

# Secure Fax Over HF

## **Application: Facsimile Encryptor OmniseC 525 and HAL Fax Over Radio FXD4100/2K**

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This document provides recommendations on the use of the Facsimile Encryptor OmniseC 525 over radio networks.

Sending fax documents over radio networks can be done through different ways and technologies. This document is limited to one of the ways, using the HAL Communications Corp. Fax over Radio Modem. It explains the features and benefits of the Facsimile Encryptor, how to set it up with the HAL Communications Corp. FXD4100/2K Fax over Radio equipment.

## 1 HAL Communications FXD4100/2K Fax Over Radio

The FXD4100/2K provides fax image transfer via HF radio communications using a standard G3 fax device. The fax devices function as if they were connected to a wire-line system.



HAL CLOVER-2000 software is included with the FXD4100/2K unit. CLOVER-200 is a 3000 bps, voice bandwidth waveform incorporating a unique ARQ protocol with selective block repeats for digital communications over long distances using HF transceivers.

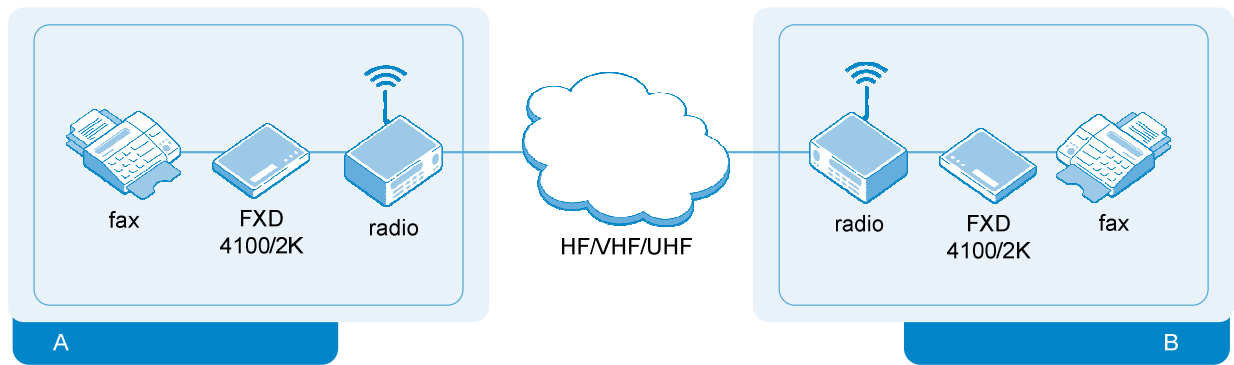
It requires 2000 Hz, (500-2500 @ -50 dB) bandwidth and has ARQ throughput of 224 to 2000 bits/sec.

For further information please refer directly to the HAL Communications web site

<http://www.halcomm.com/> or the FXD4100/2K product description

<http://www.halcomm.com/docs/FXD41002K.pdf>

## 2 Typical Fax Over Radio Application Using HAL FXD4100/2K



The diagram shows a typical fax over radio application without encryption using the HAL Communications Corp. FXD4100/2k.

### Transmission procedure:

1. Place page on fax device
2. Enter number of distant station (the number is defined by the FXD4100/2K OwnID)
3. Press '#' and Send
4. Receive acknowledgement

## 3 Facsimile Encryptor Omnisec 525

The Facsimile Encryptor Omnisec 525 fulfills the highest requirements concerning confidentiality, integrity and availability.

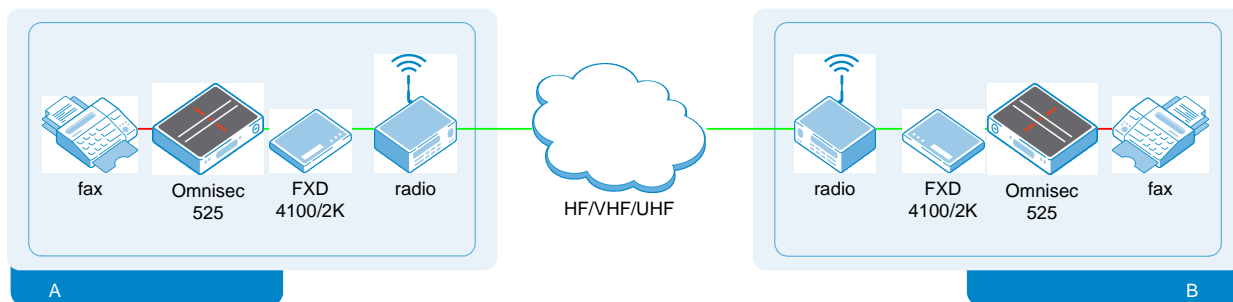


The Omnisec 525 allows receiving fax messages from the local fax device and sending messages towards the line simultaneously (store-and-forward).

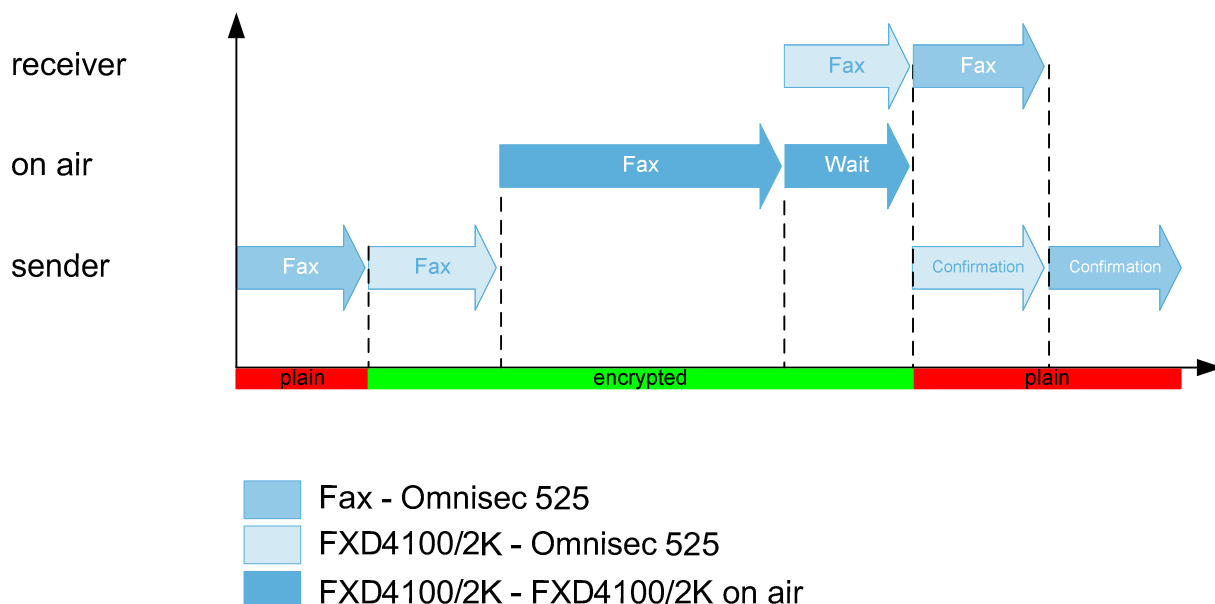
The "Secure Fax Mailbox" can store received facsimile messages encrypted in the Omnisec 525. This prevents the printout of fax messages on the local fax device in order that no unauthorized personnel have the possibility to read confidential or secret information.

A "watermark" can be placed in the received messages that show if they were transmitted encrypted or plain.

## 4 Typical Secure Fax Over Radio Application Using FXD4100/2K and Facsimile Encryptor Omnisecc 525



## 5 Transmission Procedure



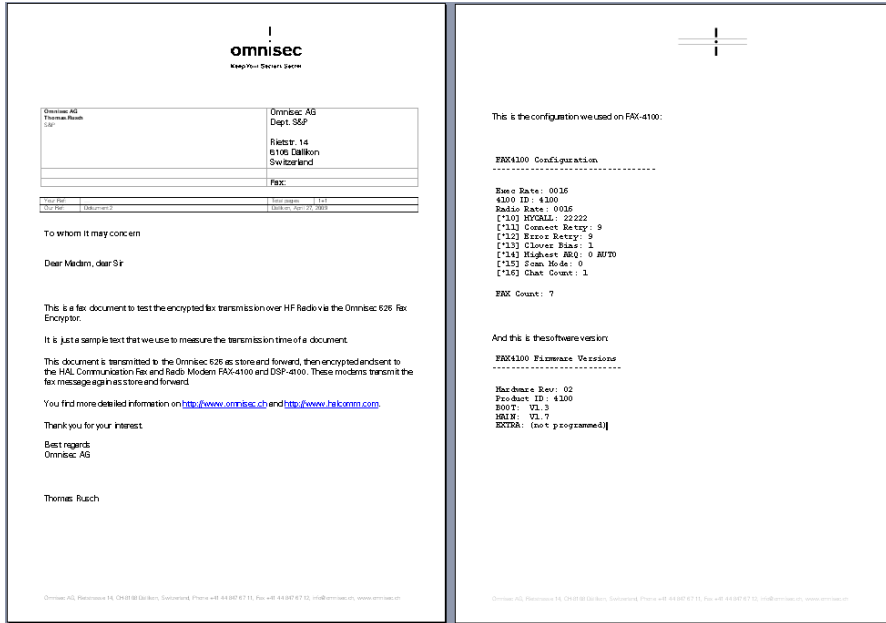
The transmission consists of several steps:

- fax message is transmitted from fax device to the Omnisecc 525
- the Omnisecc 525 encrypts and transmits the fax message to the FXD4100/2K
- the FXD4100/2K transmits the fax message over air as a file transfer
- the FXD4100/2K's remain on the radio link, while the receiving FXD4100/2K transmits the fax message to the Omnisecc 525
- a Success/Error Report is created in the FAX-4100/2K delivered to the sending Omnisecc 525 as a new plain fax message
- the receiving Omnisecc 525 transmits the fax message to the destination fax device
- the sending Omnisecc 525 transmits the report to the originator fax device

The two additional Store-and-Forward steps increase the total transmission time

## 6 Transmission Results

This fax message that has been used for all tests:



### Transmission time without OmniseC 525:

Step	Duration
overall time	6' 11''
fax A to FXD4100/2K A	1' 27''
on air	2' 38''
FXD4100/2K B to fax B	1' 24''
FXD4100/2K A to fax A	0' 42''

### Transmission time with OmniseC 525:

Step	Duration
overall time	11' 35''
Fax A to OmniseC 525 A	0' 57''
OmniseC 525 A to FXD4100/2K A	1' 42''
on air	5' 51''
FXD4100/2K B to OmniseC 525 B	1' 35''
OmniseC 525 B to fax B	0' 57''
FXD4100/2K A to OmniseC 525 A	0' 47''
OmniseC 525 A to fax A	0' 43''

## 7 Setup Procedure

### 7.1 Omnisec 525

Required equipment:                   programmed E-SM (Equipment Security Module)

All settings are done through keyboard input on Omnisec 525.

Access to parameters:                enter security manager password

All parameters not mentioned are as factory default.

#### Device Properties/Line Interface

Fax V.34 Mode:                       off

Satellite Mode                       off

Load Country Profile:               US

#### Device Properties/Fax Interface

Fax V.34 Mode:                       off

Satellite Mode                       off

Load Country Profile:               as required by fax device

#### Security Settings/Call Routing Table

Add Table Entry:                   enter phone number of destination and set rule: Call pass non-transparent.

Plain Receive:                       enable

Plain Transmit:                       enable

### 7.2 HAL FXD4100/2K

Required equipment:                none

All settings are done through keyboard input of connected fax device: Lift handset of fax device or connect a phone to the "Fax" connector of the FXD4100/2K and type commands on phone keyboard.

All parameters not mentioned according to radio and HF conditions.

MyCall                                 \*10XXXXX#

where XXXXX is the phone number of local fax device.

## 8 Further Details and Support

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**Keep Your Secrets Secret**

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