



CODAN MANPACK Sentry-H 6110-MP Installation Guide

[Home](#) » [CODAN](#) » CODAN MANPACK Sentry-H 6110-MP Installation Guide 

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MANPACK SENTRY-H 6110-MP



Codan's Sentry-H 6110-MP (type number 2410) 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 in a unit weighing less than 4 kg without compromise on any capabilities.

KEY FEATURES

- Best in class, size and weight
- Software Defined Radio
- 30 W power output
- Man portable usage up to 79 hour battery life
- Rugged and waterproof MIL-STD-810G design
- Optional rugged smart handset with colour display and integrated GPS
- Dual handset control
- Colour display, with intuitive icon based User Interface
- Multilingual 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
- Presets
- Standards based:
 - MIL-STD-188-110A/B (STANAG 4539) Data (up to 19k2 bps)
 - MIL-STD-188-110D (Appendix C)
 - FED-STD-1045
 - MIL-STD-188-141D (Appendix A, Appendix C)
 - MIL-STD-188-141B ALE (JITC certification pending)
 - 3G ALE (STANAG 4538)
- AES-256 / CES-128 COMSEC
- ECCM – up to 25 hops/sec
- 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 flash drive 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 colour display with intuitive icon-based menu system, 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.

Additional languages available upon request.

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.

SWAP OPTIMISED

The 6110-MP can be configured with a standard size, high capacity BB-2590 style rechargeable battery, resulting in an overall unit weight of less than 4.7kg and providing an industry leading battery life of up to 79 hours.

The 6110-MP is now offered with a shorter battery compartment and compatible rechargeable battery that effectively makes it the smallest and lightest HF manpack radio available today with a weight of less than 4kg. Even with the lower capacity battery the radio will still provide an impressive battery life of up to 23 hours.

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, including digital voice 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 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. Calls can be made ad-hoc or via fully pre-programmed entries in the contacts list using 3G ALE.

*JITC certification pending

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.

PRESET SUPPORT

Tactical communications users often require an ability to quickly switch between different radio configurations to communicate with different units or in different ways without re-programming the equipment. Until recently, Codan supported this requirement via Secure Interoperability on a Channel level as well as the Select Active HF Network features. The new Presets feature further improves Sentry-H family capabilities. A Preset is a predefined set of

configurations and settings, which includes:

- A fixed channel/frequency or a scanning mode with a group of active HF networks
- Digital Voice state, rate and active waveform
- Encryptor and secure key index
- Hopping state and hopping plan index
- Transmit power as well as values for up to 32 transceiver settings.

The Preset capability allows an operator to quickly switch between different modes/operational scenarios to communicate with different parties or re-configure the equipment on a fly for different missions, ensuring that radio assets remain flexible to meet your mission needs.

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.

OVER THE AIR WAYPOINTS

The user interface facilitates straightforward sharing of waypoints over the air with other users. The message call mechanism provides an intuitive method to select, include and transmit multiple waypoints from the waypoint list. Upon receiving a message call containing waypoints, the waypoints can be saved to the waypoint list, and also used for immediate distance & bearing plots. This feature greatly simplifies the process of sharing and tracking geolocation information amongst a group of radio users.

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. Compatible with AES-256 encryption and Frequency Hopping options.

An optional open protocol version of Digital Voice is also available to enable interoperability between Codan and other vendor radios.

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.

The optional STANAG 3G ALE provides fast linking and data capability, when combined with Sprint Chat/Net application, that is capable of exceeding the performance experienced with traditional MILSTD-188-110 2G data. Codan 3G ALE supports all call types including digital voice message calls and SMS text (via Sprint Net stations).

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 flash drive may be used to load the keys to the radio.

ECCM (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.

Frequency hopping is now compatible with Digital Voice and 2G MIL/STANAG data waveforms to further extend ECCM capabilities. Available Digital Voice vocoder rates and 2G data rates are dependant on selected hopping rate, ISB data is not supported in frequency hopping mode.

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.

SOFTWARE APPLICATIONS

- TPS-M Radio Programming Software
- RC50-C HF Email (for STANAG/MIL modem)
- Codan Chat HF (for robust ARQ modem)
- Key Management Software
- Key Fill Software
- RTS tracking software
- SprintChat and SprintNet
- Virtual Control Point (VCP)
- Software Developers Kit (SDK)

ACCESSORIES

- 2320 Sentry-H smart handset
- Tactical antenna solutions
- Backpacks
- Rechargeable and single use batteries
- Base and field battery charging solutions
- H-250 audio accessories
- Morse Key
- External GPS antenna

TRANSCEIVER BASED OPTIONS

- Standard digital bundle
- Advanced digital bundle
- 3G ALE (STANAG 4538)
- CES-128 voice encryption
- ECCM (frequency hopping)
- Foreign language user interface
- Free tune transmit
- Independent Sideband (ISB)

Contents

[1 SPECIFICATIONS](#)

[2 Documents /
Resources](#)

[2.1 References](#)

[3 Related Posts](#)

SPECIFICATIONS

GENERAL

Frequency range	Transmit: 1.6 to 30 MHz (optional: 1.5 to 30MHz) Receive: 250 kHz to 30 MHz
Power output	30 W PEP \pm 1dB (two-tone or voice), user-programmable in 1W steps (low/medium/high)
Channels	Up to 1000 entries
Contacts	Up to 500 entries
HF networks	Up to 20 networks (simultaneous scanning)
Presets	Up to 100 user defined presets
Input voltage range	13.8 V DC nominal, negative earth Functional range: 10 V to 17 V DC
Frequency stability	± 0.3 ppm for -30°C to $+60^{\circ}\text{C}$
Supply current	Transmit: output power 30 W, two-tone 3 A to 4.5 A CW or average speech 1.5 A for battery life calculations Receive: no signal < 0.3 A typical, 0.35 A maximum
GPS	Embedded receiver/antenna (GPS, GLONASS and Beidou)
Programming	TPS-M Radio Programming Software, USB memory device
Language support	English, Spanish, Russian, French, Arabic, Dari, Pashto, Portuguese and Polish
Compliance	CE, FCC Part 90, AS/NZS 4770, AS/NZS 4355, MIL-STD 461-G, IC RSS-125
Interoperability	NTIA / JF12

RF

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

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



Radio with regular
battery box



Radio with short
battery box

WAVEFORMS

Automatic Link Establishment (ALE)	MIL-STD-188-141D (Appendix A, Appendix C); FED-STD-1045; JITC Certified MIL-STD-188-141B; STANAG 4538 3G ALE
Data	MIL-STD-188-110D (Appendix C); MIL-STD-188-110A/B (STANAG 4539) data capability with data rates up to 19k2 bps
Selcall	CCIR 493-4 proprietary and open standard
Digital voice	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
Digital voice (open protocol)	TWELP (600/700/1200/2400 bit/s) Note: Actual vocoder rate combinations are dependent on other Export/Non-export controlled capabilities that may also be enabled
Encryption	AES-256 digital voice and data (256 keys, direct entry and programmable via Codan KMS/KFS & USB flash drive) CES-128 voice (97 x 16-digit keys, direct entry and programmable via Codan KMS/KFS & USB flash drive, 4-digit session PIN)
ECCM	6, 12, 25 hops per second (hps) Max Data Rate: 6hps (2400bps) 12hps (1200bps) 25hps (600bps) DV Vocoder Rates (TWELP only): 6hps and 12hps (1200bps, 600bps, 480bps, 300bps) 25hps (600bps, 480bps)

ELECTRICAL AND MECHANICAL

Size	Radio with regular battery box: L: 324 x W: 245 mm x H: 96 mm (with handles) Radio with short battery box: L: 277 x W: 245 mm x H: 96 mm (with handles)
Weight	Radio without battery box: 2.45 kg Radio with regular battery box (without battery): 3.23 kg Radio with short battery box (without battery): 3.08 kg Radio with regular battery box and 17.4Ah battery: 4.65 kg Radio with short battery box and 8.7Ah battery: 3.95 kg
Interfaces	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)
Temperature range	Operational at -30 to +60°C; 95% RH maximum, non-condensing (-40 to +70°C reduced performance with suitable battery)
Environmental standards	MIL-STD-810G Shock, Drop, Vibration, Humidity, High temp, Low temp, Blowing Dust, Salt Fog, Fungus, Contamination, Altitude, Immersion IP68 2m / 1hr
Supported batter types	BB-2590, BA-3590 Note: Operational temperature range of the radio may be affected by battery operational temperature range
MTBF	116,000 hours
MTTR	Less than 30 minutes

PRODUCT TYPE NUMBER

Product type numbers	RF Unit: 2410, Smart Handset (optional): 2320
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Values noted are typical. Equipment descriptions and specifications subject to change without notice or obligation. ECCN is pending.

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Documents / Resources

	<p>CODAN MANPACK Sentry-H 6110-MP [pdf] Installation Guide MANPACK Sentry-H 6110-MP, MANPACK, MANPACK 6110-MP, Sentry-H 6110-MP, 6110-MP, Sentry-H</p>
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References

- [High Frequency & Land Mobile Radio • Codan Communications](#)