

# HF TRANSCEIVER

## SENTRY-H 6120-BM



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COMMUNICATIONS



### KEY FEATURES

- Software Defined Radio
- 150 W power output
- Wide range 10 V to 36 V DC input
- Rugged and waterproof MIL-STD-810G design
- Rugged smart handset with colour display and integrated GPS
- Intuitive icon based colour display
- Multi-language user interface
- Embedded GPS
- IP/Ethernet/Wi-Fi/USB connectivity
- Exceptional RF performance
- 2nd generation digital voice (TWELP)
- Digital voice message call
- Standards based:
  - MIL-STD-188-110A/B (STANAG 4539) Data (up to 19k2 bps)
  - FED-STD-1045
  - MIL-STD-188-141B ALE (JITC certified)
  - 3G ALE (STANAG 4538)
- AES-256/CES-128 COMSEC
- ECCM
- H-250 Accessories support
- Virtual Control Point (VCP) compatible
- Wide range of supported peripherals
- Worldwide Codan service and support

Codan's Sentry-H 6120-BM delivers a rugged Software Defined Radio (SDR) solution for military organisations that demand uncompromised, secure long range voice and data communications. With 150W RF power, it has been specifically designed to deliver the smallest and lightest form factor for no-fuss integration into base and mobile platforms.

In close consultation with military customers, the 6120-BM has been optimised for ease-of-use and features an ergonomic smart handset with a colour, high-resolution multi-language interface and a variety of other capabilities.

### PROVEN SOFTWARE DEFINED ARCHITECTURE

Codan's 6120-BM 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 thousands of hours of operation in the field, the 6120-BM delivers market-leading performance and future upgradability through software updates that support evolving standards and ensure sustainability.

### IP/ETHERNET/USB CONNECTIVITY

The 6120-BM's IP based design facilitates remote access and the 2320 Handset USB port provides a convenient point for connecting the Codan TPS-M transceiver programming application. 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 Sentry 2320 Handset user interface has 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 unique circumstances.

### DUAL HANDSET CONTROL

The 6120-BM features the 2320 Smart Handset as the primary user interface. However, support for H-250 audio accessories is also provided via a dedicated interface. This presents the advantage of being able to conveniently locate the 2320 Handset for radio monitor and control while using a dedicated headset/handset or intercom system for voice communications.

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### ADVANCED ALE

The 6120-BM 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 existing bandwidth.

The 6120-BM 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, text message, GPS and status calls. Calls can be made ad-hoc or via fully pre-programmed entries in the contacts list.

The 6120-BM certified waveforms allow for integration and interoperability with agencies using disparate radio networks and systems.

### 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 6120-BM has embedded GPS receivers in the RF Unit and 2320 Handset with GPS, GLONASS and BEIDOU navigation systems supported. The RF Unit has a connection point for an external remote GPS antenna if needed.

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 handset user interface.

### HIGH POWER FOR BASE AND MOBILE CONFIGURATIONS

The 6120-BM is the military industry's first base and mobile radio system that delivers 150 W of RF power without the added cost, weight and complexity of an external amplifier. It has an in-built power amplifier that provides full-duty cycle performance across the complete HF band for all supported modes. Designed for maximum efficiency and a wide range of DC input voltages, the 6120-BM is the HF radio of choice for vehicle and other battery based systems.

The rugged RF unit is made out of a high-grade metal cast chassis and meets or exceeds MIL-STD-810G so you can be confident it will get the job done no matter where you operate.

### DIGITAL VOICE

Codan's second generation digital voice technology utilises TWELP (Tri-Wave Excited Linear Prediction) 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 6120-BM 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 MIL-STD-188-110B 2G data. Codan 3G ALE supports all call types including digital voice message calls and SMS text (via Sprint Net stations).

The 6120-BM 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 6120-BM, from CES-128 grade voice encryption through to full AES-256 encryption of digital voice, STANAG/MIL-STD data and STANAG 4538/3G ALE. The AES-256 encryption supports 256 by 256 bit 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 6120-BM to automatically enable encryption on specified networks /channels

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

### FREQUENCY HOPPING

The 6120-BM 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 PIN's, and also combining frequency hopping with CES-128 voice encryption.

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### WARRANTY, SERVICE, AND SUPPORT

Reliability and performance, backed up by our standard three year warranty, with the ability to independently sustain your communications, complimented by field upgradable unique option codes 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

- Tactical base antenna and mast solutions
- Mobile / base antenna tuners
- Mobile Shock Mounts
- General mounting accessories
- H-250 audio accessories, remote speaker
- 3320 AC power supply
- Morse key
- Crosspatch
- Telephone interconnect
- 500 W / 1kW high power amplifiers
- External GPS antennas

### TRANSCEIVER BASED OPTIONS

- Standard digital bundle
- Advanced digital bundle
- 3G ALE (STANAG 4538)
- CES-128 voice encryption
- Frequency hopping
- Languages: (Dari, Pashto, Arabic, French, Spanish, Russian, Chinese)
- Free tune transmit
- Independent Sideband (ISB)

## 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>	150 W PEP $\pm$ 1 dB (two-tone or voice), user-programmable in 1 W 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 <b>Functional range:</b> 10.8 V to 35.2 V DC
<b>Supply current</b>	<b>Transmit:</b> output power 150 W, two-tone 11 A to 20 A CW or average speech 8 A for battery life calculations <b>Receive:</b> no signal < 0.6 A typical, 0.9 A maximum
<b>Frequency stability</b>	$\pm$ 0.3 ppm from $-20^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
<b>GPS</b>	RFU - external antenna, 2320 Handset - embedded receiver/antenna (GPS, GLONASS and Beidou)
<b>Programming</b>	TPS-M- Radio Programming Software, USB memory device
<b>Language support</b>	Multiple language UI and documentation
<b>Compliance</b>	CE, FCC Part 90, AS/NZS 4770, AS/NZS 4355, IC RSS-125

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

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### SPECIFICATIONS

#### 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>Receiver specifications</b>	<b>Sensitivity:</b> SSB: -125 dBm (0.12 uV) 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

#### WAVEFORMS

<b>Automatic Link Establishment (ALE)</b>	FED-STD-1045; JITC Certified 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 & memory stick) CES-128 voice (97 x 16-digit keys, direct entry and programmable via Codan KMS/KFS & memory stick, 4-digit session PIN)
<b>ECCM</b>	6/12/25 hops per second

#### ELECTRICAL AND MECHANICAL

<b>Size</b>	<b>RFU:</b> 220 mm x 66.5 mm x 190 mm <b>Handset:</b> 67 mm x 210 mm x 72.5 mm
<b>Weight</b>	<b>RFU:</b> 2.82 kg; Handset: 280 g (no cable)
<b>Interfaces</b>	ATU Control, General Purpose Interface, Handset Interface, DC supply, USB (via Handset), Fan Control, 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 Shock, Drop, Vibration, Humidity, Blowing Dust, Salt Fog, Fungus, Altitude, Immersion IP67 1m / 30 minutes
<b>MTBF</b>	141,000 hours
<b>MTTR</b>	<10 minutes

#### PRODUCT TYPE NUMBER

<b>Product type numbers</b>	RF Unit: 2310, Smart Handset: 2320
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ECCN is pending

