

Inmarsat Fleet F77 fax solutions

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1. INTRODUCTION:

Facsimile communications over Inmarsat Network can be achieved in various ways, these include deploying:

- Group 3 / Super Group 3 fax machines
- Group 4 fax machines
- Enhanced solutions based upon the Internet Protocol



(1.1) What is a G3 fax machine?

Most fax machines in use today are of the G3 type, and transmit data at speed of up to 14,400 kbps with error correction. Although scanning, encoding and compression techniques are performed digitally, the actual transmission is still performed by what is essentially a built-in analogue-based modem.

(1.2) What is Super G3 fax machine?

Super Group 3 communication is a new international standard that allows transmission and reception at up to 33.6 Kbps and uses fax handshaking techniques (called v.8 protocols in the fax industry) to further reduce transmission times.

Super Group 3 fax machines save time and money by shortening all three components of fax transmission: handshaking, page transmission and retraining.

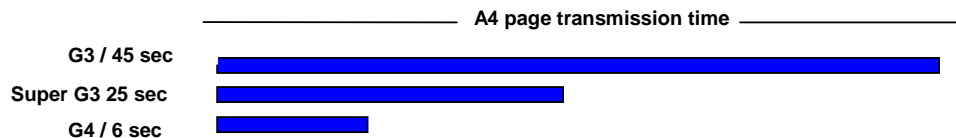
By focusing on all three phases of fax transmission, Super Group 3 fax machines provide dramatically faster transmissions when communicating with other Super G3 units.

(1.3) What is a G4 fax machine?

Group4 fax machines are designed for use with ISDN (Integrated Services Digital Network), offering faster transmission speeds, higher quality and improved transmission reliability.

The main difference between Group 3 and Group 4 fax machines is that Group4 does not convert the scanned information into an analogue format before transmission.

“It takes about six seconds to transmit an A4 page between G4 fax machines, compared to 45 seconds for G3 machines”



(1.4) What is Fax over IP?

A number of solutions are available to provide a bridge between a user's e-mail system and their fax requirements both at the mobile/remote side as well as the destination side. The types of solutions available here are:

1.4.1 Electronically created documents in Word, Excel, Power Point can be converted to a fax format directly (with software drivers) and sent to standard fax destinations using fax modems /TA's that operate directly to a telephone or ISDN line. (e.g. Winfax Pro, RVSCOM) The receiving destination is typically a fax machine. Automatic faxing to multiple destinations is a typical application of this solution.

1.4.2 Paper documents can be scanned, attached to an email and transmitted digitally to one or more destinations or email addresses. This solution is deployable in many ways:

- For the first solution, the system requires that a working email client and messaging Hub/server be in place. Normal benefits of email apply such as Compression, encryption, multiple addressing, forwarding, confirmations and of course printing the document out.
- Alternatively, the destination addresses can infact be ordinary fax numbers worldwide. This typically requires the messaging server/hub to have the capability of converting and forwarding to the fax destinations in either Group 3 or Group 4 protocols. This service is usually operated as a worldwide service with numerable Points of Presence (PoP) located strategically worldwide. Typical applications of this solution are to bring economies of scale to International fax communications and utilising existing leased/economical Internet connections. e.g. Jfax etc
- New fax machines recently available, possess options that have much of this messaging and IP connectivity built right in. With their scanning capability, these fax machines are able to replicate the messaging process directly without additional hardware or software. This solution does require subscription to an email and Internet service. E.g. OKI, Panasonic etc

The fax gateway decides where the PoP (Point of Presence) nearest to the fax number is and switches the fax message onto the public telephone network at that location. Notification and reply of each fax sent is delivered to the sender by e-mail. Home office and mobile users can use their favourite web browser to access the Electronic Fax providers web fax feature and send a fax directly from the browser.

Solutions using the Internet this way provide a number of benefits & opportunities:

- To use the Internet to send documents from the desktop to any fax machine connected to the public telephone network or vice versa.
- This is substantially cheaper than using the public telecom network and brings fax into line with e-mail.

2. Commissioning and Configuring the Inmarsat Fleet F77 for ISDN Group4 Fax:

2.1 Commissioning Inmarsat Fleet F77:

In order to successfully interface, configure and use the range of services that Inmarsat Fleet F77 provides it is important that the terminal is commissioned properly. You must know in advance the types of applications and services you intend to utilise. The table below shows a typical example of commissioning details necessary before you can successfully use the Fleet F77.

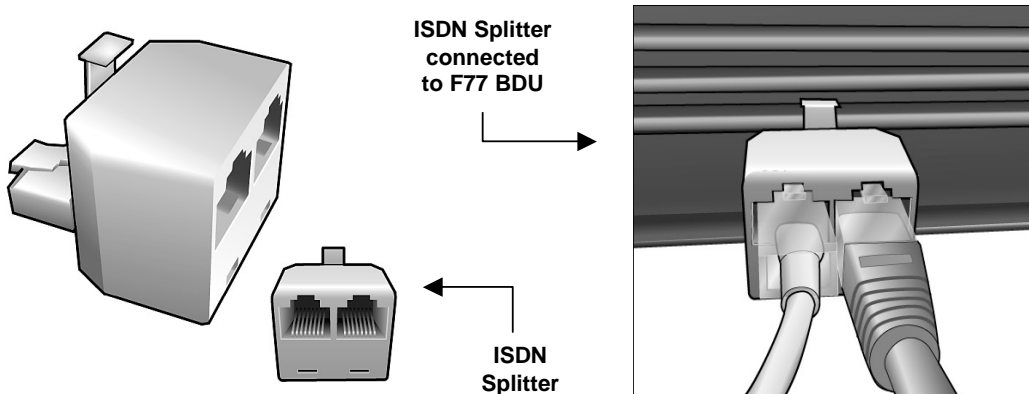
SERVICES	IMNs	ID ASSIGNED	HAND SET ROUTING	ISDN VIRTUAL PORT ROUTING
			* = INCOMING # = OUTGOING	
Mini-M Voice	76001xxxx	001	*NUMBER#	NUMBER
Speech	60022xxxx	145	*NUMBER	NUMBER
Audio 3.1 kHz- Group 3 fax	60022xxxx	097	NUMBER	*NUMBER
MPDS	60022xxxx	161	-	-
64Kbits/s Group 4 fax	60022xxxx	081	-	*NUMBER#

In most cases you will be interfacing 2 ISDN devices – a data terminal adapter and a Group 4 fax machine. For this you will only need to commission one ISDN IMN. (see above) (ISDN circuits possess a capability to route calls to selected devices on their own) If the Group 4 fax machine supports Group 3 transmissions as well and you wish to be able use this functionality, then you must also obtain one 3.1kHz audio IMN commissioned as well.

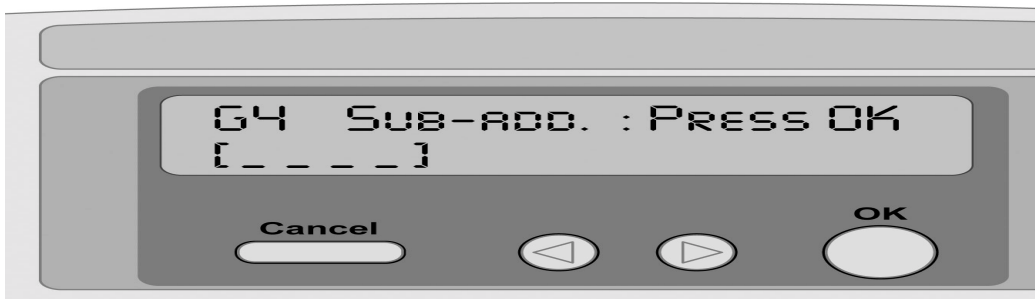
These “**virtual**” ports (ISDN and 3.1 kHz audio IMN’s) must now be programmed through the Fleet F77 handset and enabled for outgoing & incoming calls as well as for correct Routing. This is described in your manufacturer user manual guide.

3. Interfacing the Fax Machine to the Fleet F77:

The Fleet F77 BDU, provides a number of interfaces. The Group 4 fax machine needs to be connected to the ISDN RJ-45 port. In case the BDU possesses only one physical RJ-45 port, an **ISDN-Splitter** can be used to allow multiple ISDN devices to connect to the Fleet F77. Appropriate configuring of the routing inwards of calls will allow automatic forwarding of data calls to one device (i.e. ISDN TA) while fax calls will be diverted to the Group 4 fax machines by MSN identifier. (This is a particular feature of ISDN links) See diagram below:



4. Configuring your Fax machine:



The Group 4 fax machine is connected directly to the ISDN RJ-45 interface on the F-77 BDE. Depending upon the make of the Fax machine, you will usually be required to program your fax machines with the MSN numbers (Multi Subscriber Number). The MSN feature enables the assignment of multiple numbers to a single ISDN BRI channel. (like that provided by the Fleet F77 unit) This is useful for mapping multiple devices to a single channel. In the case of the T&T F77 unit, the sub-addresses automatically assigned for ISDN is 0081 (used for Group 4 fax) and for 3.1 kHz is 0097 (used for Group 3 Fax). See your F77 terminal manufacturer guide.

4.1 Configuration guides available:

- Configuring T&T Fleet F77 handset for Group3 & Group 4 fax machines –ver NK1.0

5. FAQs:

5.1 How much better is the quality?

G3 fax machines typically support two image resolutions: 200 x 100 dpi (standard mode), and 200 x 200 (fine mode). G4 fax machines support a resolution of 400 - 600 dpi, which is as good as most laser printers. In addition, G4 typically features 64 levels of gray (with Colour options as well), so text is easier to read and illustration and photo fidelity is preserved. Higher scanning resolutions means higher amounts of digitised data and thus requiring higher bandwidths to transmit economically.

5.2 Can G4 send to G3?

Yes, although the transmission speed is limited to that of the G3 fax (9,600 kbps, 14,400 kbps or 33,600 kbps –Super G3).

5.3 What about the fax quality?

When a G4 machine transmits to a G3 machine, the G4 machine switches to a G3-compatibility mode called fallback option, so the fax quality is the same as that for G3. Using a G4 machine at the source, however, may provide better results. Although the printing and resolution capability of the receiving machine will determine the final quality.

5.4 Can G3 send to G4?

Yes, so long as the G4 machine is G3 compatible and have a fallback option.

5.5 What are other options available to me?

To get the full benefits of Group 4 fax, both sides of a fax communication need to have Group 4 fax machines, and these are still new, expensive and thin on the ground, so while a vessel at sea may now be able to send out faxes at 64kbps, the chances are the recipient on land will still be using Group 3 at 14.4kbps. While the market catches up with the leading edge, however, there are other fax options available via Inmarsat Fleet F77MPDS.

5.6 Soft fax via Fax Gateways: But how do you turn a fax into an e-mail?

A growing number of commercial services from organisations such as Callagenix, Onebox, Protus, J2 and unified messaging solutions support this facility.

They work like this: Subscribers to the service are given a special number that callers can dial into to send a fax (plus email and, in some cases, voicemail and SMS too). The service answers the call, detects what kind of message it is receiving, and converts it to the appropriate digital format. In the case of fax, this is usually a TIFF image file which can be viewed using standard PC imaging software such as Windows Imaging, Paintshop Pro, Photoshop and so on. The digital file is then e-mailed to you in the form of an attachment, or stored in a personal mailbox that you can access over the Web from your Fleet F77.

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RELATED DOCUMENTS & LINKS:

1. **Configuring Thrane & Thrane Fleet F77 handset for Group 3 and Group 4 fax machines –ver NK1.0**
2. **Configuring Nera Fleet F77 with Ricoh 2100L fax machine**

HARWARE WEBSITES:

1. www.ricoh.co.uk - Ricoh 2100 L fax machine (tested)
2. www.oki.com - Group 4 fax hardware (not tested)

SOFT FAX SOLUTION OVER IP:

1. www.efax.com, www.i2.com - Fax Gateway solutions over IP
2. www.livingbyte.com - RVS Group 4 fax software solution