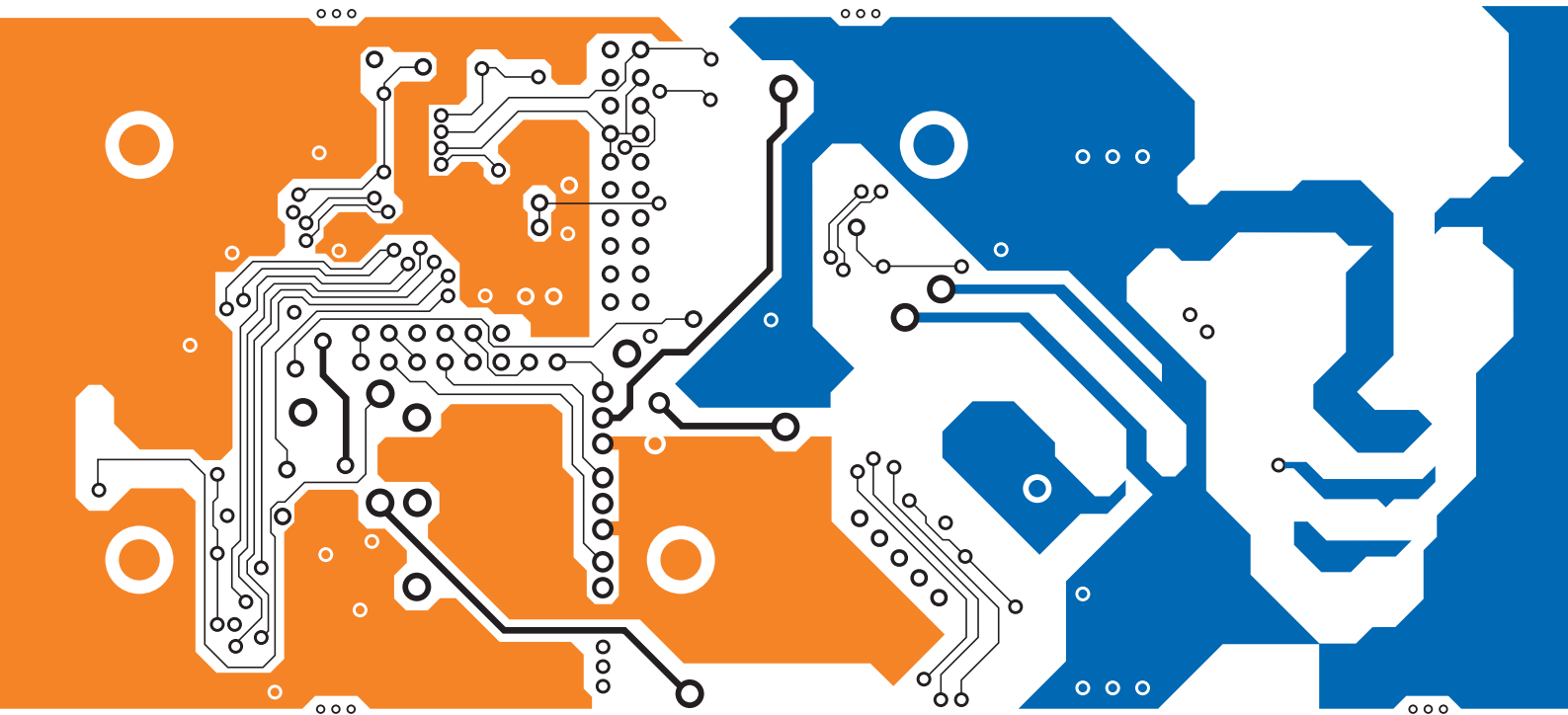




SSB Transceiver 2110

HF RADIO COMMUNICATIONS



REFERENCE MANUAL

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This reference manual provides an overview of the 2110 SSB Transceiver, how to deploy the antenna system, how to operate it, and how to perform advanced setup procedures. This manual is for system administrators who set up and maintain HF communication networks.

This manual contains:

- Section 1** [About this manual](#)—explains the terms and abbreviations used in this manual
- Section 2** [2110 SSB Transceiver compliance](#)—compliance information and safety notices
- Section 3** [HF radio transmission](#)—provides an overview of HF communication
- Section 4** [The 2110 SSB Transceiver](#)—explains the transceiver’s components, standard features and options
- Section 5** [Preparing the 2110 SSB Transceiver for use](#)—explains how to charge and install a battery, insert the transceiver into a backpack, and select an antenna
- Section 6** [Operating the transceiver](#)—explains how to use the transceiver, set your station self address, and set the time and date
- Section 7** [Using lists](#)—explains the contents of the Main Menu, how to use lists, and how to manage them using the List Manager
- Section 8** [The Channel List](#)—explains the settings in the Channel List and how to program a channel
- Section 9** [The Network List](#)—explains the settings in the Network List and how to program a network
- Section 10** [The NET List](#)—explains the settings in the NET List and how to program a NET
- Section 11** [The Phone Link List](#)—explains the settings in the Phone Link List and how to program a phone link
- Section 12** [The Address List](#)—explains the settings in the Address List and how to program the Address List
- Section 13** [Making and receiving calls](#)—explains how to make and receive calls
- Section 14** [The Control List](#)—explains the contents of the Control List
- Section 15** [The Keypad List](#)—explains the Keypad List
- Section 16** [The Mode List](#)—explains the Mode List
- Section 17** [Using the transceiver in free tune and Amateur Mode](#)—explains how to use the transceiver in free tune
- Section 18** [Hot keys](#)—explains how to set up, manage and use hot keys
- Section 19** [Operating the transceiver from a computer](#)—explains how to operate the transceiver from a computer using CICS
- Section 20** [Connectors](#)—explains the connectors on the 2110 SSB Transceiver
- Section 21** [System messages](#)—explains the system messages that may be displayed on the front panel screen

[Section 22 Accessories and hardware options](#)—lists the accessories and hardware options available for the 2110 SSB Transceiver

[Section 23 Specifications](#)—lists the specifications of the 2110 SSB Transceiver

[Appendix A Hot key examples](#)—provides examples of hot keys and how to create them

[Appendix B Get Status calls](#)—explains the information you can retrieve from another transceiver by making a Get Status call to that transceiver

[Appendix C Forgotten passwords](#)—explains what to do if you have forgotten the password for the transceiver

[Appendix D Limiting user access](#)—describes the Message 10 entries and how to use them

There is an index at the end of this manual.

Standards and icons

The following standards and icons are used in this manual:

This typeface Means...

<i>Italic</i>	a cross-reference or text requiring emphasis
Bold	a key on a computer keyboard
command	a command that you can enter from a computer, for example, help
command <variable> <variable>	a variable associated with a command that you enter using a computer, for example, prompt off <text string> time means that you may enter prompt off , prompt <text string> or prompt time
command [optional]	the information following the command in [] brackets is optional

This icon Means...

☐	a step within a task
NOTE	the text beside this icon may be of interest to you
CAUTION	proceed with caution as your actions may lead to loss of data, privacy or signal quality
WARNING	your actions may cause harm to yourself or the equipment

Definitions

Acronyms and abbreviations

This term	Means...
4WD	four wheel drive
addr	address
AGC	automatic gain control
ALC	automatic level control
ALE	automatic link establishment
AM	amplitude modulation
AMD	automatic message display
ASCII	American standard code for information interchange
BER	bit error rate
CALM	Codan automated link management
CB	citizen band
CICS	computer interface command set
CR	carriage return
CTS	clear to send
DC	direct current
DSP	digital signal processor
DTE	data terminal equipment
DTR	data terminal ready
ESN	electronic serial number
ETSI	European Telecommunications Standards Institute
GP	general purpose
GPIO	general purpose input/output
GPS	global positioning system
HF	high frequency
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ID	identification
IF	intermediate frequency

This term	Means...
ISO	internal sales order
LBT	listen before transmit
LCD	liquid crystal display
LED	light emitting diode
LF	line feed
LQA	link quality analysis
LSB	lower sideband
NiMh	nickel metal hydride
NSP	NGT system programmer
OTA	over-the-air
PA	power amplifier
PC	personal computer
PEP	peak envelope power
p-p	peak to peak
PTT	press-to-talk
rcvd	received
RF	radio frequency
R&TTE	radio and telecommunications terminal equipment
RTS	request to send
Rx	receive
SB	sideband
SINAD	(signal + noise + distortion)-to-(noise + distortion) ratio
SLA	sealed lead acid
SWR	standing wave ratio
tcvr	transceiver
TIS	ALE keyword 'this is'
TPE	transmit program enable
TWAS	ALE keyword 'this was'
Tx	transmit
TxD	transmit disabled
TxE	transmit enabled
TxP	transmit prohibited

This term	Means...
USB	upper sideband
UTC	universal time coordinated
UV	ultraviolet
V	firmware/software version

Glossary

This term	Means...
address	The HF transceiver equivalent of a telephone number. Your station self address is used by other stations to call you, and it is sent when you make calls to identify you as the caller. It is sometimes referred to as an ID, a station ID, or a self ID.
ALL call	An ALE address syntax used to broadcast to any station that is tuned to the same frequency in an ALE/CALM network or scanning the network. The ALL call uses a special address syntax @?@ that ALE stations recognise. A selective ALL call addresses a subset of stations. A multiple selective ALL call addresses these subsets within the one call. The ALL address syntax may be used in Emergency, Message, Phone, Selective, and Send Position calls if the FED-STD-1045 ALE/CALM option or MIL-STD-188-141B ALE option is installed.
ANY call	An ALE address syntax used to broadcast to any station that is tuned to the same frequency in an ALE/CALM network or scanning the network. The ANY call uses a special address syntax @@? that ALE stations recognise. A selective ANY call addresses a subset of stations. A multiple selective ANY call addresses these subsets within the one call. The ANY address syntax may be used in Emergency, Message, Phone, Selective, and Send Position calls if the MIL-STD-188-141B ALE option is installed.
automatic gain control (AGC)	A process that automatically adjusts the gain with respect to the input signal to provide a constant output level.
automatic level control (ALC)	A process that automatically provides a constant output level as the input level varies.
automatic tuning antenna	An antenna designed for use with multichannel transceivers. It uses a microcontrolled stepper motor to give continuous tuning over the operating frequency range of the antenna.

This term	Means...
call detect time	The length of time during scanning that the transceiver pauses on each channel in order to detect an incoming call. It is the inverse of the scan rate.
channel	Frequencies programmed in the transceiver to transmit and receive signals on air.
Channel Test call	A call that enables you to test the quality of a channel. It is sometimes referred to as a Beacon call. If you have the MIL-STD-188-141B ALE option installed, Channel Test calls may be made in an ALE/CALM network to replace information in the LQA database, and to perform a manual sounding operation.
counterpoise	A radial array or a grid network of metallic wires arranged horizontally around the base of an antenna to provide an effective earth plane.
Emergency call	A call that enables you to trigger an emergency alert tone at a specific station then speak to an operator there.
frequency	The number of cycles per second of a radio wave, usually expressed in kilohertz.
Get Position call	A call that gets the GPS position of a specific station.
Get Status call	A call that gets diagnostic information about the transceiver at a specific station.
Group Selective call	An ALE call that is sent to stations specifically addressed in the call that are tuned to the same frequency in an ALE/CALM network or scanning the network. The Group Selective call may be used in Emergency, Message, Phone, Selective, and Send Position calls if the MIL-STD-188-141B ALE option is installed.
front panel	The interface that is used to control the functions of the 2110 SSB Transceiver. It consists of a display, keypad and connectors for the handset, antenna and earthing.
hot key	A key on the front panel that is pre-programmed with a macro that enables you to perform a task quickly.
Last Heard Log	A log of the last 100 on-air transmissions detected by the current station. The information gathered from each transmission includes the self address of the heard station, the time/date of the transmission, and the channel/mode used for the transmission. The Last Heard Log is available if the MIL-STD-188-141B ALE option is installed.

This term	Means...
link	A link is established following a 3-way handshake process. Scanning is off and a timeout, set using the Cfg In Call Timeout entry in the Control List, will be active. With ALL calls and NET calls that are set to link immediately, the linking establishment process is 1-way.
listen before transmit (LBT)	If enabled, the automatic process that the transceiver uses to detect whether or not there is traffic on a channel and, when necessary, select another channel or inform the user that the channel is busy.
LQA beacon	A Channel Test call made in an ALE/CALM network using a Group Selective or NET address syntax. The LQA beacon tests all channels within the network to determine the best channel according to local and remote BER and SINAD measurements. On completion of the beacon, the information collected replaces the information for the channel stored in the LQA database. It is sometimes referred to as an ALE beacon. The LQA beacon is available if the MIL-STD-188-141B ALE option is installed.
macro	A short set of instructions to automate a task you perform with the transceiver. When a macro is assigned to a key, the key becomes a hot key.
manual sounding	A Channel Test call made in an ALE/CALM network using the text SOUNDING as the call address. The station performs a sounding operation, which other stations use to update the information in their LQA database. Manual sounding is available if the MIL-STD-188-141B ALE option is installed.
Message call	A call that enables you to send a message to a specific station.
mode	A type of reception or transmission you can use with a channel, comprising a sideband and an IF filter.
NET call	An ALE address syntax that is used to send a call from one station to other stations that have the NET programmed in the NET List. If these stations have their self address in the Member Address setting they are members of this NET. The NET address syntax may be used in Emergency, Message, Phone, Selective, and Send Position calls if the MIL-STD-188-141B ALE option is installed.
network	Two or more stations that use the same frequencies and call system to communicate.
Phone call	A call that enables you to connect to a public telephone network.

This term	Means...
PTT button	Press-to-talk button, located on the left side of the handset. This button enables you to communicate during voice calls, switch mute off temporarily, cancel voice calls prior to the point where voice can be transmitted, cancel calls where data is being transmitted, and exit out of editable screens without saving changes.
revertive	A signal sent by a station in response to a call.
transceiver unit	The unit that modulates audio signals onto radio frequencies that can be transmitted on air, and that demodulates the radio frequencies it receives into audio signals.
Selective call	A call that enables you to contact a specific station then speak to an operator.
Send Position call	A call that sends your GPS position to a specific station.
sideband	A band of frequencies that is above or below a modulated carrier frequency.
standing wave ratio (SWR)	The ratio of forward and reflected powers between a transmitter and its antenna load, which can be measured by an SWR meter.
station	A point of communication consisting of a transceiver, a power supply, an antenna, control and accessory devices, ancillary equipment, and appropriate connecting cables.
transceiver	A transceiver unit with speaker, handset, and battery.
Wildcard call	An ALE address syntax used to broadcast to any station that is tuned to the same frequency in an ALE/CALM network or scanning the network. The Wildcard address syntax, which ALE stations recognise, uses the wildcard character ? as a placeholder for characters within a self address of a receiving station. A multiple Wildcard call addresses matching subsets within the one call. The Wildcard address syntax may be used in Emergency, Message, Selective, and Send Position calls if the MIL-STD-188-141B ALE option is installed.

Units

NOTE Imperial dimensions are in United States Customary Units.

Measurement	Unit	Abbreviation
Area	American wire gauge	AWG
Capacitance	farad	F
Current	amp	A
Frequency	hertz	Hz
Impedance	ohm	Ω
Length	metre (inch/feet/yard/mile)	m (in/ft/yd/mi)
Power	watt	W
Power ratio	decibel	dB
Temperature	degrees Celsius (Fahrenheit)	°C (°F)
Time	second	s
	hour	h
Voltage	volt	V
Weight	gram (pound)	g (lb)

Unit multipliers

NOTE Units are expressed in accordance with ISO 1000:1992 ‘SI units and recommendations for the use of their multiples and of certain other units’.

Unit	Name	Multiplier
M	mega	1 000 000
k	kilo	1 000
m	milli	0.001
n	nano	0.000 000 001

About this issue

This is the first issue of the 2110 SSB Transceiver Reference Manual.

Associated documents

This manual is one of a series of publications related to the 2110 SSB Transceiver. Associated documents are:

- 2110 SSB Transceiver Getting Started Guide (Codan part number 15-04136-EN)
- NGT System Programmer Help (Codan part number 15-04105-EN)
- Antenna Matrix (Codan part number 12-50133)
- 2110 SSB Transceiver Technical Service Manual (Codan part number 15-02071-EN)
- 2110 SSB Transceiver Repair Guide (Codan part number 15-04139-EN)
- Declaration of Conformity for the 2110 SSB Transceiver (Codan part number 19-40157)

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2 2110 SSB Transceiver compliance

This section contains the following topics:

[Introduction \(14\)](#)

[European Radio and Telecommunications Terminal Equipment Directive \(15\)](#)

[Electromagnetic compatibility and safety notices \(16\)](#)

[C-tick approval \(18\)](#)

[Care and safety information \(19\)](#)

Introduction

This section describes how to ensure the 2110 SSB Transceiver complies with the European Electromagnetic Compatibility Directive 89/336/EEC and the European Low Voltage Directive 73/23/EEC as called up in the European Radio and Telecommunications Terminal Equipment Directive 1999/5/EC.

The CE Declaration of Conformity and Expert Letter of Opinion for the product is listed on [page 11, *Associated documents*](#). This document can be made available upon request to Codan or a Codan-authorized supplier.

This section also contains the requirements for C-tick.

European Radio and Telecommunications Terminal Equipment Directive

The 2110 SSB Transceiver has been tested and complies with the following standards and requirements (articles of the R&TTE Directive):

- Article 3.1b: ETSI EN 301 489-1
- Article 3.1b: ETSI EN 301 489-15
- Article 3.2: Australian type approval according to AZ/NZS 4770:2003
- Article 3.1a: assessed against ICNIRP requirements
- Article 3.1a: EN 60950

Compliance with these standards is deemed sufficient to fulfil the requirements of the R&TTE Directive 1999/5/EC.

Product marking and labelling

Any equipment supplied by Codan that satisfies these requirements is identified by the **CE0191** Ⓢ, **CE0191**, or **CE** markings on the model label of the product.

Declaration of Conformity and Expert Letter of Opinion

The CE Declaration of Conformity and Expert Letter of Opinion for this product is listed on [page 11, *Associated documents*](#). This document can be made available upon request to Codan or a Codan-authorized supplier.

Protection of the radio spectrum

CAUTION Most countries restrict the use of HF radio communications equipment to certain frequency bands and/or require such equipment to be licensed. It is the user's responsibility to check the specific requirements with the appropriate communications authorities. If necessary, contact Codan for more information.

Electromagnetic compatibility and safety notices

Radiation safety

To ensure optimal transceiver performance and to avoid exposure to excessive electromagnetic fields, the antenna system must be installed according to the instructions provided.

WARNING High voltages exist on the antenna during transmission and tuning. Do not touch the antenna during these activities. RF burns may result.

WARNING Install the grounding system or counterpoise as directed to prevent RF burns from any metal part of the transceiver.

You should not transmit from your transceiver or tune the antenna unless people are beyond the safe working distance of:

- WARNING**
- 0.2 m (8 in) from a long wire, end-fed broadband, broadband dipole, or wire dipole antenna
 - 0.6 m (2 ft) from any whip antenna

Safe working distance is based on continuous exposure to CW type transmissions, as set out in the ICNIRP Exposure Guidelines 1998 for occupational exposure. Safe working distance can be reduced with normal voice communication.

Electromagnetic compatibility

To ensure compliance with the EMC Directive is maintained, you must:

- ☐ Cover unused connectors with the protective caps supplied to prevent electrostatic discharge passing through your equipment.

Electrical safety

To ensure compliance with the European Low Voltage Directive is maintained, you must deploy and use the 2110 SSB Transceiver and antennas in accordance with the instructions in the *2110 SSB Transceiver Getting Started Guide*, the *Quick Reference Cards* supplied with each antenna, and the *2110 SSB Transceiver Reference Manual*.

When using equipment that is connected directly to the AC mains these precautions must be followed and checked before apply AC power to the unit:

- ☐ Use the standard AC mains cable supplied.
- ☐ Ensure the covers for the equipment are fitted correctly.

The 3121 AC Battery Charger is double insulated and marked with .

CAUTION If it is necessary to remove the covers during service by a qualified electronics technician, they must be refitted correctly before using the equipment.

WARNING The protective cover must always be fitted when the 3121 AC Battery Charger is connected to the AC mains.

Batteries

Battery cells are electrically live at all times and must be treated with extreme caution. They may supply high short-circuit currents even if they appear to be damaged or inoperable.

Batteries should be used to provide power to the transceiver only, using the supplied connectors.

The batteries will not charge at temperatures higher than 40°C.

Earth symbols

An antenna earth connection point is provided on the 2110 SSB Transceiver. The symbol shown in [Table 1](#) is used to identify the earth on the equipment.

Table 1: Earth symbol

Symbol	Meaning
	Antenna earth

C-tick approval

The 2110 SSB Transceiver meets the requirements of the Australian Communications Authority Radiocommunications (MF and HF Radiotelephone equipment—Land Mobile Services) Standard 2003 (AS/NZS 4770).

Care and safety information

Storage of batteries

Codan recommends that batteries are fully charged prior to storage. The length of time that they can be stored before recharging is necessary is dependent on the type of battery and the average storage temperature.

Table 2: Battery storage times

Type	Storage time @ 20°C (70°F)	Storage time @ 30°C (85°F)
NiMh	12 months	6 months
SLA	15 months	10 months

Disposal of batteries

Batteries must be recycled. They should not be burnt or disposed of in landfill.

Immersion of the transceiver in water

The transceiver unit and battery pack are designed to be waterproof to IP68. The units can withstand immersion in 1 m (3 ft) of water for up to 1 h. Prolonged immersion may cause damage to the units.

If the units are immersed in water, drain any water from the front panel speaker and keypad, then wipe and air dry the connectors on the units prior to use or charging the battery.

If the units are exposed to salt water, they should be washed with fresh water as soon as possible.

WARNING Do not expose the connector on the battery pack to salt water. This will damage the connector.

Deploying antennas

WARNING Do not deploy the antenna at sites with overhead power cables.

WARNING Do not deploy or use any antenna if there is lightning in the area.

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3 HF radio transmission

This section contains the following topics:

[HF radio transmission \(22\)](#)

[Etiquette for the use of HF radio \(25\)](#)

HF radio transmission

The HF band is the range of frequencies between 3 and 30 MHz. HF transceivers usually cover a frequency range of 1.6 to 30 MHz.

Codan HF transceivers transmit on single sidebands. This reduces the power required to send HF signals and increases the number of channels available within the HF spectrum.

HF transceivers are primarily used for long-range communication where distances of 3000 km (1800 mi) and more are possible. Obstructions such as buildings and mountains have little effect on long-range communication. HF radio can cover such large distances because of the way the transmitted radio signal propagates.

HF radio waves propagate in three ways simultaneously:

- ground wave
- direct wave
- sky wave

Ground wave

The ground wave travels near the ground for short distances, typically up to 100 km (60 mi) over land and 300 km (190 mi) over sea. The distance covered depends upon the operating frequency, transmission power and type of terrain.

Direct wave

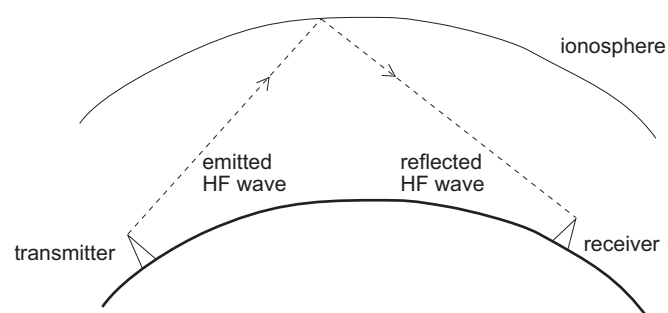
The direct wave travels in a direct line-of-sight from the transmitter to the receiver.

Sky wave

The sky wave is the most important form of HF propagation. The radio wave is transmitted toward the sky and is reflected by the ionosphere to a distant receiver on earth.

The reflective properties of the ionosphere change throughout the day, from season to season, and yearly.

Figure 1: The reflective properties of the ionosphere



Frequency, distance and time of day

The extent to which a radio wave is reflected depends on the frequency that is used. If the frequency is too low the signal is absorbed by the ionosphere. If the frequency is too high the signal passes straight through the ionosphere. Within the HF band, low frequencies are generally considered to be in the range of 2 to 10 MHz. High frequencies are above 10 MHz.

A frequency chosen for daytime transmission may not necessarily be suitable for night-time use. During the day the layers of the ionosphere are thick. The layers absorb lower frequencies and reflect higher frequencies. At night, the ionosphere becomes very thin. The low frequencies that were absorbed during the day are reflected and the high frequencies that were reflected during the day pass straight through.

Summer HF communications usually operate on higher frequencies than those used in winter over the same distance.

Solar activity varies over an 11 year cycle. Higher frequencies need to be used during periods of peak activity.

It is important to remember that you may need to change the frequency you are using to achieve the best communication. The general rules of thumb for HF communication are:

- the higher the sun, the higher the frequency
- the further the distance, the higher the frequency

Channels and modes

A channel is a name that is given to a frequency or a pair of frequencies, for example, 'Channel 1', '4500' and 'Headquarters'. The frequencies may be any frequencies within the HF range.

Each channel has one or more modes associated with it. Each mode indicates a sideband that can be used with the channel, such as USB or LSB. When you make a call you need to specify the channel *and* the mode you want to use.

[Table 3](#) shows examples of channels and the information associated with them.

Table 3: Examples of channels and modes

Channel	Receive frequency (kHz)	Transmit frequency (kHz)	Modes
Channel 1	10600	10600	LSB, USB
4500	4500	—	AM
Headquarters	22758	23000	USB

Networks and scanning

A network is two or more stations that use the same frequencies and call system to communicate.

The frequencies are allocated by a government authority and enable the network to maintain HF communication throughout the day and night.

The call system is the method the network uses to make and receive calls. For example, in networks that use the Codan Selcall call system to make calls, the user enters the address of the station they want to call, then selects the channel/mode on which to make the call. In networks that use the ALE/CALM call system, the transceiver selects the best channel/mode for the call.

The transceiver can be set to scan the channel/modes used by your network to detect incoming calls. It is recommended that when you are not using the transceiver to communicate you switch scanning on. This ensures that you can receive calls from stations in your network.

The FED-STD-1045 ALE/CALM option

If you want to use the ALE/CALM call system to automate the selection of channels you must install the FED-STD-1045 ALE/CALM option in the transceiver. CALM stands for Codan Automated Link Management.

The FED-STD-1045 ALE/CALM option enables the transceiver to test the signal propagation qualities of your channels using soundings, and build a profile of each channel's suitability for use at different times of the day and night. The BER and SINAD information collected during sounding activity is stored in the transceiver using a 24-hour period LQA database. With this information, the transceiver is able to select the most suitable channel/mode for you when you make a call.

You are able to make ALE ALL calls with this option.

CALM is interoperable with FED-STD-1045 ALE.

The MIL-STD-188-141B ALE option

The MIL-STD-188-141B ALE option includes the FED-STD-1045 ALE/CALM option. It also provides the capability to make ALE calls using ALL, ANY, Group Selective, NET, and Wildcard address syntaxes. These calls connect one station to many stations at the same time. The MIL-STD-188-141B ALE option also provides advanced link quality analysis, advanced messaging, and access to a Heard List.

The MIL-STD-188-141B ALE option is interoperable with FED-STD-1045 ALE and MIL-STD-188-141B.

Etiquette for the use of HF radio

There is a standard procedure for communicating over HF radio. Before you begin transmitting, switch off scanning, select a channel, then press PTT to initiate tuning of the antenna. Listen to the channel that you are going to use and ensure that there is no voice or data communication taking place. You may need to wait until the channel is clear or select another channel.

NOTE If you have the Cfg LBT Mode set to Enabled or Override allowed, the transceiver searches for a channel that is not being used; you do not need to check any channels first.

When you first establish communication with another station it is customary to state their call sign and then your own using the phonetic alphabet (see [Table 4 on page 26](#)). For example:

‘Alpha Bravo One, this is Alpha Bravo Two. Do you receive me? Over.’

In this example your call sign is AB2 and you are calling a station with the call sign AB1. A call sign is a group of letters and numbers issued by a government authority to identify a station. The phonetic alphabet is used to ensure that your call sign is understood.

The word ‘over’ is used to signify the end of your transmission. The transceiver may be set up to transmit a short beep when you release the PTT button on the handset. When your conversation with the other party is finished, the party that speaks last should say ‘out’.

Swearing or foul language should not be used—heavy penalties can apply.

Keep communication as short as possible.

Table 4: The phonetic alphabet

Letter	Word	Letter	Word
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

4 The 2110 SSB Transceiver

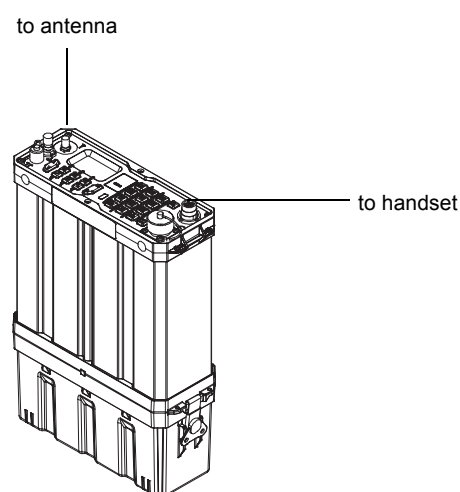
The 2110 SSB Transceiver consists of a:

- handset
- 2110 transceiver unit
- battery pack
- antenna and earthing equipment

The handset is a hand-held device that has a microphone, and PTT button. The microphone and PTT button are used for voice communication.

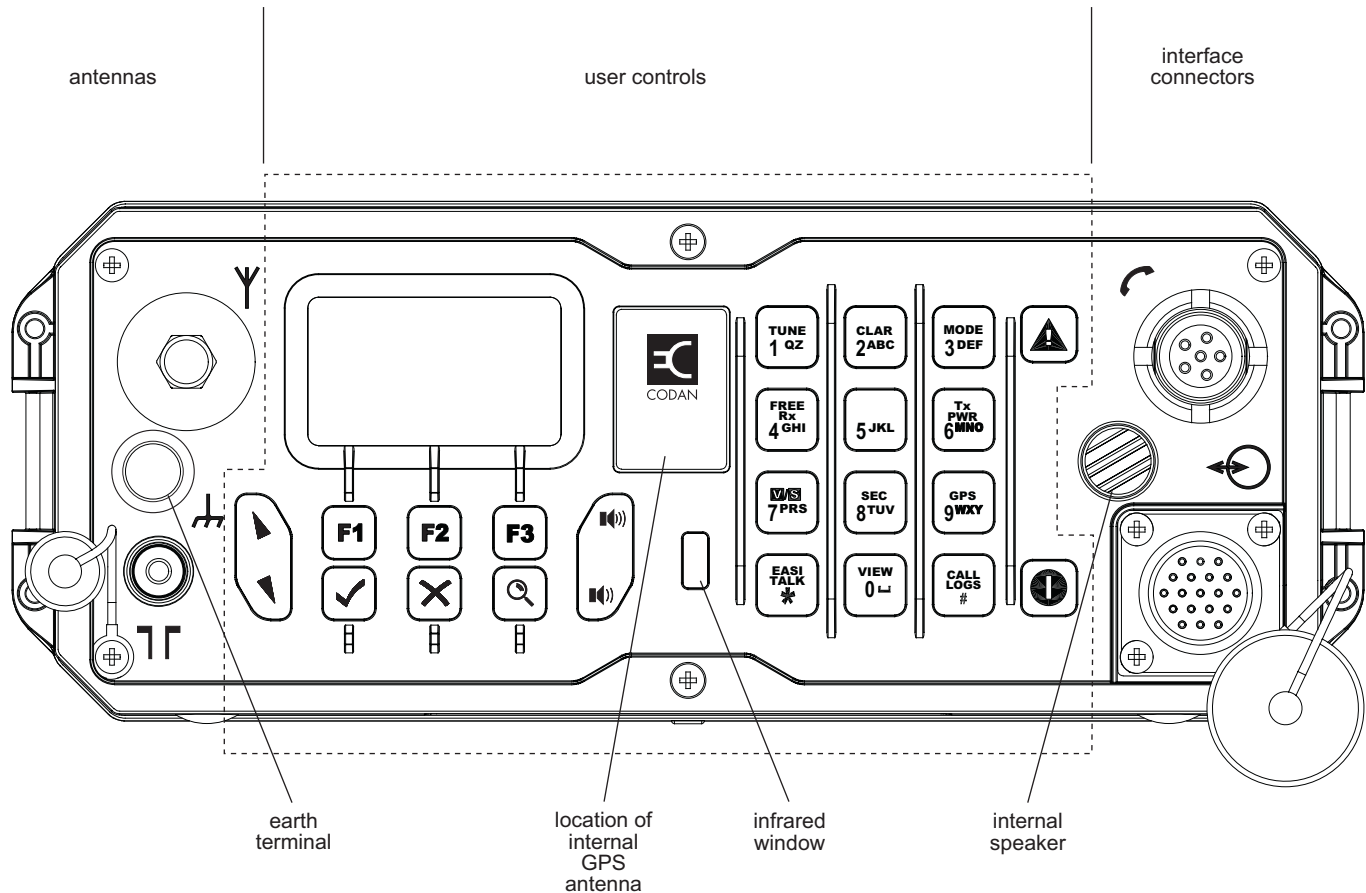
The transceiver unit modulates audio signals onto radio frequencies that can be transmitted on air, and demodulates the radio frequencies it receives into audio signals. The keypad on the front panel of the transceiver unit enables you to control and configure the 2110 SSB Transceiver. The handset connects to the front panel.

Figure 2: The 2110 SSB Transceiver



The front panel

Figure 3: The front panel



User controls

The user control area comprises:

- an LCD
- navigation keys (left arrow, right arrow, checkmark, X, magnifying glass)
- volume controls (two speaker icons)
- soft function keys (**F1**, **F2**, **F3**) corresponding to the function displayed on the front panel screen
- alphanumeric keys (**0–9**, *****, **#**)
- emergency key (triangle with exclamation mark)
- power key (power symbol)

There are two ways to use the keys on the front panel. You can:

- press a key, briefly
- *hold* a key for 2 seconds

The ✓ and ✕ keys

Press ✓ to:

- select the item on the active line in the list
- save changes
- answer ‘yes’ to prompts

Hold ✓ to edit settings.

Press ✕ to:

- backspace over text
- remove messages on the screen
- cancel changes
- answer ‘no’ to prompts

Hold ✕ to go from any location to the home screen. If you have entered text into a setting and want to discard the changes you made, *hold* ✕.

The scroll keys

The ⬅ and ➡ keys are the scroll keys. Use these keys to scroll up or down through any kind of list, to scroll left or right over text, and to increase or decrease a value.

Interface connectors

The interface connector area comprises:

- the 6-way handset connector (📞)
- the 19-way GPIO connector (🔌)

Antennas

The antenna area comprises:

- the antenna stud (📡) for whip antennas and the long wire antenna adaptor
- the 50 Ω connector (📶) for broadband and dipole antennas

Hot keys

Hot keys enable you to perform a task quickly. The transceiver comes with some standard hot keys programmed; the keys are labelled with the corresponding task performed.

Table 5: Standard hot keys

Hot key	Function
F1	Pressing F1 performs the macro assigned to this soft function key. By default, MUTE is assigned to this key, so pressing F1 toggles mute on or off.
F2	Pressing F2 performs the macro assigned to this soft function key. By default, CALL is assigned to this key, so pressing F2 starts a call.
F3	Pressing F3 performs the macro assigned to this soft function key. By default, SCAN is assigned to this key, so pressing F3 switches off scanning, or if you were in a call, ends the call and switches scanning on.
<i>Hold MUTE</i>	<i>Holding MUTE</i> toggles the front panel speaker on or off.
TUNE	Pressing TUNE displays the PTT tunes screen so you can manually tune the antenna. For more information see page 77, Manual tuning .
CLAR	Pressing CLAR enables you to adjust the receive frequency to compensate for any frequency offset between your transceiver and the remote transceiver. For more information see page 78, Using the clarifier .
MODE	Pressing MODE selects the next allowable mode programmed for the channel, usually USB or LSB.
FREE Rx	Pressing FREE Rx enters Free Tune mode in which you can adjust or enter a receive frequency. For more information see page 232, Using the transceiver in free tune .
Tx PWR	Pressing Tx PWR toggles the transmission power of the transceiver between Hi (25 W) and Lo (5 W).
V/S	Pressing V/S toggles the mute type between Voice mute and Selcall mute. For more information see page 61, Muting the transceiver .
SEC	Pressing or <i>holding SEC</i> enters Secure mode, if the hardware option is fitted, and special firmware is programmed into the transceiver and enabled. For more information see page 80, Using the voice encryptor .
GPS	Pressing GPS displays your current GPS position, if the hardware option is fitted and enabled. For more information see page 222, GPS Screen entry .
EASITALK	Pressing EASITALK toggles the DSP noise reduction algorithm on or off. For more information see page 79, Reducing background noise with Easitalk .

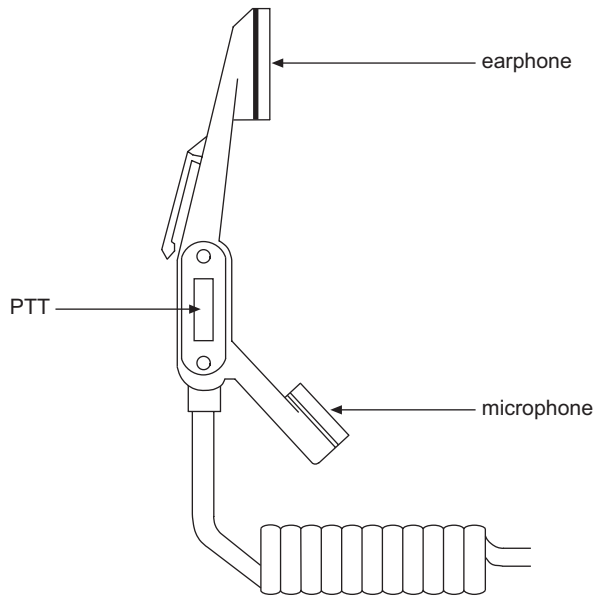
Table 5: Standard hot keys (cont.)

Hot key	Function
VIEW	Pressing VIEW toggles between the channel screen and the Address List. If you are in any other list, pressing VIEW displays the channel screen.
CALL LOGS	Pressing CALL LOGS repeatedly steps through a number of call logs: Calls Out, Calls In, Last Heard, then back to the screen from which you began. In these logs, you can view the details of the calls or detected stations. The Last Heard log is only available if you have the MIL-STD-188-141B ALE option installed.
▲ (Emergency)	<i>Holding ▲</i> starts an automatic Emergency call transmission using call information contained in the Emergency entries in the Address List (see page 152, Making several different types of calls).
1 (Power)	Pressing 1 cycles the screen and keypad backlighting through the brightness settings.
1 + 9	Pressing 1 + 9 enables you to change the default setting for the screen contrast. For more information see page 74, Changing the screen contrast .
1 + 0	Pressing 1 + 0 enables you to change the default setting for the screen and keypad backlighting. For more information see page 74, Changing the screen brightness .

Handset

The 2110 SSB Transceiver supports standard audio accessories using H-229 type connectors. The handset is a standard issue, lightweight, tactical H-250/U type, with built-in earphone, noise-cancelling microphone, and PTT button. It is connected to the 6-way connector on the front panel of the transceiver.

Figure 4: The handset



5 Preparing the 2110 SSB Transceiver for use

This section contains the following topics:

[Charging a battery \(34\)](#)

[Connecting a battery to the transceiver \(36\)](#)

[Inserting the transceiver into a backpack \(36\)](#)

[Selecting an appropriate antenna \(37\)](#)

[Troubleshooting the transceiver \(41\)](#)

[Testing the installation \(42\)](#)

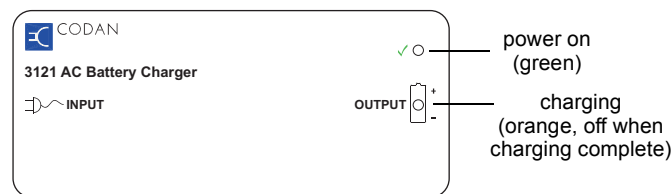
Charging a battery

Before using your transceiver, you must ensure that the supplied battery is fully charged. You may use an AC–DC or DC–DC charger with the battery. The AC–DC charger (Type 3121) uses a universal AC mains input of 90–264 V AC. The DC–DC battery charger (Type 3122) may be powered from any 12–60 V DC source, for example, from a vehicle 12 V DC outlet, or from a 24 V vehicle battery.

The Codan battery chargers are specially designed for low-noise operation, so receiver performance remains optimal while charging the battery via the front panel. You can continue to use your transceiver during battery charging.

- CAUTION** Charging is recommended between 0 and 40°C. The battery will not commence charging if the temperature is at or above 40°C. If charging is already in progress, and the temperature rises to 50°C, charging will be stopped automatically.
- CAUTION** To prevent damage to the battery, Codan recommends the use of the Codan battery chargers to charge the battery pack.

Figure 5: Typical front panel of a battery charger



- WARNING** The battery pack should be charged with the connector facing upward and the vents clear of obstructions so that any gas created during the charging process is released.
- CAUTION** Provide clear notification that charging is underway. Ensure there is adequate ventilation around the battery during charging.

To charge a battery:

- ☐ Do one of the following:
 - If the battery is attached to the transceiver, use cable 08-06215-001 to connect the output of the charger to the 19-way connector on the front panel of the transceiver.
 - If the battery is detached from the transceiver, use cable 08-06214-001 to connect the output of the charger to the 6-way connector on the top of the battery pack.
- ☐ Connect the charger to an appropriate power source.

NOTE It will take approximately 16 seconds for charging to start.

If the transceiver is operational during charging, the battery status indicator on the front panel screen will show that the battery is charging. When charging is complete, the battery status indicator will be full.

Requirements for alternative chargers

The Codan battery packs may be charged using alternative supplies, for example, solar panels or hand-crank generators. In this situation, the voltage level must not exceed 15.5 V and the current must be within 1–3 A. These chargers must be connected between pin B (charge in) and pin A (ground) on the connector on the battery pack.

Notes on charging batteries

A battery will require 3–5 discharge/recharge cycles when new before it will reach its full capacity. In order to increase the battery service life, it is recommended that the battery *is not* fully discharged during each cycle. Full discharge should only be carried out periodically as follows:

Type Full discharge

NiMh Two full discharge/recharge cycles every 20 charge cycles

SLA One full discharge/recharge cycle every 20 charge cycles

For the periodic full discharge cycle, run the battery down to zero capacity using the transceiver. The transceiver will switch off automatically when the battery is fully discharged.

WARNING If you are using alternative means to discharge the battery, the battery voltage must not go below 10 V.

WARNING An SLA battery must be charged immediately after discharge to prevent damage to the battery.

The Codan battery packs have in-built monitoring, which is reported in the Battery entry in the Control List. You should view the Battery Cycle setting for the number of times the battery has received input current (that is, has been charged).

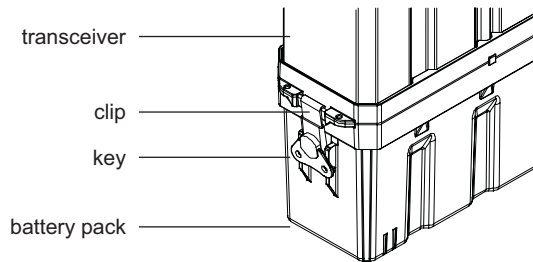
NOTE You will need to log in as administrator to see the Control List (see [page 110, Logging into admin level from user level](#)).

Connecting a battery to the transceiver

The battery is connected to the bottom of the transceiver. It is held in place by clips with locking key latches (see [Figure 6](#)).

NOTE The battery connector on the base of the transceiver is on the same side of the transceiver as the antenna connectors on the front panel.

Figure 6: Transceiver with battery pack connected



Inserting the transceiver into a backpack

All backpacks come with adjustable straps that hold the transceiver firmly in position. Some backpacks have an internal mounting frame.

To insert the transceiver into a backpack with an internal mounting frame:

- ☐ Open the rear of the backpack to expose the mounting frame.
- ☐ Push the transceiver between the foam mounts on the frame.
- ☐ Secure the transceiver with the two adjustable straps.
- ☐ Close the rear of the backpack.

To insert the transceiver into the soft backpack:

- ☐ Slide the transceiver into the backpack.
- ☐ Secure the transceiver with the adjustable strap on the outside of the backpack.

Selecting an appropriate antenna

Use the following table as a guide to selecting an antenna that is appropriate for your communication requirements.

Table 6: Selection guide for antennas

Antenna	Communication distance (km)				Effort to install	Antenna performance	See...
	0–100	100–500	up to 2000	up to 5000			
Tape/Knock-down whip	✓				Minimum Maximum	Adequate Superior	page 37, Whip antennas
3 m (10 ft) collapsible whip	✓	✓					
Long wire and adaptor	✓	✓	✓				page 38, Long wire antenna and adaptor
End-fed broadband	✓	✓	✓				page 39, End-fed broadband antenna
Broadband dipole	✓	✓	✓	✓			page 39, Broadband dipole antenna
Wire dipole	✓	✓	✓	✓			page 40, Wire dipole antenna

NOTE

For specific information on the deployment of an antenna see the *Quick Reference Card* provided with the antenna.

Whip antennas

There are three whip antennas available for use with the 2110 SSB Transceiver:

- tape whip
- knock-down whip
- 3 m (10 ft) collapsible whip

All whip antennas are omnidirectional in performance, therefore providing radiation efficiency equally in all directions depending on the deployment position (for example, vertical position for long distances and horizontal position for short distances). When receiving, this omnidirectional performance may mean more unwanted signals are picked up, which contributes to high levels of background noise or interference.

The whip antennas are suitable for multifrequency operation. The built-in antenna tuner automatically tunes the antenna on the first time a transmission occurs after selecting a new channel. This occurs when your transceiver receives a call, or when you press PTT. Alternatively, the antenna can be tuned to a frequency by pressing **TUNE**, then PTT. The SWR of the antenna may be viewed by pressing **TUNE**. The whip antennas are suitable for scanning ALE/CALM and Codan Selcall networks.

The whip antennas are designed for deployment on the antenna stud on the front panel of the 2110 SSB Transceiver. The tape and knock-down whip antennas are suitable for walking and listening for communication over short distances up to 100 km (60 mi), using frequencies of 3–30 MHz. The 3 m (10 ft) collapsible whip antenna is suitable for communication over short to medium distances up to 500 km (300 mi), using frequencies of 2–30 MHz. Due to its length and rigidity, the collapsible whip antenna is not suitable for walking and listening.

Table 7: Advantages and limitations of a vertical whip antenna

Advantages	Limitations
Quick and easy to deploy. Tape and knock-down whips are suitable for monitoring communications while moving due to their flexibility and knock-down properties. Omnidirectional antenna, therefore it can pick up signals equally in all directions. Suitable for short-distance communications. Suitable for scanning applications. Multifrequency operation.	Tape and knock-down whips unsuitable for distances over 100 km (60 mi). 3 m (10 ft) collapsible whip unsuitable for distances over 500 km (300 mi). 3 m (10 ft) collapsible whip unsuitable for monitoring communications while moving. This antenna is more susceptible to noise pickup such as that produced by welders, electric motors, power lines etc. If used in a noisy environment, degradation of the received signal will occur.

Long wire antenna and adaptor

The long wire antenna is suitable for multifrequency operation with the built-in antenna tuner of the 2110 SSB Transceiver. It is approximately 10 m (11 yd) in length. The long wire antenna is suitable for scanning ALE/CALM and Codan Selcall networks.

The long wire antenna and adaptor is designed for deployment on the antenna stud on the front panel of the 2110 SSB Transceiver with the use of one support structure. The long wire antenna is suitable for communication over short to long distances up to 5000 km (3000 mi), using frequencies of 1.6–30 MHz. It is restricted to a fixed site for transmission and reception.

Table 8: Advantages and limitations of a long wire antenna and adaptor

Advantages	Limitations
Quick and easy to deploy. Large in size therefore, is more efficient than the whip antennas. Suitable for scanning applications. Multifrequency operation.	Requires a support structure and appropriate space, oriented correctly for the required direction of communication. The length of the wire may need to be varied to tune on all frequencies.

End-fed broadband antenna

The end-fed broadband antenna is a multifrequency antenna that does not require tuning. It is suitable for scanning ALE/CALM and Codan Selcall networks.

The end-fed broadband antenna is designed for deployment on the **1F** connector on the front panel of the 2110 SSB Transceiver with the use of one support structure. The end-fed broadband antenna is suitable for communication over short to long distances up to 5000 km (3000 mi), using frequencies of 2–30 MHz. It is restricted to a fixed site for transmission and reception.

Table 9: Advantages and limitations of a end-fed broadband antenna

Advantages	Limitations
Quick and easy to deploy. Suitable for scanning applications. Multifrequency operation.	Requires a support structure and appropriate space, oriented correctly for the required direction of communication. Due to its broadband properties, it has a low immunity to noise. May be inefficient on some frequencies.

Broadband dipole antenna

The broadband dipole antenna is a multifrequency antenna that does not require tuning. It is suitable for scanning ALE/CALM and Codan Selcall networks.

The broadband dipole antenna is designed for deployment on the **1F** connector on the front panel of the 2110 SSB Transceiver with the use of at least one support structure. The broadband dipole antenna is suitable for communication over short to long distances up to 5000 km (3000 mi), using frequencies of 3–30 MHz. It is restricted to a fixed site for transmission and reception.

Table 10: Advantages and limitations of a broadband dipole antenna

Advantages	Limitations
Suitable for scanning applications. Multifrequency operation. Generally, more efficient than the end-fed broadband antenna.	Requires at least one support structure and appropriate space, oriented correctly for the required direction of communication.

Wire dipole antenna

The wire dipole antenna is a single frequency antenna that is deployed to a particular length corresponding to its operational frequency. It cannot be used in scanning applications.

The wire dipole antenna is designed for deployment on the 7F connector on the front panel of the 2110 SSB Transceiver with three support structures. The wire dipole antenna is suitable for communication over short to long distances up to 5000 km (3000 mi), using frequencies of 3–30 MHz. It is restricted to a fixed site for transmission and reception.

Table 11: Advantages and limitations of a wire dipole antenna

Advantages	Limitations
Good signal quality. Suitable for medium to long-distance communications.	Requires at least three support structures and appropriate space, oriented correctly for the required direction of communication. Single frequency operation, therefore not suitable for scanning applications. Length of antenna is specific to the desired frequency of operation.

Troubleshooting the transceiver

Below is a checklist for basic troubleshooting.

Check that:

- all connectors are dry and free of dirt
- all connections are sound
- the battery is connected to the transceiver and has some charge
- the selected antenna is appropriate for the distance over which you want to communicate
- the antenna is deployed correctly, oriented in a suitable direction, and connected to the transceiver
- the grounding system is adequate as per instructions provided with the antenna
- the antenna selection icon on the front panel screen matches the type of antenna you are using

If required, restart your transceiver to invoke self-testing. The self-test checks the memory, hardware, LCD and keys.

If a serious fault is reported, contact your Codan representative.

[Table 12](#) contains some general tips for troubleshooting your transceiver.

Table 12: General troubleshooting

Problem	Solution
The sound from the front panel speaker is muffled	Drain any moisture from the front panel of the transceiver by turning it upside down.
Communications are not clear	Try another channel. Press PTT. If you are using a whip or long wire antenna, check that the antenna selection icon is Y ATU or Y ATU/50 (see Figure 9 on page 48). If you are communicating over a short distance, try laying the whip horizontally for near vertical incident skywave operation. Change to a long wire antenna. If communications are still not clear, change to a dipole or broadband antenna and check that the antenna selection icon is 11 50 or 11 ATU/50 (see Figure 9 on page 48).
There are no supports for a wire antenna available	Lay the antenna wire on the ground. Lay the counterpoise in the opposite direction.
I get a burn from the handset when I press PTT	The transceiver is not adequately earthed. Attach a counterpoise as per the instructions provided with the antenna.
GPS is not working	Ensure that the front panel of the transceiver, and hence the GPS antenna, is facing the sky so that it can receive signals from satellites.

Testing the installation

Following correct deployment, the station should be tested for correct operation prior to use in the HF network.

Testing involves:

- measuring the SWR
- carrying out station-to-station on-air testing

Voltage standing wave ratio

The 2110 SSB Transceiver measures the forward and reflected powers between the transceiver and its antenna load. To ensure correct installation, the power and SWR assessment should be performed with the transceiver working in its normal antenna system. Press **TUNE** to see the SWR, then press PTT to manually tune the antenna.

If the impedance of the antenna is equal to 50 Ω , there will be no power reflected. This is the ideal situation, which gives an SWR reading of 1:1. An SWR equal to or lower than 2.5:1 is acceptable. If the SWR is greater than 3:1, the ALC circuitry in the transceiver will reduce the output power. With some combinations of frequencies and antenna design, it may not be possible to achieve the desired value on all channels.

Using SWR to test the transceiver

To test the transceiver:

- ☐ Select the channel with the highest operating frequency of the transceiver.
- ☐ Press **TUNE**.
- ☐ Press PTT to tune the transceiver.

If the antenna length and ground parameters are within satisfactory operating range, tuning will be successful and the SWR reading will be less than 2:1.

- ☐ Select the channel with the lowest operating frequency of the transceiver and repeat the test.
- ☐ If a particular channel frequency does not tune, check the:
 - length of the antenna (for long wire antennas)
 - effectiveness of the grounding system
 - orientation of the antenna

Alter these slightly in an attempt to achieve better tuning.

On-air testing

On-air testing gives a better indication of antenna operation, particularly if the operator is familiar with the signal strengths normally received within a network. Certain types of test calls can be used to test the transceiver.

With on-air testing, the difference in equipment between stations must be taken into account when determining the quality of the transmission.

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6 Operating the transceiver

This section contains the following topics:

[Switching on the transceiver \(46\)](#)

[The front panel screen \(47\)](#)

[The channel screen \(48\)](#)

[Entering and editing text \(52\)](#)

[Quick Start \(57\)](#)

[Muting the transceiver \(61\)](#)

[Scanning channels \(62\)](#)

[Using the microphone \(63\)](#)

[Finding words and values \(64\)](#)

[Setting the basics \(67\)](#)

[Using hot keys \(75\)](#)

[Tuning the antenna \(76\)](#)

[Using the clarifier \(78\)](#)

[Reducing background noise with Easitalk \(79\)](#)

[Using the voice encryptor \(80\)](#)

Switching on the transceiver

NOTE Prior to operational use, you should connect an antenna to the transceiver (see [page 37, *Selecting an appropriate antenna*](#), and the *Quick Reference Card* supplied with the antenna).

To switch on the transceiver:

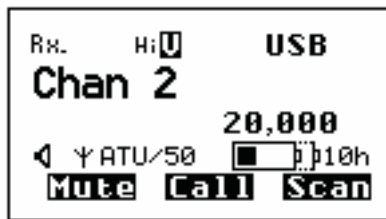
- ☐ Press **1**.

The Codan logo screen is displayed.

- ☐ If you are prompted to enter a password, enter your user or administrator password, then press **✓**.

If you enter an incorrect password it is automatically erased. If you enter an incorrect password three times, the transceiver automatically switches off. If you have forgotten your password see [page 337, *Forgotten passwords*](#).

The welcome screen (if set) is briefly displayed, then the home screen is displayed. For example:



The default home screen is the channel screen in the Channel List. If another screen has been set as the home screen, it is displayed instead. For more information on the home screen see [page 95, *Setting the home screen*](#).

NOTE If there are no channels programmed into the transceiver, **Free Tune** is displayed.

Switching off the transceiver

To switch off the transceiver:

- ☐ *Hold down* **1** for 2 seconds, then release.

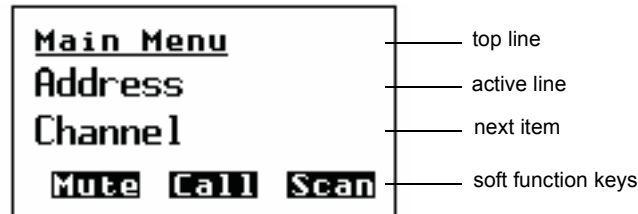
The transceiver is switched off.

The front panel screen

NOTE In the following example, you will need to log in as administrator to see the Main Menu (see [page 110, Logging into admin level from user level](#) and [page 88, The Main Menu](#)).

The screen on the front panel consists of three lines.

Figure 7: The front panel screen



The information displayed on the top line depends on the task you are performing. It can display:

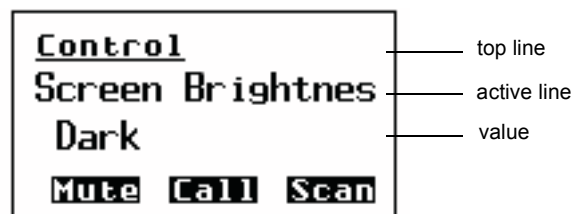
- the name of the list, entry or setting you are in
- the Find prompt when you press 

The next line is called the active line. You can use this line to indicate the list or entry you want to select, to enter text, and to change the value in a setting.

The third line is used when a list is displayed to show either the next item in the list ([Figure 7](#)), or the value in the first or only setting for the entry that is displayed ([Figure 8](#)). When a value is displayed it is indented under the name of the entry to which it applies. In [Figure 8](#) the value indicates that the Screen Brightness is set to Dark.

The name of each soft function key represents the action that will take place when the corresponding **F1**, **F2** or **F3** key on the front panel of the transceiver is pressed.

Figure 8: The front panel screen displaying a value



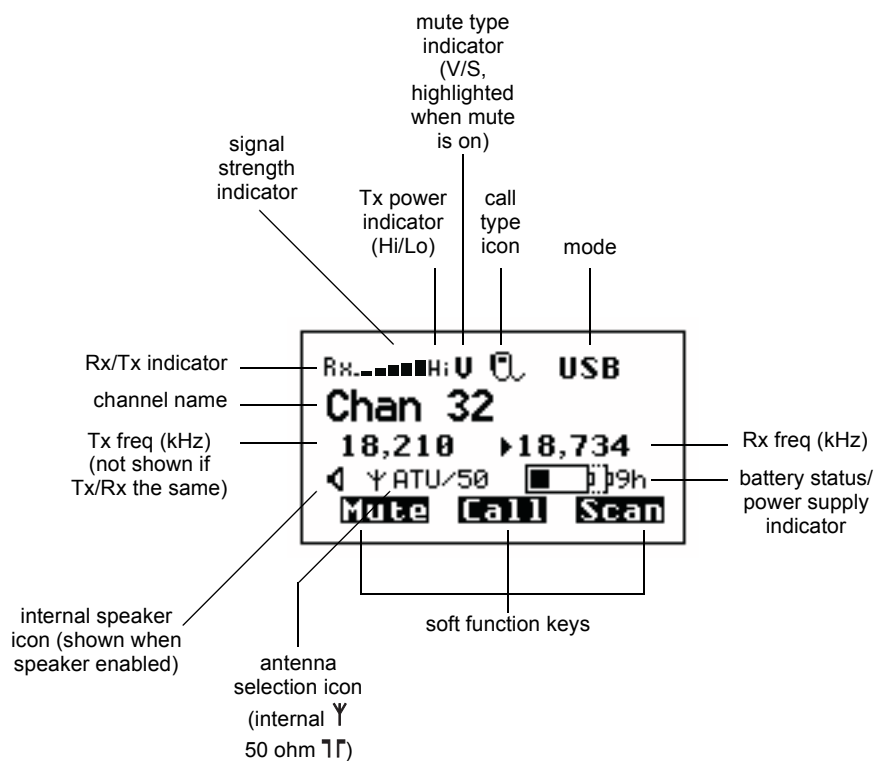
The front panel screen also displays information screens such as the channel screen in the Channel List, and the time screen in the Control List.

The channel screen

The channel screen is the screen that is displayed when you open the Channel List. It displays:

- the name of the currently selected channel
- a bar graph that indicates the signal strength on receive and the output power on transmit
- the transmit power level indicator
- the mute type indicator
- the call type icon
- the mode
- the transmit and receive frequencies, if applicable
- an arrow that indicates whether the transceiver is receiving or transmitting
- the internal speaker icon
- the antenna selection icon
- the battery status indicator
- the soft function keys

Figure 9: The channel screen in the Channel List



If the transmit and receive frequencies are the same, the frequency is only displayed in the receive frequency position on the right side of the screen and the Rx indicator arrow is not used. The signal strength/output power indicator shows whether the transceiver is receiving or transmitting.

Your transceiver has the option of selecting high or low power by pressing **Tx PWR**. When low power is selected, **Lo** is displayed to the right of the signal strength indicator (see [Figure 9](#)). When high power is selected, **Hi** is displayed in this location.

While a call is being established, the transceiver will show that calling activity is in progress by flashing **CALL** in place of the scan indicator (see [Figure 10](#)). During a call, this indicator is replaced with an icon showing the type of call being sent or received (see [Figure 9](#)). These icons are listed in [Table 17 on page 158](#) and [Table 18 on page 166](#).

When the transceiver is scanning, the channel screen is replaced by the scanning screen (see [Figure 10](#)).

Figure 10: The scanning screen

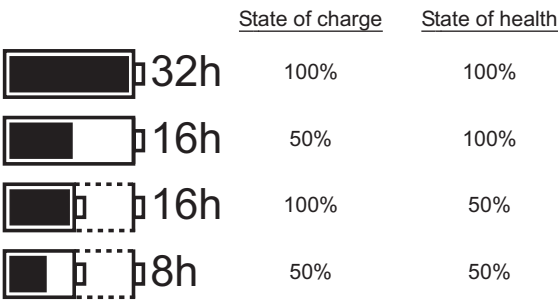


Battery status indicator

The channel screen displays a battery status indicator. The indicator graphically shows the:

- state of charge
- state of health

Figure 11: Battery status indicator



State of charge

The state of charge indicates graphically how much charge is remaining in the battery. The battery continuously monitors the current consumption of the transceiver and calculates the remaining hours of use assuming a Tx to Rx ratio of 1:9. Additional battery information may be viewed in the Battery entry in the Control List.

NOTE You will need to log in as administrator to see the Control List (see [page 110, Logging into admin level from user level](#)).

State of health

Rechargeable batteries have a limited lifetime and a limited number of times that they may be charged and discharged. Over time, the total amount of charge that a battery may hold decreases. The state of health indicates graphically how much charge a battery can still hold, relative to when it was new.

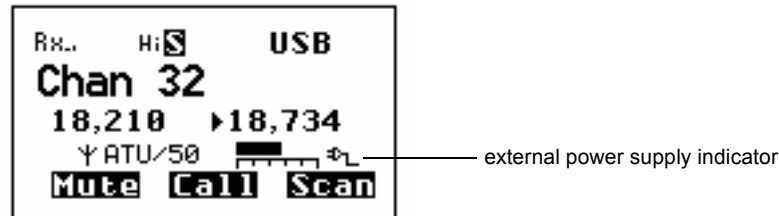
A low state of health indicates that the battery may need replacing.

NOTE When charging a new battery it may show a low state of health until it has been fully charged and discharged several times.

External power supply indicator

If you supply 12 V DC power to your transceiver via the 6-way connector on the base of the unit, the battery status indicator is replaced by the external power supply indicator.

Figure 12: External power supply indicator

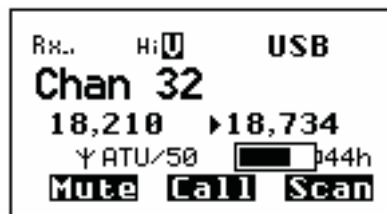


The indicator shows the voltage supplied by the power source. The scale of the indicator is 10–15 V. In the example above, the voltage is just below 13 V.

Selecting a channel

To select a channel:

- ☐ Press **X** or **VIEW** until the channel screen is displayed.
- ☐ If the transceiver is scanning, press **SCAN** to switch off scanning.



- ☐ Scroll through the channels in the list. Stop scrolling when the channel you want is displayed.

The channel is selected.

If you want to change the sideband or IF filter settings, press **MODE**.
If the mode does not change there is only one mode for the channel.

NOTE

You can also use the Find feature to find a channel (see [page 64](#), *Finding words and values*).

If you have an automatic antenna fitted, press PTT to tune the antenna to the currently selected channel.

Entering and editing text

There are several situations in which you may be prompted to enter or edit text, for example, when you enter the address of a station you want to call, when you select a setting in which text is required, or when you create an entry in a list. The numeric keypad on the front panel is context sensitive so that, in these situations, you can use the numeric keys to enter letters, numbers and symbols.

The editable screens

A screen in which you can enter or edit text will have a question mark at the end of the title line and a character/case indicator in the bottom right of the screen.

Figure 13: Editable screen showing upper-case text entry

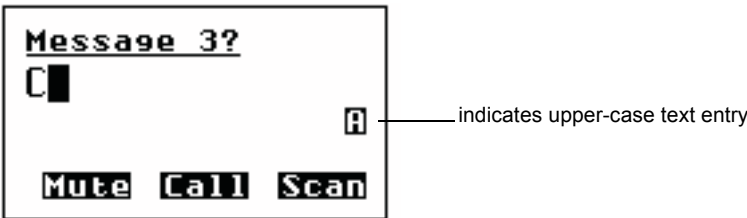


Figure 14: Editable screen showing lower-case text entry

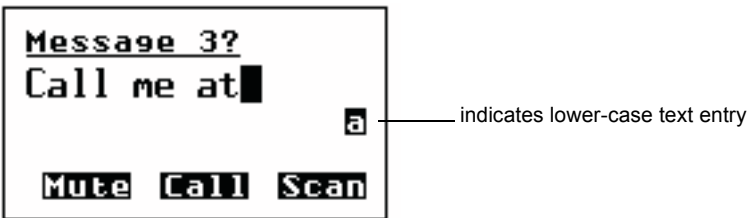


Figure 15: Editable screen showing numeric text entry

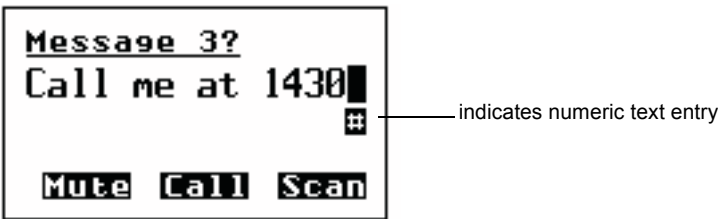
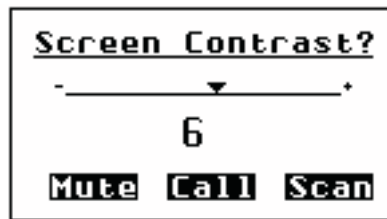


Figure 16: Editable screen showing slider



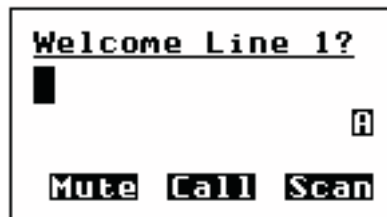
Editing a screen

NOTE In the following example, you will need to log in as administrator to see the Welcome Text entry in the Control List (see [page 110, Logging into admin level from user level](#)).

To gain access to an editable screen:

- ☐ *Hold* ✓.

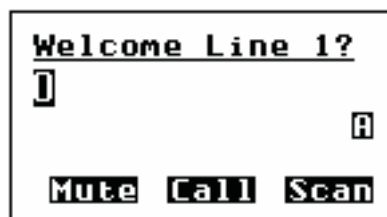
A question mark is displayed at the end of the heading to show that you can now enter and/or edit text in the setting.



Entering text

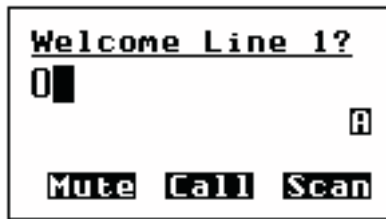
To enter text in an editable screen:

- ☐ To enter one of the letters on a key, press the key repeatedly until the letter is displayed.

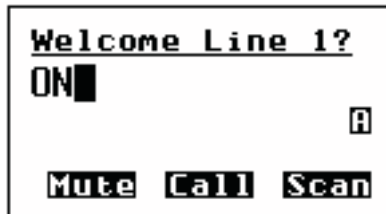


NOTE You can also *hold* the key until the letter you want is displayed, then release the key.

- ☐ To enter another letter on the same key, wait until the cursor moves to the next space...

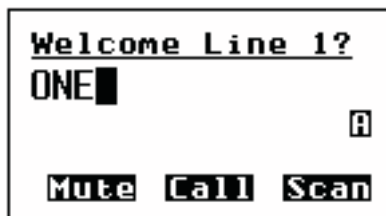


...then press the key repeatedly until the letter you want is displayed.



- ☐ To enter a letter on another key, press the key for the letter.

You do not need to wait until the cursor moves to the next space.



Changing between alpha and numerical characters

To change between upper-case and lower-case letters and numbers in an editable screen:

- ☐ Press **#** to change the character/case indicator at the bottom right of the screen from **A** to **a** to **#**.

NOTE

When you are prompted to enter a call address, the types of characters that you can enter are determined by the call systems installed in the transceiver.

Moving the cursor

To move the cursor across the text:

- ☐ Use **↶** and **↷** to move the cursor left and right respectively.

Inserting text

To insert text:

- ☐ Use **↶** and **↷** to move the cursor to the point where you want to insert text (or a space), then press the required character key.

NOTE If you want to insert a space, make sure that **A** or **a** is displayed at the bottom right of the screen before you press **0**, otherwise you will enter a zero.

Deleting text

To delete text:

- ☐ Use **↩** and **↪** to move the cursor one position to the right of the character that you want to delete, then press **X**.

Entering special characters in messages and names

To enter special characters:

NOTE The special characters that are available are:

. , ' ? ! & # \$ * () - + /

- ☐ Use the **↩** and **↪** keys to move the cursor to the point where you want to insert a special character, then press ***** repeatedly until the symbol you want is displayed.

NOTE Make sure that **A** or **a** is displayed at the bottom right of the screen before you press *****, otherwise you will enter a decimal point.

To enter one of an extended range of special characters:

The characters that are available are:

NOTE space , . ; ? : " ' / ! @ # \$ % ^ & * () _ - + = | \ ~ < > { } [] 0 1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z

- ☐ Use **↩** and **↪** to move the cursor to the character or space where you want to replace a character.

NOTE If you want to add a new character, enter a space then move the cursor to this space.

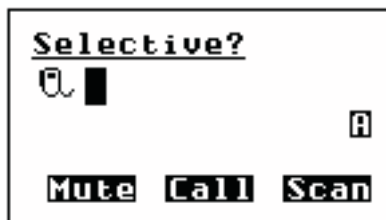
- ☐ Press **Q** to place an underscore beneath the current character or space.
- ☐ Use **↩** and **↪** to scroll through the character choices.
- ☐ When you have selected the character that you want to use, use **1** or **3** to scroll left or right respectively.
- ☐ When you have made the changes, press **Q** to exit the special character mode.

Entering text in an ALE call address

- NOTE** If the MIL-STD-188-141B ALE option is installed in your transceiver, the ***** key may be used to enter the special ALE addressing characters easily.
- NOTE** You can use any of the characters in the basic 38 ASCII subset (A–Z, 0–9, @ and ?) for the address.

To enter a special ALE addressing character:

- ☐ Ensure that you are in an editable address screen in which you can enter upper-case letters (**A**).



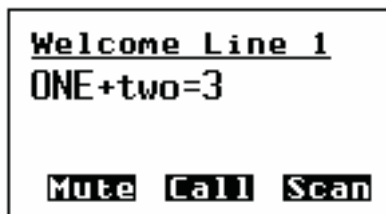
- ☐ Do one of the following:
 - to enter an @, press ***** once
 - to enter a ?, press ***** twice while the cursor is in the same space
 - to enter a comma, press ***** three times while the cursor is in the same space
 - to enter any upper-case letter, press the corresponding key
 - to enter a number, press **#** once to change to numeric text entry, then press the corresponding key

Saving text changes

To save the changes you have made:

- ☐ Press **✓**.

The question mark is removed from the heading.



If you do not want to save the text, *hold* **✗** to discard the changes.

Quick Start

Quick Start provides a simple way of:

- adding channels
- assigning channels to a scan list
- setting the time and date
- setting the self address of your station
- adding, changing or deleting entries from lists

Quick Start will be available if your transceiver contains only one station self address and network names from this default list:

- *Voice
- *Selcall
- *CALM
- !Default

Quick Start is accessed via the **Q** key. Standard List Manager functions as described on [page 91, *The List Manager*](#) are accessed through the Advanced... entry in the List Manager when Quick Start is available. When Quick Start has been disabled by entering a non-default network name or by entering more than one station self address, all List Manager functionality is accessed directly by *holding* the **Q** key.

Quick Start is not available in countries that do not permit programming of transmit frequencies using the front panel, for example, the United States of America and Australia.

Opening and closing Quick Start

To open Quick Start:

- ☐ Hold **Q**.

To close Quick Start:

- ☐ Press or *hold* **X**.

Adding/Editing a channel

To add or edit a channel:

- ☐ Hold **Q** to open Quick Start.
- ☐ Scroll to **Add/Edit channel**, then press **✓**.
- ☐ Enter the name of the channel that you want to use, then press **✓**.

NOTE For help with entering text see [page 52, Entering and editing text](#).

If you want to use an existing channel, scroll to the channel, then press **✓**.

- ☐ Enter the receive frequency in kilohertz, then press **✓**.

NOTE You can enter the frequency to three decimal places. Press ***** to enter a decimal point, then continue with entering the frequency.

- ☐ Enter the transmit frequency in kilohertz, then press **✓**.
- ☐ Scroll to the mode combination you want to use, then press **✓**.

The transceiver will return to Quick Start.

- ☐ If you want to add more channels to your transceiver, scroll to **Add/Edit channel** and repeat this process.
- ☐ Press **✗** to close Quick Start, if required.

NOTE If you want to make or receive calls on this new channel, you must add it to your scan list.

Setting up a scan list

To set up a scan list:

- ☐ Hold **Q** to open Quick Start.
- ☐ Scroll to **Set scan list**, then press **✓**.

The first channel in the transceiver will be displayed.

- ☐ If you want to add this channel to the scan list, press **✓**.

If you do not want to add this channel to the scan list, press **✗**.

When all the channels have been viewed or you have added 20 channels to your scan list, the transceiver will return to Quick Start.

If you do not want to scroll through all the channels in your scan list, hold **✓** to return to Quick Start.

- ☐ Press **✗** to close Quick Start, if required.

CAUTION Each time you enter **Set scan list**, the resulting scan list will overwrite the existing scan list.

Setting the time and date

To set the time and date:

☐ Hold **Q** to open Quick Start.

☐ Scroll to **Set time/date**, then press **✓**.

The display will appear with a line under the day of the month.

☐ Use **▶** or **◀** to change the current setting to the correct value, then press **✓**.

The line will appear under the month.

☐ Repeat the previous step until you have made all of the changes to the time and date.

When all the changes have been made, the transceiver will return to Quick Start.

☐ Press **✕** to close Quick Start, if required.

Setting your station self address

NOTE

When Quick Start is available, any self address that you enter using this method will replace the previous self address. If you want to enter more than one self address, and hence disable the Quick Start features, see [page 69, *Entering your station self address*](#).

To set your station self address:

☐ Hold **Q** to open Quick Start.

☐ Scroll to **Set my address**, then press **✓**.

☐ Enter your station self address (maximum of 6 numeric digits for a Codan Selcall network, and 15 upper-case/numeric digits for an ALE/CALM network), then press **✓**.

NOTE For help with entering text see [page 52, *Entering and editing text*](#).

☐ Press **✕** to close Quick Start, if required.

Adding/Editing an entry in the Address List or Call Book

To add or edit an address that you call frequently:

☐ Hold **Q** to open Quick Start.

☐ Scroll to **Address/CallBk**, then press **✓**.

☐ Enter the name of the station or person that you want to add to the list, or use **▶** and **◀** to select an existing entry, then press **✓**.

NOTE For help with entering text see [page 52, *Entering and editing text*](#).

☐ Scroll to the type of call that you want to make, enter the station address that you want to call, then press **✓**.

- ☐ If you selected **Message?** or **No call type**, enter the message, then press ✓.
If you do not want to enter a message, press ✓.

- ☐ Scroll to the call system that you want to use to make the call, then press ✓.

- ☐ If you selected **Phone?** or **No call type**, select **<blank>** for the phone link that you want to use, then press ✓.

When all the changes have been made to the call address, the transceiver will return to Quick Start.

- ☐ If you want to add more call addresses to your Address List or Call Book, scroll to **Address/CallBk** and repeat this process.
- ☐ Press ✕ to close Quick Start, if required.

Deleting an entry

To delete addresses, channels or phone links:

- ☐ *Hold* 🔍 to open Quick Start.
- ☐ Scroll to **Delete...**, then press ✓.

You can delete items from the Address/CallBk, Channel or Phone Link Lists.

- ☐ Scroll to the list from which you want to delete an item, then press ✓.
- ☐ Scroll to the item you want to delete, then press ✓.

NOTE If you delete a channel from the Channel List, it will be deleted from the scan list automatically.

- ☐ Press ✕ to close Quick Start, if required.

Muting the transceiver

NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see [page 110, Logging into admin level from user level](#)).

When the transceiver is set to a channel or is scanning channels, you hear the noise on each channel. If you do not want to listen to this noise you can silence the transceiver by switching mute on. When the transceiver has been muted continuously for more than 10 seconds it will switch to low-current mode. The transceiver will return to full current use when mute is opened. You can disable the low-current mode by setting the Cfg Low Current Mode entry in the Control List to Disabled.

Mute automatically comes on when the transceiver starts scanning. You must set the Mute Scan entry in the Control List to:

- Selcall if you want the mute to open when a call addressed to your station is detected or voice is detected on a channel in a voice network
- Voice if you want the mute to open when a voice signal is detected (you can alter the dwell time across Codan Selcall networks)
- Scan for Voice if you want the mute to open when a voice signal is detected on any network (the transceiver scans at a uniform rate across all networks)

If the scan is paused due to voice being detected, the length of time that the transceiver holds the pause is set in the Cfg Scan Voice Max Hold and Cfg Scan Voice Extend entries in the Control List.

NOTE For help on these entries in the Control List see [page 200, Entries in the Control List](#) and [page 96, Changing a setting in the Control List](#).

Switching mute on or off

To switch mute on or off:

- ☐ Press **MUTE**.

A message is displayed briefly to inform you that mute has been switched on or off.

Setting the mute type

To select the mute type:

- ☐ Press **V/S** to toggle the mute type between Selcall mute and Voice mute.

Scanning channels

If you expect to receive calls on several channel/modes, switch scanning on. When scanning is switched on the transceiver selects each channel/mode in your network in quick succession to detect incoming calls. The channel/modes are scanned in a continuous cycle. Mute is switched on automatically.

When the transceiver detects a call addressed to your station it stops scanning and notifies you according to the type of call received (see [page 190, *Receiving a call*](#)). When you press **SCAN** to end the call, scanning resumes. If you do not press this key to end the call, or any other key within 30 seconds, the transceiver automatically ends the call and resumes scanning.

When the transceiver detects voice it notifies you according to the mute setting selected (see [page 61, *Muting the transceiver*](#)). If your transceiver is set to notify you when voice is detected you can pause scanning, select the channel/mode on which the voice was heard, then resume scanning when required.

It is recommended that scanning is switched on when you are not using the transceiver to communicate.

Switching scanning on or off

To switch scanning on or off:

- ☐ Press **SCAN**.

If a call is not in progress, scanning is toggled on or off.

If a call is in progress, the call is ended and the transceiver begins scanning.

NOTE When scanning is switched on, mute is also switched on.
You cannot use the PTT button while the transceiver is scanning.

Pausing scanning

To pause scanning:

- ☐ Do one of the following:
 - to pause scanning on the current channel/mode, press ✓
 - to pause scanning and scroll to another channel/mode, press ▸ or ▹

The channel/modes through which you can scroll are those in the network or networks that were being scanned. They are not listed alphabetically but in the order in which they were being scanned.

If you do not press a key within 30 seconds, the transceiver automatically resumes scanning.

- ☐ While scanning is paused, do one or more of the following:
 - to speak, *hold down* PTT
 - to resume scanning immediately, press ✓

Using the microphone

The microphone is located at the bottom of your handset, just like a telephone handset. When you talk into the microphone:

- hold the handset as you would a telephone handset
- *hold down* PTT
- speak clearly at your normal volume and rate
- use the word ‘over’ to indicate that you have finished speaking, then release PTT (the transceiver also transmits a short beep when you release PTT)
- remember that your conversation can be monitored by anyone tuned to your transmit frequency

If PTT is held continuously for a certain length of time, the system stops transmission, switches to receive and displays an error message on the front panel. This ensures that, even if the PTT button is being held down accidentally (because, for example, you are sitting on the handset), power consumption is minimised and the transceiver is ready to receive calls.

You can set the length of time the system waits before it cuts transmission, or switch this feature off, by using the PTT Cutout Time entry in the Control List (see [page 200](#), *Entries in the Control List*).

Finding words and values

NOTE In the following examples, you will need to log in as administrator to see the Main Menu (see [page 110, Logging into admin level from user level](#)).

Scrolling through lists, entries and settings is one way to find items. The Find feature, however, may help you find them faster.

There are two types of searches you can perform to find specific items. You can:

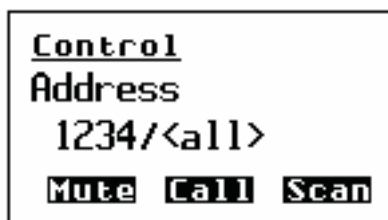
- search for any word in the Main Menu or in an entry in a list that begins with a specific character (for example, find all the entries in the Control List that contain the word ‘beep’, such as Key Beep and PTT Beeps)
- search for a value in a setting (for example, find all the channels in the Channel List with a receive frequency of 13 000 kHz)

Finding a word

To find any word in the Main Menu or in the name of an entry:

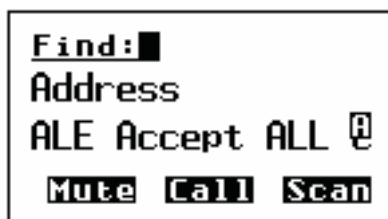
- ☐ From **Main Menu**, select the list in which you want to search.

The first entry in the list is displayed. For example:



- ☐ Press  once.

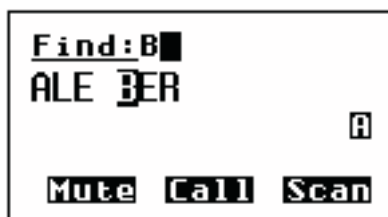
The Find prompt is displayed on the top line.



NOTE For help with finding a value see [page 65, Finding a value](#).

- ☐ Enter the first character of the word you want to find.

The first item that contains a word beginning with this character is displayed.

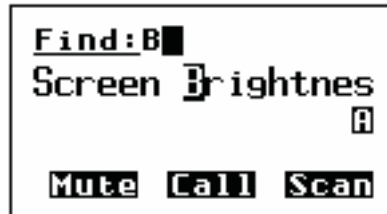


If there aren't any words that begin with this character the character is deleted and an error beep is made.

NOTE To refine your search, enter more characters in the word you want to find.

To backspace over text, press **X**.

- ☐ Scroll through the list until the item you want is displayed on the active line.



NOTE If the list doesn't scroll then there is only one word that matches the characters you entered.

- ☐ Press **✓** to exit Find at the entry.



Finding a value

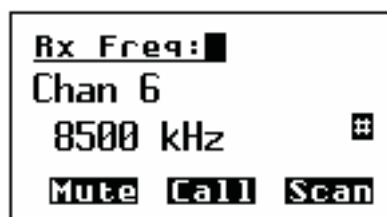
To find a value that begins with a specific character:

- ☐ From **Main Menu**, select the list in which the value is stored.

NOTE You cannot use this type of search in the Main Menu or in the Control List.

- ☐ Press **Q** twice.

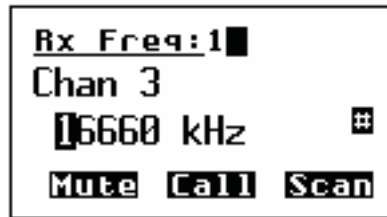
The Find prompt is displayed on the top line with the name of the first setting in the entry. For example:



NOTE The search for a value will be conducted in the setting displayed. To search for a value in a different setting, press **Q** until that setting is displayed.

- ☐ Enter the first character of the value you want to find.

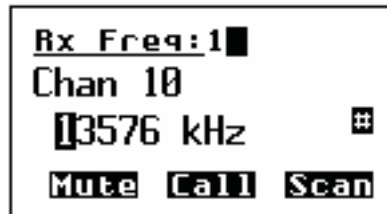
The first entry that contains a value beginning with this character is displayed, and the value is displayed beneath it.



If there aren't any values that begin with this character the character is deleted and an error beep is made.

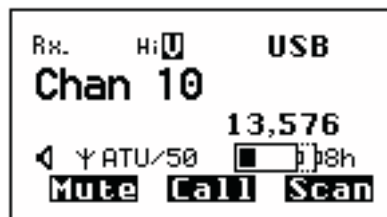
NOTE To refine your search, enter more characters in the value you want to find.
To backspace over text, press **X**.

- ☐ Scroll through the entries until the one you want is displayed.



NOTE If the list doesn't scroll then there is only one value that matches the characters you entered.

- ☐ Press **✓** to exit Find at the entry.



NOTE If you are in the Channel List the transceiver selects this channel.

Setting the basics

Setting the time and date

NOTE In the following discussion, you will need to log in as administrator to see the Main Menu (see [page 110, Logging into admin level from user level](#)).

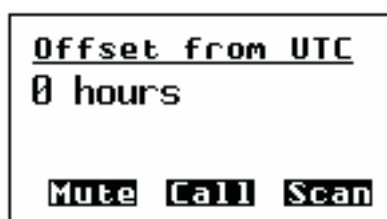
When the transceiver leaves the factory it is set to UTC time with a time zone offset of zero. To set your local time and date you need to enter your time zone offset from UTC time, then adjust the local time and date if necessary. This feature is useful if you have a network that spreads over several time zones, or you need to time stamp your transmissions according to the current time at longitude zero.

Setting the time zone offset

To set your time zone offset from UTC time:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Time Zone Offset**, then *hold* **✓**.

NOTE Scroll to the entry or use the Find feature (for help see [page 64, Finding words and values](#)).



- ☐ Scroll to the correct time zone offset for your location, then press **✓**.
- ☐ Press **X** until **Main Menu** is displayed.

Adjusting the local time and date

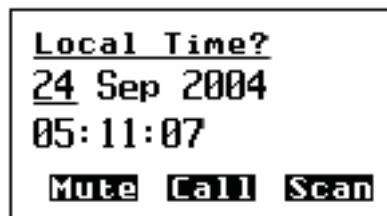
If the local time and date are not correct after setting your time zone offset from UTC time, adjust the local time and date.

To adjust the local time and date:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Time Local**, then *hold* **✓**.

NOTE Scroll to the entry or use the Find feature (for help see [page 64](#), *Finding words and values*).

The cursor is placed under the day of the month.



- ☐ Scroll through the values until the one you want is displayed, then press **✓** to go to the next setting.

To go to the previous setting, press **X**.

- ☐ Repeat the previous step until the date and time are correct.
- ☐ Press **✓** after setting the seconds to save your changes.
- ☐ Press **X** until **Main Menu** is displayed.

Displaying the local time and date

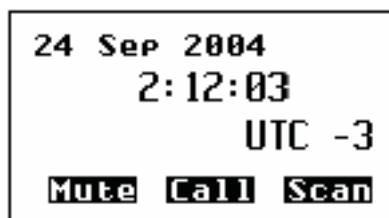
NOTE In the following discussion, you will need to log in as administrator to see the Main Menu (see [page 110, Logging into admin level from user level](#)).

To display the local time and date:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Time Screen**, then *hold* **✓**.

NOTE Scroll to the entry or use the Find feature (for help see [page 64, Finding words and values](#)).

The time screen is displayed.



- ☐ Press **X** until **Main Menu** is displayed.

Entering your station self address

NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see [page 110, Logging into admin level from user level](#)).

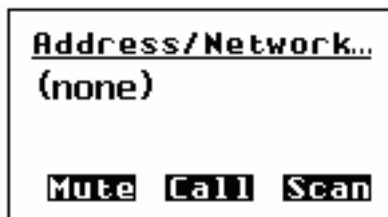
Your station self address is the address used by other stations to call you, and it is sent when you make calls to identify you as the caller. You can enter up to 20 self addresses for your station. This section explains how to enter, edit and delete station self addresses.

Entering a self address

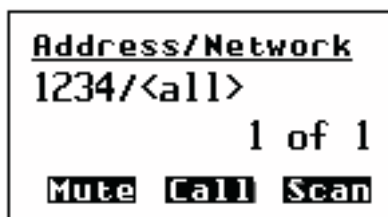
To enter your station self address:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Address**, then press **✓**.

If a self address has not yet been entered the screen displays **(none)**. Press **✓** to open the List Manager.



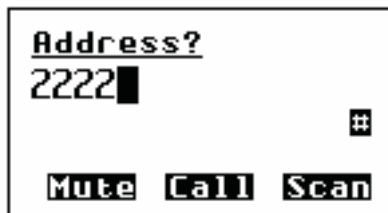
If one or more self addresses have already been entered the screen displays the number of self addresses (for example, **(1 items)**). Press ✓ to display the self addresses, then *hold* Q to open the List Manager.



- ☐ Select **Add item**.



- ☐ Enter the self address of your station. For example:



If you are entering a self address to be used in:

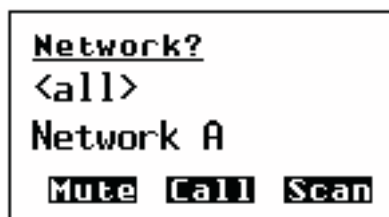
- a Codan Selcall network, enter up to 6 numeric digits
- an ALE/CALM network, enter up to 15 upper-case/numeric digits, or a combination of both (see [page 158, Special ALE address syntaxes](#))

NOTE For help with entering text see [page 52, Entering and editing text](#).

NOTE Do not enter a self address that ends with one or more zeros. Zeros are used to indicate that calls are to be made to groups of stations in a Codan Selcall network.

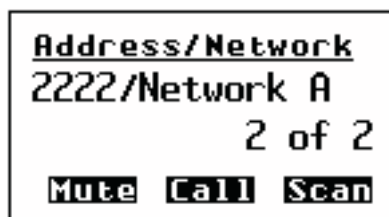
- ☐ Press ✓.
- ☐ Select the network in which you want to use this self address.

To use the self address in all networks, select **<all>**.



The self address is created and the List Manager remains open.

- ☐ If you want to view the self address you have created, press **X** to close the List Manager.



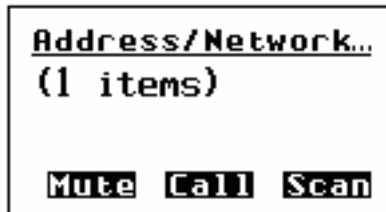
- ☐ Press **X** until **Main Menu** is displayed.

Editing a self address

To edit a station self address:

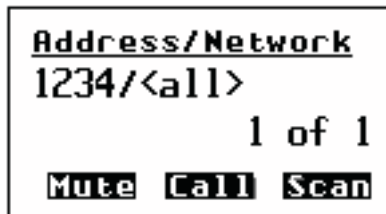
- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Address**, then press **✓**.

The number of self addresses in the list is displayed. For example:



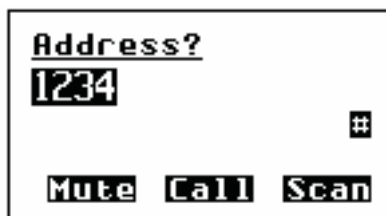
- ☐ Press **✓** to display the self address/addresses.

If there is more than one self address, scroll to the self address you want to edit.



- ☐ *Hold* **✓** to edit the self address.

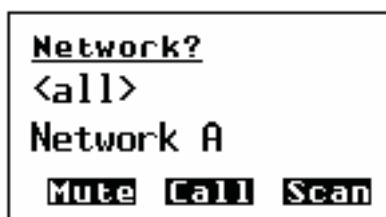
The self address is displayed.



- ☐ Edit the self address as required, then press **✓**.

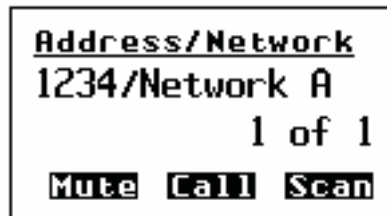
NOTE For help with entering text see [page 52, Entering and editing text](#).

The network is displayed.



- ☐ Do one of the following:
 - to change the network, scroll to the network you want, then press ✓
 - to use the self address in all networks, select **<all>**
 - if you do not want to change the network, scroll to the original network, then press ✓

The new details are saved.



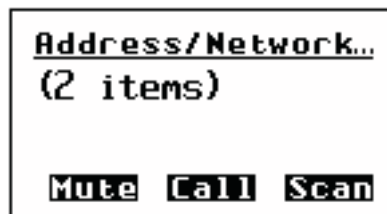
- ☐ Press ✕ until **Main Menu** is displayed.

Deleting a self address

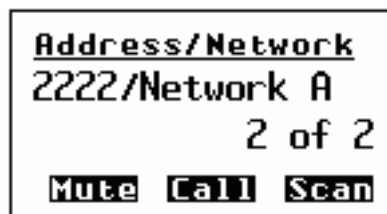
To delete a station self address:

- ☐ Press ✕ until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press ✓.
- ☐ Scroll to **Address**, then press ✓.

The number of self addresses in the list is displayed. For example:



- ☐ Press ✓ to display the self address/addresses.
- ☐ Scroll to the self address you want to delete.



- ☐ Hold 🔍 to open the List Manager.
- ☐ Select **Delete item**.



The transceiver asks you to confirm that you want to delete the item.

- ☐ Press **✓**.

The item is deleted and the List Manager remains open.

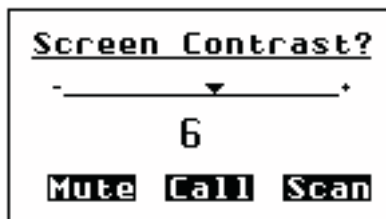
- ☐ Press **✗** until **Main Menu** is displayed.

Changing the screen contrast

To change the contrast of the screen:

- ☐ Press **⬇ + 9** to access the Screen Contrast entry in the Control List.

The Screen Contrast slider screen is displayed.



- ☐ Use **⬆** or **⬇** to increase or decrease the contrast, then press **✓**.

Changing the screen brightness

To change the brightness of the screen:

- ☐ Tap **⌚** repeatedly to cycle through the screen brightness options.

Using hot keys

Hot keys on the front panel are keys that perform special tasks in addition to their normal functions. [Table 5 on page 30](#) lists the standard hot keys on the front panel and the tasks you can perform with them.

Generally, pressing the hot key a second time will exit from the hot key activity. For example, pressing **CLAR** allows the clarifier to be edited. Pressing **CLAR** again exits the editing mode and returns you to the screen from which you began.

NOTE If you want the user to be able to access an entry in the Control List so that they can change the value, you should set up a hot key that accesses the entry (see [page 241, *Creating a macro and assigning it to a hot key*](#) for information on how to create hot keys).

To use a hot key on any of the front panel keys:

- ☐ Press the hot key.

NOTE If the key can perform more than one hot key task, a list of the tasks is displayed. Press the key repeatedly to scroll through the tasks. When the task you want to perform is displayed, press ✓.

NOTE Some keys may require you to select a value from a list or enter text before the task is completed.

The task is performed.

Tuning the antenna

Automatic tuning

If the transceiver is connected to an automatic antenna, it tunes the antenna automatically when required.

To tune the antenna when you select a channel:

- ☐ Select a channel in the Channel List (for help see [page 51, *Selecting a channel*](#)).
- ☐ Press then release PTT.

A message is displayed to inform you that tuning has begun, and the transceiver makes a series of short beeps. Tuning typically takes 1–2 seconds.

If tuning fails, a message is displayed to inform you of this, and the transceiver makes an error beep. You may need to manually tune the antenna (see [page 77, *Manual tuning*](#)).

Removing the tuning message

To remove the tuning message before tuning is complete:

- ☐ Press **✕**.

The beeps will continue until tuning is complete.

Aborting automatic tuning

To abort automatic tuning:

- ☐ Press PTT.

A message is displayed to inform you that tuning has been aborted, and the transceiver makes an error beep.

Manual tuning

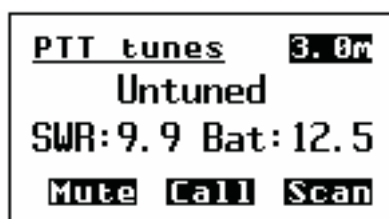
You may need to manually tune the antenna if you are receiving on a channel on which you have not just transmitted, or if you want to check the SWR value for the antenna.

The transceiver will display whether it is **Tuned** or **Untuned**.

To manually tune the antenna:

- ☐ Press **TUNE**.

The **PTT tunes** screen is displayed with the SWR and battery voltage on the bottom line. For example:

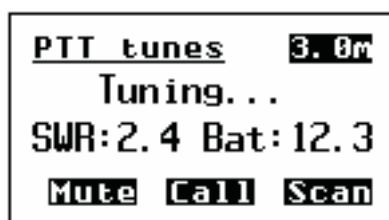


NOTE

If you do not press PTT within 30 seconds you are returned to the screen from which you began.

- ☐ Press PTT to tune the antenna.

Tuning... is displayed, and the transceiver makes a series of short beeps.



An SWR of less than 2.5:1 is acceptable.

If a message is displayed while you are tuning, you can remove it by pressing **X**.

NOTE

If tuning continues for more than 2 minutes, tuning is automatically aborted. The transceiver displays a message to inform you of this, makes an error beep, and returns you to the screen from which you began.

If tuning is unsuccessful, refer to the *Quick Reference Card* supplied with the antenna.

- ☐ Press PTT to stop tuning.
- ☐ Press **TUNE** to return to the screen from which you began.

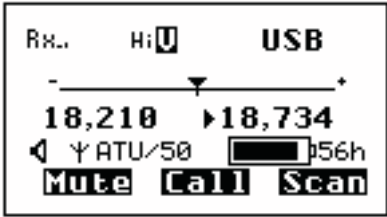
Using the clarifier

The clarifier is a feature that enables you to adjust the receive frequency to compensate for any frequency offset between your transceiver and the remote transceiver, thus improving the quality of received voice.

To use the clarifier:

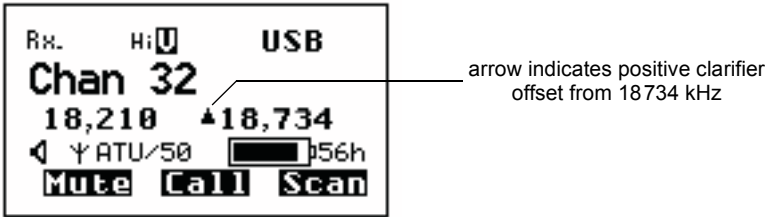
- Press **CLAR**.

The Clarifier slider is displayed in the channel screen.



- Use  or  to increase or decrease the pitch of the received voice, then press  or **CLAR**.

If you select a positive clarifier offset from the frequency, the Rx indicator changes to an up arrow. If you select a negative clarifier offset from the frequency, the Rx indicator changes to a down arrow. For example:



NOTE When you select another channel/mode the clarifier is reset to the centre point.

Reducing background noise with Easitalk

The Easitalk feature enables you to reduce the level of background noise that is present when you listen to a channel.

If Easitalk is on when the transceiver begins scanning, it is automatically switched off. It is switched on again when scanning pauses or stops.

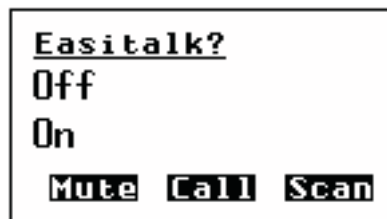
NOTE Easitalk uses one of three DSP algorithms to reduce the background noise. Depending on the conditions you may need to change the algorithm in the Cfg Easitalk entry in the Control List. If you intend to change the algorithm regularly, set up a hot key on the **5** key to go to the next algorithm value in the Cfg Easitalk entry in the Control List (see [page 331, Example 4: changing a value to the next value in a list](#)).

Switching Easitalk on or off

To switch Easitalk on or off:

- ☐ Press **EASITALK**.

The Easitalk entry in the Control List is displayed and the value is automatically toggled on or off.



After about 2 seconds you are returned to the screen from which you began.

NOTE Easitalk is not available if the Voice Encryptor feature is active.

Using the voice encryptor

NOTE To use the voice encryptor, you must have the hardware option fitted, and special firmware programmed into the transceiver and enabled.

The voice encryptor is an optional feature that provides high-grade security for voice communications. This feature uses Secure Keys, Secure Modes, and PINs to provide various levels of secure communications.

In order to communicate securely between two stations, both stations must use the same Secure Key. The voice encryptor may be programmed with multiple Secure Keys, any one of which may be selected. In addition to the Secure Keys, the voice encryptor provides a PIN facility, which temporarily varies the level of security on the key for a private session.

For secure communications within your organisation you need to set up a Corporate key that is common to all transceivers in your organisation. If you need to have secure communications with other organisations operating the same type of equipment as yours, you can use the fixed Global key that is common to all voice encryptors shipped from the factory. The Global key provides secure communications, however the security is less than that provided by a Corporate key. The PIN facility may also be used with the Global key to improve the level of security.

Using the voice encryptor

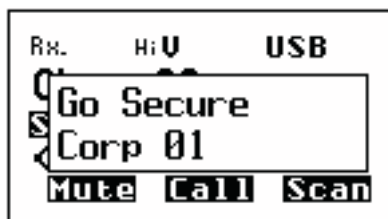
NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see [page 110, Logging into admin level from user level](#)).

Using the voice encryptor

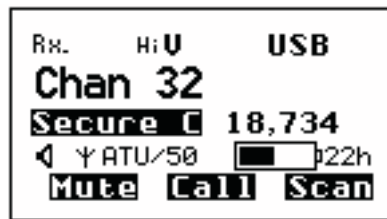
To use the voice encryptor:

- ☐ Press **SCAN** to switch off scanning.
- ☐ Press **SEC**.

The transceiver will respond with two high short beeps and displays **Go Secure**, and the Secure Mode and Secure Key used. For example:



If you are in the Channel List, the active voice encryptor is indicated by the word **Secure** <C|G> highlighted at the left of the channel screen. For example:

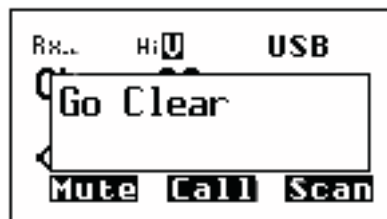


Switching off the voice encryptor

To switch off the voice encryptor:

- ☐ Press **SEC**.

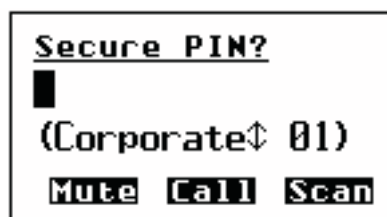
The transceiver will respond with two low short beeps and display **Go Clear**. For example:



Using a PIN for additional security

To use the voice encryptor with a PIN:

- ☐ If you are not already using the voice encryptor, press **SCAN** to switch off scanning.
- ☐ *Hold* **SEC** to enter a PIN for the session.

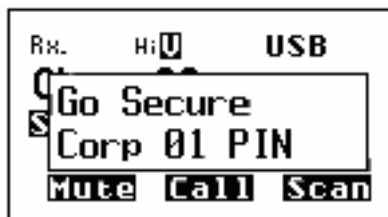


- ☐ Enter the 4-digit PIN that you have agreed to use with others for this session, then press ✓.

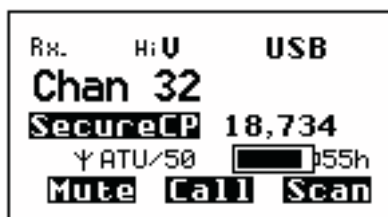
CAUTION

The PIN must be a number that both parties know and agree upon without mentioning it over the air.

The transceiver will respond with two high short beeps and displays **Go Secure**, the Secure Mode and Secure Key used, and **PIN** to indicate that a PIN is in use. For example:



If you are in the Channel List, the active voice encryptor is indicated by the word **Secure**<C|G>P highlighted at the left of the channel screen. For example:

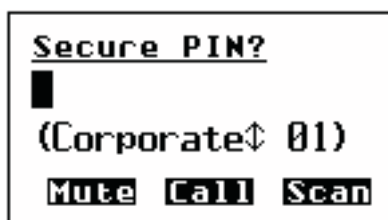


Switching between Global and Corporate Modes

Whenever you switch on the voice encryptor it will enter the mode that is set in the Secure Mode entry in the Control List. For help on setting the default Secure Mode see [page 96, Changing a setting in the Control List](#) and [page 200, Entries in the Control List](#).

To switch between the Global and Corporate Modes while using the voice encryptor:

- ☐ Hold **SEC**.



- ☐ Use **↵** or **⏏** to toggle between **Global** and **Corporate**.
- ☐ If you want to use a PIN, enter the 4-digit PIN that you have agreed to use with others for this session.
- ☐ Press **✓**.

NOTE The default Secure Mode is not changed. Next time you switch on the voice encryptor, the default mode will be entered.

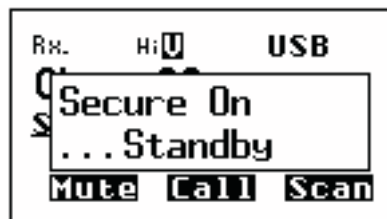
Using the voice encryptor in Standby Mode

When the voice encryptor is switched on you will hear all transmissions and noise on the selected channel. If you want to hear just the voice and encrypted transmissions you can enter the Standby Mode and switch on Voice mute. The transceiver will open mute when it detects a voice signal on the channel. When an encrypted transmission is received, the transceiver switches from Standby Mode to Secure Mode and the decrypted audio is heard.

To enter Standby Mode:

- ☐ Switch on the voice encryptor.
- ☐ Press *****.

The voice encryptor switches to Standby Mode.



If you are in the Channel List, the standby voice encryptor is indicated by the word **SecureXX** underlined at the left of the channel screen. For example:

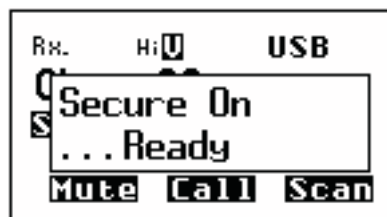


NOTE The transceiver will automatically switch from Standby Mode to Secure Mode if an encrypted transmission is received.

To exit Standby Mode:

- ☐ Press *****.

The voice encryptor switches from Standby Mode.



Setting up the voice encryptor

NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see [page 110, Logging into admin level from user level](#)).

Setting the Corporate key in an index

To set the Corporate key:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Secure Key**, then *hold* **✓**.

NOTE Scroll to the entry or use the Find feature (for help see [page 64, Finding words and values](#)).

- ☐ Enter an 8-digit key that will be used for your organisation, then press **✓**.
- ☐ Scroll to **Index**, then *hold* **✓**.
- ☐ Scroll to **Index 1**, then press **✓**.

NOTE If you need to program Index 2 or above with a secure key, you must use CICS (see [page 278, secure command](#)).

- ☐ Press **X** until **Main Menu** is displayed.

Setting up the voice encryptor for basic security use

To set up the voice encryptor:

- ☐ Set up the Corporate key, if required (see above [Setting the Corporate key in an index](#)).
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Secure Mode**, then *hold* **✓**.

NOTE Scroll to the entry or use the Find feature (for help see [page 64, Finding words and values](#)).

- ☐ Scroll to **Corporate**, then press **✓**.
- ☐ Lock and hide the Secure Mode entry in the Control List (see [page 115, Locking and unlocking information](#) and [page 113, Hiding and showing information](#)).
- ☐ If you want your users to be able to use a PIN, enable the PIN mode (see [page 344, Restricting access to Voice Encryptor features](#)). Otherwise, disable the PIN mode.

Setting up the voice encryptor for advanced security use

To set up the voice encryptor:

- ☐ Set up the Corporate key, if required (see [page 84, *Setting the Corporate key in an index*](#)).
- ☐ Set up a hot key to access the Secure Index entry in the Control List so that the current Secure Index, as designated by the organisation, can be selected (see [page 330, *Example 3: displaying and/or changing a setting in the Control List*](#)).
- ☐ Scroll to **Control**, then press ✓.
- ☐ Scroll to **Secure Mode**, then *hold* ✓.
- ☐ Scroll to **Corporate**, then press ✓.
- ☐ Program multiple Corporate keys via CICS (see [page 278, *secure command*](#)).
- ☐ If you want to change the base of all Corporate keys, modify the base key (Index 0) via CICS (see [page 278, *secure command*](#)).
- ☐ If you want to alter the encryption algorithm contact your Codan representative.

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7 Using lists

This section contains the following topics:

[The Main Menu \(88\)](#)

[Selecting a list \(90\)](#)

[The List Manager \(91\)](#)

[Setting a marker \(94\)](#)

[Setting the home screen \(95\)](#)

[Changing a setting in the Control List \(96\)](#)

[Making changes to all other lists \(97\)](#)

[Hiding and showing settings \(101\)](#)

[Grouping and ungrouping entries \(103\)](#)

[Restricting access to information \(108\)](#)

[Logging into admin level \(110\)](#)

[Displaying full and normal view \(112\)](#)

[Hiding and showing information \(113\)](#)

[Locking and unlocking information \(115\)](#)

The Main Menu

NOTE In the following discussion, you will need to log in as administrator to see the Main Menu (see [page 110, Logging into admin level from user level](#)).

All the details required to operate the transceiver, such as the self address of your station and the channels and networks you use, are stored in lists. Each list relates to a particular area of the transceiver's operation. The lists that are displayed in the Main Menu are:

- the Address List, which stores the details of stations you often call
- the Channel List, which stores the details of the channels you use
- the Control List, which stores the settings that control the way the transceiver operates, for example, the brightness and contrast of the front panel screen, the time and date, passwords, and your station self address
- the NET List, which stores information about the NETS that you use, whether or not you are a member of these NETs, and the networks used with each NET
- the Network List, which stores information about the networks you use and the channels used in each network
- the Phone Link List, which stores the details of telecommunication stations you contact to make telephone calls from the transceiver

The lists are displayed in the Main Menu without the word 'list' after them.

Figure 17: The contents of the Main Menu

Main Menu

Address
Channel
Control
Network
NET
Phone Link

Entries, settings and values

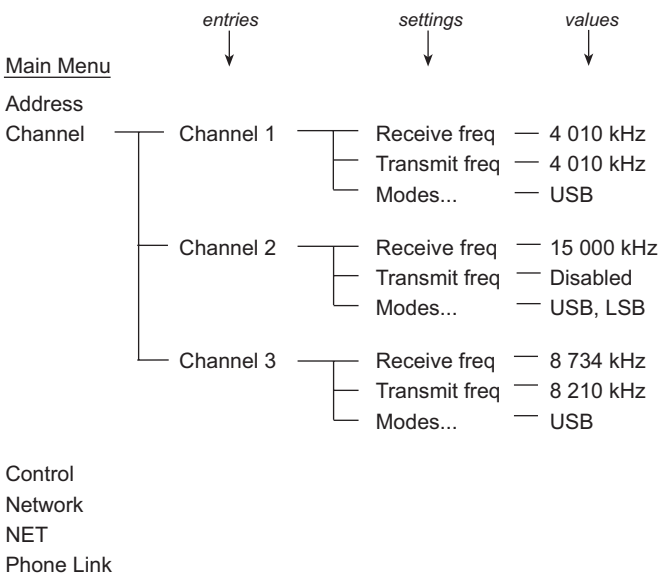
Each list contains entries. The entries in the Address List are the names of the stations you often call, for example, 'Home', 'Work'. The entries in the Channel List are the names of the channels you use, for example, 'Channel 1', 'Channel 2'.

You can add entries to each list except the Control List.

Each entry has one or more settings. For example, the entries in the Channel List are the channels that you use, and each entry has a setting for the receive and transmit frequencies, and the modes that can be used with the channel.

Each setting has a value. For example, the value for the Receive freq setting in the Channel List is the receive frequency of the channel in kilohertz.

Figure 18: Examples of entries, settings and values

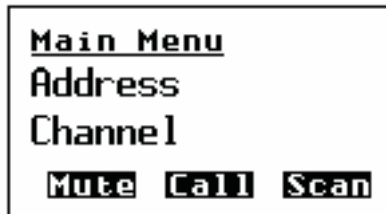


Selecting a list

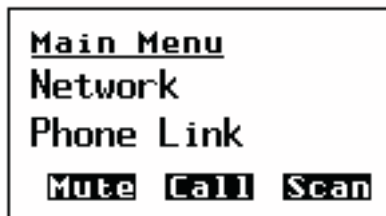
NOTE In the following example, you will need to log in as administrator to see the Main Menu (see [page 110, Logging into admin level from user level](#)).

To select a list from the Main Menu:

- ☐ Press **X** until **Main Menu** is displayed.

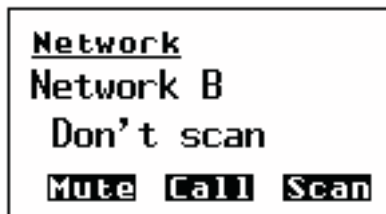


- ☐ Scroll through the Main Menu until the list you want to select is displayed on the active (middle) line. For example:



- ☐ Select the list.

The name of the list is displayed on the top line and the first entry is displayed on the active line. You can now scroll through the entries.



- ☐ Press **X** until **Main Menu** is displayed.

The List Manager

The List Manager is a collection of tools that enable you to perform various tasks on lists, entries and settings. These tasks include:

- creating, copying, renaming and deleting entries
- setting the home screen
- changing the way lists, entries and settings are displayed
- preventing information from being edited and/or displayed (hiding and locking)
- creating macros and hot keys
- logging in as an administrator

The tools in the List Manager are displayed as entries. You can scroll through them and select them the same way you scroll through entries in lists. The entries in the List Manager vary according to the list, entry or setting you were on when you opened it: only entries relevant to that item are displayed. [Table 13 on page 92](#) lists the entries in the List Manager and their functions.

Using the List Manager

The entries in the List Manager are covered in detail in this section. However, the basic steps for using them are the same.

To use an entry in the List Manager:

- ☐ Go to the list, entry or setting in which you want to use the List Manager.
- ☐ *Hold*  to open the List Manager.

If Quick Start is enabled, scroll to **Advanced...**, then press .

- ☐ Scroll through the entries until the one you want to select is displayed on the active line (see [Table 13 on page 92](#)).
- ☐ Press .

When the task is completed, the List Manager remains open.

Entries in the List Manager

Table 13: List Manager entries and their functions

Entry		Enables you to...
Create entry		Create an entry in a list.
Copy entry		Copy an entry in a list.
Rename entry		Rename an entry in a list.
Delete entry		Delete an entry in a list.
Set marker		Set a marker on an entry in a list so that the next time you open the list, it is opened to this entry.
Add item		Add: • a mode to a channel in the Channel List • a channel/mode to a network in the Network List • your station self addresses to the Address entry in the Control List
Delete item		Delete: • a mode from a channel in the Channel List • a channel/mode from a network in the Network List • your station self addresses from the Address entry in the Control List • a macro from a key in the Keypad List
Display options...	Group entries?	Group entries in a list.
	Ungroup entries?	Ungroup entries in a list.
	Show settings?	Display the first setting of an entry under the name of the entry.
	Hide settings?	Display the next item in a list under the name of an entry.
	Full view?	Show the lock and hide icons at the top right of the screen and display entries marked as hidden.
	Normal view?	Remove the lock and hide icons at the top right of the screen and hide entries marked as hidden.

Table 13: List Manager entries and their functions (cont.)

Entry		Enables you to...
Macros...	Create macro	Create a macro.
	Copy macro	Copy a macro.
	Move macro	Move a macro from one key to another, or from one position to another on the same key.
	Add to macro	Create a macro then add it to the end of an existing macro.
	Join macros	Join two existing macros.
	Rename macro	Rename a macro.
	Delete macro	Delete a macro.
Config...	Set home screen	Set the home screen.
	Lock?	Prevent users from editing lists, entries and settings by locking items at user level.
	Unlock?	Unlock lists, entries and settings that have been locked at user level.
	Hide?	Prevent users from displaying lists, entries and settings in normal view by hiding items at user level.
	Show?	Display lists, entries and settings in normal view that have been hidden at user level.
	Locks off?	Switch off all locks set at user level until the Locks on? entry is used, or the transceiver is switched off then on again.
	Locks on?	Switch on all locks set at user level.
	Admin login	Gain access to the Admin... group of entries in the List Manager.
Built-in Test	Select test?	Select a built-in test from a range of automatic, startup and user tests.
Admin...	Admin lock?	Prevent users from editing lists, entries and settings by locking items at admin level.
	Admin unlock?	Unlock lists, entries and settings locked at admin level.
	Admin hide?	Prevent users from displaying lists entries and settings by hiding items at admin level.
	Admin show?	Display lists, entries and settings hidden at admin level.
	Locks off?	Switch off all locks set at admin level until the Admin... Locks on? entry is used, or the transceiver is switched off then on again.
	Locks on?	Switch on all locks set at admin level.
	Admin logout?	Log out of admin level.

NOTE

The Admin... group of entries enables the administrator to restrict user access to information configured in the transceiver.

Setting a marker

Markers are like bookmarks: if you want to display a particular entry each time you open a list, set a marker on that entry. This saves your having to scroll to the entry each time you want to use it. For example, if you often use a particular entry in the Address List, set a marker on that entry so that each time you open the Address List the entry is displayed.

To set a marker:

- ☐ Go to the list or entry on which you want to set a marker.
- ☐ *Hold*  to open the List Manager.
- ☐ Select **Set marker**.

The marker is set and the List Manager closes.

To move a marker to another entry repeat the steps above.

NOTE

If you want a list to open at the first entry, set the marker on the first entry in the list.

Setting the home screen

The home screen is the screen that can be displayed quickly, regardless of the list you happen to be in. It is displayed after you:

- switch the transceiver on
- *hold* **X** from any location

The default home screen is the Channel List but almost any screen can be used as a home screen. If you want to see the current time, make the time screen the home screen.

When you set the home screen, values are not recorded. For example, if you make the Channel List the home screen, it displays the currently selected channel, not the channel that was selected when you set the home screen.

Setting the home screen

To set the home screen:

- ☐ Go to the screen you want to make the home screen.

NOTE If you want to make a screen in the Control List the home screen, you will need to log in as administrator to see the Control List (see [page 110, Logging into admin level from user level](#)).

- ☐ *Hold* **Q** to open the List Manager.
- ☐ Select **Config...**
- ☐ Select **Set home screen**.

The home screen is set and the List Manager remains open.

Displaying the home screen

To display the home screen from any location:

- ☐ *Hold* **X**.

NOTE If you are editing a setting, *holding* **X** will cancel your changes and exit the setting. *Holding* **X** again will display the home screen.

- ☐ To return to the channel screen, press **VIEW**.

Changing a setting in the Control List

NOTE In the following example, you will need to log in as administrator to see the Control List (see [page 110, Logging into admin level from user level](#)).

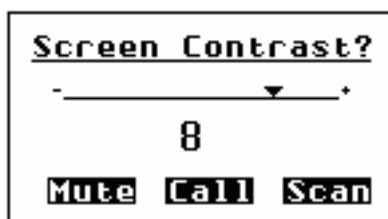
Most of the entries in the Control List contain a single setting. The steps in this section show you how to change these settings. The Address entry, which contains multiple settings, is covered on [page 69, Entering your station self address](#).

To change a setting in the Control List:

- ☐ Press **✕** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to the entry in which the setting you want to change is stored, then *hold* **✓**.

NOTE Scroll to the entry or use the Find feature (for help see [page 64, Finding words and values](#)).

A question mark is displayed at the end of the heading to show that you can now edit the setting. For example:



- ☐ Scroll to the value you want (if it is a slider screen or a list) or enter text (for help see [page 52, Entering and editing text](#)).

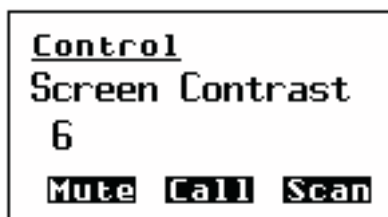
If you do not want to save the change you made and you are in a setting where you can:

- select a value from a list or slider screen, press **✕** or PTT
- enter and delete text, *hold* **✕** or press PTT

The change is discarded and the setting is closed.

- ☐ Press **✓**.

The question mark is removed.



- ☐ Press **✕** until **Main Menu** is displayed.

Making changes to all other lists

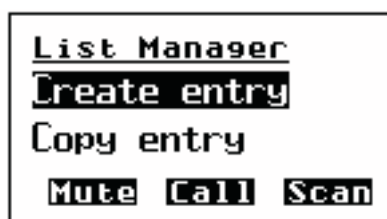
NOTE In the following examples, you will need to log in as administrator to see the lists (see [page 110, Logging into admin level from user level](#)).

The following steps can be used to make changes in every list except the Control List (see [page 96, Changing a setting in the Control List](#)).

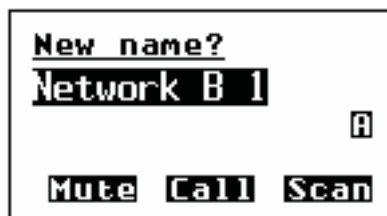
Creating an entry in a list

To create an entry in a list:

- ☐ Select the list in which you want to create an entry.
- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Create entry**.



The transceiver suggests a name for the new entry based on the name of the entry you were on. For example:



- ☐ Enter the name that you want to use for the new entry.

The name must be unique to the list that you are in.

NOTE For help with entering text see [page 52, Entering and editing text](#).

- ☐ Press **✓**.

The transceiver will prompt you to enter settings for the entry.

For information on settings in the...

See...

Channel List	page 118
Network List	page 123
NET List	page 134
Phone Link List	page 142
Address List	page 147

The new entry is created and the List Manager remains open.

- ☐ If you want to view the entry you have created, press **X** to close the List Manager.

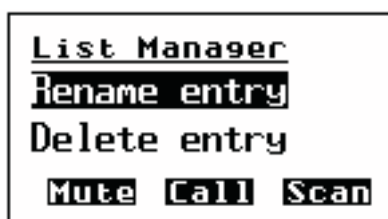
Renaming an entry in a list

To rename an entry in a list:

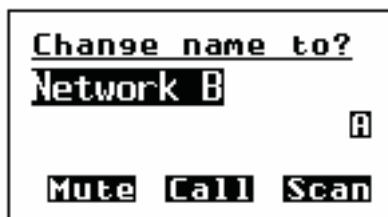
- ☐ Go to the entry you want to rename.

NOTE Scroll to the entry or use the Find feature (for help see [page 64](#), *Finding words and values*).

- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Rename entry**.



The transceiver displays the existing name of the entry for editing.



- ☐ Enter the new name that you want to use for this entry.

The name must be unique to the list that you are in.

NOTE For help with entering text see [page 52](#), *Entering and editing text*.

- ☐ Press **✓**.

The entry is renamed and the List Manager remains open.

- ☐ If you want to view the entry you have renamed, press **X** to close the List Manager.

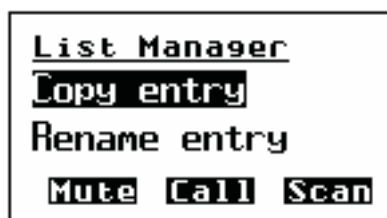
Copying an entry in a list

To copy an entry in a list:

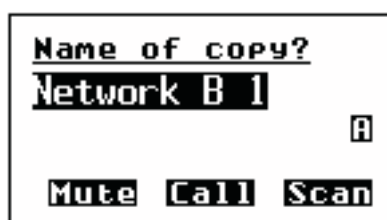
- ☐ Go to the entry you want to copy.

NOTE Scroll to the entry or use the Find feature (for help see [page 64](#), *Finding words and values*).

- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Copy entry**.



The transceiver suggests a name for the new entry based on the name of the entry you were on.



- ☐ Enter the name that you want to use for the copy of this entry.

The name must be unique to the list that you are in.

NOTE For help with entering text see [page 52](#), *Entering and editing text*.

- ☐ Press **✓**.

A copy of the original entry, with the new name, is created and the List Manager remains open.

- ☐ If you want to view the entry you have created, press **✕** to close the List Manager.

Editing an entry in a list

To edit an entry in a list:

- ☐ Go to the entry you want to edit.

NOTE Scroll to the entry or use the Find feature (for help see [page 64](#), *Finding words and values*).

- ☐ Press **✓** to view the settings for the entry.
- ☐ Scroll to the setting you want to edit, then *hold* **✓**.

For information on settings in the...**See...**

Channel List	page 118
Network List	page 123
NET List	page 134
Phone Link List	page 142
Address List	page 147

- ☐ When you have edited the settings, press **X** until you return to the entry.

Deleting an entry from a list

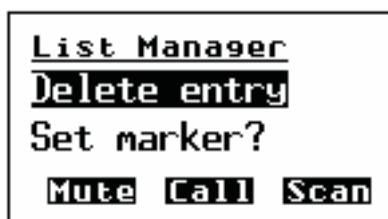
To delete an entry from a list:

- ☐ Go to the entry you want to delete.

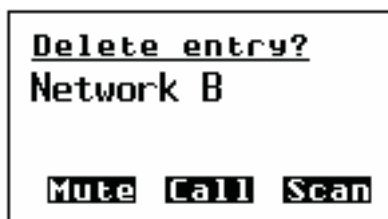
NOTE

Scroll to the entry or use the Find feature (for help see [page 64](#), *Finding words and values*).

- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Delete entry**.



The transceiver asks you to confirm that you want to delete the entry.



- ☐ Press **✓**.

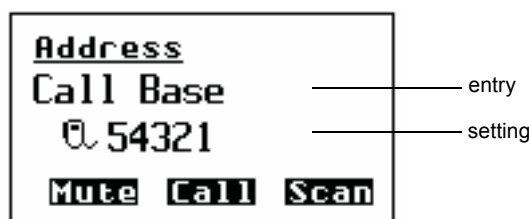
The entry is deleted and the List Manager remains open.

Hiding and showing settings

You can set up the transceiver to show the first setting for each entry in a list. This shows the information in the entry.

Figure 19 shows an entry (Call Base) in the Address List with the first setting for the entry (call type and address) displayed under it. The setting is indented to indicate that it belongs to the entry above it.

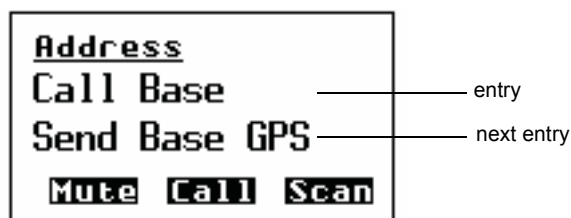
Figure 19: The Address List with settings shown



If you do not want the first setting to be displayed you can hide it.

The next entry in the list is displayed instead, as shown in Figure 20.

Figure 20: The Address List with settings hidden



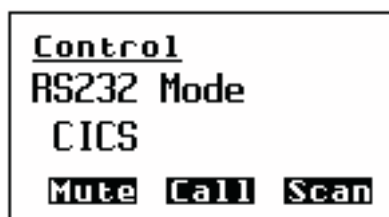
NOTE

In the following examples, you will need to log in as administrator to see the Control List (see [page 110, Logging into admin level from user level](#)).

Hiding settings in a list

To hide settings in a list:

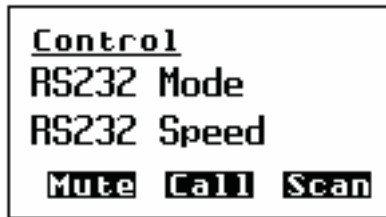
- ☐ Go to the list in which you want to hide settings. For example:



- ☐ Hold **Q** to open the List Manager.

- ☐ Select **Display options...**
- ☐ Select **Hide settings?**

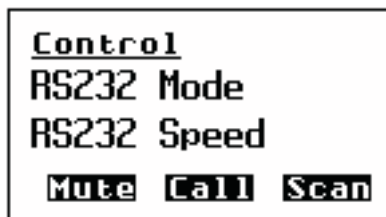
The settings are hidden and the List Manager remains open.



Showing settings in a list

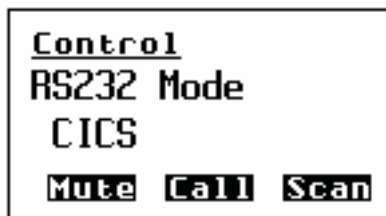
To show settings in a list:

- ☐ Go to the list in which you want to show settings. For example:



- ☐ *Hold*  to open the List Manager.
- ☐ Select **Display options...**
- ☐ Select **Show settings?**

The settings are shown and the List Manager remains open.



Grouping and ungrouping entries

Entries in lists are usually displayed on a single level. When you scroll through a list you scroll over each entry in it.

Figure 21: Ungrouped entries in a list

```
Control
Screen Auto-Dim
Screen Brightness
Screen Contrast
Time Local
Time Screen
Time Zone Offset
```

If you want to simplify your lists so that you do not have to scroll over each entry, you can group the entries. When you do this, a second level is created for groups of entries that begin with the same word. The word that is common to the group is displayed on the first level and is followed by an ellipsis (...) to indicate that there are entries beneath it.

Figure 22: Grouped entries in a list, level one

```
Control
Screen...
Time...
```

This reduces the number of items over which you have to scroll. The entries themselves are displayed on the second level.

Figure 23: Grouped entries in a list, levels one and two

```
Control
Screen...
  Auto-Dim
  Brightness
  Contrast
Time...
  Local
  Screen
  Zone Offset
```

To display the entries on the second level you simply select the group name (for example, Screen...) on the first level. The entries can then be selected and edited in the same way as other entries.

The entries in the Control List have been named to take advantage of grouping. Related entries begin with the same word so that, grouped or ungrouped, they appear close to each other in the list (for example, Time Local, Time Screen, Time Zone Offset).

You cannot change the names of the entries in the Control List. You can, however, take advantage of grouping in other lists by creating or renaming your entries with group names.

For example, if you have a number of channels that you only use at night, you could rename them using a group name such as ‘Night’, then group the entries in the Channel List (see [Figure 24](#)). This will save your having to scroll over the night-time channels when you do not need to use them, and to limit your scrolling to within the group when you do.

Figure 24: Ungrouped and grouped entries

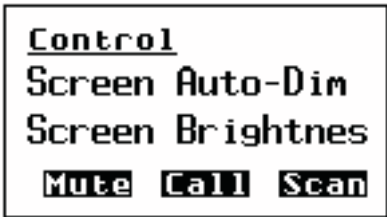
Original entries	→	Night-time entries renamed with a group name	→	Entries grouped
Channel		Channel		Channel
Chan 1		Chan 1		Chan...
Chan 2		Chan 2		Night...
Chan 3		Night Chan 1		
Chan 4		Night Chan 2		
Chan 5		Night Chan 3		
Chan 6		Night Chan 4		

NOTE In the following examples, you will need to log in as administrator to see the Control List (see [page 110, Logging into admin level from user level](#)).

Grouping entries

To group entries:

- ❑ Open the list in which you want to group entries. For example:

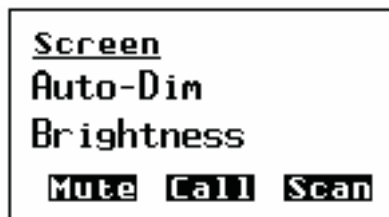


- ❑ Hold **Q** to open the List Manager.
- ❑ Select **Display options...**
- ❑ Select **Group entries?**

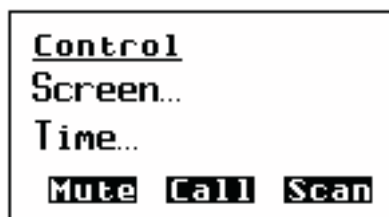
The entries are grouped and the List Manager remains open.

- ❑ If you want to view the grouped entries, press **X** to close the List Manager.

If you were on an entry with a group name when you opened the List Manager, the lowest level of that group is displayed when you exit the List Manager. The group name is displayed on the top line.



To return to the top level of the group, press **X** until the name of the list you are in is displayed on the top line.



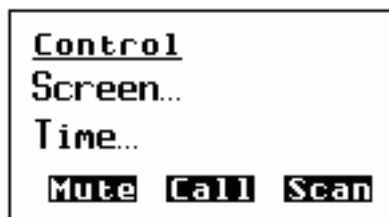
Ungrouping entries

There are two ways to ungroup entries in a list. If you want to temporarily ungroup the entries in a list, scroll to a grouped entry, then *hold* **✓**. The entries will remain ungrouped until you exit the list.

If you want the entries to be ungrouped each time you open the list, use the steps below.

To ungroup entries:

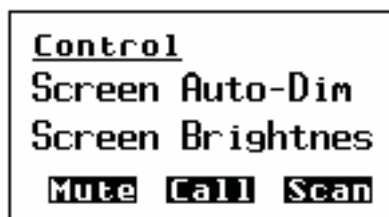
- ☐ Open the list in which you want to ungroup entries. For example:



- ☐ *Hold* **Q** to open the List Manager.
- ☐ Select **Display options...**
- ☐ Select **Ungroup entries?**

The entries are ungrouped and the List Manager remains open.

- ☐ If you want to view the ungrouped entries, press **X** to close the List Manager.

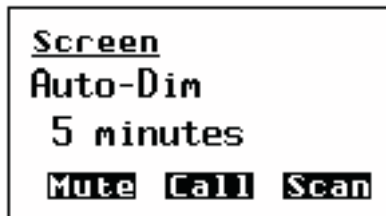


Selecting a grouped entry

To select a grouped entry:

- ☐ Scroll to the grouped name, then press ✓.

The grouped name is displayed on the top line and the entries are displayed beneath it.



NOTE

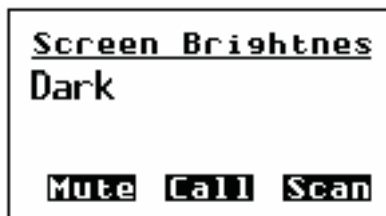
If the settings are hidden, the next entry in the list is displayed on the bottom line instead of a setting.

- ☐ Scroll through the entries until the one you want is displayed on the active line.



- ☐ Press ✓.

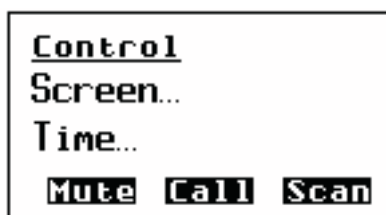
The first (or only) setting for the entry is displayed.



- ☐ To return to the list of grouped entries, press ✕.



- ☐ To return to the first level of the list, press ✕.

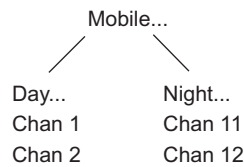


Locking and hiding grouped entries

Grouped entries can be locked and hidden. The process is the same as that for individual entries except that you start by going to the name of the group you want to lock or hide, not to a single entry.

For example, to lock all the channels in [Figure 25](#) you would go to the group name Mobile... and lock it. To lock the night-time channels, you would go to the group name Night... For more information on locking and hiding entries see [page 115, *Locking and unlocking information*](#) and [page 113, *Hiding and showing information*](#).

Figure 25: Locking and hiding grouped entries



Restricting access to information

Access to information in the transceiver can be restricted in two ways. You can lock lists, entries and settings to prevent them from being edited, and you can hide them to prevent them from being displayed.

For example, if you do not want users to change the transmit frequencies of channels in the transceiver, you can lock the settings in which these frequencies are stored. If you do not want users to see these frequencies you can hide the settings.

User, admin and factory level

Lists, entries and settings can be locked and hidden at three levels—user, admin and factory level—and they can only be unlocked and displayed by someone logged into the same or a higher level.

User level is the lowest and most general level. When you switch on the transceiver you are automatically logged into this level. Items locked and hidden at this level can be unlocked and displayed by others logged into this level or admin level. The user should be able to access all necessary information for the day-to-day operation of the transceiver at this level. By default, the user has access to the Channel and Address Lists.

Admin level is for use by system administrators. Items locked and hidden at this level can only be unlocked and displayed by others logged into this level. This prevents users from being able to change and display these items. For details on the admin level see [Table 14 on page 109](#) and [page 110, *Logging into admin level*](#). By default, all lists are hidden at admin level however, this can be changed by the administrator to meet the user's requirements. If the administrator recognises that there are some entries in the Control List to which the user requires access, they can either unlock and show the entry at user level, or set up a hot key to access the entry (see [page 241, *Creating a macro and assigning it to a hot key*](#)).

Factory level is the highest level and is used by Codan to lock certain configuration settings in the Control List. Items locked at this level can be displayed by users and administrators but cannot be unlocked. You cannot log into factory level.

Items can be locked at one level and hidden at another. For example, if you have access to admin level and do not want users to display the factory-locked configuration settings in the Control List, you could hide these settings at admin level.

[Table 14](#) summarises the access restrictions you can place on items at user and admin level. Locking and hiding information is covered in more detail on [page 115, *Locking and unlocking information*](#) and on [page 113, *Hiding and showing information*](#).

Table 14: Restricting access to information at user and admin levels

If you log into user level...	You can... • lock and hide items at user level • unlock items that have been locked at user level • display items that have been hidden at user level You cannot... • unlock items that have been locked at admin or factory level • display items that have been hidden at admin or factory level
If you log into admin level...	You can... • lock and hide items at user and admin level • unlock items that have been locked at user or admin level • display items that have been hidden at user or admin level You cannot... • unlock items that have been locked at factory level

Full and normal view

Full view is a feature that enables you to display items that have been hidden at the level into which you are logged, and to see the level at which items have been locked.

For example, if you have logged in as a user then switch to full view, information that has been hidden at user level is displayed and icons at the top right of the screen indicate the level at which any items have been locked and hidden. When you switch to normal view, the hidden items and the icons are removed. Full and normal view are covered in more detail on [page 112, *Displaying full and normal view*](#).

Logging into admin level

Logging into admin level gives you access to the Admin... group of entries in the List Manager (see [Table 13 on page 92](#)). These entries enable you to lock and hide information at admin level.

When you log into admin level:

- all locked entries are temporarily unlocked
- full view is enabled

There are two ways you can log into admin level. If you are prompted to enter a password when you switch on the transceiver, you can enter the admin password instead of the user password.

NOTE If you want to log into admin level this way, make sure that a user and an admin password have been set in the Control List. When you switch on the transceiver, you are only prompted to enter a password if a user password has been set.

You can also log into admin level by logging in at user level then using the Admin login entry in the List Manager.

Logging into admin level from user level

To log into admin level from user level:

- ☐ *Hold*  to open the List Manager.

If Quick Start is enabled, scroll to **Advanced...** in the Quick Start menu, then press .

- ☐ Scroll to **Config...**, then press .
- ☐ Scroll to **Admin login**, then press .
- ☐ Enter the admin password, then press .

NOTE If an admin password has not been set, you can log in by simply pressing .

You are logged into admin level and the List Manager remains open.

- ☐ If you want to access the Main Menu, press  until **Main Menu** is displayed.

Logging out of admin level

To log out of admin level:

- ☐ *Hold*  to open the List Manager.

If Quick Start is enabled, scroll to **Advanced...**, then press .

- ☐ Scroll to **Admin...**, then press .

- Scroll to **Admin logout**, then press ✓.

You are returned to user level and the List Manager remains open.

NOTE If you switch off the transceiver while you are logged into admin level you are automatically logged out.

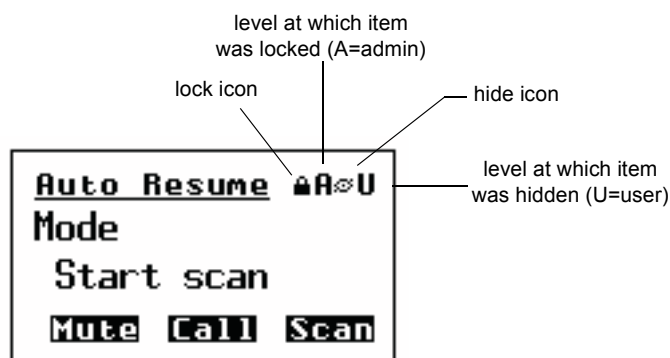
Displaying full and normal view

Full view is a feature that enables you to display any items that have been hidden at the level into which you are logged, and to see the level at which items have been locked.

When you switch to full view, icons are displayed at the top right of the screen to indicate whether an item has been locked and/or hidden, and the level at which these restrictions were set (for more information on access levels see [page 108, Restricting access to information](#)). When you switch to normal view, the icons and any items that have been hidden are removed.

[Figure 26](#) shows the front panel screen in full view. The entry in this figure has been locked at admin level to prevent it from being edited by users, and hidden at user level to prevent it from being displayed to users in normal view.

Figure 26: Full view



If you want to unlock an item that was locked at the same level as that into which you are logged, you do not need to switch to full view. For example, if you are logged into user level and want to unlock an item locked at user level you can do so in normal view.

If you want to be able to see an item that has been hidden in normal view, you must first switch to full view to display the item (with its hide icon), then use the Config... Show? entry in the List Manager. When you return to normal view, the item will be displayed.

For more information on locking and hiding items at different levels see [page 115, Locking and unlocking information](#) and [page 113, Hiding and showing information](#).

Switching between full and normal view

To switch between full and normal view:

- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Display options...**
- ☐ Select **Full view?** or **Normal view?**

Full view or normal view is displayed and the List Manager remains open.

Hiding and showing information

If you want to prevent users from displaying information, in particular lists, entries and settings, you can hide these items. For example, to prevent users from displaying the transmit frequency of a channel, you can hide the setting in which the frequency is stored. You can also hide entries in lists to reduce the number of items over which you need to scroll. By default, all lists are admin hidden. Therefore, users cannot access configuration information in the transceiver unless the administrator shows this information at user level.

You can hide lists, entries and settings at one of two levels: user level and admin level (for more information see [page 108, *Restricting access to information*](#)). [Table 15](#) summarises the effects of hiding information at these levels.

When you log into admin level, full view is automatically enabled, so all items hidden at user or admin level will be displayed.

CAUTION If a hot key has been created to display a hidden item, anyone can display the item by using the hot key. If the item is not locked, anyone can edit the item.

Table 15: Hiding items at user and admin levels

Hiding an item at...	Means that...
user level	- the item is hidden from anyone logged into user level, in normal view - users can display the item by switching to full view - users can display the item in normal view by using the Config... Show? entry in the List Manager - the item is visible to anyone logged into admin level, in normal or full view
admin level	- the item is hidden from anyone logged into user level, in full or normal view - all items hidden at user or admin level will be displayed automatically

Hiding or showing an item at user level

To hide or show a list, entry or setting at user level:

- ☐ Go to the list, entry or setting you want to hide or show.

NOTE You may need to switch to full view to see the item (see [page 112, *Displaying full and normal view*](#)).

NOTE If you want to hide a group of entries in a list, make sure that the entries in the list are grouped, then go to the name of the group you want to hide. For more information on grouping entries see [page 103, *Grouping and ungrouping entries*](#).

- ☐ *Hold*  to open the List Manager.
- ☐ Select **Config...**
- ☐ Select **Hide?** or **Show?**
- ☐ Switch to normal view, if required.

The List Manager remains open.

Displaying an item hidden at user level

To display a list, entry or setting that has been hidden at user level:

- ☐ Switch to full view (for help see [page 112, *Displaying full and normal view*](#)).
- ☐ Go to the list, entry or setting that was hidden.

NOTE

If the item is not displayed in full view it has been hidden at admin or factory level.

Hiding or showing an item at admin level

To hide or show a list, entry or setting at admin level:

- ☐ Log into admin level if you have not already done so (for help see [page 110, *Logging into admin level*](#)).
- ☐ Go to the list, entry or setting you want to hide or show.

NOTE

If you want to hide a group of entries in a list, make sure that the entries in the list are grouped, then go to the name of the group you want to hide. For more information on grouping entries see [page 103, *Grouping and ungrouping entries*](#).

- ☐ *Hold*  to open the List Manager.
- ☐ Select **Admin...**
- ☐ Select **Admin hide?** or **Admin show?**

The List Manager remains open.

Locking and unlocking information

If you want to prevent users from changing information, in particular lists, entries and settings, you can lock these items. For example, if you want to prevent users from changing the station self address of the transceiver you can lock the Address entry in the Control List. If you want to prevent users from changing any information in the Control List you can lock the entire list. In addition, locking items prevents them from being accidentally changed.

You can lock lists, entries and settings at one of two levels: user level and admin level (for more information see [page 108, Restricting access to information](#)). [Table 16](#) summarises the effects of locking information at these levels.

When you log into admin level, all locked items are temporarily unlocked.

Table 16: Locking items at user and admin levels

Locking an item at...	Means that...
user level	- anyone logged into user level can unlock the item by using the Unlock? or Locks off? entries in the List Manager, then they can edit the item - anyone logged into admin level can edit the item without unlocking it first
admin level	- the item cannot be edited by anyone logged into user level - the item can be edited by anyone logged into admin level

Locking or unlocking an item at user level

To lock or unlock a list, entry or setting at user level:

- ☐ Go to the list, entry or setting you want to lock or unlock.

NOTE

If you want to lock a group of entries in a list, make sure that the entries in the list are grouped, then go to the name of the group you want to lock. For more information on grouping entries see [page 103, Grouping and ungrouping entries](#).

- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Config...**
- ☐ Select **Lock?** or **Unlock?**

The item is locked or unlocked and the List Manager remains open.

Locking or unlocking an item at admin level

To lock or unlock a list, entry or setting at admin level:

- ☐ Log into admin level if you have not already done so (for help see [page 110](#), *Logging into admin level*).
- ☐ Go to the list, entry or setting you want to lock or unlock.

NOTE

If you want to lock a group of entries in a list, make sure that the entries in the list are grouped, then go to the name of the group you want to lock. For more information on grouping entries see [page 103](#), *Grouping and ungrouping entries*.

- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Admin...**
- ☐ Select **Admin lock?** or **Admin unlock?**

The item is locked or unlocked and the List Manager remains open.

Switching locks off or on at user level

If you need to edit a number of items that have been locked you may want to use the locks off feature. This switches off all the locks set at the level into which you are logged, so you do not have to unlock items individually. When you have edited the items you can reinstate all the locks in one step using the locks on feature.

NOTE

If you switch off the locks and switch off the transceiver, the locks are automatically reinstated.

To switch locks off or on at user level:

- ☐ Hold **Q** to open the List Manager.
- ☐ Select **Config...**
- ☐ To switch locks off select **Locks off?**

To switch locks on select **Locks on?**

The List Manager remains open.

8 The Channel List

This section contains the following topics:

[About channels \(118\)](#)

[Settings in the Channel List \(118\)](#)

[Programming the Channel List \(119\)](#)

About channels

A channel is a frequency or pair of frequencies to which a name has been given, such as 'Channel 1', '4500' and 'Headquarters'. You need to enter the details of at least one channel before you can make or receive a call. Channels are stored in the Channel List.

Settings in the Channel List

When you create a channel you need to enter:

- a name for the channel
- the receive and transmit frequencies of the channel, if applicable
- one or more modes to be used with the channel

Channel names

A channel name can consist of letters, numbers or a combination of both. Before you name any channels, consider using group names to make navigation in the Channel List easier (for more information see [page 103, *Grouping and ungrouping entries*](#)).

CAUTION You should be aware of any restrictions placed on channel names in your transceiver when it is used with InterNav software. For more information see the documentation provided with this equipment.

Frequencies

The receive and transmit frequencies may be any frequencies within the HF range. However, the transmit frequencies can only be those allocated to you by the relevant government authority in your country.

Spectral regulations may require the TxD option to be installed in the transceiver. In this case, you cannot create channels with new transmit frequencies. You can, however, create receive-only channels, and channels with the same transmit frequency as an existing channel. If the TxP option has been installed in the transceiver, you cannot create channels.

Modes

A mode specifies a combination of a sideband (for example, USB or LSB) and IF filter settings (that is, bandwidth and centre frequency). Each channel must have at least one mode. You may want to select several modes for each channel depending on the modes available to you.

When the standard IF filter is fitted, the allowable modes are USB and LSB. If a different filter is fitted, other modes are available. For example, if you have a wide IF filter fitted, USBW and LSBW are available. If you have a narrow Morse filter fitted, USB CW and LSB CW are available.

Programming the Channel List

Creating a channel

This section covers creating a channel in a transceiver where receive and transmit frequencies can be entered.

If you are operating the transceiver in a country that has stringent licensing regulations, you may not be permitted to create channels with transmit frequencies.

NOTE If the TxD option has been installed in the transceiver, there are restrictions on the frequencies you can enter.

If the TxP option has been installed in the transceiver, you cannot create channels.

To create a channel:

- ☐ Press **VIEW** until the channel screen is displayed.

NOTE If the Channel List is empty, **Free Tune** is displayed.

- ☐ Use the List Manager to create an entry (for help see [page 97, Creating an entry in a list](#) and [page 52, Entering and editing text](#)).
- ☐ Enter the setting information provided in the following table as required, then press **✓** to enter the information.

If this prompt is displayed...	Do this...
Receive Freq	• use this frequency, or • enter a new receive frequency in kilohertz NOTE You can enter the frequency to three decimal places. Press * to enter a decimal point, then continue with entering the frequency.
Transmit Freq	• use this frequency, or • enter a new transmit frequency in kilohertz, or • disable the transmit frequency by pressing ✕ repeatedly until the setting is empty NOTE If the TxD option has been installed in the transceiver, you cannot create channels with new transmit frequencies. You can however, create channels with the same transmit frequency as an existing channel, and you can disable transmit frequencies to create receive-only channels.

If this prompt is displayed...	Do this...
Mode	enter a mode NOTE If multiple modes can be added to the channel, select the new mode and press ✓. If you do not want to add another mode, press ✕.

The new channel is created and the List Manager remains open.

- ❑ If you want to view the channel you have created, press ✕ to close the List Manager.

NOTE If you disabled the transmit frequency, dashes are displayed in place of the transmit frequency.

Renaming a channel

When you rename a channel, references to the channel in other lists are not automatically updated; you need to go to the Address, Network and Phone Link Lists and update any references to the channel.

For example, if the channel you renamed is used in a network, go to the channel/mode list for the network, find the reference to the old channel name, then edit it so that the new name is displayed (for help see [page 129, Editing a network](#)). If you do not update the reference to the channel, the channel will not be scanned when scanning is switched on.

Renaming a channel is a standard list function. For help see [page 98, Renaming an entry in a list](#).

Copying a channel

Copying a channel is a standard list function. For help see [page 99, Copying an entry in a list](#).

Editing a channel

Editing a channel is a standard list function. For help see [page 99, Editing an entry in a list](#).

Deleting a channel

Deleting a channel is a standard list function. For help see [page 100, Deleting an entry from a list](#).

9 The Network List

This section contains the following topics:

[About networks \(122\)](#)

[Settings in the Network List \(123\)](#)

[Special network names \(127\)](#)

[Programming the Network List \(128\)](#)

About networks

A network is two or more stations that use the same frequencies and call system to communicate. This simplifies communication because each station knows the method with which they can make and scan for incoming calls, and the frequencies they can use. Information about the networks you may use is stored in the Network List.

Networks are based on call systems. A call system is a method of making and receiving calls. For example, if you are in a network that uses the Codan Selcall call system, you can make calls by entering the address of the station you want to call, then selecting the channel/mode you want to use. When your call is detected by the receiving station, that station rings to alert the operator. In an ALE/CALM network, you can make calls by entering the address of the station you want to call only. The transceiver will select the best channel on which to make the call.

When you create a network, the transceiver prompts you to select a call system, then prompts you for further information based on your selection. [Figure 27](#) shows an example of the information required to create networks based on the Codan Selcall, ALE/CALM, and Voice Only call systems. This information is explained on [page 123, Settings in the Network List](#).

NOTE

The call systems from which you can select depend on the options installed in the transceiver.

Figure 27: An example of information stored in the Network List

Network List			
Network A	—	Scan Network:	Scan voice
	—	Call System:	Codan Selcall
	—	Call Detect Time:	<default>
	—	Privacy Mode:	Registered
	—	Privacy Password:	*****
	—	Nominal Preamble:	4 seconds
	—	Channel/Mode:	Chan 3/USB Chan 4/LSB Chan 5/USB
Network B	—	Scan Network:	Scan
	—	Call System:	ALE/CALM
	—	Call Detect Time:	<default>
	—	Sounding Interval:	2.5 hours
	—	Privacy Mode:	Group
	—	Privacy Password:	*****
	—	Nominal Preamble:	2 seconds
Channel/Mode:		Chan 1/USB	
		Chan 2/USB	
		Chan 3/USB	
		Chan 4/LSB	
Network C	—	Scan Network:	Don't Scan
	—	Call System:	Voice Only
	—	Call Detect Time:	<default>
	—	Channel/Mode:	Chan 1/USB Chan 2/LSB

Settings in the Network List

NOTE In the following discussion, you will need to log in as administrator to see the Network List (see [page 110, *Logging into admin level from user level*](#)).

Network Name

CAUTION You should be aware of any restrictions placed on network names in your transceiver when it is used with InterNav software.

Scan Network

The Scan Network setting applies to all types of networks. It enables you to specify whether or not you want the channels in the network to be scanned when scanning is switched on. You can also set the transceiver to scan for voice in voice networks even when the Mute Type is set to Selcall mute.

NOTE The transceiver will scan a maximum of 100 channels at a time. If the total number of channels in all the networks you are scanning exceeds 100, only 100 of the channels will be scanned.

Call System

The Call System setting applies to all types of networks. The call system is the method used by the network to make and receive calls, for example, Codan Selcall, ALE/CALM or Voice Only. The call systems from which you can select depend on the options installed in the transceiver.

If your network uses the Codan Selcall call system, you can make calls by selecting an appropriate channel/mode then entering the address of the station you want to call. When your call is detected by the receiving station, that station rings to alert the operator. If your network uses the ALE/CALM call system the transceiver can select the best channel/mode for you. If your network uses the Voice Only call system, you can make calls by selecting an appropriate channel/mode then pressing PTT and speaking. You cannot enter the address of the station you want to call.

CAUTION Any station that is tuned to your frequency and has mute off can listen to your voice conversation.

Call Detect Time

The Call Detect Time setting applies to all types of networks. The call detect time is the length of time the transceiver pauses on each channel, when scanning, to detect an incoming call. You can set the call detect time to <default> or to a specific value.

NOTE The call detect time is the inverse of the scan rate. For example, a call detect time of 0.2 seconds is equivalent to a scan rate of 5 channels per second.

Sounding Interval

The Sounding Interval setting applies to ALE/CALM networks only. The sounding interval is the frequency with which the transceiver sends sounding signals to other stations to assess the quality of the channels in the network.

The recommended value is 5 hours. The longer the value, the longer the transceiver takes to update its channel quality information. If the value is set to 5 hours the transceiver will take 5 days to completely update channel quality information. Longer sounding intervals decrease the interruptions on network channels.

NOTE Link quality information is also updated each time a call is made or received.

Privacy Mode

The Privacy Mode setting applies to Codan Selcall and ALE/CALM networks only. The Privacy Mode is the method used to encrypt the data content of calls between stations. If you select Registered or Group, you will need to enter an appropriate password into the Privacy Password setting.

Privacy Mode	Is used for...
Registered	encrypting Phone calls that you make when you have registered with a network that encrypts telephone numbers (you are provided with a password that you need to enter into the Privacy Password setting)
Group	encrypting data in calls between two stations (you agree upon a password to enter into the Privacy Password setting)
None	calls made under a Codan protocol, which uses special formatting
Plain (lowest mode) (MIL-STD-188-141B ALE option only)	AMD messages in ALE calls (basic 64 ASCII subset A–Z, 0–9, space ! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^)

When you are setting up ALE/CALM networks, you should ensure that you set up networks with the same Privacy Mode for communication. If there is a mismatch in Privacy Modes, the receiving station will use the most suitable privacy mode out of the networks through which the call may be received.

For example, if an initiating station starts an ALE call containing data through a network that has its Privacy Mode set to Plain, and the receiving station determines that the address is valid in networks with the Privacy Mode set to Group or Plain, then it will select the network with the Privacy Mode set to Plain on which to establish the link. Any data communications within this link will use the basic 64 ASCII subset of characters.

However, if the receiving station determines that the address is available in a Group network only, it will select the Group network on which to establish the link. Data communications within this link will not be successful because the initiating station does not have the password for the Privacy Mode of Group at the receiving station.

If an initiating station starts an ALE call (without data), the receiving station determines in which networks the address is valid, selects a network with the lowest Privacy Mode available, then establishes the link. Data communications may proceed as per the Privacy Modes of the selected sending and receiving networks.

Privacy Password

The Privacy Password setting applies to Codan Selcall and ALE/CALM networks where the Privacy Mode has been set to Group or Registered. The privacy password is the password that enables you to use the Privacy Mode mentioned above. It can be up to 15 characters long.

Nominal Preamble

The Nominal Preamble setting applies to Codan Selcall and ALE/CALM networks only. The nominal preamble is the length of the preamble signal sent by the transceiver when you make a call. This is the signal for which other transceivers scan in order to detect your call.

The nominal preamble should be set to no less than the number of channels in the network multiplied by the call detect time. If you set the Nominal Preamble to <default> the transceiver will calculate the length of preamble at the time of the call, based upon the number of channels in the network. If you are calling a station that uses identical network information, the preamble of the initiating station will match the detection requirements of the receiving station. If such stations are scanning a different number of networks, then the nominal preamble should be calculated on a per station basis.

If a transceiver that you want to call scans multiple networks, the preamble can be increased to the time it takes that transceiver to scan all of its channels.

Channel/Mode

The Channel/Mode setting applies to all networks. This setting contains the channels and modes used by the network. The modes from which you can select are those specified for the channel in the Channel List.

Before you add channel/modes to a network, consider the following:

- While there is no limit to the number of channels you can add to a network, the transceiver will only scan a maximum of 100 channels at a time. If the total number of channels in all the networks you are scanning exceeds 100, only 100 of the channels will be scanned.
- If several modes can be used with one channel and you want the channel to be scanned using each mode, create several entries for the channel, one for each mode. For example, if you want to scan 'Chan 1' using modes USB and LSB, create the entries 'Chan 1/USB' and 'Chan 1/LSB'.
- An easy way to add and maintain channels in a network is to use groups of channels. Only the group name is stored in the Network List so you can add and delete channels from the group in the Channel List without having to update the Network List each time. When the network is scanned the transceiver scans whichever channels are in the group at the time. For more information see [page 103, Grouping and ungrouping entries](#).
- When you add a group of channels to a network you need to select a mode for the group. The mode should be an allowed mode for all the channels in the group as the transceiver will only scan the channels for which the mode is allowed.

If the mode is not an allowed mode for one or more channels, these channels are listed in a message that is displayed when you switch scanning on. In this situation these channels will not be scanned. To ensure that they are scanned, add them to the network individually.

- A network cannot be scanned unless there are channel/modes in it. However, you can still use the network to make calls. The channel/modes from which you can select are all those in the Channel List.
- If you rename a channel in the Channel List and that channel is used in a network, you must delete the channel from the network and if necessary add the new channel name.
- If you make frequent and significant changes to the channels and networks in the transceiver you may want to use NSP to maintain this information.

Special network names

Specifying a default network to use with !<network name>

When you make a call from the Channel List, the transceiver usually prompts you to select a network and channel for the call. To avoid the transceiver prompting you for a network or channel, the system administrator should set up a network with a leading '!' in the name, for example, '!AidNet'. The !<network name> should contain all of the channels that are programmed into the transceiver, thus avoiding any prompting for channels.

These networks enable the operator to make a call on any channel in the transceiver with minimal prompting by the transceiver.

Networks called *CALM, *Selcall and *Voice

These networks are used with Quick Start (see [page 57, Quick Start](#)).

Programming the Network List

NOTE In the following discussion, you will need to log in as administrator to see the Network List (see [page 110, Logging into admin level from user level](#)).

Creating a network

When you create a network, the transceiver prompts you for various details. It is recommended that you read [page 123, Settings in the Network List](#) before you create a network.

To create a network:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Network**, then press **✓**.
- ☐ Use the List Manager to create an entry (for help see [page 97, Creating an entry in a list](#) and [page 52, Entering and editing text](#)).
- ☐ Enter the setting information provided in the following table as required, then press **✓** to enter the information.

If this prompt is displayed...	Do this...
Scan Network?	select whether the network is scanned or not NOTE If you want to scan a voice network for voice when the Mute Type is set to Selcall, select Scan voice (see page 61, Muting the transceiver).
Call System?	select the call system you want to use
Call Detect Time?	- increase or decrease the call detect time, or - scroll to the far left of the line until <default> is displayed
Sounding Interval?	select the value you want to use
Privacy Mode?	select the mode you want to use
Privacy Password?	enter the password you want to use with the Privacy Mode
Nominal Preamble?	increase or decrease the nominal preamble time
Channel?	select the channel you want to use NOTE If the channel is in a group, select the group name then press ✓, then select the channel that you want to use. If you want to use a group of channels, select the group name, then <i>hold</i> ✓.

If this prompt is displayed...	Do this...
Mode?	select the mode for the channel or group of channels that you want to use
Add another Channel/ Mode?	select the channel/mode that you want to use NOTE If you do not want to add another channel/mode, press X.

The new network is created and the List Manager remains open.

- ☐ If you want to view the network you have created, press **X** to close the List Manager.

Renaming a network

When you rename a network, references to the network in other lists are not automatically updated; you need to go to the Address entry in the Control List to update any of your station self addresses that refer to the network, and to the Address, NET and Phone Link Lists to update any entries that refer to the network.

For example, if the network you renamed is used in an entry in the Address List, go to this entry, find the reference to the old network name, then change it so that the new name is displayed (for help see [page 155, Editing an entry in the Address List](#)). If you do not update the reference to the network, the transceiver will prompt you to select a network each time you use the entry to make a call.

Renaming a network is a standard list function. For help see [page 98, Renaming an entry in a list](#).

Copying a network

Copying a network is a standard list function. For help see [page 99, Copying an entry in a list](#).

Editing a network

Editing a network is a standard list function. For help see [page 99, Editing an entry in a list](#).

Deleting a network

Deleting a network is a standard list function. For help see [page 100, Deleting an entry from a list](#).

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