

envoy™ HF TRANSCEIVER

➤ FEATURES AT A GLANCE



- Clear, reliable analogue and digital voice communications
- 125 W RF output power
- Industry-leading RF performance
- Intuitive programming and operation, and USB Smartloader
- Software-defined architecture
- IP remote controllable
- Ethernet/USB connectivity
- High-resolution colour display
- Multi-lingual graphical user interface
- Integrated robust 3012 compatible data modem
- CES/AES encryption
- Powerful PC-based programming software
- Desk console for base stations
- Calling systems
 - 4/6 digit Selcall based on CCIR 493-4 (compliant with UN open Selcall)
 - FED-STD-1045 ALE
 - MIL-STD-188-141B ALE

Codan's Envoy™ 2200 series HF Transceiver delivers dependable, clear, trouble-free voice and data communications in challenging environments, without dependence on existing infrastructure. With 125 W of power, Envoy™ is offered in mobile and base station configurations.

SOFTWARE-DEFINED ARCHITECTURE

Envoy™ uses latest-generation high-performance Digital Signal Processor (DSP), Field-Programmable Gate Array (FPGA) and microprocessor technology. This provides market-leading performance and the assurance of protection of your investment, through future-upgradability to support evolving standards.

INTUITIVE OPERATION

With its large, high-resolution, back-lit colour display and customisable icon-based menu system, Envoy™ is as simple to operate as modern smartphones. Making calls is as simple as navigating to your contact list, locating the desired contact and pressing the "call" button.

MULTI-LINGUAL

To ease the training burden for non-English background users, the Envoy™ user interface and PC programming software are available in languages other than English.

EASY TO DEPLOY

Codan's TPS-3250 Programming Software provides a powerful user-friendly tool for the rapid configuration of your Envoy™ Transceiver, and enables installation of profiles via direct USB connection or USB memory device. Ease of field deployment is assured through the USB Smartloader capability. Alternatively Envoy™ can be configured directly through the intuitive menu system, with the assistance of the in-built quick-start guides. Access to settings can be selectively protected via an administrator pin.

BITE

Envoy™ features Built-in Test Equipment (BITE). An automatic self-test is run on start-up, and additional tests can be run manually. A simple status LED indicates normal operation (green) or fault conditions (red). Remote management is also supported via over-the-air diagnostic and status calls.

Envoy™ continually monitors forward and reflected power. Voltage Standing Wave Ratio (VSWR) can be displayed to the user, and poor VSWR (e.g. caused by an untuned antenna) is quickly reported.

SMART MONITORING AND SCANNING

When an operator is absent, Envoy™ generates an automatic log containing the caller's identity, time and channel number that can be displayed upon their return.

With multiple net adaptive scanning, Envoy™ automatically adjusts scan times for multiple networks according to the channels' preset scan times. This feature gives the most efficient scanning time possible for Selcall, ALE and voice detection.

Envoy™ features flexible scanning networks, with up to 20 scan tables containing up to 1000 channels. Scan rates of up to 8 channels per second are possible, which provides increased capacity for HF networks based on Envoy™.

With the syllabic Voice Mute, Envoy™ effectively detects voice patterns even in high-noise environments. This ensures mute is only opened after it detects speech on any scanned or monitored channels.

When Selcall or ALE selective calling is implemented, users are able to scan multiple channels or networks. The operator is only alerted when a call addressed to them specifically is received. This relieves the operator from continuous manual monitoring for relevant incoming traffic.

HIGH PERFORMANCE, INTEROPERABLE CALLING CAPABILITY

Envoy™ supports currently used calling standards including CCIR based Selcall, FED-STD-1045 Automatic Link Establishment (ALE) and MIL-STD-188-141B ALE. This ensures full interoperability with earlier generation Codan, competitor and legacy transceivers.

Envoy's™ CALM™ (Codan Automated Link Management) takes conventional ALE to the next level through dynamic channel characterisation, maximising the probability of clear

communications. In addition, Envoy™ delivers advanced capabilities, such as call voting and data optimised calling.

INDUSTRY-LEADING RF PERFORMANCE

Clear voice communications and reliable data communications are the prime objectives of Envoy™. This is achieved by industry-leading RF performance specifications, together with Codan's renowned *Easitalk™* noise-reduction technology.

INTERNAL EMAIL CAPABLE DATA MODEM

Envoy™ is available with a robust low-rate modem option, or a high-speed MIL-SPEC modem offering up to 9600 bit/s data capability. These are backed up by application software solutions supporting Email and Chat. All solutions compress data for minimal transmission time, and the high speed modem utilises DRC (data rate control) to optimise the data rate to the present channel conditions.

VOICE SECURITY

Envoy™ has a choice of three internally fitted voice encryption options to suit all levels of communications security.

The CIVS voice encryption option is a cost effective software enabled voice scrambler capability that is simple to use and provides a basic level of voice security.

The CES voice encryption option provides high level 128 bit voice security. Up to 97 16-digit user programmable keys are provided. An additional layer of security is provided through the ability to assign a PIN number during a secure communications session.

The AES voice encryption option provides 256-bit security according to the Advanced Encryption Standard, with up to 256 user programmable encryption keys.

Optimal voice clarity is provided through the use of a Mixed-Excitation Linear Predictive enhanced (MELPe) Vocoder. The MELPe Vocoder supports 1200 bit/s and 2400 bit/s user selectable data rates.

All voice encryption options for Envoy™ are fully integrated with core Transceiver functions like Selcall and ALE scanning to ensure simplicity of operation.

IP REMOTE CONTROL, CONNECTIVITY

Envoy™ features USB and Ethernet connectivity. End-user benefits include the capability for remote control over IP, and the convenience of deployment of configuration profiles through USB memory sticks. Programming and firmware upgrade are supported at high speed.

GPS SUPPORT

Envoy™ supports connection of GPS via NMEA0183 compatible GPS receivers. This enables polling and sending of GPS positions over air. Distance and bearing to other users can be displayed. When used with Internav™ CHF tracking PC software, up to 100 vehicles can be tracked. Internav™ provides advanced features such as corridor and alarm zones, waypoints, and recording of emergency events.



SPECIFICATIONS

GENERAL

Channels	Up to 1000 simplex or semi-duplex
Scanning	Up to 20 scan groups Simultaneous scanning for Selcall (ALE/CCIR) and voice Dwell time 125 ms to 9.9 s, adjustable
Contacts List	Up to 500 entries
SDR processing architecture	DSP, 456 MHz, 32-bit FPGA, 500,000 gate MCU, ARM9, 300 MHz 32-bit
Interfaces	USB (via Handset or Console) Serial RS232 (supports NMEA-0183 GPS) Ethernet (TCP/IP, supports remote control) Auxiliary GPIO (audio in/out, PTT, RS232) on Envoy™ X2 model
Audio response	Less than 3 dB variation from 300 Hz to 3 kHz (with optional 2.7 kHz filter)
Compliance	CE, NTIA, FCC, AS/NZS 4770:2000, AS/NZS 4582:1999 (pending)
Temperature range	-30 to +60°C
Humidity	95% RH maximum, non-condensing

RF

Frequency range	Transmit: 1.6 to 30 MHz Receive: 250 kHz to 30 MHz Frequency stability: ±0.3 ppm from -30°C to +60°C
Modes	Single sideband (J3E), USB, LSB, AM (H3E), CW (J2A), AFSK (J2B), F1B (FSK) (software controlled filter bandwidth)
Output power	125 W PEP ±1 dB (two-tone or voice), user-programmable (low/medium/high)
Duty cycle	100% Voice/Data with optional Fan
RF output impedance	50 Ω
Filter bandwidths	2.4 kHz standard (500 Hz, 2.7 kHz optional) Wideband software programmable filters available on Envoy™ X2 model
Transmitter specifications	Spurious and harmonic emissions: Better than <69 dB below PEP Intermodulation products: 40 dB below PEP Carrier suppression: Better than 65 dB below PEP Sideband suppression: 70 dB below PEP
Receiver specifications	Sensitivity: 0.12 µV, -125 dBm for 10 dB SINAD Selectivity: >70 dB at -1 kHz and +4 kHz ref SCF USB Blocking: >100 dB at ±50 kHz Image rejection: >95 dB Spurious response: >85 dB Intermodulation: Unwanted signal >92 dB below desired signal Intercept point: +38 dBm
Switching speed	<25 ms (Tx:Rx or Rx:Tx)

ELECTRICAL

Operating range	10.8 to 13.8 V DC (12 V Nominal)
Supply current	Receive: 500 mA (backlight min, audio muted) Transmit: Two-tone 12.5 A typical, average speech 8 A
Protection	Over-voltage/under-voltage/over-temperature/reverse polarity

SPECIFICATIONS (CONTINUED)

MECHANICAL

Size	2210 RF Unit:	210 x 270 x 65 mm (8.3 x 10.6 x 2.6 in)
	2220/1 Handset:	75 x 32 x 151 mm (3.0 x 1.3 x 5.9 in)
	2230 Console:	190 x 228 x 79 mm (7.5 x 9.0 x 3.1 in)
Weight	2210 RF Unit:	2.8 kg (6.2 lb)
	2220/1 Handset:	0.3 kg (0.7 lb)
	2230 Console:	1.1 kg (2.4 lb)
Paint finish	2210 RF Unit:	Powder-coated matt black
Ingress protection	IP54, MIL-STD-810G method 510.5	
Environmental standards	MIL-STD-810G (Dust, Shock, Vibration, Humidity, Fungus, Altitude)	

OTHER

Data modem (robust low rate)	CHIRP/QPSK, 2400 bit/s (up to 6000 bit/s using in-built compression)
Data modem (high speed)	MIL-STD-188-110A/B, STANAG 4539, 75 to 9600 bit/s
Encryption	CES-128, 97 x programmable 16-digit keys, 4-digit PIN (Voice only) AES-256, 256 x programmable 256-bit keys (Voice/Data)
Vocoder	MELPe (1200/2400 bit/s)
Software applications	TPS-3250 Transceiver Programming Software Internav™ GPS Tracking RC50-C Email (for high-speed modem) UUPlus™ Email (for robust low rate modem)
Language support	English, Spanish, Russian & Dari language

ACCESSORIES

- Desk Console
- 500 W / 1 kW High Power Amplifiers
- 3040 Automatic Whip Antenna
- 3020 AC Mains supplies
- 3033 Telephone Interconnect
- Dual-port Antenna Selector
- Vehicle installation kit
- Vehicle dash-mount handset cradle

MODELS

FEATURE	ENVOY X1	ENVOY X2
No. of channels	100	1000
Scan groups	10	20
Contact list entries	200	500
Accessory serial port	N/A	Standard
Data modem	N/A	Optional
Wideband filters	N/A	Optional
MIL-STD ALE	N/A	Optional



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

CODAN RADIO COMMUNICATIONS

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