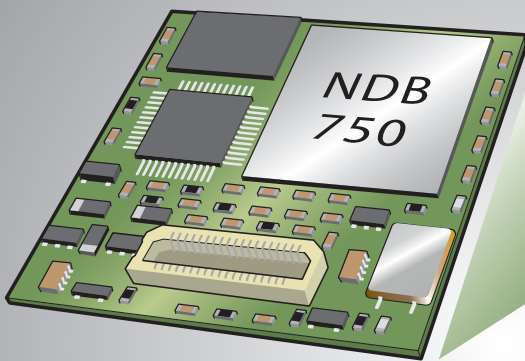


Nabishi Systems

DIGITAL ENCRYPTION MODULE NDB series

Advanced Protection
for all your Handportable
& Mobile Communications

Digital
Encryption
Modules
NDB-710/750
with OTAR
Programming
Option (on NDB-750)



Modules fit:

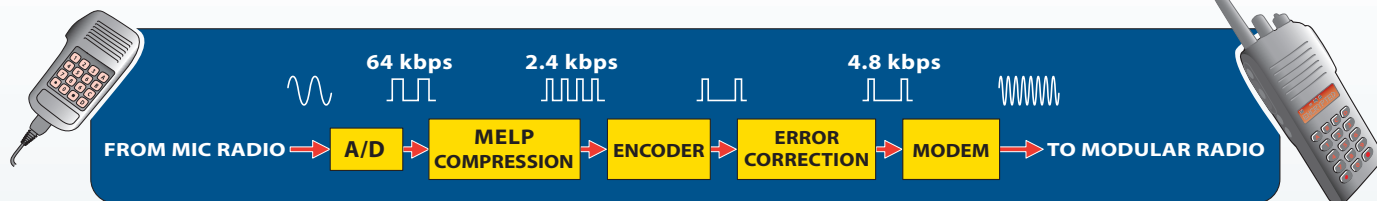


KENWOOD



and other models





Features & Functions of Digital Encryption

Speech Security

The need for radio data and voice communications security is now much more of a necessity than a few years ago. For many organisations it is vital that private communications remain private. Governments, Military, Police, Security and many Commercial Businesses rely on two-way radios to communicate and keep their personnel and staff safe.

Digital Encryption Modules - for High Level Security

Digital encryption offers the ultimate in analogue radio security without the cost of buying digital radios or replacing an entire radio system. In today's world, radio users need to protect their communications from clever and sophisticated unwanted listeners.

For the ultimate in security we are pleased to introduce the New Digital encryption unit "Nabishi NDB-710/750". This encryption module is virtually impossible to de-crypt thereby ensuring total communications security.

Totally Secure Communications

In the on going battle to combat eavesdropping of the radio transmission, a much more sophisticated method of encryption or voice scrambling is required, hence the use of digital voice encryption. A method that is virtually **impossible to decrypt**.

High Level Security - Multiple Standards

The Nabishi NDB-750 Digital Encryption module is a high level encryption device for Governmental, Security, Police and the Military. There are multiple standards available: 128 Bit DES and 256 bit AES with 32bit, 64bit decimal key strengths or 256bit HEX key strengths.

Dramatic Reduction in Interference or Interruption

More importantly, when Digital Encryption is used, there is a dramatic reduction in interference or interruption to a call between individual or Group users (or transmission from other users/groups who do not have the correct KEY).

Password Access

The plug-in modules cannot be accessed for programming or reading of information without a (user definable) password for security against equipment getting into the wrong hands and the Unique KEY code being revealed. This is available on all modules.

On-Air Kill or Stun - With OTAR Option - see right

Encryption modules supplied with our OTAR option can be stunned or disabled "Over-The-Air" from a control station if reported as lost or stolen.

Use Via Repeaters and other Signalling Formats

The Nabishi NDB-750 encryption/OTAR/AVL modules have been fully tested for use with Single Site Repeaters, Multi-Cast Schemes and Simulcast schemes using Conventional (CTCSS/DCS), Smartrunk, LTR, Passport, MPT1327 and Selcall Systems. Tests have also been carried out on schemes using Private Land-Lines, UHF Radio and Microwave Links as their service backbone.

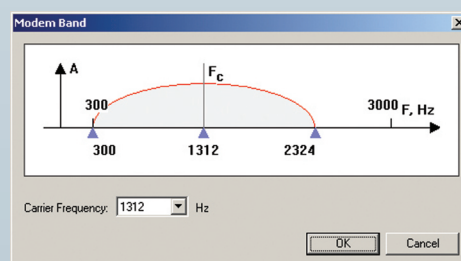
There is NO Degradation of service when using the Nabishi NDB-750 modules due to our special encoding techniques through any of the above. Note: some restrictions apply to NDB-710.

Digital KEYS

Encryption is achieved by digitizing the voice signal and encrypting it with random key stream data which means that the voice is first converted into noughts and ones and then further scrambled. Then this jumbled up data is transmitted along with its Unique KEY to the receiving radio which providing it has the correct key to match is able to reverse the process and intelligent voice signal is heard. The Key is a number selected at random at the start of every transmission. For the eaves-dropper, all that is heard is a continuous white noise which sounds as if the radios squelch is open (On FM Systems).

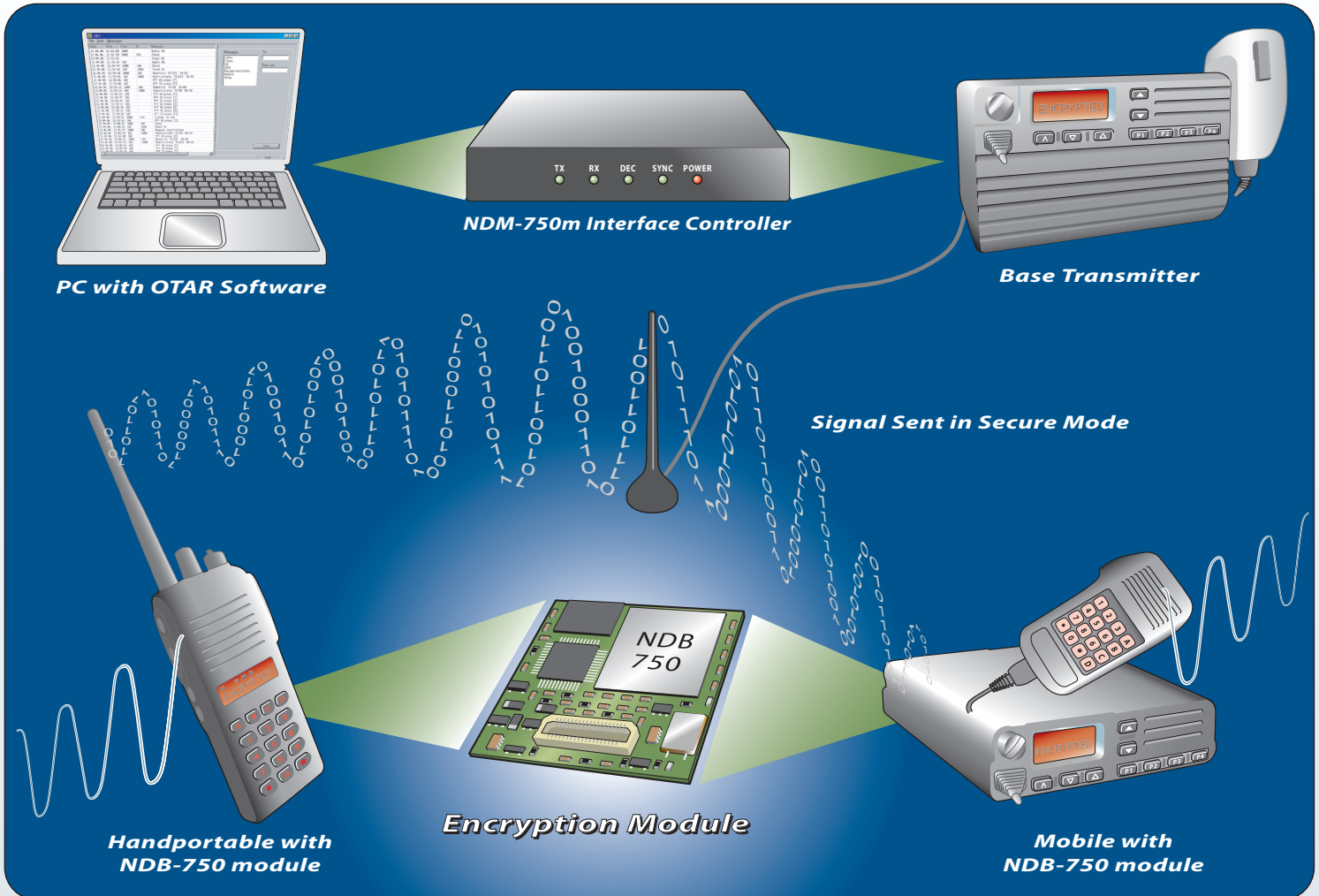
Plug-in Modules Simple to Install

NDB-750 Digital Encryption Module



Modem Band

Digital Encryption Module NDB-750 with OTAR Programming Option



OTAR OPERATION

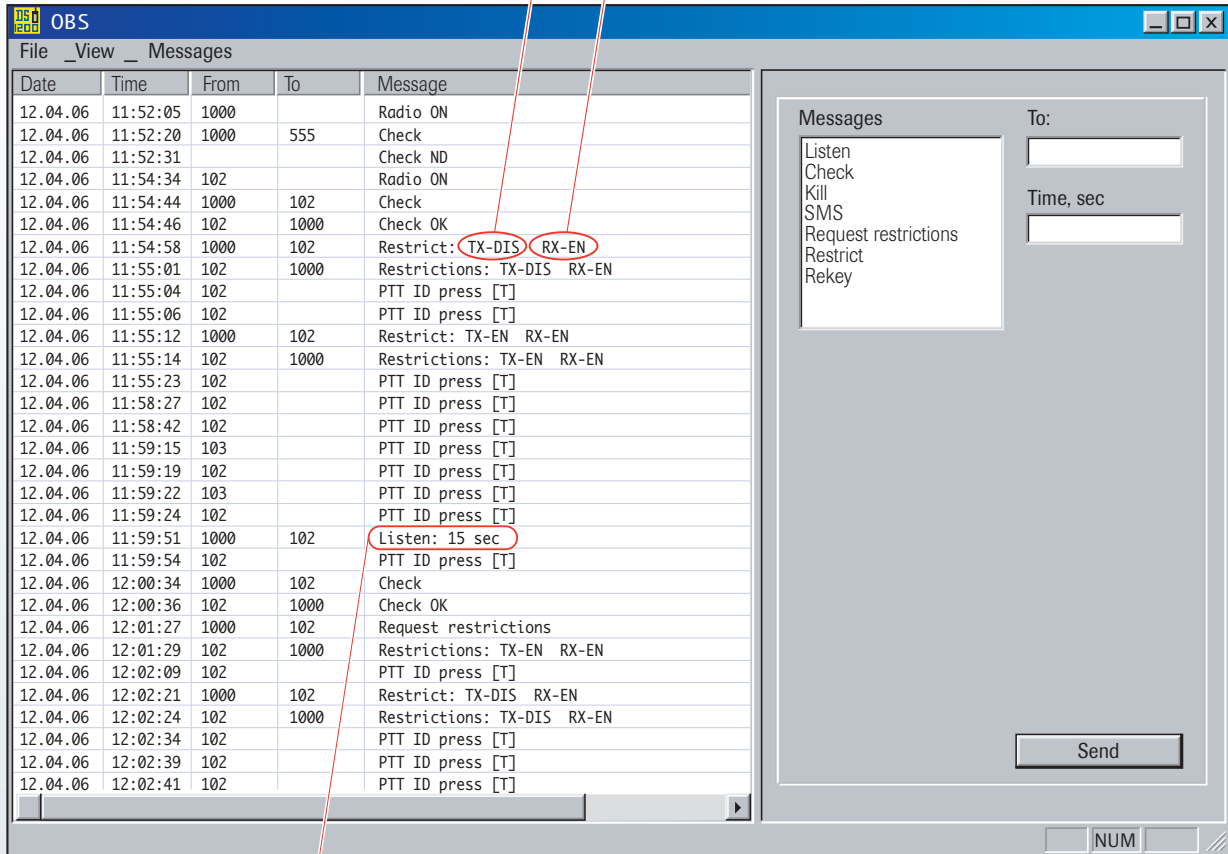
OTAR **“Over-The-Air-Rekeying”** – is the common name for the method of changing the encryption keys in a two-way radio system over the radio channel or “Over-The-Air”.

To further Increase your efficiency the digital encryption modules are also available with Over-the-Air-Reprogramming (OTAR) option which allows system controls and Key codes to be changed by remote commands, even while radios are in the field and operational. This is made possible by allocating a unique ID to each radio which is used in the command and control process.

These modules are also compatible with Nabishi's user-friendly Controller software which enables dispatchers to easily log, monitor and manage the radio system using special software on a personal computer, so you can better track and control your operation. You can protect the integrity of your system if any radio is ever lost or stolen by disabling a radio using the restricted operation mode or the kill/stun feature, which prevents the radio from transmitting or receiving any messages according to your operational requirements.

- **Over-The-Air-Reprogramming**
Re-keying of the encryption keys on a per unit or group basis
- **Radio Verification**
Discretely checks and verifies that the radio is switched on and is within the coverage area (in secret mode)
- **Kill Function**
Disable the module if the radio is lost or stolen
- **Stealth or Secret Mode**
Discrete Monitoring / Listening In (secret mode of radio's transmit)
- **Restrict Function**
Temporary restriction of receive and/or transmit functions of the subscriber
- **SMS**
*Sending of short alphanumeric messages to the radio – secret command from other subscribers
– only for Motorola radios with LCD display and with Vertex equipment with LCD display*
- **Secure Operation**
The OTAR commands are encrypted with 32-bit Master Key (constant within a system)
- **Secure Access to Modules**
*A password for the module/radio unit to be re-keyed HAS to be known in order to Re-key it.
Rekeying can be managed by multilevel access on the software by request ie operator, supervisor or chief operations manager*

TX = Transmitter Disabled
RX = Receiver Enabled



Operator Can Monitor Call

Key Technical Characteristics Voice Signal Coding (subject to change without notice)

Number of User Key Codes	NDB-750: 4 Billion (4,294,967,2960)	[NDB-710 Lite version: 1,000,000]
Length of Algorithm	NDB-750: 256 Bits (AES, DES)	[NDB-710 Lite version: 20 Bits]
Algorithm	Mixed-excitation Linear Prediction	
Programming	Software (Password Access Enabled)	
Voice Transformation Speed	2.4 kbps Voice signal frequency band 300 to 3200 Hz Modem	
Modulation Type	QPSK	
Carrier Frequency, Programmable	NDB-750: 1228,1312,1412,1788,1988 Hz	[NDB-710 Lite version: 1800 Hz]
Channel Information Transmission Speed	4.8 kbps	
Frequency Band	NDB-750: 216 to 3000 Hz	[NDB-710 Lite version: 300 to 3400 Hz]
Channel Coding Convolution Code	(r = 2/3) + Interleave Tactical Characteristics	
Mode of Operation	Simplex, Semi-duplex (Standard Radio Module) or Full Duplex for Repeater Local Operation or Land-Line Control	
End-to-End Channel Delay no more than	400ms (typical), 650ms (worst case)	
Speech intelligibility at direct interception	Totally Undecipherable Electrical Characteristics	
Transmit / Receiver Consumption Current	no more than 40mA	
Consumption Current in Waiting Mode	no more than 30mA	
Operation Temperature	-30°C to +50°C	

Extended Functions of OTAR*

As the OTAR facility allows individual control of each radio from a central control, by natural progression Nabishi have added a feature to the mobile units to allow the use of external GPS receivers to provide data for the provision of vehicle tracking and status reporting. **This function is not available on NDB-710 Lite version.*



Nabishi UK Ltd

16c Upton Road Tilehurst Reading Berkshire England RG30 4BJ
tel +44 (0)118 943 3311 **fax** +44 (0)118 943 3366
e-mail encryption@nabishi.com **web** www.nabishi.com

