MANPACK
2110

EC CODAN
COMMUNICATIONS

KEY FEATURES

- Rugged smart handset with an internal display, microphone and speaker
- Custom designed handset accessories for flexible configurations
- Tough and lightweight HF radio
- Digital Voice for clear communications
- Secure voice and data communications (AES-256)
- Advanced ALE calling standards, including 3G ALE (STANAG 4538)
- Over 60 hours of battery life
- Interoperability with other military transceivers
- Smart, fast and fully automatic antenna tuner
- GPS location and tracking
- 3 year warranty
- Worldwide training and support

Codan's Patrol 2110 Manpack is the next generation of manpacks in the 2110 series. Building on the quality and reliability of Codan Manpacks, Patrol has a new rugged handset that offers extended capability and flexibility to users for their tactical requirements.

The Patrol smart handset enables remote operation of the Manpack, with all the capability of the front panel now available in the palm of your hand. The handsets built-in speaker automatically switches to a loud mode when stowed in its custom designed cradle meaning calls can be heard when the handset is not being held to the operator's ear.

DIGITAL VOICE

Codan's second generation Digital Voice technology provides a quantum leap in High Frequency (HF) voice communications. A full digital mode coupled with highly optimised vocoder technology provides voice quality similar to that experienced with cellular phones. Optional AES-256 encryption can be added to deliver a fully secure, high quality voice capability.

ADVANCED ALE

The Patrol 2110 Manpack includes the latest generation 3G ALE technology providing the tactical user with fast linking and data capabilities. Mission critical messages are transferred securely by employing link protection and data encryption. Synchronised scanning provides more efficient use of existing bandwidth.

The Patrol Manpack is fully interoperable with military transceivers using JITC certified MIL-STD-188-141B ALE. You can initiate NET, GROUP, and WILDCARD selective calls, along with a number of advanced calls including, Phone, Message, GPS, and Status Calls. The Patrol 2110 is also interoperable with a number of commercial HF transceivers that are used by many non-government and humanitarian organisations.

FLEXIBLE CONFIGURATIONS

The Patrol's rugged handset provides extended capability for numerous Manpack configuration scenarios. When carrying the manpack on your back, the handset provides quick and full control without having to stop moving or having to access the front panel. For vehicle deployments, the handset offers the flexibility for the transceiver to be located anywhere in the vehicle, with a 6m extension cable to allow the handset to be located in the optimal position for accessibility.

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RUGGED SMART HANDSET

Custom designed to suit operational scenarios, the Patrol smart handset is manufactured from high-grade plastic polymers to meet users requirements for functionality and aesthetics. Built for the world's toughest environments, the handset meets MIL-STD-810G environmental standards for shock, vibration, dust, humidity and IP67 for water and immersion. With an internal microphone and speaker, custom-built cradle, storage bag, tamper resistant fasteners and extension accessories, the Patrol smart handset is designed to give the user the best performance from their Manpack.

DESIGNED FOR THE USER

The Patrol smart handset was designed in consultation with customers worldwide to ensure we meet their operational needs. The handset features a high contrast clear LCD which is readable in all light conditions. The keypad has been designed for reliable activation and use by a gloved hand and is resistant to contaminants such as sweat, dirt and grease; the keypad labels are resilient to heavy use, and the earpiece is ergonomically designed for comfort during extended periods of use.

LONG BATTERY LIFE

Using state-of-the-art technology, the Patrol 2110 has by far the lowest current consumption of any available HF manpack transceiver. This enables continuous operation for many days on a single battery charge, which can save some users the burden of carrying spare batteries.

LIGHTWEIGHT & RUGGED DESIGN

The Patrol 2110 Manpack Transceiver is designed for harsh field conditions and to comply with the most demanding environmental standards including MIL-STD-810F.

The transceiver and battery compartments are made from lightweight alloys and high impact plastics. Both are capable of withstanding immersion to a depth of one metre.

MIL-STD-188-141B ALE

The Patrol 2110 offers JITC certified MIL-STD-188-141B ALE as an option. With this option, Patrol offers up to 600 channels and 20 networks.

Alternatively, the Patrol Manpack offers FED-STD-1045 ALE capability. It comes with Codan's advanced link management technology (CALM™), which improves the performance of normal FED-STD ALE by maintaining channel quality information (LQA) on a 24 hour basis. This results in significantly less soundings and enables the Transceiver to select the most suitable channel from the moment it is turned on.

1. Power on/off button

2. Unique one-touch programmable Emergency Call button

3. Backlist display shows radio status, battery information, and GPS

4. Three soft keys to access frequency used functions

5. Channel and menu navigation buttons

6. Volume up/down

7. Recessed front panel protects keypad buttons

8. Clearly labelled backlit keypad provides one key access to standard functions

*Please note that the picture shown (above) is not to scale

VOICE & DATA SECURITY

A range of COMSEC options are available with the 2110, from CES-128 grade with voice encryption through to full AES-256 encryption of digital voice and STANG/MIL-STD/36 ALE data. The AES-256 encryption supports 256 by 256bit keys with additional layers of protection possible by incorporating unique radio identifiers.

CLEAR COMMUNICATIONS WITH DSP NOISE REDUCTION — EASITALK™

Codan's Digital Signal Processing (DSP) techniques greatly reduce the effect of interference and channel noise to provide clearer communications. Easitalk™ operates at the press of a button and the result is a loud and clear signal in otherwise difficult situations.

INTEROPERABILITY WITH ADVANCED CALLING FACILITIES

With Codan's advanced ALE capabilities, the Patrol 2110 Transceiver is interoperable with other military and commercial equipment complying with these standards.

Other advanced ALE features supported include:

- Automated message processing capability including Remote Diagnostics, GPS polling and position sending, Phone and Emergency Calls
- Listen-Before Transmit capability preventing ALE transmission on channels that are already occupied
- Legacy mode enabling simultaneous 2G / 3G network operation

INTELLIGENT BATTERY SYSTEM

Codan's unique battery management technology continuously monitors the battery condition and remaining capacity.
The handset and front panel show remaining operating hours, reassuring users of their ability to communicate in mission critical operations.

The intelligent monitoring system also monitors battery charging and prevents batteries from being overcharged. This ensures maximum battery life and minimises operational costs.

The battery can be charged via the transceiver's front panel while operating the manpack, or when detached using a fast charger.

The Patrol 2110 Manpack can be supplied with a range of battery charging solutions for either AC or DC sources.

INNOVATIVE USER-FRIENDLY INTERFACE

Codan's intuitive interface is easy to use right from the start and minimises training time and costs. The transceiver's menu driven interface includes a smart address book containing up to 200 names, call locations, and even pre-programmed text messages.
It also features one key access to standard functions and pre-programmed sequences.

The front panel includes an internal speaker, a full alpha-numeric keypad and large display that are white backlit for covert night time operations. Backlighting may also be completely disabled. The front panel backlighting is also NVG compatible.

The Patrol Manpack is highly configurable and supports both user and administrative access levels. This includes the ability to simplify the user interface by restricting a user to only those functions that are necessary to operate the transceiver and support the mission.

INTERNAL HIGH SPEED DATA MODEM

The Patrol 2110 can be optioned with a fully integrated internal high speed data modem with AES-256 bit encryption.

MIL-STD-188-110 A/B and STANAG 4539 waveforms are supported, with auto adaptive data rates of up to 9600 bps achieved. To ensure long operational use the internal modem auto-detects when a PC has been disconnected and switches to a power-save mode.

INTEGRATED GPS RECEIVER

To enable the user to know their location, Patrol comes with an integrated GPS receiver which shows current coordinates and with the GPS Tracking option, enables monitoring of distance and bearing from other HF radios in the network. All GPS data can be encrypted so positions are only seen by authorised users.

SMART, FAST & FULLY AUTOMATIC ANTENNA TUNER

The Patrol 2110 features an integrated antenna tuner that automatically detects the antenna and tunes it to the operating frequency. Initial tuning typically occurs within 2.5 seconds and takes only 50 milliseconds when tuning from memory. Silent Tuning is supported when changing channels.

The tuner is fully protected against unexpected antenna loads and mismatches, and overvoltage. A separate 50 ohm BNC connection is also available for broadband antennas.

OPTIONS

- Digital Voice (2400/1200 and 600bps vocoder rates supported)
- Internal 9600bps Data Modem
- 3G (STANAG 4538) ALE
- MIL-STD-188-141B ALE
- Encryption

- CES-128 bit encryption(Voice)
- AES-256 bit encryption (Voice / Data)
- Morse Key
- GPS Tracking
- External GPS antenna
- 2700 Hz Bandwidth Filter*

* Required for use with Data and Digital Voice

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SPECIFICATIONS

Channel capacity	With MIL-STD-188-141B ALE (JITC waveform) option: 600 channels, 20 networks Without MIL-STD-188-141B ALE option: 400 channels, 10 networks
Scanning	Configurable up to 8 channels per second
Linking and data	3G ALE (STANAG 4538) including FLSU, HDL, LDL, CAST (Codan Adaptive Signalling Technology), MIL-STD-188-141B ALE, MIL-STD-188-110A/B, STANAG 4539, 75 to 9600 bit/s
Vocoder	MELPe (1200/2400 bit/s); TWELP (600/1200/2400 bit/s)
Operating temperature range	–40 to +70°C, full spec –30 to +60°C
Frequency stability	±0.5 ppm
Clarifier	10 Hz
Power source	12 V DC (10.8 to 15 V operational)
Size	**Transceiver:** 245 mm W x 250 mm D x 92 mm H, with battery 245 mm W x 350 mm D x 92 mm H **Smart handset:** 70 mm W x 210 mm L x 72 mm H
Weight	**Transceiver:** 2.9 kg (5.0 kg with 8 Ah NiMH battery) **Smart handset:** 0.3 kg
Environmental	Per MIL-STD-810F including shock, vibration, humidity, immersion (1 hr at 1 m), altitude, fungus, salt fog, sand and dust, blowing dust, and rough handling
EMC	Complies with MIL-STD-461
Cooling	Convection from case
Transceiver conformance	Exceeds or meets requirements of AS/NZS 4770:2003, CE, NTIA and FCC
Interfaces	USB (full opto-isolation) or RS232
Approximate battery life	Approx. 50 hr (13 Ah NiMH), 1:9 Tx:Rx; Approx. 65 hr (17 Ah Li-FePO4), 1:9 Tx:Rx

RF

Frequency range	**Transmit:** 1.6 to 30 MHz, 10 Hz steps **Receive:** 250 kHz to 30 MHz, 10 Hz steps **Frequency Stability:** ±0.5 ppm from –30°C to +60°C
Modes	USB/LSB (J3E), AM (H3E), AFSK (J2A), CW (JIA)
RF input/output impedance	Whip/long wire antenna via internal Automatic Antenna Tuner, or 50 Ω nominal
Antenna tuner	**Tuning:** 2.5 s typical first tune (fully automatic), 50 ms for memory recall Last tune stored for 100 frequencies
Transmitter specifications	**Power output:** 25 W PEP (High)/5 W PEP (Low) selectable **Duty cycle:** 50% with over temperature protection **Audio bandwidth:** 300 to 2700 Hz (standard filter) 300 to 3000 Hz (optional 2.7 kHz BW filter)
Receiver specifications	**Operating current:** 120 mA typical (speaker muted) **Sensitivity:** 0.14 uV for 10 dB SINAD **Image & IF rejection:** 85 dB **Spurious response:** ≥70 dB **Mute:** Syllabic Voice Detect **Audio output:** Waterproof internal speaker; 0.5 W into 8 Ω, 10% THD, External speaker on GPIO connector; 1 W into 4 Ω, 10% THD

ENCRYPTION

	CES-128, 97 x programmable 16-digit keys, 4-digit PIN AES-256, 256 x programmable 256-bit keys

Values noted are typical. Equipment descriptions and specifications subject to change without notice or obligation.

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