

## 2110M MANPACK TRANSCEIVER

### ➤ FEATURES AT A GLANCE



- 1.6 to 30 MHz continuous
- Lightweight & rugged design
- Security & encryption (AES-256)
- Long battery life
- Advanced ALE (CALM™)
  - 3G ALE (STANAG 4538)
  - MIL-STD-188-141B
- Interoperability with advanced calling facilities
- Intelligent battery system
- Smart, fast & fully automatic antenna tuner
- Clear communications with DSP noise reduction — *Easitalk*™
- Innovative & user-friendly interface
- Internal encrypted Data Modem
- Integrated GPS receiver
- 3 year warranty

The CODAN™ 2110M Manpack Transceiver delivers uncompromising value to meet the most demanding mission requirements and conditions.

The 2110M features Frequency Hopping and *Voice Encryptor* options that assure reliable and secure communications during critical operations. It also provides Interoperability with other military transceivers and advanced Automatic Link Establishment (ALE) options.

### LIGHTWEIGHT & RUGGED DESIGN

The CODAN™ 2110M 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. At 2.9 kg the 2110M is the lightest, fully featured HF manpack available today.

### SECURITY & ENCRYPTION

The 2110M can be fitted with internal Frequency Hopping and encryption options that can prevent third party monitoring of communications that may otherwise jeopardise an operation.

Codan's Frequency Hopping option is user configurable to enable selection of individual hop rates, either 6/12/25 hops per second, along with a unique 18 digit security hopping key. Frequency Hopping can offer you additional protection to malicious jamming and signal interception. When combined with Codan's AES-256 or CES-128 bit encryption options, you can be assured sensitive information remains private and secure.

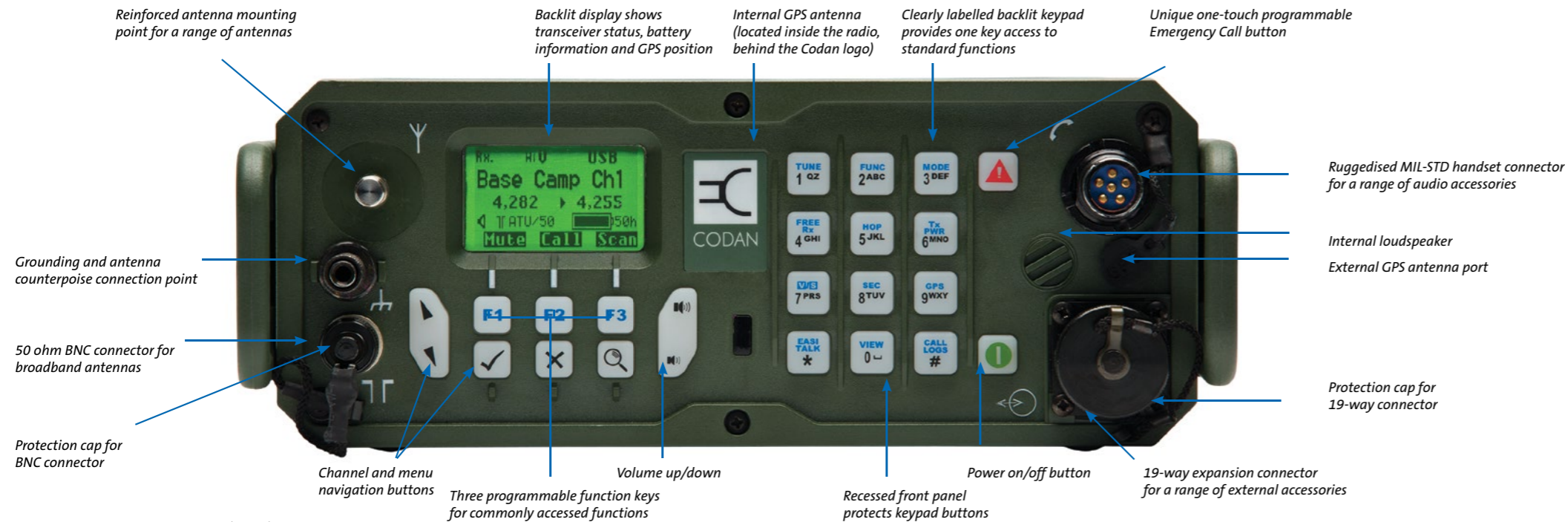
### LONG BATTERY LIFE

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

### WORLDWIDE SUPPORT

Codan customers are supported with our worldwide network of Accredited Service Centres, agents and distributors — 24 hours a day. Regular auditing and training by Codan technical staff ensure the best after sales service. The 2110M Manpack Transceiver is backed by a 3 year warranty.

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

### 3G ALE (STANAG 4538)

The 2110M 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.

### MIL-STD-188-141B ALE

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

Alternatively, the 2110M 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.

The 2110M Manpack Transceiver 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 2110M is also interoperable with a number of commercial HF transceivers that are used by many non-government and humanitarian organisations.

### INTEROPERABILITY WITH ADVANCED CALLING FACILITIES

With Codan's advanced ALE capabilities, the 2110M 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 transceiver's front panel shows 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 2110M Manpack can be supplied with a range of battery charging solutions for either AC or DC sources.

### SMART, FAST & FULLY AUTOMATIC ANTENNA TUNER

The 2110M 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.

The 2110M supports connection to a number of external antenna tuners including the CODAN™ 9350M Automatic Tuning Whip Antenna.

### 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 even under harsh conditions.

### 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 green backlit for covert night time operations. Backlighting may also be completely disabled. The front panel is also NVG compatible.

The transceiver 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 2110M 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

The 2110M comes with an integrated GPS receiver, which enables you to monitor your own location. The GPS Tracking option enables monitoring of distance and bearing from other transceivers within a HF network.

Emergency Calls sent through the unique one button emergency facility automatically include GPS position information.

Using GPS and tracking software, a base station operator can track manpack and vehicular units on a single map. Warning messages can be issued if the field operator enters a no-go area for added security. For extra protection, GPS data can be encrypted so positions are only seen by authorised users.

### OPTIONS

- Frequency Hopping
- Internal 9600 Data Modem
- 3G (STANAG 4538) ALE
- MIL-STD-188-141B ALE
- Encryption
  - CES-128 bit (Voice)
  - AES-256 bit (Voice / Data)
- MELPe 2400/1200 bps Vocoder
- Morse Key
- GPS Tracking
- External GPS antenna
- 2700 Hz Bandwidth Filter\*

\* Required for use with appropriate high speed data modems and 3G ALE

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## SPECIFICATIONS

### GENERAL

<b>Channel capacity</b>	With MIL-STD-188-141B ALE (JITC waveform) option: 600 channels, 20 networks Without MIL-STD-188-141B ALE option: 400 channels, 10 networks
<b>Scanning</b>	Configurable up to 8 channels per second
<b>Linking &amp; data</b>	3G ALE (STANAG 4538) including FLSU, HDL, LDL MIL-STD-188-141B MIL-STD-188-110A MIL-STD-188-110B STANAG 4539
<b>Operating temperature range</b>	-40 to +70°C, full spec -30 to +60°C
<b>Frequency stability</b>	±0.5 ppm
<b>Clarifier</b>	10 Hz
<b>Power source</b>	12 V DC (10.8 to 15 V operational)
<b>Size</b>	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
<b>Weight</b>	Transceiver: 2.9 kg (5.0 kg with 8 Ah NiMH battery)
<b>Environmental</b>	Per MIL-STD-810F including shock, vibration, humidity, immersion, altitude, fungus, salt fog, sand and dust, blowing dust, and rough handling
<b>EMC</b>	Complies with MIL-STD-461
<b>Cooling</b>	Convection from case
<b>Transceiver conformance</b>	Exceeds or meets requirements of AS/NZS 4770:2003, CE, NTIA and FCC
<b>Interfaces</b>	USB (full opto-isolation) or RS232
<b>Approximate battery life</b>	Approx. 50 hr (13 Ah NiMH), 1:9 Tx:Rx Approx. 65 hr (17 Ah Li-FePO <sub>4</sub> ), 1:9 Tx:Rx

### RF

<b>Frequency range</b>	<b>Transmit:</b> 1.6 to 30 MHz, 10 Hz steps <b>Receive:</b> 250 kHz to 30 MHz, 10 Hz steps <b>Frequency Stability:</b> ±0.5 ppm from -30°C to +60°C
<b>Modes</b>	USB/LSB (J3E), AM (H3E), AFSK (J2A), CW (J1A)
<b>RF input/output impedance</b>	Whip/long wire antenna via internal Automatic Antenna Tuner, or 50 Ω nominal
<b>Antenna tuner</b>	<b>Tuning:</b> 2.5 s typical first tune (fully automatic), 50 ms for memory recall Last tune stored for 100 frequencies
<b>Transmitter specifications</b>	<b>Power output:</b> 25 W PEP (High)/5 W PEP (Low) selectable <b>Duty cycle:</b> 50% with over temperature protection <b>Audio bandwidth:</b> 300 to 2700 Hz (standard filter) 300 to 3000 Hz (optional 2.7 kHz BW filter)
<b>Receiver specifications</b>	<b>Operating current:</b> 120 mA typical (speaker muted) <b>Sensitivity:</b> 0.14 µV for 10 dB SINAD <b>Image &amp; IF rejection:</b> 85 dB <b>Spurious response:</b> ≥70 dB <b>Mute:</b> Syllabic Voice Detect <b>Audio output:</b> Waterproof internal speaker; 0.5 W into 8 Ω, 10% THD External speaker on GPIO connector; 1 W into 4 Ω, 10% THD

### FREQUENCY HOPPING

<b>Hop rate</b>	6 / 12 / 25 hops per second (user programmable)
<b>Hop modes</b>	Wideband Hopping, Band Limited Hopping, List Frequencies, ALE Link
<b>Hopping plans</b>	31 user selectable
<b>Hopping keys</b>	128-bit user programmable
<b>Synchronisation</b>	Internal Encryption Synchronisation Unit (ESU)

### ENCRYPTION

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

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



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## CODAN RADIO COMMUNICATIONS

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