

# MANPACK

# SENTRY-H 6110-MP



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COMMUNICATIONS



Codan's Sentry-H 6110-MP delivers a rugged man-portable Software Defined Radio (SDR) solution for military organisations that demand uncompromised, secure voice and data communications, while on the move.

The 6110-MP forms an integral part of the Sentry-H product family that meets the demands of the modern battlefield whilst offering full backwards compatibility with legacy products. The 6110-MP is one of the smallest, lightest form factor manpack HF radios available, delivering a powerful 30W RF power and up to 55 hours of battery life in less than 5 kg of weight without compromise on any capabilities.

## KEY FEATURES

- Software Defined Radio
- 30 W power output
- Man portable usage up to 55 hour battery life
- Rugged and waterproof MIL-STD-810G design
- Lightweight and compact
- Rugged smart handset with colour display and integrated GPS
- Dual handset control
- Intuitive icon based colour display
- Multi-language user interface
- Tactically aware: dedicated sound and light controls
- Embedded GPS
- Built in front panel speaker
- IP connectivity over Ethernet/Wi-Fi and USB
- Exceptional RF performance
- Digital voice message call
- Standards based:
  - MIL-STD-188-110A/B (STANG 4539) Data (up to 19k2 bps)
  - FED-STD-1045
  - MIL-STD-188-141B ALE
  - 3G ALE (STANAG 4538)
- AES-256/CES-128 COMSEC
- ECCM
- Designed for MOTS BB-2590 style battery
- Worldwide Codan service and support

## PROVEN SOFTWARE-DEFINED ARCHITECTURE

Codan's 6110-MP uses the latest-generation high-performance Digital Signal Processor (DSP), Field-Programmable Gate Array (FPGA) and system on chip (SoC) technology.

Built upon a proven SDR platform with tens of thousands of hours of operation in the field, the 6110-MP delivers market-leading performance and future upgradability through software updates that support evolving standards and ensure sustainability.

## IP/ETHERNET/USB CONNECTIVITY

The 6110-MP's IP based design facilitates remote access and the front panel or 2320 Handset USB port provide a convenient point for connecting the Codan TPS-M transceiver programming and Codan data applications. Alternatively, a conventional USB memory stick can be connected for radio profiling, COMSEC key fill and firmware upgrades in the field.

## INTUITIVE INTERFACE AND LOCALISED LANGUAGES

The 6110-MP front panel and optional 2320 Handset user interfaces have been designed with ruggedness, and ease of configuration and operation as primary objectives. The intuitive icon-based menu system and easy to read colour screen layout, coupled with an ability to switch between multiple native languages (including data entry modes) ensures that you can focus more on your mission and less on complex radio operations and training.

Operator access to radio configuration parameters can be easily locked down or made available, depending on your mission requirements.

## DUAL HANDSET CONTROL

The 6110-MP has full support for H-250 audio accessories but is also fully compatible with the 2320 Smart Handset. With a built in speaker and GPS, the 2320 handset provides direct access to core operations remote from the radio, highly suited to on the move communications.

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### ADVANCED ALE

The 6110-MP includes the latest generation STANAG 4538 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 available spectrum.

The 6110-MP is also fully interoperable with military transceivers using MIL-STD-188-141B ALE. You can initiate NET, GROUP, and WILDCARD selective calls, along with a number of advanced calls including, digital voice message, phone, message, GPS and status calls. Calls can be made ad-hoc or via fully pre-programmed entries in the contacts list.

### LQA RAPID

Codan's proprietary enhancement to ALE waveforms provides improved performance through monitoring channel conditions over a 24 hour period. This ensures that users can rapidly establish communications on the best channel for the time of day, without the need to initiate updates to the LQA information prior to calling, thus increasing network availability and performance.

### GPS SUPPORT

The 6110-MP has an integrated GPS antenna and receiver built in to the front panel and optional 2320 Handset with GPS, GLONASS and BEIDOU navigation systems supported. The front panel has a connection point for an external remote GPS antenna for challenging conditions.

Position data display format is user selectable and includes UTM, UPS and MGRS formats. Your distance and bearing from a remote HF station or waypoint can be displayed graphically via the user interface.

### DIGITAL VOICE

Codan's second generation digital voice technology utilises MELPe (Mixed-Excitation Linear Predictive enhanced) or TWELP (Tri-Wave Excited Linear Prediction) including latest addition of 300 bit/s and 480 bit/s vocoder rates to provide a major improvement in High Frequency (HF) voice communications. A fully digital mode, coupled with highly optimised vocoder technology, provides clarity and connectivity when traditional methods fail. Optional AES-256 encryption can be added to deliver a fully secure, high quality voice capability.

### DATA WAVEFORMS

The 6110-MP is hardware ready for data mode and is delivered with the Codan 2400 bit/s robust data modem as standard. This data waveform is supported with the Codan Chat application providing peer-to-peer text chat, email, and file transfer with a simple GUI that supports multiple languages.

Codan Sprint Chat/Net application combined with optional STANAG 3G ALE capability provides robust and fast data solution exceeding MIL-STD-188-110B 2G data performance in real life conditions.

The 6110-MP may be software upgraded to full MIL-STD/STANAG data capability with data rates up to 19k2 bps (with ISB) using the Codan RC50-C HF email application.

### COMSEC

A range of COMSEC options are available with the 6110-MP, from CES-128 grade voice encryption through to AES-256 encryption of digital voice, STANAG 4538 3G ALE and STANAG/MIL-STD data. The AES-256 encryption supports up to 255 secure keys with additional layers of protection possible by incorporating unique radio identifiers.

All voice encryption options can be activated by a single hotkey, and are fully integrated with core radio functions like Selcall and ALE calling to ensure simplicity of operation. The Secure Interop feature enables configuration of the 6110-MP to automatically control encryption on specified networks/channels.

Codan Key Management software is used to generate the key files, and Codan Key Fill software or a USB memory stick may be used to load the keys to the radio.

### FREQUENCY HOPPING

The 6110-MP can be enabled with frequency hopping capability providing tactical networks with additional capability to prevent malicious jamming and signal interception. The user can select between up to 31 user programmable hop plans, each comprising a hop name, rate, bandwidth and encryption key.

Additional information security can be achieved with the use of one time session PINs, and also combining frequency hopping with CES-128 voice encryption.

### WARRANTY, SERVICE AND SUPPORT

Codan provides proven product reliability and performance, backed up by our standard three year warranty. The ability to independently sustain your equipment, complimented by field upgradable unique option codes, enables you to truly utilise SDR technology should your mission change features can easily be enabled.

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## SPECIFICATIONS

### GENERAL

<b>Frequency range</b>	<b>Transmit:</b> 1.6 to 30 MHz <b>Receive:</b> 250 kHz to 30 MHz
<b>Power output</b>	30 W RF $\pm$ 1dB (two-tone or voice), user-programmable in 1W steps (low/medium/high)
<b>Channels</b>	Up to 1000 entries
<b>Contacts</b>	Up to 500 entries
<b>HF networks</b>	Up to 20 networks (simultaneous scanning)
<b>Input voltage range</b>	13.8 V DC nominal, negative earth Functional range: 10 V to 17 V DC
<b>Frequency stability</b>	$\pm$ 0.3 ppm for $-30^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
<b>Supply current</b>	<b>Transmit:</b> output power 30 W, two-tone 3 A to 4.5 A CW or average speech 1.5 A for battery life calculations <b>Receive:</b> no signal < 0.3 A typical, 0.35 A maximum
<b>GPS</b>	Embedded receiver/antenna (GPS, GLONASS and Beidou)
<b>Programming</b>	TPS-M Radio Programming Software, USB memory device
<b>Language support</b>	English, Spanish, Russian, Chinese, French, Arabic, Dari, Pashto and Portuguese
<b>Compliance</b>	CE, FCC Part 90, AS/NZS 4770, AS/NZS 4355, MIL-STD 461-G

### RF

<b>Modes</b>	Single Sideband USB, LSB (J3E), AM (H3E), CW (J2A), AFSK (J2B), FSK (F1B), ISB (B7D or B2B), Software Defined
<b>Duty cycle</b>	100% voice and data
<b>Receive specifications</b>	<b>Sensitivity:</b> SSB: -125 dBm (0.12 $\mu$ V) for 10dB SINAD <b>Selectivity:</b> >65 dB at -1 kHz at -1 kHz +4 kHz SCF (USB)
<b>Transmitter specifications</b>	<b>Spurious and harmonic suppression:</b> >65 dB below PEP <b>Intermodulation products:</b> >31 dB below PEP

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

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## SPECIFICATIONS

### WAVEFORMS

<b>Automatic Link Establishment (ALE)</b>	FED-STD-1045; MIL-STD-188-141B; STANAG 4538 3G ALE
<b>Data</b>	MIL-STD-188-110A/B (STANAG 4539) data capability with data rates up to 19k2 bps
<b>Selcall</b>	CCIR 493-4 proprietary and open standard
<b>Digital voice</b>	TWELP 2400 bit/s, 1200 bit/s, 600 bit/s, 480 bit/s, 300 bit/s MELPe (STANAG 4591) 2400 bit/s, 1200 bit/s
<b>Encryption</b>	AES-256 digital voice and data (256 keys, direct entry and programmable via Codan KMS/KFS & USB memory stick) CES-128 voice (97 x 16-digit keys, direct entry and programmable via Codan KMS/KFS & USB memory stick, 4-digit session PIN)
<b>ECCM</b>	6/12/25 hops per second

### ELECTRICAL AND MECHANICAL

<b>Size</b>	284mm (without handles, 324 with handles) x 246 mm x 96 mm (L x W x H) including battery compartment
<b>Weight</b>	Less than 5 kg including battery
<b>Interfaces</b>	Handset Interface, DC supply (battery), USB (front panel and Handset), H-250 Audio (powered), GPS antenna, Antenna, Ethernet via adaptor (TCP/IP, supports remote control)
<b>Temperature range</b>	Operational at -30 to +60°C; 95% RH maximum, non-condensing
<b>Environmental standards</b>	MIL-STD-810G (Immersion, Shock, Drop, Vibration, Humidity, High temp, Low temp, Blowing Dust, Salt Fog, Fungus, Contamination, Altitude)
<b>Supported batteries</b>	BB-2590, BA-3590, BB-390
<b>MTBF</b>	141,000 hours (16 years)
<b>MTTR</b>	Less than 30 minutes

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