-loading larger files such as compressed video or graphics. This traffic is charged by the length of time the user is online.

MPDS

The MPDS service is charged "per megabit". This means that you are charged only for the amount of data sent and received, not for the time you are connected.

Designed for short-burst data transmissions, MPDS is perfect for sending and receiving e-mail, browsing the Internet or accessing the company intranet, applications and database queries. Together with the Capsat® Fleet77, MPDS transforms a remote vessel into just another node on your worldwide network, bringing it within instant reach 24 hours a day, seven days a week.

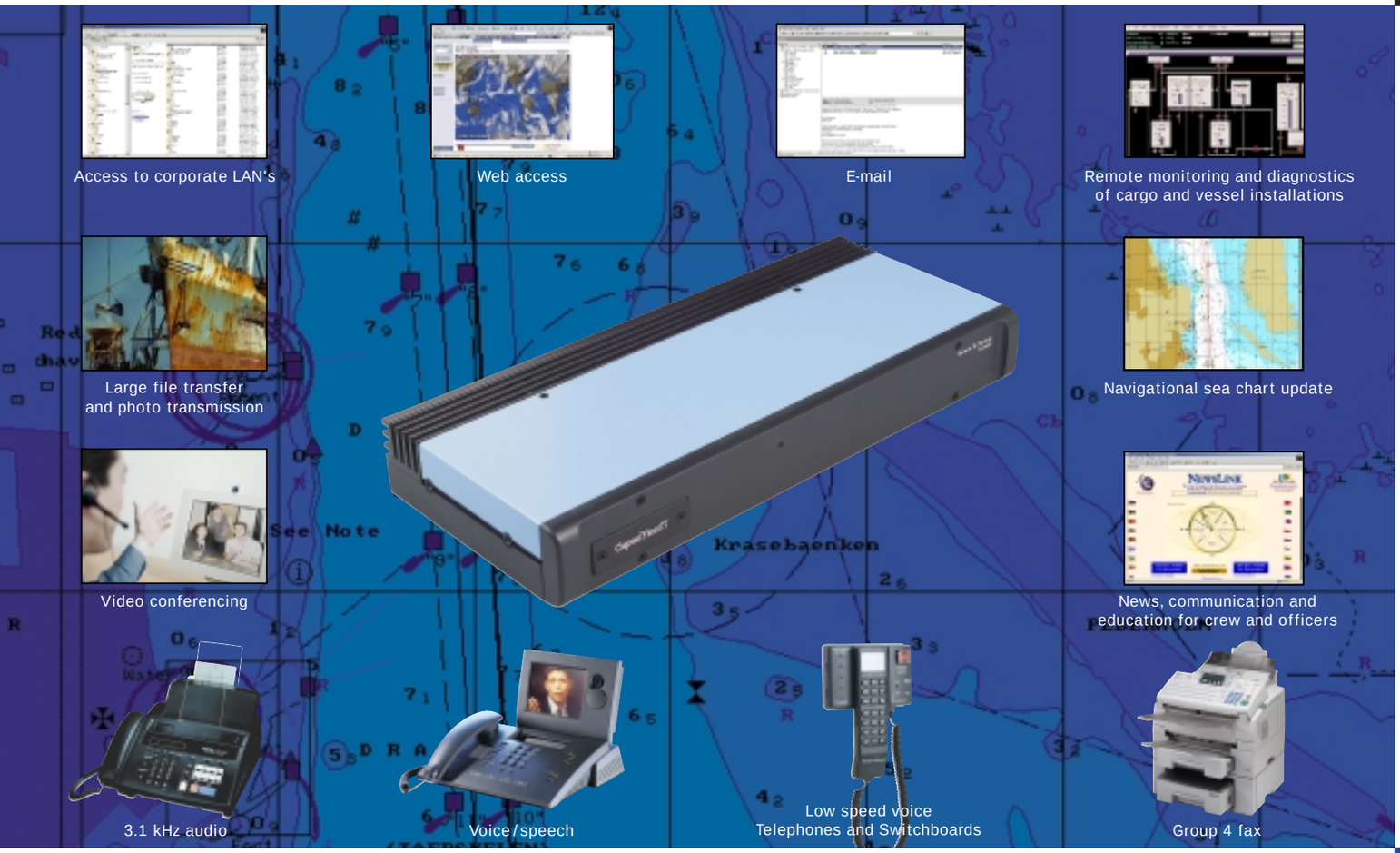
Inmarsat Fleet F77 - connecting vessels worldwide now and in the future

Inmarsat satellite communications and data solutions are designed to meet the specific needs of the maritime industry. The new Inmarsat Fleet F77 service equips mariners with a powerful and versatile communications tool with global coverage.

Inmarsat Fleet F77 meets the International Maritime Organization's (IMO) latest criteria for new services within the GMDSS safety standard. Fleet F77 supports accreditation of vessels' systems and enables high-priority distress, urgency and safety calls to override any lower priority communications through 4-level voice pre-emption and prioritisation.

Compatibility with the next generation of satellites scheduled for launch in 2004 is your assurance that your investment today in Inmarsat Fleet F77 and Capsat® Fleet77 will continue to pay dividends in the future.

ENTERING A NEW WORLD OF APPLICATION OPPORTUNITIES WITH CAPSAT® FLEET77



Capsat® Fleet77 offers a new and wider range of cost-effective data applications to the deep-sea market. This provides vessels virtually anywhere in the world with access to the same office applications and resources as any other corporate user. Capsat® Fleet77 also enables you to optimise business opportunities and minimise costs by integrating your entire fleet into your corporate network with every vessel permanently online.

MPDS Applications

Access to corporate LAN's
Ship owners can now integrate administrative procedures such as crew documentation, cargo plans and purchase routines for every single vessel in their shore-based local area networks (LANs).

Web access
The Worldwide Web offers opportunities for cost reductions and enhanced efficiency by providing immediate access for example to weather forecasts and procurement services.

E-mail via MPDS
E-mail is a universal means of business communication. Because MPDS charges according to the volume of data and not by the minute, the vessel can remain online all the time at no extra cost. This enables continuous work processes rather than the traditional routine of sending and receiving e-mails and transferring files once or twice a day.

Remote monitoring and diagnostics of cargo and vessel installations
Most modern ships today are equipped with sophisticated telemetric systems for monitoring of cargo and onboard technical installation including main and auxiliary engines. Remote monitoring and troubleshooting can now be performed via MPDS or ISDN, thus saving valuable time and travel expenses.

Navigational sea chart update
Constantly updated sea charts mean safe and efficient navigation. Downloading of electronic sea charts via satellite means that the bridge has constant access to the latest navigation information available.

Upgrade of onboard IT systems
Modern ships run numerous software applications to support daily management, maintenance and operation. Upgrading these systems traditionally meant the necessity of a visit by a service engineer. Capsat® Fleet77 enables your IT department not only to transfer the update, but also to gain direct real-time access to onboard systems in order to supervise installation.

News, communication and education for crew and officers
Ship owners today must make an extra effort to attract the best-qualified crew and officers. Capsat® Fleet77 can make the difference by providing multimedia access to news, communication with families, and remote education programmes.

ISDN Applications

E-mail via ISDN
Capsat® Fleet77 gives you the choice of sending e-mails via MPDS or ISDN. ISDN is typically the preferred option for e-mails containing large picture or file attachments.

Video conferencing
Video conferencing requires fast transmission of large amounts of data. Capsat® Fleet77 now enables ship-to-shore video conferencing via ISDN to take advantage of more cost-effective charging by the minute.

Large file transfer and photo transmission
ISDN is the best option for transmission of large amounts of data as it provides a constant 64-kbps connection charged by time spent online.

Group 4 fax
Group 4 fax technology reduces fax transmission times and thus ISDN charges.

Low speed voice Telephones and Switchboards

Capsat® Fleet77 now extends the very popular low speed voice service, which was previously available only via the Mini-M in spot beam areas, with pole-to-pole coverage. The service can of course also be used as a switchboard solution for multiple handsets (voice coded).

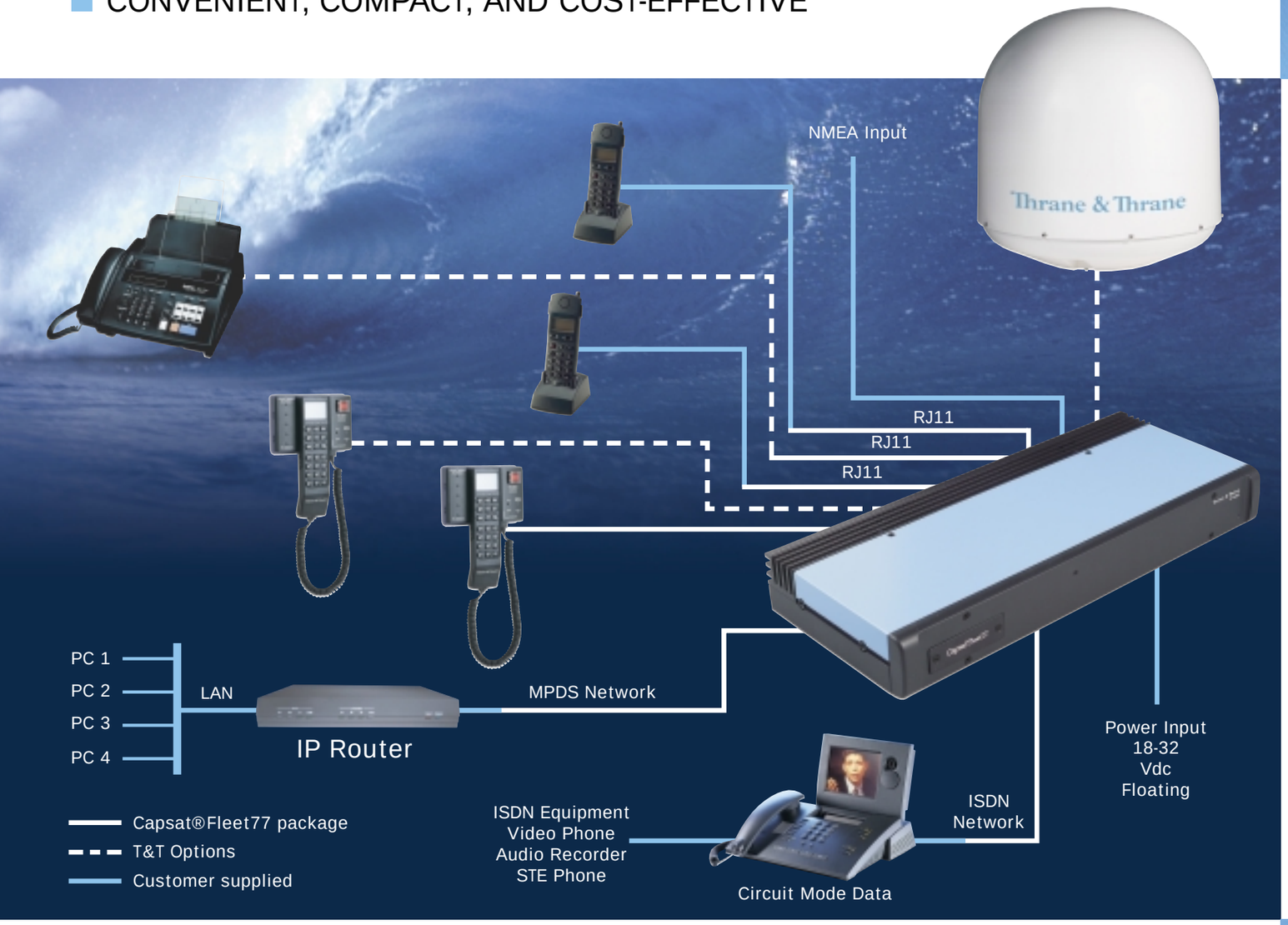
Voice / speech

The high quality service offered by the Capsat® Fleet77 enables the use of ISDN telephony with the option of onboard multiplexing to split the channel between handsets at several locations.

3.1 kHz audio

Analogue modems and G3 faxes can be used over the audio 3.1 kHz channel (14.4 kbps).

CONVENIENT, COMPACT, AND COST-EFFECTIVE



DIMENSION AND WEIGHT:	
Transceiver (TT-3038C):	2.6 kg , 53.75 x 377 x 163.7mm
Maritime Stabilised Antenna (TT-3008C):	27 kg , Diameter: 840mm, Hight: 880mm
Cradle for the handset (TT-3622B):	0.25 kg , 100m x 145mm x 42mm
Handset (TT-3620F):	0.24 kg , 200m x 52mm x 33mm
TECHNICAL SPECIFICATIONS	
Antenna:	Sensor stabilised platform with directional RHCP Antenna. No cable unwrap. Maximum pointing error +/- 5 deg.
Antenna Cable:	N/N male, max. cable loss 12 dB at 1.6 GHz, 0.5 ohm at DC
Antenna Connector:	N female (50 Ω)
Ship Motions:	Roll +/-25 deg, Pitch +/-15 deg, Yaw +/-8 deg, Surge 0.2g, Sway +/-0.2g, Heave +/-0.5g, Turning Rate +/-12 deg/s, Headway 30 knots
Transceiver Connector:	TNC female(50 Ω), short TNC/N cable supplied
Rx Freq. Band:	1525.0 - 1559.0 MHz
Tx Freq. Band:	1626.5 - 1660.5 MHz
TRANSCEIVER INTERFACES:	
Voice:	4.8 kbps AMBE, 64 kbps broadcast
ISDN:	Euro ISDN 64 kbps and US ISDN 56 kbps
Phone Interface:	2-wire 600_ CCITT rec. G.473, standard DTMF telephones, RJ-11 modular jack.
Fax Interface:	2-wire 600_ CCITT rec. G.473, T.30 Groups III Fax, RJ-11 modular jack.
Data Interface:	2 x Serial standard RS-232E
USB Interface:	USB slave interface.
POWER SUPPLY AND CONSUMPTION	
Power Supply:	18 - 32 Vdc floating
Power Consumption:	70W TX-mode (typ.), 20W RX-mode (typ.), Max. 90W [TBD]
ENVIRONMENTAL CONDITIONS:	
Ambient Temperature:	-25 C - +50 C for EME 0 - 45 C for IME
Relative Humidity:	BDU: 95% non-condensing at +40˚C ADU: 95% non-condensing at +40˚C
Vibration (antenna):	4-10 Hz 2.54 mm, 10-15 Hz 0.76 mm, 15-25 Hz 0.40 mm, 25-33 Hz 0.23 mm
Mechanical Shock:	20g/11ms half-sine

The Capsat®Fleet77 package

The basic Capsat® Fleet77 package consists of a transceiver, an antenna and a handset and distress cradle. The terminal is an integrated communications centre providing links to phones, fax machines and even shipboard computer networks.

Simple installation

With its lightweight and compact transceiver and antenna, the Capsat® Fleet77 terminal is quick and easy to install. The tracking antenna is 88 cm high, has a diameter of just 84 cm and weighs a mere 27 kg. The antenna is line-replaceable, features a bottom hatch for easy maintenance access, and can be located up to 70 metres from the transceiver.

Rapid configuration

The Capsat® Fleet77 transceiver provides a constant two-way link to Inmarsat satellites offering Inmarsat Fleet MPDS communications. User-friendly software on the accompanying CD-ROM enables simple configuration from a standard PC. If necessary, the configuration module can be transferred with its memory-resident data to a replacement transceiver without the need for reconfiguration.

Service and support

The Capsat® Fleet77 system sets new service standards with easily replaceable components and modules. Supported by a dedicated network of certified distributors and service centres, Capsat® Fleet77 is built by Thrane & Thrane for you to rely on. For Capsat® Fleet77 distributor details, go to www.tt.dk/fleetdist. Certified Service Centres can be found at www.tt.dk/csc.