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FAX POSSIBILITIES WITH NERA WORLDCOMMUNICATOR		

When purchasing your Mobile Earth Station (MES), ask the manufacturer/agent for recommended fax machines that operate with the Inmarsat system (Satellite network). This is to ensure that the fax is configured for satellite communication.

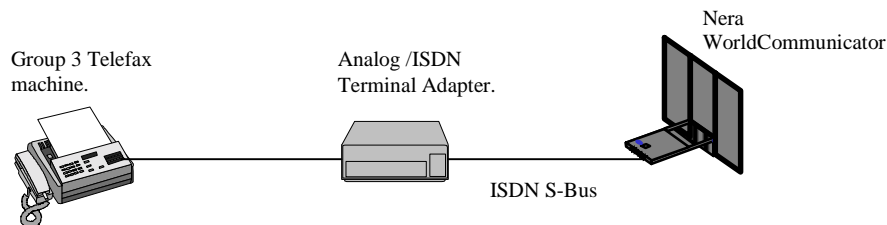
1. TRANSMISSION SPEED

While setting up a connection, the fax machines start the transmission with an agreement of what speed to use. The transfer speed is never higher than the maximum speed the slowest fax machine can handle.

2. SENDING FAX THROUGH THE NERA WORLDCOMMUNICATOR (NWC)

There are several ways to send faxes through the Nera WorldCommunicator. We can divide how to send faxes into three categories, which is subscribed below:

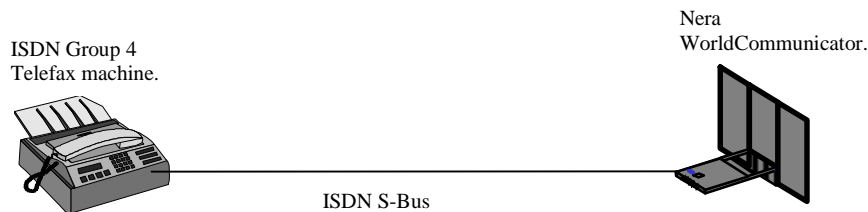
2.1 Analogue group 3 fax machines



- An Analogue/ISDN Terminal Adapter (TA) is needed between the Group 3 fax and the NWC.
- The G3 fax uses the 3,1 khz audio service, the necessary configuration is pre-programmed in the NWC from the factory.
- Configure the TA to MSN 40 and for fax service, if this MSN number is already in use please see Getting Started book for "Additional devices".
- If more than one G3 fax is connected to the ISDN bus, see the Getting started book "Additional Devices" for routing of incoming fax calls.
- The picture showed will provide connection to all fax machines that supports G3 service (most G4 fax machines will also support G3).
- Depending on the fax and the remote PSTN network you can accomplish transfer rates up to 26.400 bps.
- Note: the IMN number to a G3 is the number for 3,1 khz audio / 64 kbps audio service.

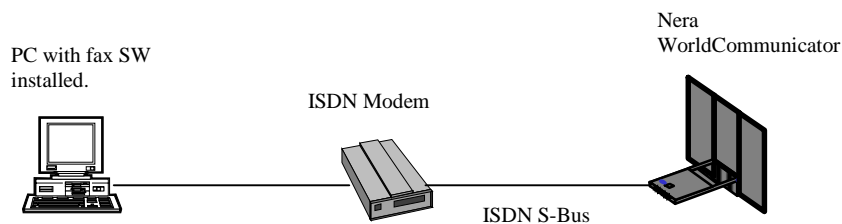
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2.2 Digital (ISDN) group 4 fax machines.



- A G4 fax is connected directly to the ISDN port on the NWC (or into an ISDN multi-port).
- The G4 fax uses the 64 kbps data service (3,1 Khz service / 64 kbps speech if using G3 facility), the necessary configuration is pre-programmed in the NWC from the factory.
- If more than one G4 fax is connected to the ISDN bus, see the Getting started book “Additional Devices” for routing of incoming fax calls.
- The picture showed will provide connection at 64.000 bps to all fax machines that supports G4 service.
- To have the fax receive both G3 and G4 fax the fax machine must have possibility to store two MSN numbers, one MSN for G3 and another for G4.
- When calling a G3 fax, set the fax in G3 mode (most G4 faxes supports G3), when receiving a G3 fax from fixed net the MES fax machine will automatically answer in G3 mode.
- Note: the IMN number to a G3 fax is the number for 3,1 khz audio / 64 kbps audio service, while the G4 number is 64 kbps data UDI.

2.3 Analogue group 3 fax from computer.



- Standard Windows fax software installed on a computer and an ISDN modem/PCMCIA which support fax protocol, can be used to send and receive fax. Most programs support up to 14.400 bps transfer rate in G3 mode and some also provide 64.000 bps G4 fax facility.
- Make sure to test the fax SW together with the ISDN modem before purchasing this solution.
- This connection depends on the same principles as explained above on G4 and G3 fax machines.
- Check the type of service (G4/ G3) your fax SW provide. Measure the throughput of the service to be sure of the quality.

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3. GENERALLY

The general rule when using Inmarsat GAN satellite communication is to have the same service on the fixed side as on the mobile side.

Most fax machines have a number of options in their operation that can only be configured by the manufacturers or suppliers of the machine.

These options are installed so that when the fax machine is supplied to the customer it is compatible with the telephone networks and the fax machine population that that fax machine is most likely to communicate with.

It is for this reason that Inmarsat is not able to publish a list of “good” fax machines, i.e. those fax machines that will give satisfactory performance over Inmarsat – M/B/GAN networks. A fax machine model tested and recommended by Inmarsat may have wildly varying characteristics from another copy of the same model.

Inmarsat have a list of recommended parameter settings to be programmed to have maximum compatibility with Inmarsat – M/B/GAN networks. It should be noted that the fax machine user generally can not configure most of these settings and should be passed to the supplier of your fax machine.

Some ideas that can help the fax compatibility:

1. Off-hook time (sometimes referred to as T1 timer):

When the fax machine is calling, the time from user dialling and pressing START button to expecting the called end to go off hook should be as long as possible (e.g. 2 minutes).

When the fax machine is called, ringing time should be set to the minimum possible (e.g. immediate answer)

2. Timings:

The turnaround time between when a fax machine receives a signal and when it responds should be as short as possible, but greater than 55 ms. Those fax machines that have turnaround times of 200ms – 300ms are unlikely to achieve a high fax call success rate over the Inmarsat – M/B/GAN

For more detailed information about configuring the fax please contact your fax dealer.

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4. TROUBLE SHOOTING

4.1 At point of purchasing

- When purchasing your Mobile Earth Station (MES), ask the manufacturer/agent for the recommended fax machines that operate with the MES
- Before purchasing or installing, ensure that your most often called numbers can be reached by:
 - Making test call through the LES you may be using most
 - Checking the terrestrial fax machine can send faxes to the MES fax
 - Trying various faxes, if possible, to find which ones work best

4.2 When setting up your NWC

- Make sure the antenna is accurately pointed, check that the signal level is more than 520.

4.3 Problems in the MES Terrestrial direction

- Dial the number from the handset on the fax machine and when you hear the called machine answering, press the START button manually.
- Turn off the Error Correction Mode (ECM) facility at one fax machine (please refer to the fax machine user manual for instructions).
- Change the off hook time to be at least 2 minutes (please refer to the fax machine user manual for instructions).
- If possible change either the fax machine at the MES or terrestrial end.
- If you are sending multiple page documents and if it fails after a page, it is most likely that the page did go through. Do not keep resending the page that failed. Send the next page until complete.

4.4 Problems in Terrestrial MES direction

- Dial the number from the handset on the fax machine and when you hear the called machine answering, press the START button manually.
- Make sure the MES is turned on and pointed accurately at the satellite if you are aware that people may be sending you messages.
- Make sure to call the correct ocean region.
- Change the number of rings that the fax machine takes to answer to the minimum setting (please refer to the fax machine user manual for instructions).
- Turn off the Error Correction Mode (EMC) facility at one fax machine (please refer to the fax machine user manual for instructions).
- If possible change either the fax machine at the MWS or terrestrial end.