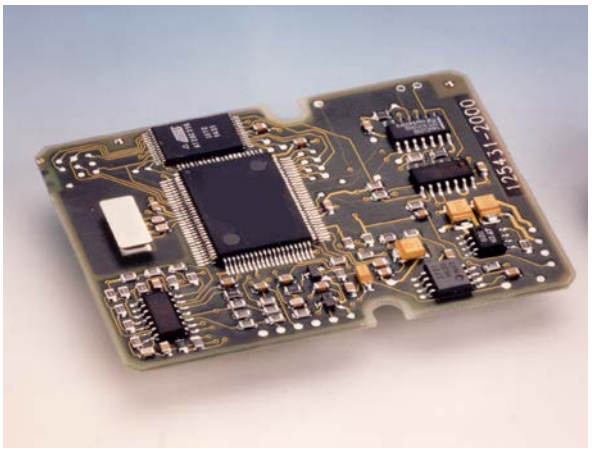
VOICE & DATA ENCRYPTION UNIT

SEU-8220-04

ENCRYPTION EQUIPMENT

for **tactical HF/V/UHF radios** including:

PRC-77
PRC-1060
PRC-1070
PRC-1077
PRC-1099
PRC-2150
PRC-xxxx



SEU-8220-04

Voice & Data Encryption Unit

Add-on device

to-be-connected to existing tactical radios.

SEU-8220-02

Voice Encryption Module

Retrofitting

into tactical radios or integrating into portable mobile radio equipment (incl. handset).

VOICE & DATA ENCRYPTION FOR TACTICAL RADIOTELEPHONES

SEU-8220-04

- **Add-on Unit**
- Voice and Data Encryption
- Remote Commands (opt.)
- Universal Radio / Line Interface
- MIL and STANAG waveforms (opt.)
- Custom defined waveforms and protocols
- Applicable up to MACH-2 platforms
- Protected OTAR re-programming and key exchange (opt.).
- Very high security
- Evaluated AES ciphering algorithm
- Interoperability with other systems
- Automatic re-synchronisation
- Adaptive channel equalisation
- Excellent speaker recognition
- User-exchangeable key generator (opt.)
- Cuistomised encryption algorithm (opt.)
- No political considerations

ALBRECHT (Switzerland) offers its new Voice and Data Ciphering Module SEU-8220-04 for highly secure voice and data communication over analog narrow-band radio channels.

The SEU-8220-04 is used by authorities, governmental agencies, police and the military.

Complex digital signal processing techniques in conjunction with state-of-the-art encryption ensure excellent speaker recognition and robust data communication with highest security.

AES ciphering algorithm providing the highest security needed for such user groups. From a practical standpoint, it is not susceptible to attack by eavesdroppers or by using current crypto-analytical methods.
Customised encryption algorithms or number generators can be integrated if required.

The SEU-8220-04 Voice and Data Ciphering System can be implemented into already existing radio networks for end-to-end encryption without the necessity of changing radio communication infrastructures.

The SEU-8220-4 is compatible with complex radio networks, such as multiple repeaters and simulcast systems. No wider bandwidth is needed for ciphering mode. For relay operation, no special repeater is required.

User-defined algorithms and addressing schemes can be integrated. Different waveforms according to STANAG or MIL can be downloaded for interoperability. The user can select standard waveform and protocol, custom defined or standardised procedures by local settings to ensure interoperability between different user groups. This flexibility is given by using modern FPGA technologies.

The SEU-8220-04 can be used for V/UHF as well as for HF/SSB radio channels. Channel-typical behaviours like fading and Doppler effects are compensated automatically.

MACH2 versions for airborne platforms are available.

Neither the company nor the product is affected by any political influence.

SEU-8220-04 VOICE & DATA CIPHERING

TECHNICAL SPECIFICATIONS

Ciphering technique	High security ciphering algorithm controlled by a complex crypto generator. The speech input signal is digitally transformed into a noise signal with power distributed equally over the available audio bandwidth (OFDM and Digital Spread-Spectrum).
Ciphering algorithm	- AES-128/256. - Implementation of customised algorithm (opt.).
Cryptographic data	Key length 128/256 bits.
Key selector	- 15 user-selectable communication keys stored in battery buffered key banks.
Key storage	- Max. 255 keys.
Key loading	- KPU-8200 key fill device. - Over the Air- key select, override or reprogramming using high level encryption combined with DH-Authentication process (opt.).
Key and parameter generation	Menu driven process with Crypto Management System (opt.) or with KPU-8200 key programming unit.
Key erase	Emergency kill (key and configuration erase).
Operating mode	Voice: semi-duplex (full duplex optional). Data: encrypted, point-to-point, multi-point. Command: 8 single commands with back indications (opt.)
Synchronisation	Automatic receiver synchronisation and channel equalisation combined with late entry technique.
Coding delay (voice)	Less than 100 ms (SEU-8220-01/2 end to end).
Mode control	Clear/ciphered: clear voice override; automatic reception of ciphered signal.
Transmission channel	V/UHF, HF/SSB
Channel coding	FEC and Interleaving techniques.
Source coding	Vocoder
Voice quality	Good speaker identification.
Channel requirements	Bandwidth: 250 - 2550 Hz 300 - 3000 Hz (adaptable) Offset: +/- 120 Hz for HF-SSB (opt.) Link-offset compensation: max. 80 Hz (modem/data mode).
Audio interface	H-189/250 handset Input: 0.5 mV to 2.0 V, impedance: 200 ohms Output: 50 mV to 3.0 V, impedance: 50 ohms.

SEU-8220-04 TECHNICAL SPECIFICATIONS (cntd.)

Communication interface 1	Radio:	input:	10 mV to 5.0 V (rms)
	Radio:	output:	0.5 mV to 2.0 V (rms)
Communication Interface 2	Line:	balanced:	600 Ohm, 0dBm.
Data Interface	RS232	customised GUI Graphic User Interface, opt.	
	Ethernet	opt.	
	USB-2	opt.	
Diagnostics	- BITE - PC-keyboard and VGA-display for diagnostic. - Analog converted I/Q interface for constellation diagram (X/Y).		
Security	- Protected firmware. - Tamper-proof design. - Kill function.		
Environmental conditions	MIL-STD-810F		
Temperature	Operating	-25 to +55°C	
	Storage	-40 to +75°C	
Humidity	95% RH (+60°C), non-condensing		
Tightness	Submersible to 1 meter (SEU-8210)		
Vibration	1 g/5 to 200 Hz random		
Shock	25 g/11 ms		
EMI	MIL-STD-461B, class A3 DO-160F Sect. 20, 21		
Flammability	DO-160F Sect. 26.		
Power requirements	External	9 to 32 VDC	
Power consumption	2.5 W	in cipher mode	
	1.0 W	in stand-by mode	
	3.5 W	in data/remote mode	
Size	Case SEU-8210:	255W x 37H x 220D mm	
	Case SEU-8220:	100W x 35H x 170D mm	
Weight	SEU-8210:	1,5 kg (without batteries)	
	SEU-8220:	0,6 kg.	

Options

../010	Anti-Spoofing
../020	Selective Call (Analog or Digital Ident)
/021	Silent interrogation, tbd
../022	Customised waveforms (MIL, STANAG...), tbd
../023	Customised encryption algorithm, tbd
../030	Ciphered Digital Data Transmission
../031	Ethernet interface
../032	UI, Crypto-Management System, tbd
../033	UI, Remote Control, Fleet Management, tbd
../050	Remote Commands
../060	Built-in GPS Module for SEU-8210
../080	AC Power Supply 90...260 V
../090	KPU-8200 Key Programming Unit
../200	Various customised Interfaces on request.