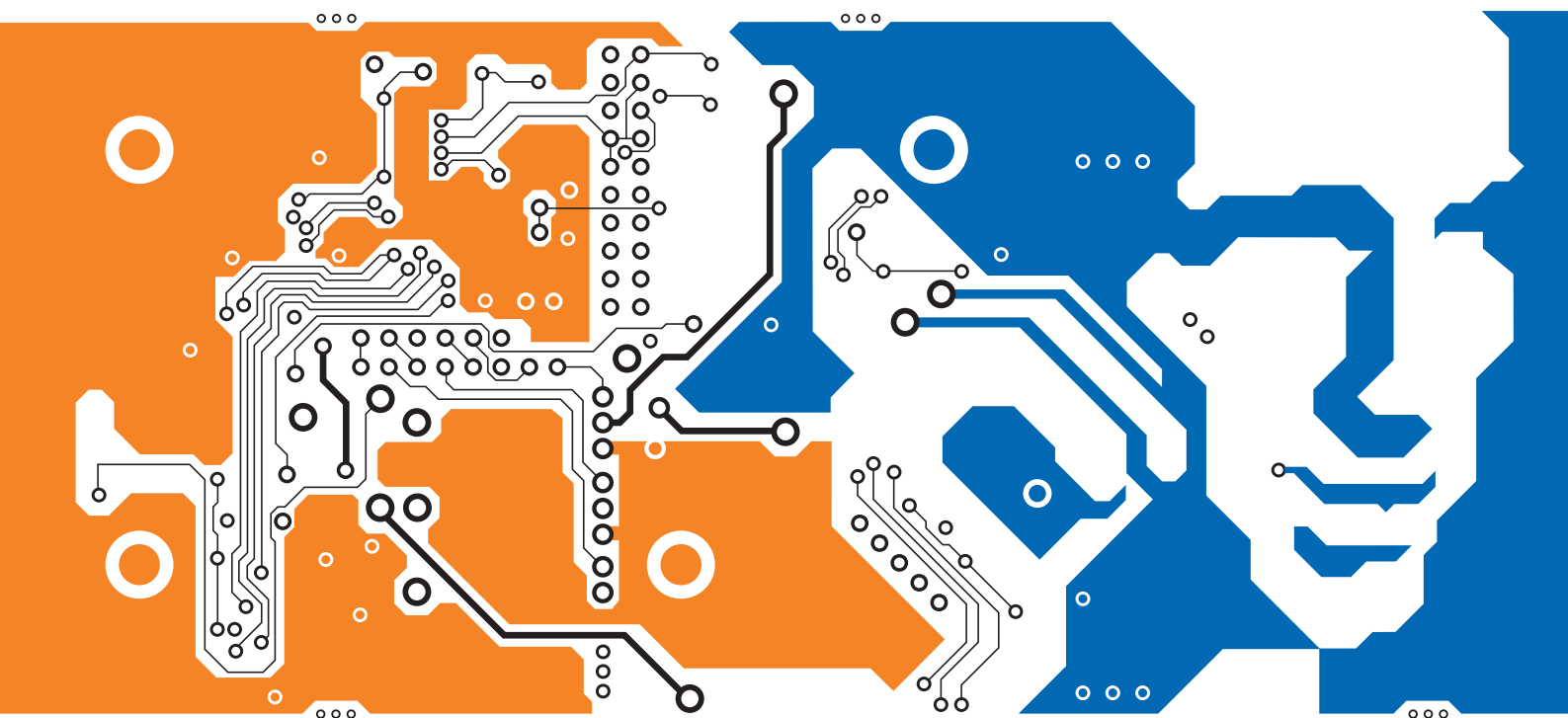




NGT Transceiver

CR

HF RADIO COMMUNICATIONS



REFERENCE MANUAL

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The English version takes precedence over any translated versions.

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1 About this manual

This reference manual provides an overview of the NGT CR Transceiver, how to install it in mobile and fixed stations, 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 [NGT CR Transceiver compliance](#)—compliance information and safety notices
- Section 3 [HF radio transmission](#)—provides an overview of HF communication
- Section 4 [The NGT CR Transceiver](#)—explains the transceiver's components, standard features and options
- Section 5 [Installation](#)—explains how to install the transceiver and antenna in a mobile or fixed situation, and test the installation
- 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 Phone Link List](#)—explains the settings in the Phone Link List and how to program a phone link
- Section 11 [The Address List](#)—explains the settings in the Address List and how to program the Address List
- Section 12 [Making and receiving calls](#)—explains how to make and receive calls
- Section 13 [The Control List](#)—explains the contents of the Control List
- Section 14 [The Keypad List](#)—explains the Keypad List
- Section 15 [The Mode List](#)—explains the Mode List
- Section 16 [Using the transceiver in free tune and Amateur Mode](#)—explains how to use the transceiver in free tune, and provides the frequency bands for Amateur Mode
- Section 17 [Hot keys](#)—explains how to set up, manage and use hot keys
- Section 18 [Connectors](#)—explains the connectors in the transceiver system
- Section 19 [System messages](#)—explains the system messages that may be displayed on the handset screen
- Section 20 [Accessories and hardware options](#)—lists the accessories and hardware options available for the transceiver system
- Section 21 [Specifications](#)—lists the specifications of the transceiver system
- 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 menu option in the transceiver
-------------	----------------------------------

This icon...	Means...
--------------	----------

<input type="checkbox"/>	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
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
ISO	internal sales order

This term...	Means...
LBT	listen before transmit
LCD	liquid crystal display
LED	light-emitting diode
LF	line feed
LSB	lower sideband
NC	normally closed
NO	normally open
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
R&TTE	radio and telecommunications terminal equipment
rcvd	received
RF	radio frequency
RTS	request to send
Rx	receive
SB	sideband
SINAD	(signal + noise + distortion)-to-(noise + distortion) ratio
SWR	standing wave ratio
tcvr	transceiver
TPE	transmit program enable
Tx	transmit
TxD	transmit disabled
TxE	transmit enabled
TxP	transmit prohibited
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 <code>@?@</code> that ALE stations recognise. The global ALL address syntax may be used in Emergency, Message, Phone, Selective, and Send Position calls if the FED-STD-1045 ALE/CALM 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.
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.
control cable	A cable connecting two items of equipment that allows control information to be passed between the equipment.
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.
decoupling	The removal of unwanted noise and signal from electronic circuitry by transferring it to ground.
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. You can make Get Position calls if the GPS option is installed.
Get Status call	A call that gets diagnostic information about the transceiver at a specific station.

This term...	Means...
hot key	A key on the handset or desk console that is pre-programmed with a macro that enables you to perform a task quickly.
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.
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.
Marine Emergency call	A call that enables you to contact a station using a tone on the marine distress frequency of 2182 kHz.
mobile station	A station that is usually mounted in a vehicle or is portable and easily transportable. It consists of a transceiver, a power supply, an antenna, control and accessory devices, ancillary equipment, and appropriate connecting cables.
mode	A type of reception or transmission you can use with a channel, comprising a sideband and an IF filter.
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.
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.
RF filtering	A device fitted to prevent noise from being generated and to minimise the noise radiated by the wiring connected to the noise source. These devices include filters, suppressing capacitors, and earth straps.
RF unit	The unit in a transceiver that modulates audio signals onto radio frequencies that can be transmitted on air, and that demodulates the radio frequencies it receives into audio signals.
scan rate	See call detect time .
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. You can make Send Position calls if the GPS option is installed, and your transceiver has a GPS position registered.

This term...	Means...
shielding	A metallic barrier that is positioned between a noise source and the transceiver to minimise noise interference.
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	An RF unit, handset, speaker, and appropriate connecting cables.

Units

Measurement	Unit	Abbreviation
Capacitance	farad	F
Current	amp	A
Frequency	hertz	Hz
Impedance	ohm	Ω
Length	metre	m
Power	watt	W
Power ratio	decibel	dB
Temperature	degrees Celsius	°C
Time	second	s
	hour	h
Voltage	volt	V
Weight	gram	g

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 NGT *CR* Transceiver Reference Manual.

Associated documents

This manual is one of a series of publications related to the NGT *CR* Transceiver. Associated documents are:

- NGT *CR* Transceiver Getting Started Guide (Codan part number 15-04144-CH), Chinese version
- NGT System Programmer Help (Codan part number 15-04105-EN)
- Automatic Tuning Whip Antenna 9350 Installation Handbook (Codan part number 15-04142-EN)
- Antenna Matrix (Codan part number 12-50133)
- NGT Transceiver System Technical Service Manual (Codan part number 15-02063-EN)
- NGT Transceiver System Repair Guide (Codan part number 15-04143-EN)
- Declaration of Conformity for the NGT *CR* Transceiver (Codan part number 19-40242)
- Declaration of Conformity for the 3020 Transceiver Supply (Codan part number 19-40127)

2 NGT CR Transceiver compliance

This section contains the following topics:

[Introduction \(12\)](#)

[European Radio and Telecommunications Terminal Equipment Directive \(13\)](#)

[Electromagnetic compatibility and safety notices \(14\)](#)

Introduction

This section describes how to ensure the NGT *CR* 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 this product is listed on [page 10, *Associated documents*](#). This document can be made available upon request to Codan or a Codan-authorised supplier.

European Radio and Telecommunications Terminal Equipment Directive

The NGT CR 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

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 10, *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** • 1.5 m (5 ft) of any part of a mobile antenna
- 2 m of any part of a fixed antenna in a data installation of up to 125 W output
- 5 m of any part of a fixed antenna in a data installation of up to 1 kW output

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:

- ☐ Use standard shielded cables supplied from Codan (where applicable).
- ☐ Ensure the covers for the equipment are fitted correctly.

CAUTION If it is necessary to remove the covers at any stage, they must be refitted correctly before using the equipment.

- ☐ Cover unused connectors on the RF unit with the protective caps supplied to prevent electrostatic discharge passing through your transceiver.

Electrical safety

To ensure compliance with the European Low Voltage Directive is maintained, you must install and use the NGT CR Transceiver in accordance with the instructions in the *NGT CR Transceiver Getting Started Guide* and the *NGT CR Transceiver Reference Manual*.

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

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

CAUTION

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

WARNING



A protective earth connection must be included in the mains wiring to the 3020 Transceiver Supply (see below, *Earth symbols*).

The protective cover must always be fitted when the 3020 Transceiver Supply is connected to the AC mains.

Earth symbols

Chassis earth connection points are provided on the NGT CR Transceiver and 3020 Transceiver Supply. A protective earth is provided in the AC mains wiring of the 3020 Transceiver Supply. This protective earth must be connected at the AC mains supply outlet. The symbols shown in [Table 1](#) are used to identify the earths on the equipment.

Table 1: Earth symbols

Symbol	Meaning
	Chassis earth
	Protective earth

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3 HF radio transmission

This section contains the following topics:

[HF radio transmission \(18\)](#)

[Etiquette for the use of HF radio \(21\)](#)

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 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 over land and 300 km over sea. The distance covered depends upon the operating frequency, transmission power and type of terrain.

Direct wave

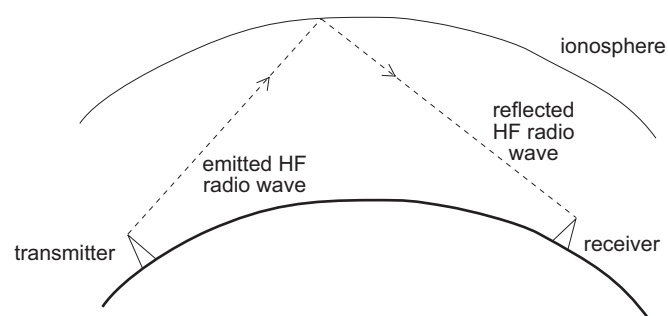
The direct wave travels in a direct line-of-sight from the transmitter to the receiver.

Sky wave

The sky wave is the most important form of HF propagation. The HF 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 an HF 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 radio 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 radio 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 must specify the channel *and* the mode you want to use.

[Table 2](#) shows examples of channels and the information associated with them.

Table 2: 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 radio 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 or Open 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 scanning is switched on when you are not using the transceiver to communicate. This ensures that you can receive calls from stations in your HF radio communication 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 global ALE ALL calls with this option.

CALM is interoperable with FED-STD-1045 ALE.

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.

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.

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4 The NGT CR Transceiver

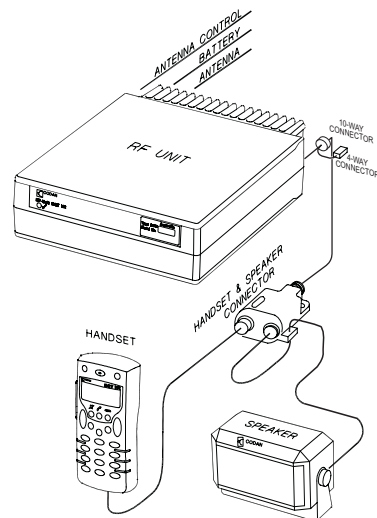
The NGT CR Transceiver consists of:

- a 2020 Handset
- a 2011 RF Unit

The handset is a hand-held device that has a microphone, PTT button, display and keypad. The microphone and PTT button are used for voice communication. The keypad enables you to control and configure the transceiver system. The handset is connected to the handset and speaker connector from the RF unit, or to the rear of the Code 766 Desk Console.

The RF unit modulates audio signals onto radio frequencies that can be transmitted on air, and demodulates the radio frequencies it receives into audio signals.

Figure 2: The NGT CR Transceiver



The 2020 Handset

Figure 3: The 2020 Handset



The handset comprises:

- an LCD
- navigation keys (↩, ↪, ✓, ✕, Q)
- volume controls (🔊, 🔊🔊)
- **MUTE**, **CALL** and **SCAN** hot keys
- alphanumeric keys (0–9, *, #)
- emergency key (🚒)
- power key (🔋)
- microphone
- PTT button
- programming jack

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

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

The Tick and Cross 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:

- navigate up from settings to entries
- 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.

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 3: Standard hot keys

Hot key	Function
MUTE	Pressing MUTE toggles mute on or off.
CALL	Pressing CALL starts a call.
SCAN	Pressing SCAN switches off scanning, or if you were in a call, ends the call and switches scanning on.
TUNE	Pressing TUNE displays the PTT to tune screen so you can manually tune the antenna. For more information see page 97, 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 99, Using the clarifier .
MODE	Pressing MODE selects the next allowable mode programmed for the channel, usually USB or LSB.
V/S	Pressing V/S toggles the mute type between Voice mute and Selcall mute. For more information see page 82, Muting the transceiver .
SEC	Pressing or <i>holding</i> SEC enters Secure mode, if the hardware option is fitted and special firmware is programmed into the transceiver and enabled. For more information see page 101, Using the voice encryptor .
EASITALK	Pressing EASITALK toggles the DSP noise reduction algorithm on or off. For more information see page 100, Reducing background noise with Easitalk .
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, then back to the screen from which you began. In these logs, you can view the details of the calls.
⚠ (Emergency)	<i>Holding</i> ⚠ starts an automatic Marine Emgcy transmission using call information contained in the Emergency entry in the Address List.

Table 3: Standard hot keys (cont.)

Hot key	Function
① + 9	Pressing ① + 9 enables you to change the default setting for the screen contrast. For more information see page 93, <i>Changing the screen contrast</i> .
① + 0	Pressing ① + 0 enables you to change the default setting for the screen and keypad backlighting. For more information see page 94, <i>Changing the screen brightness</i> .

The Code 766 Desk Console with handset

The Code 766 Desk Console is an optional accessory for fixed stations. It features a microphone, a cradle for the handset, a PTT button, four hot keys, a built-in speaker, and a headphone socket.

The hot keys are labelled F1 to F4. The console is shipped with a standard macro assigned to each one (see [Table 4](#)). If you want to customise the hot keys you can create your own macros and assign them to the keys (for more information see [page 223, Hot keys](#)).

Figure 4: The Code 766 Desk Console

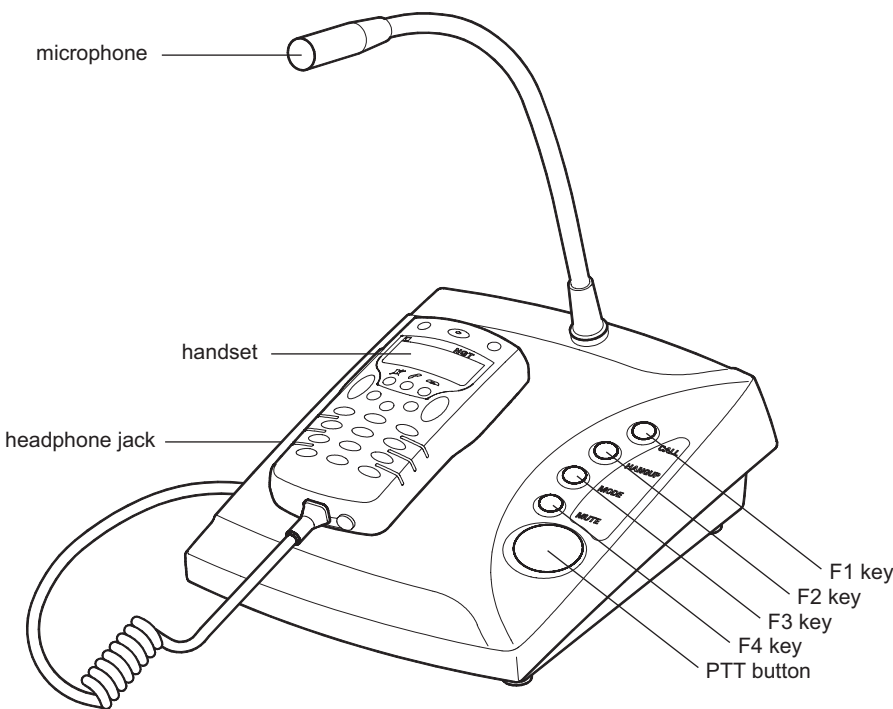


Table 4: Standard hot keys on the desk console

Key	Hot key task	Handset equivalent
F1	New Call: begins a call	CALL key
F2	Scan Toggle: ends a call if a call is in progress, or toggles scanning on or off	SCAN key
F3	Next Mode: switches to the next possible mode for the currently selected channel	MODE key
F4	Mute: switches mute on or off	MUTE key

5 Installation

This section contains the following topics:

[Types of stations \(30\)](#)

[Types of mobile antennas \(33\)](#)

[Types of fixed antennas \(34\)](#)

[Installing the transceiver \(42\)](#)

[Radio frequency interference \(mobile stations only\) \(55\)](#)

[Noise suppression \(58\)](#)

[Tuning the mobile antenna \(59\)](#)

[Troubleshooting the installation \(60\)](#)

[Testing the installation \(65\)](#)

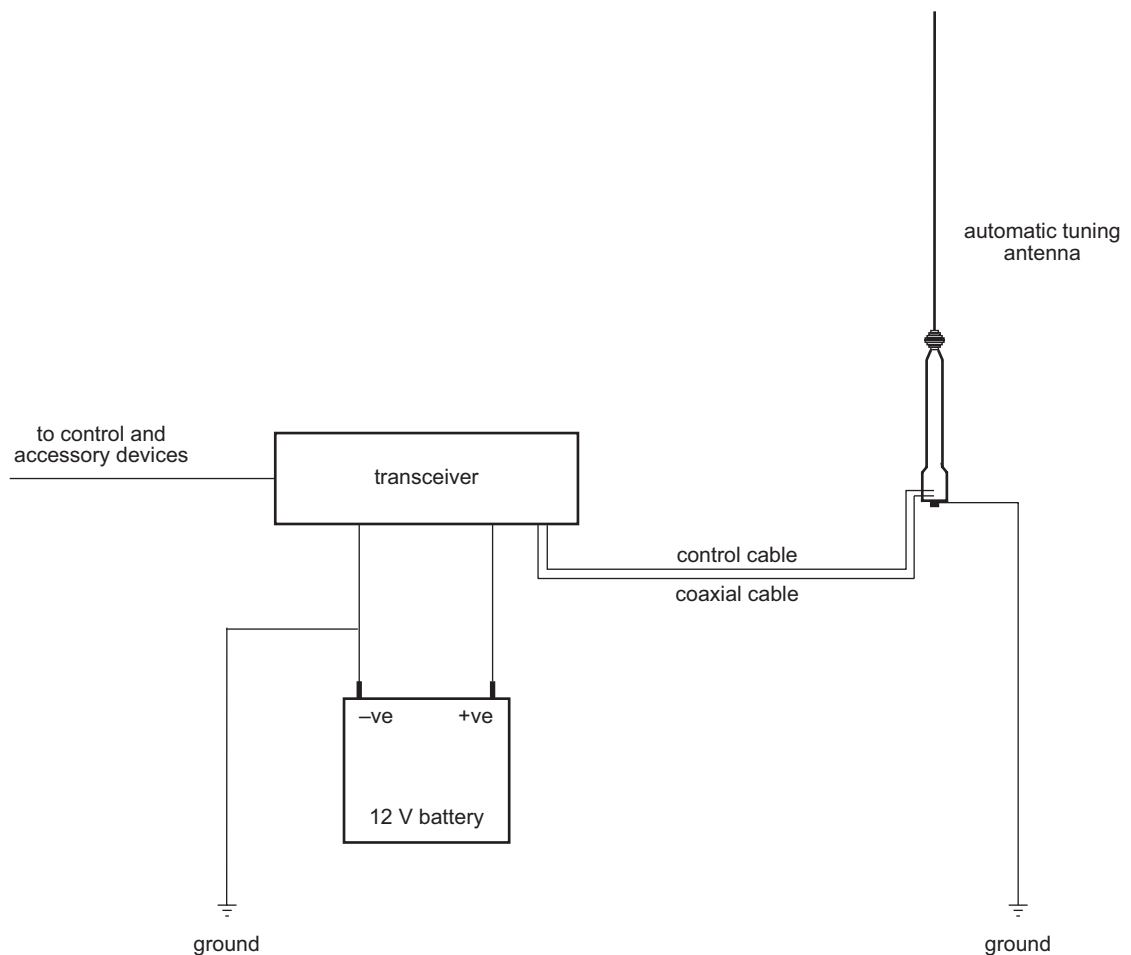
Types of stations

Mobile station

A mobile station typically consists of a transceiver, a 12 V DC power supply (battery), an antenna, control and accessory devices, ancillary equipment, and appropriate connecting cables. The antenna is connected to the transceiver by coaxial cable. An automatic tuning antenna also requires a control cable connected to the transceiver (see [Figure 5](#)).

When space is limited in a mobile situation, the transceiver may be located in the boot or behind/under a seat.

Figure 5: A typical mobile station

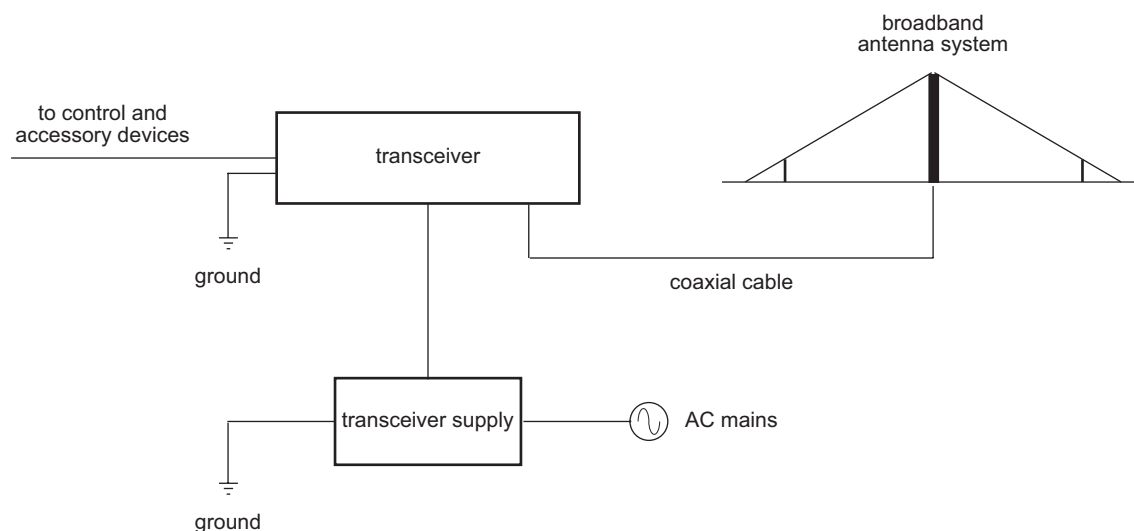


Fixed station

A fixed station typically consists of a transceiver, an AC transceiver supply connected directly to the mains, an antenna, control and accessory devices, ancillary equipment, and appropriate connecting cables.

The transceiver is connected to the DC output lead of the transceiver supply. The antenna is connected to the transceiver by coaxial cable.

Figure 6: A typical fixed station



Antenna tuners in a fixed station

The purpose of an antenna tuner is to adjust the wavelength of the antenna according to the selected frequency. This ensures an optimum load to the transceiver so that it achieves maximum efficiency. A tuner is usually installed when a single antenna is operating on a range of frequencies, such as the long wire and vertical whip antennas, and there is limited space available for additional antennas to be installed.

The radiating portion of the antenna connects directly to the tuner through a high voltage insulator. The antenna length must be compatible with the tuner installed and be suitable for the working frequency range.

CAUTION It is essential that the correct antenna type, site location, and grounding technique be chosen so that the system will operate effectively (see [page 34, Types of fixed antennas](#)).

Automatic tuners

These tuners automatically tune to the selected frequency, and can recall frequency settings for future use. Automatic tuners operate with almost any end-fed antenna with a length of 6 m or more, provided an effective ground system is used.

Antenna supports in a fixed station

Supports are used to position the antenna to face the desired direction of communication. The supports suspend the antenna in the air and provide it with adequate rigidity. The supports must be able to withstand extreme environmental conditions.

CAUTION The antenna may not tune or remain tuned if it sways or sags.

Existing supports can be used, such as trees or windmill towers, if they are suitably positioned according to the direction of communication. Support systems also include freestanding or guyed masts.

NOTE If the supports are unstable, additional support, such as guy anchors, should be provided.

The antenna is tied to various supports by wire or nylon rope guys to ensure the antenna is insulated from its supports. If wire guys are used, two ceramic insulators *must* be provided at each end of the antenna. If metallic supports are used, position the insulators so that the antenna is at least 2 m from the mast. Ceramic insulators ensure the signal is not connected directly to the ground via the metallic supports.

Types of mobile antennas

Automatic tuning whip antenna

Description

The automatic tuning whip antenna is a multifrequency antenna. A microcontrolled stepper motor in the base of the automatic antenna adjusts an inductor until the antenna is tuned to the selected frequency.

Advantages and limitations

Table 5: Advantages and limitations of the automatic tuning whip antenna

Advantages	Limitations
Wide operating frequency range. Easier to operate than a tapped whip antenna.	Large physical size that requires a more substantial mounting bracket. An additional control cable is required.

For information on installing the antenna see the *Automatic Tuning Whip Antenna 9350 Installation Handbook*.

Types of fixed antennas

Vertical whip antenna

Description

The vertical whip antenna is omnidirectional in performance, therefore it provides radiation efficiency equally in all directions depending on its mounting position. When receiving, this omnidirectional performance may mean more unwanted signals are picked up, which contributes to high levels of background noise or interference.

Where used

The vertical whip antenna is designed for installation on buildings or open ground. The antenna is suitable for most transceivers operating with an associated antenna tuner.

Installation

The vertical whip antenna is designed for permanent or temporary installation. The antenna is easy to install.

For efficient operation of the vertical whip antenna, a good earth system is necessary. When the antenna is erected on open ground, especially in dry ground conditions, an earth mat consisting of at least four wire radials extending as far as possible from the base is desirable (see [page 46, Grounding the antenna](#)).

For roof-mounted installations, metal roofing or a radial earth plane is recommended (see [page 46, Grounding the antenna](#)).

Advantages and limitations

Table 6: Advantages and limitations of the vertical whip antenna

Advantages	Limitations
Suitable for long distance communication. Omnidirectional antenna, therefore it can pick up signals equally in all directions. Suitable where space is limited.	Unsuitable for distances under 100 km. This antenna is more susceptible to noise pickup such as that produced by welders, electric motors, power lines etc. If installed in a noisy environment, degradation of the received signal will occur. Due to its relatively small size, it may require an antenna tuner for optimum performance.

End-fed broadband antenna

Description

The end-fed broadband antenna is a multifrequency antenna.

Where used

The end-fed broadband antenna is designed for rural outposts, not built-up areas.

Installation

The end-fed broadband antenna is easily and permanently installed. It requires masts and sufficient space for installation. No installation or operational adjustments are required.

Advantages and limitations

Table 7: Advantages and limitations of the end-fed broadband antenna

Advantages	Limitations
Wide operating frequency range. Suitable for point-to-point and base-to-mobile applications.	Must be positioned at right angles to the desired direction of communication. Due to its large size, it requires a large area for installation. Due to its broadband properties, it has a low immunity to noise.

Broadband dipole antenna

Description

The broadband dipole antenna is designed for large-scale professional fixed station systems. The antenna is suitable for high or low power, multifrequency operation.

Where used

The broadband dipole antenna is designed for installation on buildings or open ground.

Installation

The broadband dipole antenna is generally erected on masts and requires sufficient space for installation.

Advantages and limitations

Table 8: Advantages and limitations of the broadband dipole antenna

Advantages	Limitations
Wide operating frequency range. Generally, more efficient than the end-fed broadband antenna. Suitable for point-to-point and base-to-mobile applications.	Must be positioned at right angles to the desired direction of communication. Due to its large size, it requires a large area for installation.

Long wire antenna

Description

The long wire antenna is suitable for multifrequency operation with most transceiver systems with an antenna tuner. It is approximately 20 m in length.

Where used

The long wire antenna is used on buildings or open ground. It is ideal for field crews who require an antenna that can be quickly and easily installed at temporary sites. It may also be used in permanent installations where space is limited.

Installation

The long wire antenna is designed for permanent or temporary fixed station installations. It requires at least one mast and sufficient space for installation.

Advantages and limitations

Table 9: Advantages and limitations of the long wire antenna

Advantages	Limitations
<p>Wide operating frequency range.</p> <p>Large in size, therefore, is more efficient.</p>	<p>Must be positioned at right angles to the desired direction of communication.</p> <p>Due to its large size, it requires a large area for installation.</p> <p>The length of the wire may be too long for some operating frequencies and tuners. Under these conditions, the length of the wire must be reduced according to the recommendations provided in the handbook for the tuner. If you require further assistance, contact your Codan representative.</p>

Quick-to-erect dipole antenna

Description

The quick-to-erect dipole antenna is lightweight and portable. The antenna is designed for sky-wave communications over medium to long distances.

Each half of the antenna is marked in 0.5 MHz spacings wound onto the winding spool/insulator. These elements unwind to the marker that indicates the frequency in use and clips into the slot provided on the insulator assembly. The remaining wire is short circuited on the reels.

Where used

The quick-to-erect dipole antenna is primarily used with manpack or portable HF systems.

Installation

The quick-to-erect dipole antenna is designed for temporary installations. The antenna is usually suspended between two trees or lightweight masts by terylene halyard tails with lead-weighted ends, which are supplied with the kit.

Advantages and limitations

Table 10: Advantages and limitations of the quick-to-erect dipole antenna

Advantages	Limitations
Easy and quick to install. Lightweight and portable.	Must be positioned at right angles to the desired direction of communication. Single frequency operation.

Dipole antenna

Description

The dipole antenna is a single frequency antenna that is manufactured to a particular length corresponding to its operational frequency. The antenna is designed for sky-wave communications over medium to long distances.

Where used

The dipole antenna is used on buildings or open ground.

Installation

The dipole antenna is erected on masts and requires space for installation.

Advantages and limitations

Table 11: Advantages and limitations of the dipole antenna

Advantages	Limitations
Good signal quality. Suitable for medium- to long-distance communications.	Single frequency operation. Must be positioned at right angles to the desired direction of communication. Due to the antenna requiring support at each end, greater space is required for installation.

Multiple dipole antenna

Description

A multiple dipole antenna consists of a number of dipole antennas supported on the same mast. Each dipole antenna corresponds to a different frequency. An antenna selector is required to ensure that the correct antenna is automatically selected by the transceiver for the particular channel in use.

Where used

The multiple dipole antenna is designed for installation on buildings or open ground.

Installation

The multiple dipole antenna is erected on a mast and requires space for installation.

CAUTION

Do not install antennas on the same mast if they are:

- tuned to frequencies closer than 10% of each other
- 3, 5 or 7 times the frequency of each other

For maximum efficiency, install:

- the lower frequency antenna above the higher frequency antenna
- adjacent antennas at least 2 m apart

Advantages and limitations

Table 12: Advantages and limitations of the multiple dipole antenna

Advantages	Limitations
Wide operating frequency range. Large in size, therefore, is more efficient.	Must be positioned at right angles to the desired direction of communication. Due to its large size, it requires a large area for installation.

Multichannel helical dipole antenna

Description

The multichannel helical dipole antenna has a maximum capacity of three operational frequencies. The narrow bandwidth of the antenna provides improved receiver selectivity and noise reduction compared to the broadband antenna.

The antenna is available in two sizes:

- 4.5 m
- 7.5 m

The 7.5 m antenna is more efficient.

Where used

The multichannel helical dipole antenna can be used in locations where space is not available for conventional dipoles. It is often used on the rooftops of high-rise buildings. The antenna is suitable for installation in noisy environments.

Installation

The multichannel helical dipole antenna should be mounted no higher above the ground than half the wavelength of the highest frequency used. The antenna must be correctly set up and adjusted by a technician on installation.

Advantages and limitations

Table 13: Advantages and limitations of the multichannel helical dipole antenna

Advantages	Limitations
Provides better noise reduction compared to the broadband antenna.	Must be positioned at right angles to the desired direction of communication.
Narrow bandwidth improves receiver selectivity.	Limited frequency operation.
Requires less space than a conventional dipole.	
No antenna selector is required.	

Installing the transceiver

NOTE All antennas are supplied completely assembled and ready for installation.

On receiving your NGT *CR* Transceiver, check the contents against the packing list. Make sure that all equipment itemised on the packing list is present before you start installing the system.

Open each packing case and examine the contents for signs of damage. If you notice any damage, contact Codan immediately. Failure to contact Codan before returning the unit may result in any warranty being void.

We recommend that the equipment is installed by qualified and experienced personnel, to the relevant standards and approvals.

WARNING While the following information is intended to assist with installation, it is the purchaser's responsibility to ensure that the mounting cradle is installed with due regard to vehicle-occupant safety, particularly in the event of a vehicle accident. Codan accepts no responsibility or liability in the event of injury to vehicle occupants or any other damage due to insecure or otherwise unsafe or inappropriate installation of the mounting cradle.

NOTE Unused connectors on the RF unit must be covered with the protective caps supplied to prevent electrostatic discharge passing through your transceiver.

Positioning the transceiver

When choosing a location for the components of the transceiver, you should be aware of the environmental ratings of each item of equipment as set out on [page 259, Specifications](#). They must be mounted in a suitable position that:

- provides physical protection to the transceiver and its cables, for example, avoid floor mounting where the transceiver and cables may be subjected to accidental contact
- allows easy access to the controls
- allows a free flow of air through the rear cooling fins to dissipate heat generated by the transceiver
- is not exposed to direct sunlight
- is not exposed to direct water ingress
- will not cause injury to motor-vehicle occupants if an accident occurs, for example, *do not* mount the transceiver overhead
- minimises vibration and shock
- ensures correct connection and operation
- allows easy maintenance

NOTE The units of the mobile station should only be mounted on structural components of the vehicle body and not to dress panels. The areas used for mounting may require reinforcement.

Mounting positions that are recommended in a mobile installation include:

- the transmission hump
- in place of the glove box
- behind the seat
- under the dashboard (if safe)

WARNING Do not mount the transceiver on a cargo barrier as it may void the vehicle manufacturer's warranty.

The mounting position must ensure sufficient cable length is provided to allow the removal of the equipment from the cradle with the various cables connected.

Positioning the control devices

The control devices and speaker must be in a position that:

- is near the operating position
- is clear of other controls
- is not dangerous
- considers cable routing

Positioning the antenna

WARNING The antenna should be installed by a suitably-qualified technician, to the relevant standards and approvals.

WARNING While the following information is intended to assist with positioning the antenna, it is the purchaser's responsibility to ensure that the 9350 Automatic Tuning Whip Antenna is installed with due regard to pedestrian and vehicle-occupant safety, particularly in the event of a vehicle accident. Codan accepts no responsibility or liability in the event of injury to pedestrians or vehicle occupants or any other damage due to insecure or otherwise unsafe or inappropriate installation of the antenna.

NOTE Correct installation of the antenna provides efficient operation over the frequency range of the transceiver. It ensures the antenna provides maximum output power during transmission and clear reception of weak signals.

Mobile antenna

When installing the antenna you must consider:

- the location and mounting of the antenna
- how to provide a good earth plane for the antenna
- the routing of the coaxial and control cables

To obtain optimal radiation efficiency from your antenna, and optimal reception at your antenna, it must be mounted in a position that:

- is clear of surrounding body work
- supports a good earth plane
- supports the RF earthing required for correct tuning and loading
- does not obscure the driver's vision
- does not obscure number plates or vehicle lights
- does not interfere with engine or car openings
- allows for best radiation (that is, open and clear of all metal obstructions)
- clears electric power lines, overhanging trees, bridges etc
- does not breach vehicle-licensing regulations

A mounted antenna must have:

- a strong anchorage for the base of the antenna
- a sound electrical connection to the vehicle chassis

Fixed antenna

Position the antenna:

- immediately adjacent to the antenna feed point
- free from obstructions such as buildings, trees and vegetation
- at right angles to the desired direction of communication
- away from any other antenna system

NOTE The transceiver and antenna do not have to be positioned close to each other if connected by coaxial cable. The transceiver and the feed point of the antenna can be up to 20 m apart before heavier low-loss coaxial cable, such as RG213, is necessary.

Horizontal wire antennas, including the dipole, broadband and long wire antennas, have maximum radiation along their length. Radiation is lowest at the ends of the antenna. Therefore, position these antennas at right angles to the desired direction of communication so that the antenna faces the direction where communications are most desired, that is, point the ends of the antenna in the direction where communications are least desired.

Vertical antennas, such as the vertical whip antenna, have an omnidirectional radiation pattern. Therefore, the direction that vertical antennas face is not important as the radiation pattern is generally equal in all directions.

Positioning the tuner (fixed station only)

Due to high voltages on the antenna, position the tuner so that the antenna-to-tuner connection is isolated from accidental contact with conducting surfaces.

WARNING It is essential that the antenna be positioned at least 50 mm from a conducting surface.

CAUTION Avoid kinks in the antenna lead-in wire.

Grounding the transceiver

A good ground (RF earth) is essential for efficient operation of the fixed station. The transceiver chassis should be connected to the ground via the earth screw on the rear panel of the transceiver. Use a copper braid of at least 12 mm width to connect the transceiver to the earthing point.

NOTE Keep the earth braid as short as possible.

All individual units in a fixed station should be earthed to prevent RF interference corrupting the data and audio circuits. Equipment that requires earthing has an earth screw fitted. To achieve good earthing, connect separate earth braids to the earth screws on each piece of equipment and connect them back to the same earthing point.

NOTE Ideally, all earth braids should connect directly back to a single point to prevent earth loops.

An adequate earthing system is necessary for:

- electrical safety
- static drain
- noise reduction

Electrical safety (AC mains supply only)

To provide electrical safety to the fixed station see [page 51, *Wiring techniques \(AC mains supply only\)*](#).

Static drain

In some cases, wind-driven particles, such as dry sand, may charge the transceiver and ancillaries to very high voltages above earth. Usually the low-impedance protective earth connection prevents high voltages from building up. In the event that the protective earth is disconnected or does not exist, as for a solar-powered fixed installation, these high voltages may occur.

If the voltage of the electrostatic charge becomes sufficiently high, a flashover could occur between the charged parts and earth. The energy released at flashover depends upon the voltage of the charged parts to earth. This energy generates a steep wave front, which may cause failure in the front end of the transceiver or result in damage elsewhere.

WARNING A flashover may result in the failure of the basic insulation of a mains-energised transceiver supply, causing an extreme safety hazard. To avoid a flashover, ensure that the transceiver is correctly earthed (see [page 45](#), *Grounding the transceiver*).

Noise reduction

In some cases, noise can be reduced by direct earthing of the case of the transceiver to ground. If an improvement is noticed, the existing functional RF earth may be inadequate and will need to be improved.

Where the antenna and transceiver must be installed in close proximity, direct earthing of the transceiver may be necessary to eliminate RF feedback.

Grounding the antenna

Grounding a mobile antenna

The grounding of the antenna at the mounting point is essential for efficient operation of your mobile station.

Most mobile antennas are considerably shorter than a quarter wavelength at HF, and exhibit an extremely low radiation resistance. Consequently, their efficiency is poor compared with the quarter wave radiator that they represent. This effect can be minimised by good installation practices, and most importantly, by the provision of a low-impedance earth return for the antenna.

Due to the poor earth return surrounding a mobile HF antenna, best use should be made of what is available. A fair reduction in antenna base impedance (and therefore increased antenna current and radiation) can often be achieved by providing a good earth connection from the antenna base to nearby bodywork. Connections to the vehicle chassis are not as effective because many 4WD vehicles have insulating mountings from body to chassis.

A strong metal plate that is large enough to support the antenna will provide efficient grounding.

Automatic tuning whip antennas require a 6 mm plate (minimum), gusseted both sides, or a 10 mm plate gusseted on a single side. The plate should be welded to the chassis or some other part of the vehicle's frame.

The mounting plate must be free of rust and paint to allow metal-to-metal contact between the base and bracket of the antenna. This electrical bond is the basis for effective RF earthing. The RF earthing differs from the DC earth required by the battery and the vehicle's electrics. RF currents flow essentially on the conductor surface, therefore good RF earthing requires conductors with large surface areas. Conductive grease may be used on the touching surfaces to help prevent corrosion.

In addition to the base plate, supplementary earthing may be required. This can be achieved by attaching braided copper straps or a shim copper strip of suitable width between the antenna plate and an earth point on the body.

NOTE Use a multimeter to check for good contact with the battery negative.

Grounding a fixed antenna

Requirements of the earth plane (or ground) will depend upon the type of antenna selected (see [page 34, Types of fixed antennas](#)) and the location of the antenna, that is, on open ground or on a rooftop.

When installing an antenna on open ground, ground conductivity is often insufficient to provide adequate earthing, especially on well-drained sandy, rocky or loamy soils. An earth plane should be used to ensure adequate earthing of the antenna is achieved. For a vertical antenna, an efficient earth plane is provided by a counterpoise consisting of at least four radials extending from the base of the antenna. The radials should be buried a few inches below the surface. An earth mat for an antenna mounted on open ground can be supplied by Codan (Codan part number 15-00158).

When installing an antenna on rooftops where there is no existing earth plane, an earth plane should be installed. The earth plane should be a conducting surface extending several wavelengths in all directions around the antenna. This can be provided by placing a screen of wire mesh or similar material over the roof of the building. Usually, a counterpoise system is used, for example, for a vertical antenna, a counterpoise system consisting of at least 8–10 radials bonded together at the base of the antenna provides an efficient earth plane. A radial earth plane for an antenna mounted on the rooftop of a building can be supplied by Codan (Codan part number 15-00159).

If an earth plane, such as a counterpoise, cannot be provided for the antenna, an earth wire connected to a suitable earth stake can be used, but with reduced efficiency.

NOTE As the earth wire forms part of the antenna system, any resistance in the earthing network will reduce the efficiency of the antenna.

CAUTION The ground connections are subjected to corrosion and oxidation. All joints must be clean, and the hardware adequately tightened. The joints can be protected by the application of silicone grease. In severe conditions, joints should be covered with self-amalgamating tape followed by a layer of good quality UV-stable PVC tape.

CAUTION RF earthing should not be relied upon to provide protective earthing. It can fail upon the removal of one of the interconnecting links. A separate wire should always be connected to the item you want to protect.

Grounding the tuner (fixed station only)

The ground system is a key part of the overall antenna system. An inefficient ground system is a primary cause of poor performance and difficulty in adjusting the tuner.

The ground system should be connected to the earth stud on the tuner by a heavy copper wire or braid. The connection from the tuner to the ground must be a small percentage of the total length of the antenna, that is, the earth braid must be kept as short as possible.

CAUTION Do not use a ground strap that exceeds 1.5 m.

In areas of good ground conductivity, an effective ground can be established with an earth spike. The spike should be approximately 3 m in length and should be installed as close as possible to the tuner. It may be necessary to use several earth spikes bonded together to improve the ground contact.

Connecting the antenna to the transceiver

A vehicle antenna is a tuned antenna, and therefore, must be connected to the transceiver using 50 Ω coaxial cable. Type RG58 cable is normally used. The cable should be as far as possible from other vehicle wiring, especially high-tension ignition wiring.

In addition to an RF coaxial cable connection, an automatic tuning whip antenna also requires a control cable to be connected to the transceiver.

The cables are supplied in standard lengths with the appropriate connectors fitted at either end.

Connecting the tuner to the antenna (fixed station only)

When routing the antenna wire to the tuner:

- keep the length of antenna wire inside the building to a minimum and away from metal objects
- a minimum hole diameter of 100 mm is necessary for wiring that passes through a wall or roof, and the wiring should pass through the centre of this hole
- wiring must not come into contact with guttering, eaves etc, upon entering or leaving a building

Power supply

WARNING All installations should be checked by a qualified technician before power is applied to the transceiver.

Power can be provided by either:

- a suitable transceiver supply connected directly to the AC mains (fixed station only)
- a 12 V DC lead acid battery (mobile or fixed stations)

CAUTION Ensure that the power supply to operate your station is 12 V DC.

AC mains supply

Codan provides a 3020 Transceiver Supply, which can be used with transceivers operating on speech and data communication.

CAUTION If the distance between the transceiver supply and the transceiver requires the cable to be extended, the cable size may need to be increased to minimise voltage drop (see [page 54, *Connecting the AC mains supply*](#)).

Battery power supply

Batteries need to be well-charged and in good condition to ensure effective operation. Poor condition of the battery will usually lead to poor performance of your station. This includes reduced power output and signal distortion during transmission.

If use of a mobile transceiver results in a heavy drain on the vehicle battery, a two-battery system can be used. Generally the vehicle alternator and charge system will cope with the extra battery, however an isolation circuit should be provided between the batteries.

Checking the battery

It is important to maintain the condition of the battery to ensure that it is in suitable working order.

Table 14: Battery maintenance

Check for...	Comment
Correct charge	Use a multimeter or a hydrometer to check the charge condition of the battery.
Water level in cells	The plates should be sufficiently covered with electrolyte. Add clean distilled water if the electrolyte is below the top of the plates. <i>Never</i> overfill cells as this will cause corrosion.
Corrosion-free terminals	Where there is corrosion on the terminal posts, the whole area should be neutralised and cleaned. This can be achieved using a wire brush, paint scraper, and a solution of water and baking soda. WARNING Any cleaning of the terminals should be done in a well-ventilated area using the appropriate personal protective equipment.
Tight electrical connections	Check for defective cables, loose connections, corrosion, cracked cases or covers, loose hold-down clamps, and deformed or loose terminal posts.

Power supply factors

Voltage drop

The most common causes of voltage drop along a cable are:

- the diameter of the wire is too thin
- the length of the cable is too long

The average current consumption of a transceiver is low except during transmission of voice and data peaks, where high current is needed for short intervals. The power supply cable needs to be sufficiently heavy to supply these current peaks without excessive voltage drop (see [page 52, Power and control cabling](#)).

Incorrect wiring techniques, including poor choice of connection points and incorrect use of terminal lugs, can also cause a voltage drop.

Fuse protection (battery supply only)

An external fuse must be fitted in the active wire as close as possible to the battery to ensure there is no risk of fire if the cable is damaged. The fuse must be of a type that has a low voltage drop at peak currents (see [page 54](#), *Protecting the cables*).

NOTE A 32 A cartridge fuse (Codan part number 15-00711) is recommended.

Noise interference

The transceiver has noise-rejection circuitry and, provided correct power cable connection and routing are established, noise interference via the power cable will be kept to a minimum (see [page 53](#), *Connecting the battery supply*).

Wiring techniques (AC mains supply only)

Correct wiring techniques, such as choosing good connection points and correct use of terminal lugs, can reduce voltage drop.

For correct wiring techniques when connecting the transceiver supply see [page 54](#), *Connecting the AC mains supply*.

WARNING It is essential for every mains-energised installation to have an effective connection to the protective earth of the power distribution system in case the basic insulation fails.

WARNING Without protective earthing, dangerous voltages may be applied to accessible metal parts.

A 3-wire mains cord has an earth wire that provides an effective earth, and is therefore electrically safe. A 2-wire mains cord lacks a protective earth wire, so one must be established by bonding the transceiver supply to an earth stake driven into the ground, or to some other low-impedance earth connection.

Installing the cables

WARNING *Do not cut the control, coaxial or speaker cable. If the cables are too long, gather the excess neatly and secure it out of the way.*

CAUTION Large magnetic fields can be generated along the power cable during transmission and these fields may be coupled into the control cabling. Failure to keep these cables separated will cause distortion of the transmitted signal.

The cabling must be in a position that:

- is away from operator's feet
- is secured and concealed as much as possible
- ensures the control cables are separated from the DC power cable by at least 200 mm (8 in) (except over short distances, for example, to pass through the same hole in a bulkhead)
- is secured behind protective metalwork (only if the cables run under the vehicle)

Keep cables in the engine compartment away from:

- heat, for example, exhaust, air-conditioning systems, and water pipes
- oils and corrosive liquids, for example, engine oil, battery fluid, brake fluid

Connecting the power supply

Power and control cabling

The connection from the transceiver is made directly to the battery/power source via a twin core cable.

The cable should:

- be of adequate electrical capacity
- be fused in the positive leg at or near the battery terminal
- not be used to provide power connections to any other equipment

The cable from the battery must be able to carry the full supply current, so it must be of correct size. As the distance between the transceiver and the battery increases, the cross-sectional area of the cable must increase proportionally to minimise the voltage drop. For example, a 100 W transceiver positioned 2 m away from the battery requires a cable with a cross-sectional area of approximately 4 mm², whereas a transceiver 5 m away from the battery requires a cable with a cross-sectional area of approximately 10 mm².

A heavy-duty power cable is supplied with the vehicle-mounting cradle for mobile stations. This cable minimises the voltage drop between the battery and transceiver during transmission (see [page 50, Voltage drop](#)).

CAUTION If you use a thinner cable than this, voltage drop may occur, which may affect signal quality.

Connecting the battery supply

To connect the battery supply:

- ☐ Connect the red positive and black negative wires from the power cable of the transceiver to the positive and negative terminals of the battery, respectively.
- ☐ Fit a suitable fuse (32 A, Codan part number 15-00711 is recommended) as near as practicable to the battery connection (positive side).

WARNING *Do not* connect the power cable to the ignition switch or the body next to the transceiver mount due to voltage drop and noise interference.

- ☐ In a mobile installation, route the power cable away from other vehicle wiring, including high-tension ignition wiring between the spark plugs, distributor and coil. Ensure the power cable does not run together with, or parallel to, the transceiver control cables for any long distance.

NOTE Where wiring passes through any bulkhead, provide appropriate grommets to prevent insulation being cut.

- ☐ Terminate the transceiver power cable with connector lugs.
- ☐ Secure the power cable using cable ties.
- ☐ Test that the power supply and transceiver work correctly.

Using a terminal block

A terminal block can be fitted where heavy cables are used for long cable runs, or where the tools or materials may not be available to reterminate the transceiver power supply connector. The terminal block is fitted next to the transceiver to connect the cable from the battery to the transceiver power cable. The length of the cable between the terminal block and the transceiver should not exceed 500 mm so that voltage drop is minimised.

To fit the terminal block:

- ☐ Cut the connector from the end of the battery cable.
- ☐ Strip 10 mm of the insulation from the cable.
- ☐ Insert the cable into the terminal block, ensuring the screws of the terminal block are completely undone before inserting the wires.

NOTE Observe correct polarity.

NOTE Ensure there are no stray wires.

- ☐ Turn the screws into place.

Connecting the AC mains supply

To connect the AC mains supply:

- ☐ Fit the plug from the transceiver supply into the AC mains socket.

NOTE The transceiver supply converts the AC power supply to DC.

- ☐ Connect the transceiver supply to the transceiver via the DC power leads.

NOTE Ensure the transceiver is grounded correctly (see [page 45, Grounding the transceiver](#)).

Most Codan power supplies can use an external battery as an alternative power supply in the event of an AC mains failure. Codan recommends the use of the Standby Battery Cable Kit (Codan part number 15-00702) for easy and correct installation of the standby battery. The cable from this battery must be able to carry the full supply current, so it must be of correct size (see [page 52, Power and control cabling](#)).

Protecting the cables

Physical protection

Protect all the cables from sharp edges and mechanical abrasions. Cables that pass through body panels or internal bulkheads must be protected by grommets. Holes in the bulkhead need only be large enough to allow the end of the cable with the smaller connector to pass through. Removing a connector should be a last resort. Externally, the cable and connectors need to be weatherproofed using self-amalgamating rubber tape.

CAUTION Removal of factory-fitted connectors may cause cable or connector faults.

CAUTION Crimp-style coaxial connectors for vehicle installations should be avoided because they are susceptible to mechanical damage and are not weatherproofed.

NOTE Any cabling under carpet or floor mats should be clear of foot traffic.

Electrical protection

The transceiver is provided with adequate internal protection. The transceiver supply is also fitted with adequate protection.

In a vehicle-battery supply installation, we recommend that a suitable cartridge fuse (32 A, Codan part number 15-00711) is fitted in the positive wire, close to the battery. This will protect the power cable from risk of fire if damaged insulation should touch surrounding metalwork or the vehicle chassis.

As the fuse is not included to protect the transceiver circuits, it should be of large physical and electrical size to eliminate the possibility of voltage drops across the fuse.

WARNING Do not use normal glass in-line automotive fuses.

Radio frequency interference (mobile stations only)

Types of noise

Engine noise and electrical accessories often cause RF interference.

Noise interference can be:

- induced into and carried along the cables to the transceiver
- radiated from the noise source and picked up at the antenna (see [Table 15](#))

Table 15: Noise source and type

System	Noise source	Noise type
Ignition	Ignition	Distributor and spark plug leads
Battery charging	Alternators	Diode switching and brushes
Other	Brakes and bearings	Static discharge
	Mechanical voltage regulators	Contact arcing
	Oil pressure sender	Contact arcing
	Tachometer	Impulse
	Winches	Motor brushes
	Wipers and fan motors	Motor brushes

Noise from the ignition system

The ignition system of a petrol motor vehicle is often a major noise source.

High-tension wiring

All high-tension wiring from the ignition coil to the spark plugs should be:

- kept as short as possible
- clean
- as close to the engine block as possible
- of a suppressed type

The coil must be either mounted on, or immediately next to, the engine block.

Low-tension wiring

The low-tension wiring from the coil to the distributor contact breaker points must:

- be as short as possible
- not be included with other wires in a harness or loom

This wire must be shielded if more than 300 mm long (see [page 58, Noise suppression](#)). A suitable shield can be provided by a twin flex or ‘figure eight’ cable (consisting of two conductors).

Shielding is achieved by:

- connecting each end of one of the conductors to a good earth
- connecting the other conductor in place of the original wire

Coil-to-battery wiring

A low-pass filter such as a Marine Technology type MAR-ACE should be fitted at the coil end of the battery wire. The earth connection of the filter should be short and bonded to the coil body.

Noise from the battery-charging system

Alternator/generator-to-battery wiring

A low-pass filter such as a Marine Technology type MAR-60A (up to 60 A) should be fitted to the main battery lead at the alternator to minimise noise. The filter must be rated for the maximum current available from the charging system. The earth lug of the filter should attach to the alternator body or the engine block.

Alternator-to-regulator control wire

The alternator-to-regulator control wire carries switching pulses that often contribute noise to the receiver.

WARNING Suppression via capacitors or filters is not an option because it may cause damage to the regulator.

To minimise noise:

- separate the regulator control wire from all other wiring
- keep the wiring as short as possible

If the wiring is longer than approximately 300 mm, it should be shielded.

Other regulator wires

These wires are usually suppressed using good low-inductance bypass capacitors. A Marine Technology type MAR-ACE filter is appropriate. These capacitors must be connected to the wires that are to be suppressed and to the chassis via very short leads.

Other noise sources

Engine instrumentation

Certain types of oil pressure sensors and voltage regulators used in instrument systems contain a vibrating or thermal cycling contact. These devices can only be suppressed by isolating and screening the wiring (see [page 56, Alternator-to-regulator control wire](#)). Disc ceramic capacitors with short leads, protected with insulating sleeving, are often used. If these capacitors are used, values less than 1 nF should be used to prevent damage to instrument contacts.

Electric motors

Small electric motors can usually be suppressed with capacitors. Larger motors may require a better filter as mentioned above.

NOTE Atmospheric and solar noise conditions may be more responsible for poor signal reception than any locally-generated noise.

Noise suppression

Noise interference is suppressed by:

- shielding/screening, for example, the addition of a physical metallic shield between a noise source and the transceiver
- decoupling to ground, for example, a filter capacitor on the alternator
- RF filtering
- maintaining all electrical equipment and connections
- re-routing wiring, for example, separating the antenna feed wire from the battery cable

Most commercial and passenger vehicles are not easily suppressed for noise at radio frequencies. Since shielding of existing cables and devices such as spark plugs is neither practical nor viable for general vehicle installations, RF filtering is the preferred option.

RF filtering involves:

- preventing the noise from being generated
- minimising the noise radiated by the wiring connected to the noise source

An interference suppression kit is available from Codan (Codan part number 15-00704). It contains filters, suppressing capacitors, earth straps and fitting instructions.

The process of eliminating signal interference is by:

- identifying the noise source(s) by noting the difference in the noise levels in the receiver with the motor and accessories 'off' and 'on'
- working on each source individually until an acceptable level of suppression is achieved

Alternatively, disconnect all possible sources of noise then replace and suppress them in turn.

Most suppression is carried out using some type of RF filtering. All suppressor devices must be fitted at the source of the interference in order to be effective.

Tuning the mobile antenna

To tune the automatic tuning whip antenna:

- ☐ Scroll to the channel on which you want to transmit, then press PTT to tune.

Troubleshooting the installation

Common problems caused by incorrect installation are listed in [Table 16](#).

WARNING Poor installation can damage the antenna such that a replacement is needed.

Table 16: Possible faults in the installation

Symptoms	Possible causes	Action
Antenna detunes	Inadequate support of the antenna.	Ensure the antenna has adequate support so it does not sway or sag. If required, use antenna supports such as guyed masts (see page 32, Antenna supports in a fixed station).
Antenna fails to tune certain channels or frequencies	The antenna and/or tuner may not be earthed correctly.	<p>Improve the earth connection (see page 46, Grounding the antenna and page 48, Grounding the tuner (fixed station only)).</p> <p>Ensure a good earth connection to the vehicle body is provided by an earth braid or copper strap, keeping it as short as possible.</p> <p>Check the vehicle earth on metal areas close to the antenna and rectify if necessary, for example, the bonnet of the vehicle may be isolated from the main vehicle earth.</p> <p>If the problem persists, shorten or lengthen the coaxial cable between the antenna and the transceiver by approximately 1 m (1 yd). Check that the problem does not move to other channels.</p>
	Incorrect positioning of the antenna.	Check that the position of the antenna corresponds to the desired direction of communication. The antenna must also be positioned away from trees, buildings etc, which provide a shielding effect and diminish the efficiency of the antenna. With an SWR meter in place, alter the position of the antenna to achieve best forward radiated power (see page 65, Standing wave ratio).
	Inadequate support of the antenna.	Ensure the antenna is adequately supported, so that it <i>does not</i> sway or sag. If required, use antenna supports such as guyed masts (see page 32, Antenna supports in a fixed station).
	The antenna may have been tuned without the whip in place.	Ensure the whip is in place before tuning.

Table 16: Possible faults in the installation (cont.)

Symptoms	Possible causes	Action
Antenna tunes when stationary, but fails when mobile	Incorrect positioning of the antenna on the vehicle.	Ensure correct installation and tuning procedures are followed. With an SWR meter in place, alter the position of the antenna to achieve best forward radiated power (see page 65, Standing wave ratio). Carry out all testing in the open, away from trees and buildings etc. Leaning the antenna away from the bodywork sometimes assists in tuning. Check that the problem does not move to other channels.
Distortion of the transmit audio signal	Inadequate earthing of the transceiver to the vehicle chassis.	Improve the earth of the transceiver by connecting an earthing strap (braid or copper strip) from the earth screw of the transceiver to the vehicle chassis, keeping the strap as short as possible (see page 45, Grounding the transceiver).
Noise interference	Noise interference by other equipment.	Identify the source of interference by switching other equipment off. If possible, move the transceiver and/or antenna away from the noise source.
	Inadequate earthing of the transceiver.	Improve the earth of the transceiver by connecting an earthing strap (braid or copper strip) from the earth screw of the transceiver to the earthing point, keeping the strap as short as possible (see page 45, Grounding the transceiver).
No power	The internal fuse of the transceiver has blown.	Replace the fuse.
	Poor connections.	Check the connections from the battery to the transceiver, ensuring that they are connected correctly.
	Power not switched on.	Check that the switch is on at the AC mains supply and the transceiver supply.
	Battery not supplying the correct voltage, or is in poor condition.	Check battery supply (see page 50, Checking the battery).
	Incorrect cable connections.	Check the connections from the AC mains supply to the transceiver supply, and from the transceiver supply to the transceiver. Ensure that the cables are connected correctly.
	Faulty cables and/or connectors.	Check that the cables and connectors between all items of equipment are securely connected and not damaged. If the cables or connectors are faulty, contact your Codan representative.

Table 16: Possible faults in the installation (cont.)

Symptoms	Possible causes	Action
Poor radiation efficiency	Poor installation.	Improve the earth connection (see page 46, <i>Grounding the antenna</i>).
	Incorrect positioning of the antenna.	<p>Check the position of the antenna, ensuring that the vehicle body is not acting as a shield.</p> <p>Check that the position of the antenna corresponds to the desired direction of communication. The antenna must also be positioned away from trees, buildings etc, which provide a shielding effect and diminish the efficiency of the antenna. With an SWR meter in place, alter the position of the antenna to achieve best forward radiated power (see page 65, <i>Standing wave ratio</i>).</p> <p>If the problem persists, check the antenna length (for long wire antennas), the length of the antenna feed wire, and the conductivity of the grounding system. Alter these slightly in an attempt to achieve better tuning. Check that the problem does not move to other channels.</p>
	The antenna and/or tuner may not be earthed correctly.	Improve the earth connection (see page 46, <i>Grounding the antenna</i> and page 48, <i>Grounding the tuner (fixed station only)</i>).

Table 16: Possible faults in the installation (cont.)

Symptoms	Possible causes	Action
SWR is bad	The SWR measurement may have been performed at the RF unit rather than at the antenna. The difference in SWR readings is due to losses associated with the installation and coaxial cable.	Ensure the SWR meter is connected to the coaxial line at the base of the antenna to achieve an accurate reading (see page 65, Standing wave ratio).
	The antenna may not be positioned correctly.	Check the position of the antenna, ensuring that the vehicle body is not acting as a shield. With an SWR meter in place, alter the position of the antenna to achieve best forward-radiated power (see page 65, Standing wave ratio). Check that the position of the antenna corresponds to the desired direction of communication. The antenna must also be positioned away from trees, buildings etc, which provide a shielding effect and diminish the efficiency of the antenna. With an SWR meter in place, alter the position of the antenna to achieve best forward-radiated power (see page 65, Standing wave ratio).
	Faulty coaxial cable or control cable.	Replace faulty cables.
	The antenna and/or tuner may not be earthed correctly.	Improve the earth connection (see page 46, Grounding the antenna and page 48, Grounding the tuner (fixed station only)).
Transceiver is not responding to instructions	The transceiver may not be connected correctly.	Check that all the connections between the units of the station are correct and secure.
	Faulty cables and/or connectors.	Check that the cables and connectors are securely connected and not damaged. If the cables or connectors are faulty, contact your Codan representative.

Table 16: Possible faults in the installation (cont.)

Symptoms	Possible causes	Action
Tuning fails	Inadequate earthing.	<p>Antenna mounting bracket should be welded or bolted directly to the chassis.</p> <p>All paint should be cleaned from mating surfaces.</p> <p>The earth braid provided should be connected to an independent grounding point going to the bodywork of the vehicle, or to the battery negative if possible.</p> <p>Improve the earth of the transceiver by connecting an earthing strap (braid or copper strip) from the earth screw of the transceiver to the earthing point, keeping the strap as short as possible (see page 45, Grounding the transceiver).</p>
Voltage drop in the fuse, the control leads, or the battery	Voltage less than 12 V DC.	Check the voltage; it must be greater than 12 V DC on transmit.

Testing the installation

Following correct installation, 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

Standing wave ratio

An SWR meter measures the forward and reflected powers between a transceiver and its antenna load and represents this in a ratio called the SWR. 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 1.8:1 is acceptable. If the SWR is greater than 1.8:1, 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 figure on all channels.

CAUTION The SWR should never rise above 2:1.

Using SWR to test the installation

To test the installation:

- ☐ Select the highest operating frequency of the transceiver.
- ☐ Connect the SWR meter to the coaxial line at the base of the antenna.
- ☐ 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.

- ☐ Adjust the transceiver to its lowest operating frequency and repeat the test.
- ☐ If a particular channel frequency does not tune, check the:
 - length of the antenna (for long wire antennas)
 - conductivity 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 installation.

With on-air testing, the difference in equipment between stations must be taken into account when determining the quality of the transmission. For example, a 100 W fixed station may be in contact with another fixed station using a full-size antenna and high-power transceiver. Fixed stations sometimes use split sites, where the receivers are located in a noise-free area, therefore, signal quality is improved because noise interference is minimised.

6 Operating the transceiver

This section contains the following topics:

- [Switching on the transceiver \(68\)](#)
- [The handset screen \(69\)](#)
- [The channel screen \(70\)](#)
- [Entering and editing text \(72\)](#)
- [Quick Start \(77\)](#)
- [Muting the transceiver \(82\)](#)
- [Scanning channels \(83\)](#)
- [Using the microphone \(85\)](#)
- [Finding a value \(86\)](#)
- [Setting the basics \(88\)](#)
- [Using hot keys \(95\)](#)
- [Tuning the antenna \(96\)](#)
- [Switching on Help Mode \(98\)](#)
- [Using the clarifier \(99\)](#)
- [Reducing background noise with Easitalk \(100\)](#)
- [Using the voice encryptor \(101\)](#)

Switching on the transceiver

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 273, *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 115, *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 handset screen

NOTE In the following example, you must log in as administrator to see the Main Menu (see [page 129, *Logging into admin level from user level*](#) and [page 108, *The Main Menu*](#)).

The screen on the handset consists of two lines.

Figure 7: The handset 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.

Figure 8: The handset screen displaying a value

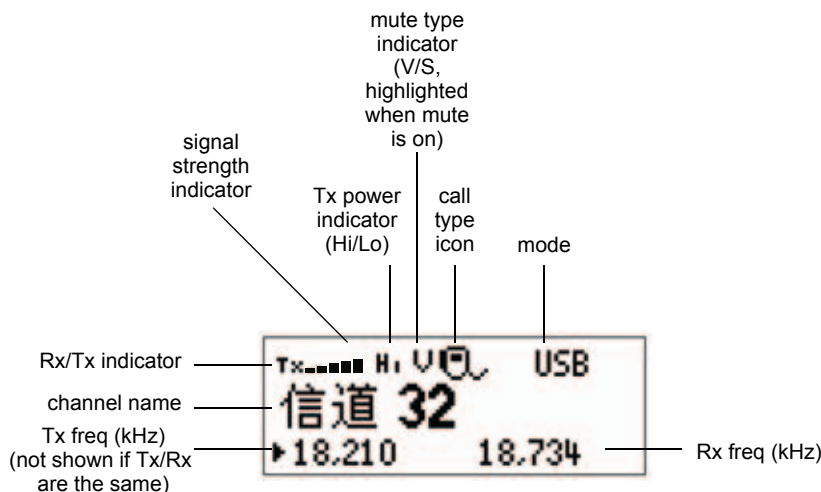
The handset screen also displays information screens such as the channel screen in the Channel List, and the time screen in the Control List.

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

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. 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.

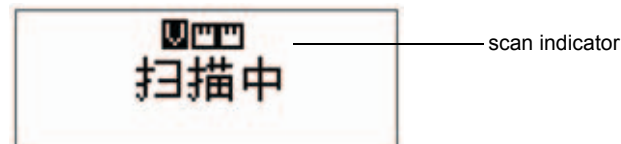
NOTE

If you intend to change the power setting regularly, set up a hot key on the **6** key to display the Cfg Power Preference entry in the Control List (see [page 265, Example 4: displaying and/or changing a setting in the Control List](#)). This type of hot key requires you to consciously select the power setting, thus preventing any accidental changes.

While a call is being established, the transceiver will show that calling activity is in progress by flashing  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 24 on page 167](#).

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

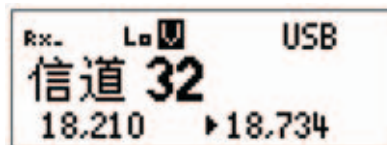
Figure 10: The scanning screen



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.

NOTE

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.

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 handset 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 11: Editable screen showing upper-case text entry

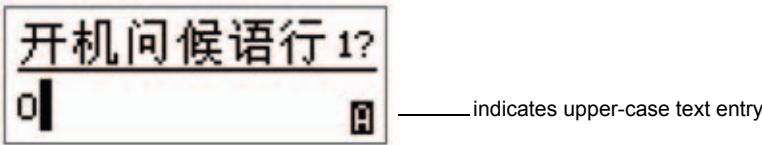


Figure 12: Editable screen showing lower-case text entry

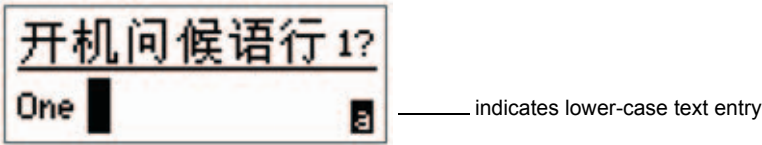


Figure 13: Editable screen showing numeric text entry

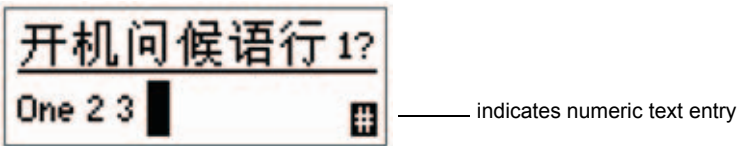
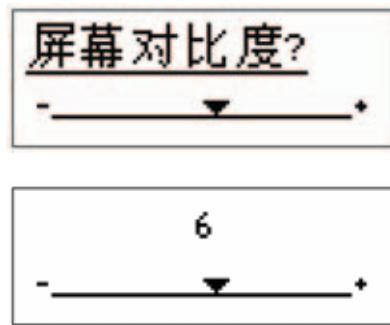


Figure 14: Editable screen showing slider



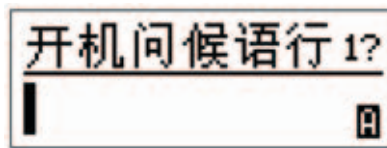
Editing a screen

NOTE In the following example, you must log in as administrator to see the Welcome Text entry in the Control List (see [page 129, Logging into admin level from user level](#)).

To gain access to an editable screen:

- ☐ Hold ✓.

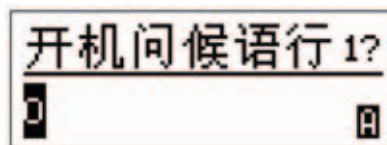
A question mark is displayed at the end of the heading to show that you can now enter and/or edit text in the setting.



Entering text

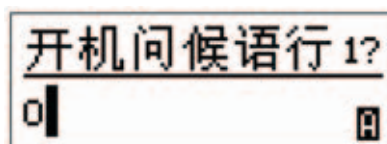
To enter text in an editable screen:

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

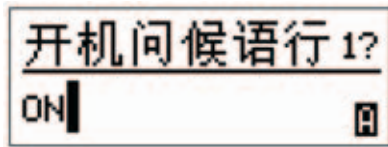


NOTE You can also *hold* the key until the letter you want is displayed, then release the key.

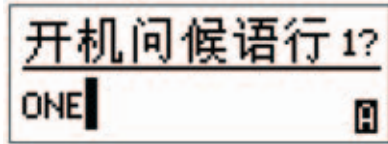
- ☐ To enter another letter on the same key, wait until the cursor moves to the next space...



...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 numeric 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 **↶** or **↷** to move the cursor left or right respectively.

Inserting text

To insert text:

- ☐ Use **↶** or **↷** 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 **↶** or **↷** to move the cursor one position to the right of the character you want to delete, then press **✕**.

Entering special characters in messages and names






To enter a special character:

NOTE The special characters that are available are:
 . , ' ? ! & # \$ * () - + /


- ☐ Use the  or  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:

- ☐ Use  or  to move the cursor to the point where you want to insert a special character.
- ☐ Press  to enter the special character mode.
- ☐ Use  or  to scroll through the rows of character choices.

NOTE To skip to Chinese characters that you can insert, press .

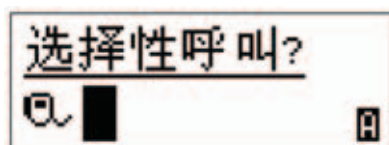
- ☐ When the character you want to insert appears in the selected row, use **1** or **3** to scroll left or right respectively until the character is highlighted, then press .

Entering text in an ALE call address

NOTE If the FED-STD-1045 ALE/CALM option is installed in your transceiver, the ***** key may be used to enter the global ALL address syntax (@?@) easily.

To enter the global ALL address syntax:

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



- ☐ Press ***** to enter @?@.

Saving text changes

To save the changes you have made in an editable screen:

- ☐ 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 is available if your transceiver has not been programmed with a profile, or contains only one station self address and network names from this default list:

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

Quick Start is accessed via the  key. Standard List Manager functions as described on [page 111, *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  key.


In countries that do not permit programming of transmit frequencies using the handset, you will not be able to add channels using Quick Start; this is achieved using NSP.

Opening and closing Quick Start

To open Quick Start:

- ☐ *Hold* .

To close Quick Start:

- ☐ Press or *hold* .

Adding/Editing a channel

NOTE If you have option TxD enabled, you will not be able to program transmit frequencies.

If you have option TxP enabled, this entry will not be available.

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 you want to create, then press **✓**.

NOTE For help with entering text see [page 72, 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 returns to Quick Start.

- ☐ If you want to add/edit more channels in your transceiver, scroll to **Add/Edit channel**, then repeat this process.
- ☐ Press **X** 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 15 channels to your scan list, the transceiver returns 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 overwrites 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 appears with a line under the day of the month.

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

The line appears 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 returns 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 90, *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 (up to 6 numeric digits for a Codan Selcall or Open Selcall network, and up to 15 upper-case/numeric digits for an ALE/CALM network), then press **✓**.

CAUTION If you intend to send calls to a station that is compatible with 4-digit self addresses only, you must set up a 4-digit self address.

NOTE For help with entering text see [page 72, *Entering and editing text*](#).

- ☐ Press **X** 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 you want to add to the list, or use **▶** or **◀** to scroll to an existing entry, then press **✓**.

NOTE For help with entering text see [page 72, *Entering and editing text*](#).

- ☐ Scroll to the type of call you want to make, enter the station address 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 you want to use to make the call, then press **✓**.
- ☐ If you selected **Phone?** or **No call type**, scroll to **<blank>** as the phone link you want to use, then press **✓**.

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

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

Deleting an entry

To delete addresses, channels or phone links:

- ☐ Hold **Q** 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 is deleted from the scan list automatically.

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

Muting the transceiver

NOTE In the following discussion, you must log in as administrator to see the entries in the Control List (see [page 129, Logging into admin level from user level](#)).

When the transceiver is set to a channel or is scanning channels, and mute is switched off, you hear noise on each channel. If you do not want to listen to this noise, you can silence the transceiver by switching mute on.

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 call detect time across Codan Selcall and Open 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. Scanning will only resume automatically if the transceiver is set to start scanning after a timeout period (see [page 202, Auto Resume entries](#)).

NOTE For help with changing these entries in the Control List see [page 186, Entries in the Control List](#) and [page 116, 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. The **V** or **S** on the channel screen is highlighted when mute is on.

Setting the mute type

To select the mute type:

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

Scanning channels

If you intend 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. For more information on setting up a network to be scanned see [page 144, *Scan Network*](#).

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 181, *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 a pre-determined timeout, the transceiver automatically ends the call and resumes scanning (see [page 202, *Auto Resume entries*](#)).

When the transceiver detects voice, it notifies you according to the mute setting selected (see [page 82, *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.

If you press PTT while the transceiver is scanning, the scan is paused.

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 top centre of your handset. When you talk into the microphone:

- hold the microphone side-on and close to your mouth
- *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 handset. 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 186](#), *Entries in the Control List*).

Finding a value

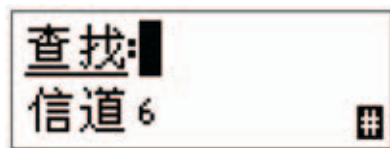
To find a value that begins with a specific character:

- ☐ From **Main Menu**, scroll to the list in which the value is stored, then press ✓.

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

- ☐ Press 🔍 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 🔍 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 ✕.

- ☐ 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

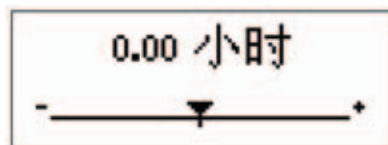
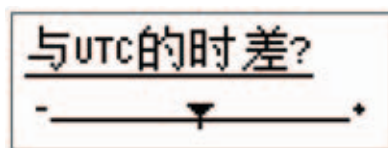
NOTE In the following discussion, you must log in as administrator to see the Main Menu (see [page 129, Logging into admin level from user level](#)).

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



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

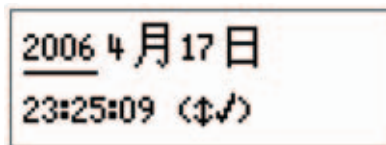
Adjusting the local time and date

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

The cursor is placed under the year.



- ☐ 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 **✕**.

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

Displaying the local time and date

NOTE In the following discussion, you must log in as administrator to see the Main Menu (see [page 129, 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...**, then press **✓**.
- ☐ Scroll to **Screen**, then *hold* **✓**.

The time screen is displayed.



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

Entering your station self address

NOTE In the following discussion, you must log in as administrator to see the entries in the Control List (see [page 129, Logging into admin level from user level](#)). If you want to view a self address when you switch on your transceiver see [page 212, Welcome text](#).

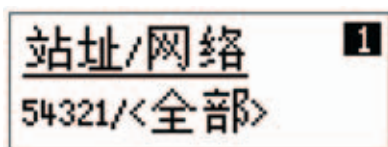
Your station self address is the address used by other stations to call you, and it is sent when you make calls to identify you as the caller. You can enter up to 5 self addresses for your NGT CR Transceiver. This section explains how to enter, edit and delete station self addresses.

Entering a self address

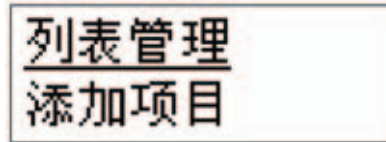
To enter your station self address:

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

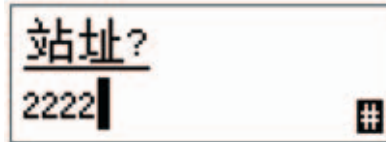
If one or more self addresses have already been entered, the screen displays the first self address with the total number of self addresses. *Hold* **Q** to open the List Manager.



- ☐ Scroll to **Add item**, then press ✓.



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



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

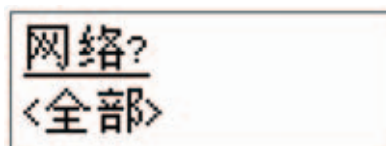
- a Codan Selcall network, enter up to 6 numeric digits
- an Open Selcall network, enter up to 6 numeric digits
- an ALE/CALM network, enter up to 15 upper-case/numeric digits, or a combination of both

CAUTION If you intend to send calls to a station that is compatible with 4-digit self addresses only, you must set up a 4-digit self address.

NOTE For help with entering text see [page 72, Entering and editing text](#).

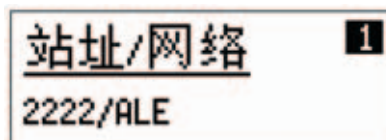
NOTE Do not enter a self address that ends with one or more zeros. Zeros are used to indicate that calls are to be made to groups of stations in a Codan Selcall or Open Selcall network.

- ☐ Press ✓.
- ☐ Scroll to the network in which you want to use this self address, then press ✓.
- To use the self address in all networks, scroll to **<all>**, then press ✓.



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

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



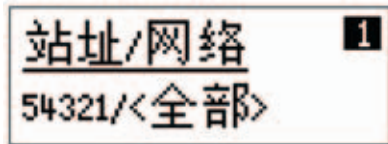
- ☐ Press ✕ until **Main Menu** is displayed.

Editing a self address

To edit a station self address:

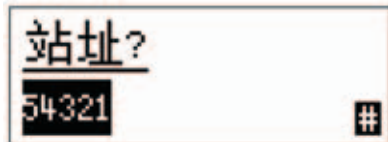
- ☐ Press **✕** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Address**, then press **✓**.

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



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

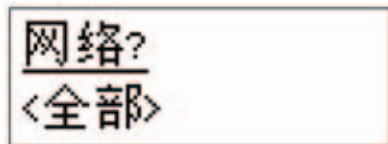
The self address is displayed.



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

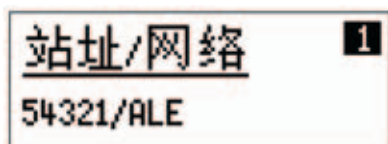
NOTE For help with entering text see [page 72, Entering and editing text](#).

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, scroll to **<all>**, then press **✓**
 - if you do not want to change the network, scroll to the original network, then press **✓**

The new details are saved.

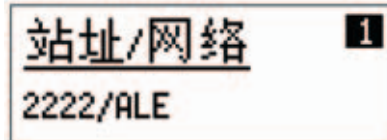


- ☐ Press **✕** until **Main Menu** is displayed.

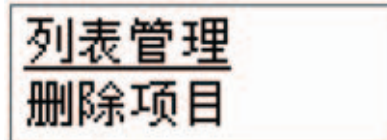
Deleting a self address

To delete a station self address:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Address**, then press **✓**.
- ☐ Scroll to the self address you want to delete.



- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Delete item**, then press **✓**.



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

- ☐ Press **✓**.

The item is deleted and the List Manager remains open.

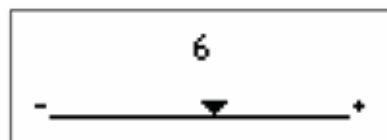
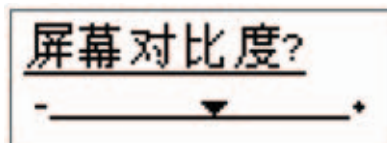
- ☐ Press **X** until **Main Menu** is displayed.

Changing the screen contrast

To change the contrast of the screen:

- ☐ Press **⓪** + **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:

- ☐ Press **ⓘ + 0** to access the Screen Brightness entry in the Control List.
- ☐ Scroll through the values until the one you want is displayed on the active line, then press **✓**.

Using hot keys

Hot keys on the handset are keys that perform special tasks in addition to their normal functions. For example, you can switch Help Mode on by going to the Help Mode entry in the Control List and selecting On, or you can press **HELP**. [Table 3 on page 26](#) lists the standard hot keys on the handset and the tasks you can perform with them.

All the keys on the desk console are hot keys. [Table 4 on page 28](#) lists the standard functions they perform.

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 227, *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 handset or desk console 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 tuning 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 71, *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 97, *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.

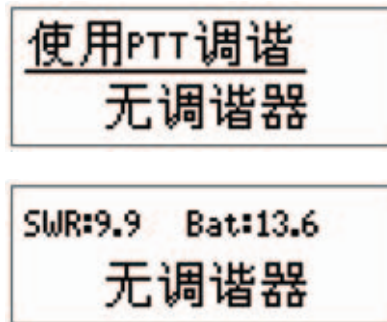
Manual tuning

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.

To manually tune the antenna:

- ☐ Press **TUNE**.

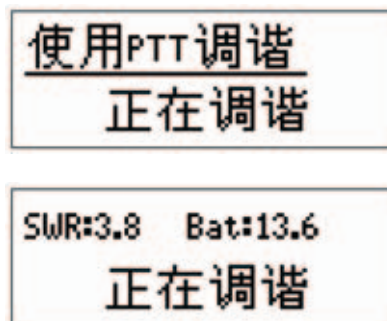
The **PTT to tune** screen is displayed with the SWR and battery voltage on the top line. For example:



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

- ☐ *Hold down* PTT to tune the antenna.

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



An SWR of less than 2:1 is acceptable.

If a message is displayed while you are tuning, you can remove it by continuing to *hold down* PTT and pressing **X**.

NOTE

If PTT is held 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.

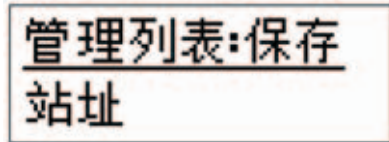
- ☐ Release PTT to stop tuning.

The beeps cease and you are returned to the screen from which you began.

Switching on Help Mode

If you want a brief explanation of the function of a list, entry or setting, go to the list, entry or setting then switch Help Mode on. The top or second line of the handset screen displays a description of the item. The description scrolls if it does not fit on the screen. When you have read the description, switch Help Mode off to display the standard heading for the list, entry or setting.

Figure 15: The Control List with Help Mode switched on



To switch Help Mode on or off:

- ☐ Press **HELP**.

Help Mode is automatically toggled on or off.

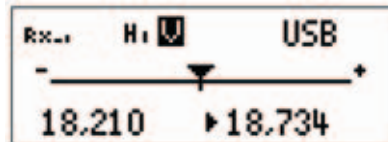
Using the clarifier

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:

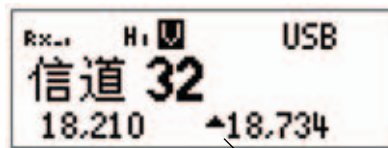
- ☐ Press **CLAR**.

The Clarifier slider is displayed in the channel screen.



- ☐ Use \blacktriangleleft or \blacktriangleright to increase or decrease the pitch of the received voice, then press \checkmark 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:



arrow indicates positive clarifier offset from 18734 kHz

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 266, Example 5: changing a value to the next value in a list](#)).

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 must set up a Corporate Secure 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 Secure Key that is common to all voice encryptors shipped from the factory. The Global Secure Key provides secure communications, however the security is less than that provided by a Corporate Secure Key. The PIN facility may also be used with the Global Secure Key to improve the level of security.

Using the voice encryptor

NOTE In the following discussion, you must log in as administrator to see the entries in the Control List (see [page 129, Logging into admin level from user level](#)).

Using the voice encryptor

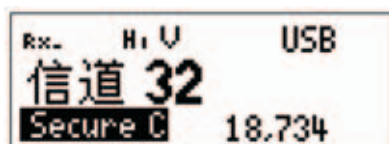
To use the voice encryptor:

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

The transceiver responds 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 bottom left of the channel screen. For example:



Switching off the voice encryptor

To switch off the voice encryptor:

- ☐ Press **SEC**.

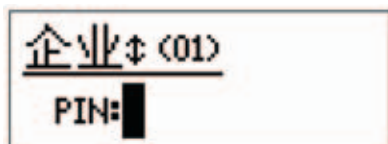
The transceiver responds with two low short beeps and displays **Go Clear**. For example:



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 responds 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 bottom left of the channel screen. For example:

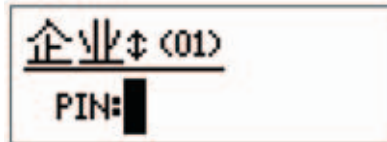


Switching between Global and Corporate Secure Modes

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 116, *Changing a setting in the Control List*](#) and [page 186, *Entries in the Control List*](#).

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

- ☐ Hold **SEC**.



- ☐ Use **↵** or **↶** to toggle between **Global** or **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.

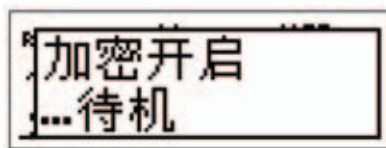
Using the voice encryptor in Standby Mode

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 opens 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.

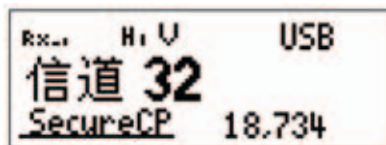
To enter Standby Mode:

- ☐ 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 bottom left of the channel screen. For example:

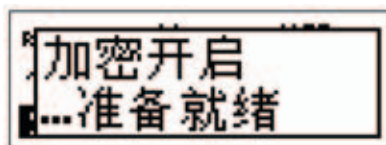


NOTE The transceiver automatically switches from Standby Mode to Secure Mode if an encrypted transmission is received.

To exit Standby Mode:

- ☐ Press *.

The voice encryptor switches from Standby Mode.



Setting up the voice encryptor

NOTE In the following discussion, you must log in as administrator to see the entries in the Control List (see [page 129, Logging into admin level from user level](#)).

Setting the Corporate Secure Key in an index

To set the Corporate Secure Key:

- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Secure...**, then press **✓**.
- ☐ Scroll to **Key**, then *hold* **✓**.
- ☐ 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 Secure Index 2 or above with a Secure Key, you must use CICS (see [page 361, 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 Secure Key, if required (see above *Setting the Corporate Secure Key in an index*).
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Secure...**, then press **✓**.
- ☐ Scroll to **Mode**, then *hold* **✓**.
- ☐ Scroll to **Corporate**, then press **✓**.
- ☐ Lock and hide the Secure Mode entry in the Control List (see [page 134, Locking and unlocking information](#) and [page 132, Hiding and showing information](#)).
- ☐ If you want users to be able to use a PIN, enable the PIN mode (see [page 280, 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 Secure Key, if required (see [page 105, *Setting the Corporate Secure 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 265, *Example 4: displaying and/or changing a setting in the Control List*](#)).
- ☐ Scroll to **Control**, then press ✓.
- ☐ Scroll to **Secure...**, then press ✓.
- ☐ Scroll to **Mode**, then *hold* ✓.
- ☐ Scroll to **Corporate**, then press ✓.
- ☐ Program multiple Corporate Secure Keys via CICS (see [page 361, *secure command*](#)).
- ☐ If you want to change the base of all Corporate Secure Keys, modify the base key (Index 0) via CICS (see [page 361, *secure command*](#)).
- ☐ If you want to alter the encryption algorithm, contact your Codan representative.

7 Using lists

This section contains the following topics:

[The Main Menu \(108\)](#)

[Selecting a list \(110\)](#)

[The List Manager \(111\)](#)

[Setting a marker \(114\)](#)

[Setting the home screen \(115\)](#)

[Changing a setting in the Control List \(116\)](#)

[Making changes to all other lists \(117\)](#)

[Saving call log information to the Address List \(120\)](#)

[Saving GPS information to the Address List \(122\)](#)

[Grouping and ungrouping entries \(123\)](#)

[Restricting access to information \(127\)](#)

[Logging into admin level \(129\)](#)

[Displaying full and normal view \(131\)](#)

[Hiding and showing information \(132\)](#)

[Locking and unlocking information \(134\)](#)

The Main Menu

NOTE In the following discussion, you must log in as administrator to see the Main Menu (see [page 129, 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 containing information specific to the operation of your transceiver 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 handset screen, the time and date, passwords, and your station self address
- 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 16: The contents of the Main Menu

Main Menu
 Address
 Channel
 Control
 Network
 Phone Link

Entries, settings and values

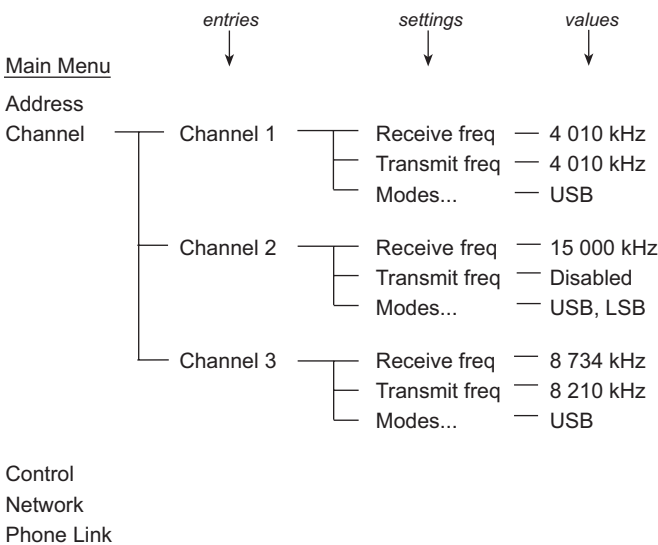
Each list contains entries. The entries in the Address List are the names of the stations you often call, for example, 'Home', 'Work'. The entries in the Channel List are the names of the channels you use, for example, 'Channel 1', 'Channel 2'.

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 17: Examples of entries, settings and values



Selecting a list

NOTE In the following example, you must log in as administrator to see the Main Menu (see [page 129, Logging into admin level from user level](#)).

To select a list from the Main Menu:

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

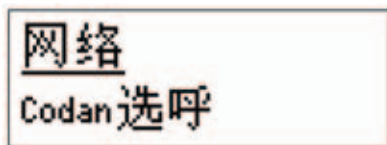


- ☐ Scroll through the Main Menu until the list you want to select is displayed on the active line. For example:



- ☐ Press **✓**.

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 **×** 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
- saving information from a call log into the Address List
- 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 17 on page 112](#) 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 17 on page 112](#)).
- ☐ Press .

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

Entries in the List Manager

Table 17: 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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
Save to Address		Save call information from a call log into an entry in the Address List.
Save Waypoint		Save GPS information into an entry in the Address 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 17: 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, which have been hidden at user level, in normal view.
	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 the entry is displayed each time you open the Address List.

To set a marker:

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

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 your GPS position or the current time, make the GPS screen or 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 must log in as administrator to see the Control List (see [page 129, Logging into admin level from user level](#)).

- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Config...**, then press **✓**.
- ☐ Scroll to **Set home screen**, then press **✓**.

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

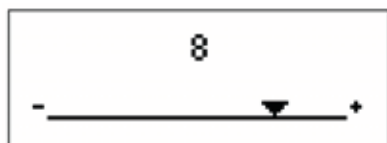
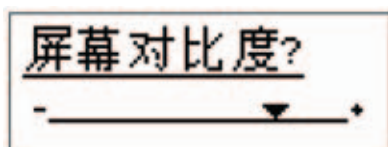
NOTE In the following example, you must log in as administrator to see the Control List (see [page 129, Logging into admin level from user level](#)).

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 90, 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* **✓**.

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 72, Entering and editing text](#)).

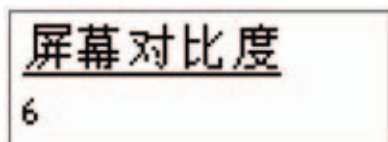
If you do not want to save the change you made and you are in a setting where you can:

- 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

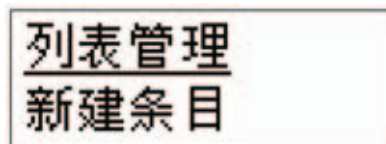
NOTE In the following examples, you must log in as administrator to see the lists (see [page 129, Logging into admin level from user level](#)).

The following steps can be used to make changes in every list except the Control List (see [page 116, Changing a setting in the Control List](#)).

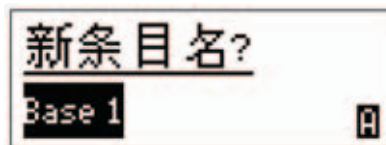
Creating an entry in a list

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.
- ☐ Scroll to **Create entry**, then press **✓**.



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



- ☐ Enter the name 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 72, 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 138
Network List	page 144
Phone Link List	page 154
Address List	page 159

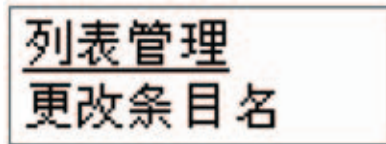
The new entry is created and the List Manager remains open.

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

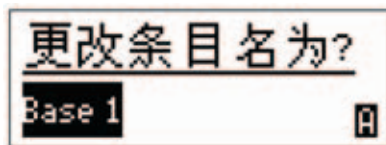
Renaming an entry in a list

To rename an entry in a list:

- ☐ Go to the entry you want to rename.
- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Rename entry**, then press **✓**.



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



- ☐ Enter the new name you want to use for this entry.
The name must be unique to the list that you are in.

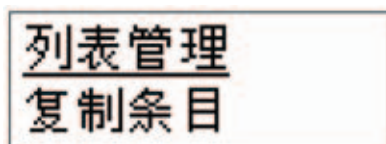
NOTE For help with entering text see [page 72, Entering and editing text](#).

- ☐ Press **✓**.
The entry is renamed and the List Manager remains open.
- ☐ If you want to view the entry you have renamed, press **✕** to close the List Manager.

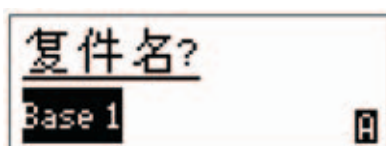
Copying an entry in a list

To copy an entry in a list:

- ☐ Go to the entry you want to copy.
- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Copy entry**, then press **✓**.



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



- ☐ Enter the name 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 72, *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.
- ☐ 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...

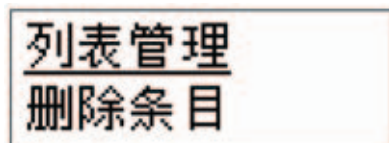
Channel List	page 138
Network List	page 144
Phone Link List	page 154
Address List	page 159

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

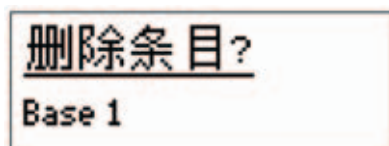
Deleting an entry from a list

To delete an entry from a list:

- ☐ Go to the entry you want to delete.
- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Delete entry**, then press **✓**.



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



- ☐ Press **✓**.

The entry is deleted and the List Manager remains open.

Saving call log information to the Address List

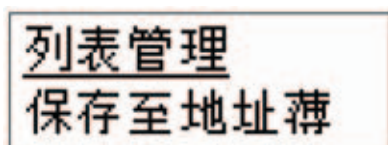
If you receive a call from another station, or make a new call to another station, an entry will be recorded in the Calls In Log or Calls Out Log respectively. You can save this information to the Address List using the List Manager, then use this entry for subsequent calls. If the received call contains GPS information, this can also be saved. When you access this entry in the Address List, and you have a valid GPS location entered for your station, the distance and bearing to the remote location is displayed.

NOTE Automatic distance and bearing calculations only occur when the GPS option is installed in your transceiver.

If a call is received from a station that has an entry in the Address List, the name of this entry is used to identify the incoming call.

To save call log information to the Address List:

- ☐ Press **#** once to go to the Calls Out Log, or twice to go to the Calls In Log.
- ☐ Go to the entry you want to save to the Address List.
- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Save to Address**, then press **✓**.



The transceiver suggests a name for the entry, based on any name associated with the caller address.



- ☐ Enter the name of the entry, then press **✓**.

NOTE For help with entering text see [page 72, Entering and editing text](#).

If you enter a name that is already used in the Address List, and you want to replace the contents of this entry, press **✓**.

- ☐ Scroll to one of the following options, then press ✓:

Option	Action	Use
Address+Position	Creates an entry for a Selective call to the address provided. The position is saved as a message.	When you return to this entry, the distance and bearing to this location is displayed. To make a Selective call to this station, press CALL .
Position Only This Waypoint	Creates an entry for a Message call with a blank address. The position is saved as a message.	When you return to this entry, the distance and bearing to this location is displayed.
Address Only	Creates an entry for a Selective call to the address provided.	To make a Selective call to this station, press CALL .



The entry in the Address List is created and the List Manager closes.

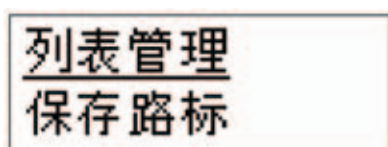
Saving GPS information to the Address List


If you have a GPS receiver connected and configured to operate with your transceiver, you can record your current GPS information from the receiver as a waypoint in the Address List. For information on saving GPS information sent to you from another station see [page 120, Saving call log information to the Address List](#). Any GPS information that is saved to the Address List will display the distance and bearing to this location from your transceiver's known location.

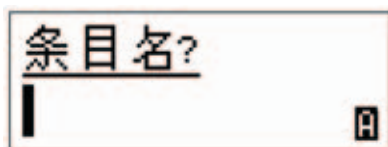
NOTE Automatic distance and bearing calculations only occur when the GPS option is installed in your transceiver.

To save GPS information to the Address List:


- ☐ In any list other than the Address List, *hold* .
- ☐ Scroll to **Save Waypoint**, then press .



- ☐ Enter the name of the entry, then press .



NOTE For help with entering text see [page 72, Entering and editing text](#).

If you enter a name that is already used in the Address List, and you want to replace the contents of this entry, press .

The entry in the Address List is created and the List Manager closes.

Grouping and ungrouping entries

NOTE Grouping entries is not recommended in the NGT *CR* Transceiver.

Entries in lists may be displayed on a single level. When you scroll through the list, you scroll over each entry in it.

Figure 18: 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 19: 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 20: 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 21](#)). 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 21: 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 must log in as administrator to see the Control List (see [page 129, Logging into admin level from user level](#)).

Grouping entries

To group entries:

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

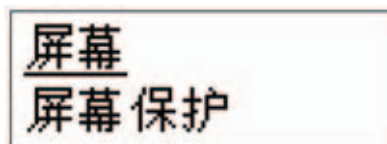


- ❑ Hold **Q** to open the List Manager.
- ❑ Scroll to **Display options...**, then press **✓**.
- ❑ Scroll to **Group entries?**, then press **✓**.

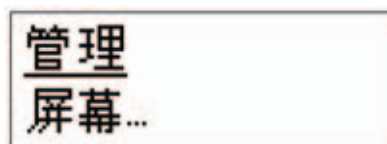
The entries are grouped and the List Manager remains open.

- ❑ If you want to view the grouped entries, press **✕** 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 **✕** until the name of the list you are in is displayed on the top line.



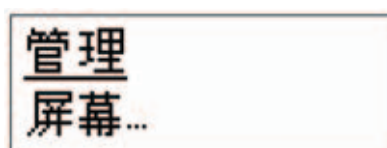
Ungrouping entries

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 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:

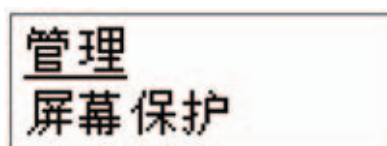
- ☐ Open the list in which you want to ungroup entries. For example:



- ☐ *Hold* **🔍** to open the List Manager.
- ☐ Scroll to **Display options...**, then press **✓**.
- ☐ Scroll to **Ungroup entries?**, then press **✓**.

The entries are ungrouped and the List Manager remains open.

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

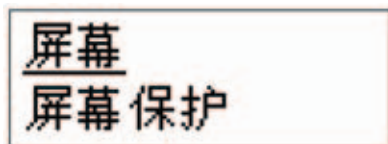


Selecting a grouped entry

To select a grouped entry:

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

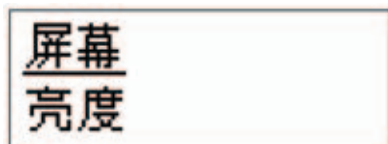
The grouped name is displayed on the top line and the first entry is displayed beneath it.



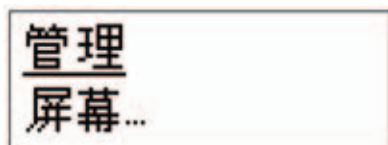
NOTE

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.



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

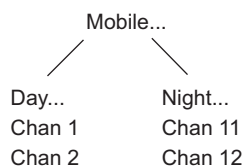


Locking and hiding grouped entries

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 22](#) 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 134, Locking and unlocking information](#) and [page 132, Hiding and showing information](#).

Figure 22: 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 admin level see [Table 18 on page 128](#) and [page 129, *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 227, *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 18](#) 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 134, *Locking and unlocking information*](#) and on [page 132, *Hiding and showing information*](#).

Table 18: Restricting access to information at user and admin levels

If you log into user level...	<p>You can...</p> <ul style="list-style-type: none"> • 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 <p>You cannot...</p> <ul style="list-style-type: none"> • 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...	<p>You can...</p> <ul style="list-style-type: none"> • 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 <p>You cannot...</p> <ul style="list-style-type: none"> • 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 131](#), *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 17 on page 112](#)). 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 in the Password Admin entry in the Control List, 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.

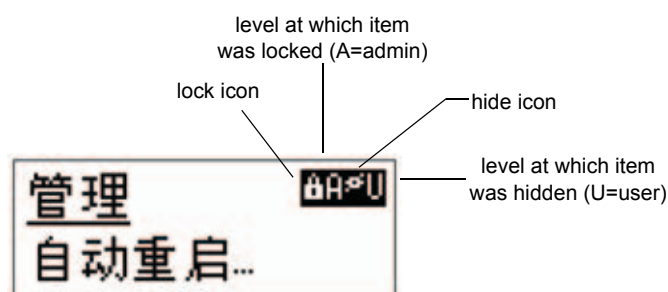
Displaying full and normal view

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 127, Restricting access to information](#)). When you switch to normal view, the icons and any items that have been hidden are removed.

[Figure 23](#) shows the handset 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 23: 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 134, Locking and unlocking information](#) and [page 132, Hiding and showing information](#).

Switching between full and normal view

To switch between full and normal view:

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Display options...**, then press **✓**.
- ☐ Scroll to **Full view?** or **Normal view?**, then press **✓**.

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 127, Restricting access to information](#)). [Table 19](#) 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 19: Hiding items at user and admin levels

Hiding an item at...	Means that...
user level	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 131, *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 123, *Grouping and ungrouping entries*](#).

- ☐ Hold  to open the List Manager.
- ☐ Scroll to **Config...**, then press .
- ☐ Scroll to **Hide?** or **Show?**, then press .
- ☐ 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 131, *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 129, *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 123, *Grouping and ungrouping entries*](#).

- ☐ Hold  to open the List Manager.
- ☐ Scroll to **Admin...**, then press .
- ☐ Scroll to **Admin hide?** or **Admin show?**, then press .

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 127, Restricting access to information](#)). [Table 20](#) summarises the effects of locking information at these levels.

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

Table 20: Locking items at user and admin levels

Locking an item at...	Means that...
user level	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 123, Grouping and ungrouping entries](#).

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Config...**, then press **✓**.
- ☐ Scroll to **Lock?** or **Unlock?**, then press **✓**.

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 129](#), [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 123](#), [Grouping and ungrouping entries](#).

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Admin...**, then press **✓**.
- ☐ Scroll to **Admin lock?** or **Admin unlock?**, then press **✓**.

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.
- ☐ Scroll to **Config...**, then press **✓**.
- ☐ To switch locks off, scroll to **Locks off?**, then press **✓**.
- To switch locks on, scroll to **Locks on?**, then press **✓**.

The List Manager remains open.

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8 The Channel List

This section contains the following topics:

[About channels \(138\)](#)

[Settings in the Channel List \(138\)](#)

[Programming the Channel List \(139\)](#)

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 must 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 must 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.

CAUTION

You should be aware of any restrictions placed on channel names in your transceiver when it is used with a Radio/Telephone Interface RTU-292 or 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.

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 117, *Creating an entry in a list*](#) and [page 72, *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	<ul style="list-style-type: none"> • use this frequency, or • enter a new receive frequency in kilohertz <p>NOTE You can enter the frequency to three decimal places. Press * to enter a decimal point, then continue with entering the frequency.</p>
Transmit Freq	<ul style="list-style-type: none"> • use this frequency, or • enter a new transmit frequency in kilohertz, or • disable the transmit frequency by pressing ✕ repeatedly until the setting is empty <p>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.</p>

If this prompt is displayed...	Do this...
Mode	<ul style="list-style-type: none"> enter a mode <p>NOTE If multiple modes can be added to the channel, scroll to the new mode, then press ✓. If you do not want to add another mode, press ✕.</p>

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 must 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 152, 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 118, Renaming an entry in a list](#).

Copying a channel

Copying a channel is a standard list function. For help see [page 118, Copying an entry in a list](#).

Editing a channel

Editing a channel is a standard list function. For help see [page 119, Editing an entry in a list](#).

Deleting a channel

Deleting a channel is a standard list function. For help see [page 119, Deleting an entry from a list](#).

This section contains the following topics:

[About networks \(142\)](#)

[Settings in the Network List \(144\)](#)

[Special network names \(150\)](#)

[Programming the Network List \(151\)](#)

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 or Open 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 24](#) shows an example of the information required to create networks based on the Codan Selcall, Open Selcall, ALE/CALM and Voice Only call systems. This information is explained on [page 144, Settings in the Network List](#).

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

Figure 24: 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 voice
	Call System:	Open Selcall
	Call Detect Time:	<default>
	Nominal Preamble:	4 seconds
	Channel/Mode:	Chan 3/USB Chan 4/LSB Chan 5/USB
Network C	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 D	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 must log in as administrator to see the Network List (see [page 129, Logging into admin level from user level](#)).

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**.

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, Open 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 or Open 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.

A Codan Selcall network can receive calls sent from a transceiver using the Open Selcall protocol. If you want to be able to make calls to transceivers that use the Open Selcall protocol, you must set up an Open Selcall network to use with these calls.

CAUTION Any station that is tuned to your frequency and has mute switched 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. The call detect time is the inverse of the scan rate. For example, a call detect time of 0.2 sec is equivalent to a scan rate of 5 channels/sec. Codan transceivers can scan at up to 8 channels/sec in an ALE/CALM network, hence the call detect time of 0.12 sec.

You can set the call detect time to **<default>** or to a specific value. The default call detect time for each call system is shown in [Table 21](#).

Table 21: Default call detect times

Call system	Default call detect time (sec)
Codan Selcall	0.3
Open Selcall	0.3
ALE/CALM	0.12
Voice Only	0.5

There should be no requirement to change the call detect time from the default value. If you change the call detect time or change the number of channels in the network, you must recalculate the nominal preamble time, that is, the call detect time multiplied by the number of channels in the network (see [page 147, *Nominal Preamble*](#)).

NOTE You cannot set a call detect time that is lower than the default value.

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 must 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 must 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

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 **None**, and the receiving station determines that the address is valid in networks with the Privacy Mode set to **Group** or **None**, then it will select the network with the Privacy Mode set to **None** on which to establish the link.

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, Open 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 (see [page 144](#), *Call Detect Time* and [Table 22](#)). If you set the Nominal Preamble to **<default>** (see [Table 23](#)), the transceiver calculates the length of preamble at the time of the call, based upon the number of channels in the network.

NOTE When an ALE/CALM network is used for the call, *and* a channel is specified rather than selecting **<auto>**, the call is sent without a preamble.

Table 22: Nominal preamble times calculated from call detect time

Call system	Default call detect time (sec) (from Table 21)	Nominal preamble time calculated and entered by system administrator for 10 channels (sec)
Codan Selcall	0.3	3
Open Selcall	0.3	3
ALE/CALM	0.12	1.2

Table 23: Default nominal preamble times

Call system	Default nominal preamble time (sec)	Nominal preamble time calculated automatically by transceiver for 10 channels (sec)
Codan Selcall	$0.6 \times \text{number of channels}$	6
Open Selcall	$0.6 \times \text{number of channels}$	6
ALE/CALM	$0.8 \times \text{number of channels}$	8

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.

CAUTION If the nominal preamble is set to default for an ALE network *and* a channel is manually selected for the call, no preamble is sent when the call is made.

If you intend to manually select channels to call scanning stations, then a non-default nominal preamble should be set.

You may need to adjust the nominal preamble from the default value if:

- the transceivers are not scanning identically
- the transceivers are scanning multiple networks
- more than 10 channels are included in the network being scanned
- there is low channel availability due to a poor signal-to-noise ratio, interference, or high traffic (that is, frequent pausing)
- there are transceivers in the network that are also scanning for voice

If a transceiver 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. The nominal preamble must be set according to the transceiver in the communication network with the slowest scan cycle.

For Codan Selcall or Open Selcall networks with more than 10 channels in the network, the nominal preamble may be set to 0.3 secs/channel.

For ALE/CALM networks using Codan transceivers that are scanning identically, the nominal preamble may be reduced to 0.15 sec/channel.

NOTE The default value for an ALE/CALM network (see [Table 23 on page 147](#)) complies with MIL-STD-188-141B ALE, and represents two ALE words (0.784 sec/channel).

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 123, Grouping and ungrouping entries](#).
- When you add a group of channels to a network, you must 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 to the network.
- 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 77, Quick Start](#)).

Programming the Network List

NOTE In the following discussion, you must log in as administrator to see the Network List (see [page 129, 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 144, 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 117, Creating an entry in a list](#) and [page 72, 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?	<ul style="list-style-type: none"> select whether the network is scanned or not <p>NOTE If you want to scan a voice network for voice when the Mute Type is set to Selcall, select Scan voice (see page 82, Muting the transceiver).</p>
Call System?	<ul style="list-style-type: none"> select the call system you want to use
Call Detect Time?	<ul style="list-style-type: none"> increase or decrease the call detect time, or scroll to the far left of the line until <default> is displayed
Sounding Interval?	<ul style="list-style-type: none"> select the value you want to use
Privacy Mode?	<ul style="list-style-type: none"> select the mode you want to use
Privacy Password?	<ul style="list-style-type: none"> enter the password you want to use with the Privacy Mode
Nominal Preamble?	<ul style="list-style-type: none"> increase or decrease the nominal preamble time
Channel?	<ul style="list-style-type: none"> select the channel you want to use <p>NOTE If the channel is in a group, scroll to the group name, then press ✓, then scroll to the channel you want to use.</p> <p>If you want to use a group of channels, scroll to the group name, then <i>hold</i> ✓.</p>

If this prompt is displayed...	Do this...
Mode?	<ul style="list-style-type: none"> select the mode for the channel or group of channels you want to use
Add another Channel/ Mode?	<ul style="list-style-type: none"> select the channel/mode you want to use <p>NOTE If you do not want to add another channel/mode, press X.</p>

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 must 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 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 163, *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 118, *Renaming an entry in a list*](#).

Copying a network

Copying a network is a standard list function. For help see [page 118, *Copying an entry in a list*](#).

Editing a network

Editing a network is a standard list function. For help see [page 119, *Editing an entry in a list*](#).

Deleting a network

Deleting a network is a standard list function. For help see [page 119, *Deleting an entry from a list*](#).

10 The Phone Link List

This section contains the following topics:

[About phone links \(154\)](#)

[Settings in the Phone Link List \(154\)](#)

[Programming the Phone Link List \(155\)](#)

About phone links

A phone link is a connection to a station with a telephone interconnect unit that can route Phone calls from transceivers to the public telephone network.

The addresses of the phone link stations you use, and the networks and channel/modes you use to make Phone calls, can be stored in the Phone Link List. If you want to be prompted for some of these details when you make a Phone call, you can leave the relevant settings in the Phone Link List blank. If you want to be prompted for all of these details, leave the Phone Link List blank.

Settings in the Phone Link List

NOTE In the following discussion, you must log in as administrator to see the Phone Link List (see [page 129, *Logging into admin level from user level*](#)).

Address

The Address setting in a phone link is the address of the transceiver connected to the radio/telephone interface.

Network

The Network setting in a phone link identifies the network through which the call is made to the transceiver connected to the radio/telephone interface.

Channel/Mode

The Channel/Mode setting in a phone link identifies the channel and mode that are used to make a call to the transceiver connected to the radio/telephone interface.

Programming the Phone Link List

NOTE In the following discussion, you must log in as administrator to see the Phone Link List (see [page 129, Logging into admin level from user level](#)).

Creating a phone link

To create a phone link:

- ☐ Press **✕** until **Main Menu** is displayed.
- ☐ Scroll to **Phone Link**, then press **✓**.
- ☐ Use the List Manager to create an entry (for help see [page 117, Creating an entry in a list](#) and [page 72, 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...
Address?	<ul style="list-style-type: none"> enter the address of the phone link station, or leave the address empty if you want to be prompted to choose an address when you make the call
Network?	<ul style="list-style-type: none"> select the network in which you want to use this phone link, or select <blank> if you want to be prompted to select a network when you make the call
Channel/Mode?	<ul style="list-style-type: none"> select the channel/mode you want to use to make the call, or select <blank> if you want to be prompted to select a channel/mode when you make the call

The new phone link is created and the List Manager remains open.

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

Renaming a phone link

When you rename a phone link, references to the phone link in the Address List are not automatically updated; you must go to the Address List and update any references to the phone link.

For example, if the phone link you renamed is used in an entry in the Address List, go to this entry, find the reference to the old phone link, then change it so that the new name is displayed (for help see [page 163, *Editing an entry in the Address List*](#)). If you do not update the reference to the phone link, the transceiver will prompt you to select a phone link each time you use the entry to make a call.

Renaming a phone link is a standard list function. For help see [page 118, *Renaming an entry in a list*](#).

Copying a phone link

Copying a phone link is a standard list function. For help see [page 118, *Copying an entry in a list*](#).

Editing a phone link

Editing a phone link is a standard list function. For help see [page 119, *Editing an entry in a list*](#).

Deleting a phone link

Deleting a phone link is a standard list function. For help see [page 119, *Deleting an entry from a list*](#).

11 The Address List

This section contains the following topics:

[About the Address List \(158\)](#)

[Settings in the Address List \(159\)](#)

[Storing GPS information in the Address List \(160\)](#)

[Programming the Address List \(162\)](#)

About the Address List

The Address List is like any personal address book: it is a place to store the names and addresses of stations you often call. When you have entered the details of a station, calling the station becomes as simple as going to the entry for it, then pressing **CALL**.

If you want to be prompted to enter particular details at the time you make a call (for example, select a channel) you can leave the relevant settings blank. If you make several different types of calls to one address, you can create several entries with the same name and address but with different call types.


The Emergency 1 entry is stored in the Address List. This is the entry the transceiver calls when you press . In the NGT CR Transceiver, this key is set up to make a Marine Emgcy call.

The Address List may also be used to store various items of GPS information. You can store GPS information about:

- your station, to provide a point of reference for automatic distance and bearing calculations
- other stations
- specific locations

This GPS information can be used as waypoints. When you review the Address List, an entry containing a waypoint displays the distance and bearing to the waypoint, relative to your own GPS location.

NOTE Automatic distance and bearing calculations only occur when the GPS option is installed in your transceiver.

For information on making calls from the Address List and making calls using  see [page 171, Making a call](#).

Settings in the Address List

CallType–Address

The call type is the type of call that you want to make to the station you want to call. For example, if you want to know where a mobile station is located, you send a Get Position call to the station. The Address setting is the address of the station you want to call.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the Emergency, Phone, Selective, or Send Position call type.

Phone Link

The Phone Link setting in an Address List entry is available when you select Phone as the call type. It identifies the phone link station through which the call is made.

Network

The Network setting in an Address List entry identifies the network through which the call is made to the station you want to call.

Channel/Mode

The Channel/Mode setting in an Address List entry identifies the channel and mode that are used to make the call to the address given in the entry.

Storing GPS information in the Address List

You can store GPS information in the Address List for the position of your station, remote stations, or other specific locations. You can receive this information via a call, then save it to the Address List. When you access this entry in the Address List, the distance and bearing to the location is displayed if your transceiver holds valid GPS information for its own position.

Often, fixed base stations do not have a GPS receiver fitted, as the position is static. If you know the GPS position of your fixed station, you can create a special entry in the Address List to store the information. This provides a reference point for automatic distance and bearing calculations to remote stations and specific locations.

NOTE Automatic distance and bearing calculations only occur when the GPS option is installed in your transceiver.

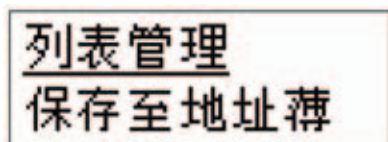
Storing your GPS information in a transceiver without a GPS receiver

If your fixed base station does not have a GPS receiver, a special entry can be created in the Address List (called My GPS) to store your position information. The transceiver uses this information to provide distance and bearing readings to any GPS locations stored in the Address List or either of the call logs. To store GPS information in the Address List you may save a position sent to you from a mobile station that is temporarily located at your fixed station.

Saving your GPS information from a call log

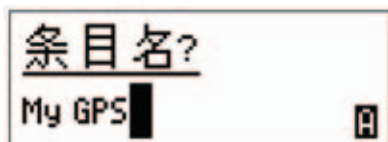
To save your GPS information to the Address List:

- ☐ Make a Send Position call from a mobile station (with an enabled GPS receiver) that is located at your fixed station.
- ☐ Press **#** twice to go to the Calls In Log.
- ☐ Go to the entry containing the information from the above call.
- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Save to Address**, then press **✓**.



The transceiver suggests a name for the entry, based on the caller address.

- ☐ Enter the text **My GPS** as the name for this entry, then press **✓**.



NOTE For help with entering text see [page 72, *Entering and editing text*](#).

If the My GPS entry in the Address List already exists, and you want to replace the contents of this entry, press ✓.

- ☐ Scroll to **Position Only**, then press ✓.

The entry in the Address List is created and the List Manager closes.

- ☐ Switch the transceiver off then on again to activate the new information in the My GPS entry in the Address List.

Saving GPS information

You may find it useful to save certain GPS information in your transceiver. For example, a mobile station could broadcast its GPS information from a particular situation (a road block or the site of an emergency), then this information may be saved to the Address List, thus providing access to distance and bearing information for the location (see [page 120, *Saving call log information to the Address List*](#)). For more information on sending group calls see [page 170, *Group calls in a Codan Selcall or Open Selcall network*](#).

Another use is saving a location as a waypoint in the Address List (for example, your campsite) so that you may return easily to it using the distance and bearing information relative to your current GPS receiver location. For more information see [page 122, *Saving GPS information to the Address List*](#).

Programming the Address List

Creating an entry in the Address List

To create an entry in the Address List:

- ☐ Press **VIEW** until the Address List is displayed.
- ☐ Use the List Manager to create an entry (for help see [page 117, *Creating an entry in a list*](#) and [page 72, *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...
New name?	<ul style="list-style-type: none"> enter a name for the new entry (for example, the name of the person or station you want to call using this entry)
<Call type>? and <Address>	<ul style="list-style-type: none"> select the call type you want to use, or select <No call type> if you want to be prompted to select a call type when you make the call enter the address to which you want to send the call, or leave the address empty if you want to be prompted for an address when you make the call <p>If you selected Phone? as the call type, enter the telephone number you want to call.</p> <p>NOTE You can enter up to 16 digits. If you leave this setting empty, you will be prompted for a telephone number when you make the call.</p> <p>For information on the address syntax for</p> <p>NOTE ALL calls see page 166, <i>ALL address syntax</i>.</p>
Phone Link?	<ul style="list-style-type: none"> select the phone link station through which you want to make the call, or select <blank> if you want to be prompted to select a phone link when you make the call
Network?	<ul style="list-style-type: none"> select the network you want to use to make the call, or select <blank> if you want to be prompted to select a network when you make the call
Channel/Mode?	<ul style="list-style-type: none"> select the channel/mode you want to use to make the call, or select <blank> if you want to be prompted to select a channel/mode when you make the call

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 the Address List

Renaming an entry in the Address List is a standard list function. For help see [page 118](#), *Renaming an entry in a list*.

Copying an entry in the Address List

Copying an entry in the Address List is a standard list function. For help see [page 118](#), *Copying an entry in a list*.

Editing an entry in the Address List

Editing an entry in the Address List is a standard list function. For help see [page 119](#), *Editing an entry in a list*.

Deleting an entry in the Address List

Deleting an entry in the Address List is a standard list function. For help see [page 119](#), *Deleting an entry from a list*.

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12 Making and receiving calls

This section contains the following topics:

[Calls you can make and receive \(166\)](#)

[Making a call \(171\)](#)


[Receiving a call \(181\)](#)

Calls you can make and receive

ALL address syntax

- NOTE** The global ALL address syntax may be used if the FED-STD-1045 ALE/CALM option is installed.
- NOTE** You cannot use the global ALL address syntax in the Channel Test, Get Position, or Get Status call type.
- NOTE** For information on entering text in a call address see [page 75, *Entering text in an ALE call address*](#).

If you want to send an ALE call to any station that is tuned to the same frequency in an ALE/CALM network or scanning the network, make a call through the Emergency, Phone, Selective, or Send Position call type using the ALL address syntax (see [page 167, *Emergency call*](#), [page 169, *Phone call*](#), [page 169, *Selective call*](#), or [page 169, *Send Position call*](#)). The ALL call does not specifically call any stations, and does not request any automatic responses from stations that enter the link. Stations can be configured to accept or to ignore ALL calls.

- NOTE** When you use the global ALL address syntax through the Selective call type, the call icon will change to the ALL call icon () when the call is started.

The global ALL address syntax is **@?@**. All stations detecting the call will enter an ALE link with the initiating station, if enabled to do so.

Call types









There are 8 different types of calls available with an NGT CR Transceiver:

- [Channel Test call](#)
- [Emergency call](#)
- [Get Position call](#)
- [Get Status call](#)
- [Marine Emgcy call](#)
- [Phone call](#)
- [Selective call](#)
- [Send Position call](#)

The types of calls you can make and receive depend on the options installed in the transceiver.

Each call type has an icon associated with it that is displayed when you make and receive calls (see [Table 24](#)).

Table 24: Call types and icons

Call type	Icon
Channel Test	
Emergency	
Get Position	
Get Status	
Marine Emgcy	
Phone	
Selective	
Send Position	

Each type of call is described below.

Channel Test call

If you want to test the suitability of a channel/mode before you use it to transmit voice or data, make a Channel Test call.

NOTE You cannot use the ALL address syntax with a Channel Test call.

In a Codan Selcall or Open Selcall network, a Channel Test call sends a request to the station you want to call on the channel/mode you have selected. The receiving station automatically returns an audible test signal. The volume and clarity of this signal indicates the quality of the channel/mode.

You can also test channels once you have started a call (for more information see [page 172, Testing the quality of a channel in a Codan Selcall or Open Selcall network](#)).

Emergency call

If you want to trigger an emergency alert tone at a particular station and speak to an operator, make an Emergency call. If the GPS option is installed in the transceiver (and you have connected and configured a GPS receiver), your GPS position is automatically sent with the call.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the Emergency call type to send a call to a group of stations using an ALE/CALM network.

Get Position call

- NOTE** You cannot use the global ALL address syntax with a Get Position call.
- NOTE** The success of your Get Position call will depend upon the setting in the Cfg Respond GPS entry in the Control List of the transceiver you are polling and the Privacy Mode of the network you are using for the call (see [page 190, Cfg Respond GPS](#)).
- NOTE** If you send a Get Position call in an Open Selcall network, the transceiver you are polling must have the Cfg Respond GPS entry in the Control List set to **Always respond**.

If you want to obtain the GPS position of a station that has the GPS option installed in the transceiver, make a Get Position call. Get Position calls are automatically answered by the receiving station so an operator is not required to take any action.

- NOTE** The transceiver uses GPS information from either a connected and configured GPS receiver, or from valid content in the My GPS entry in the Address List.

The information you receive from a Get Position call is displayed on the handset as it is received, if permitted, and is stored in the Calls In Log (see [page 183, The Calls In Log](#)).

Get Status call

- NOTE** You cannot use the global ALL address syntax with a Get Status call.
- NOTE** The success of your Get Status call will depend upon the setting in the Cfg Respond OTA entry in the Control List of the transceiver you are polling and the Privacy Mode of the network you are using for the call (see [page 191, Cfg Respond OTA](#)).
- NOTE** If you send a Get Status call in an Open Selcall network, the transceiver you are polling must have the Cfg Respond OTA entry in the Control List set to **Always respond**.

If you want to obtain information on the status of a transceiver at another station, such as the power output of the transmitter or the firmware versions installed, make a Get Status call. Get Status calls are automatically answered by the receiving station so an operator is not required to take any action.

The information you receive from a Get Status call is displayed on the handset as it is received, if permitted, and is stored in the Calls In Log (see [page 183, The Calls In Log](#)).

When you make a Get Status call you must specify the type of information you require: **Diagnostic**, **Configuration**, or **Other message**. This is described in detail on [page 269, Get Status calls](#).

Marine Emgcy call

NOTE You cannot use the global ALL address syntax with a Marine Emgcy call.

If you want to broadcast an emergency alert tone on the marine distress frequency of 2182 kHz, make a Marine Emgcy call.

Phone call

If you want to call a telephone number from the transceiver, make a Phone call. Before you make a Phone call you must know the address of a telecommunication station through which your call can be routed to the public telephone network.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the Phone call type to send a call to a group of telecommunication stations using an ALE/CALM network.

Selective call

If you want to speak to an operator at a particular station, make a Selective call. When the station receives the call, the transceiver rings like a phone to notify the operator. Selective calls can be heard by any station tuned to or scanning your current channel with their mute switched off. However, only the transceiver at the station to which the call has been addressed will ring.

Selective calls can be made to several stations at once (see [page 170, Group calls in a Codan Selcall or Open Selcall network](#)).

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the Selective call type to send a call to a group of stations using an ALE/CALM network.

Send Position call

If you want to send your GPS information to another station, make a Send Position call. You can only make Send Position calls if the GPS option has been installed in your transceiver.

NOTE The transceiver sends GPS information from either a connected and configured GPS receiver, or from valid content in the My GPS entry in the Address List.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the Send Position call type to send a call to a group of stations using an ALE/CALM network.

Send Position calls are automatically answered by any receiving stations so an operator is not required to take any action. If you use the global ALL address syntax with the Send Position call type, the link terminates immediately after the GPS position is sent. GPS positions you send are stored in the Calls Out Log (see [page 179, The Calls Out Log](#)).

Group calls in a Codan Selcall or Open Selcall network

Emergency and Selective calls can be made to a group of stations simultaneously by using a Codan Selcall or Open Selcall network and a group address.

A group selcall address is an address that ends in two or more zeros. For example, to call all stations with addresses that range from 1201 to 1299, you would enter **1200** as the address. To call all stations with addresses that range from 150001 to 159999, you would enter **150000** as the address.

Open Selcall supports group calls with 1–3 zeros in 4-digit addresses, and 1–4 zeros in 6-digit addresses.

Making a call

Listen Before Transmit Mode

NOTE If you change the setting in the Cfg LBT Mode entry in the Control List, you must switch the transceiver off then on again for the change to take effect.

The NGT CR Transceiver is capable of listening to a channel before initiating a call on the channel. If the Cfg LBT Mode in the Control List is enabled, the transceiver will detect whether or not there is traffic on the selected channel. The transceiver will listen on a channel for the length of time specified in the Cfg LBT Period entry in the Control List. If there is traffic on the channel, the transceiver reports that the channel is busy.

The Cfg LBT Mode may be set to **Enabled**, **Override allowed**, or **Disabled**.

When the Cfg LBT Mode is set to **Enabled**, and the transceiver detects that the channel(s) tried is(are) busy, it will prompt you to try the call again. You can:

- press **CALL** to try the call again using LBT
- press **Q** to select a new channel, then press **CALL** to make a call on this channel using LBT

NOTE If only one channel was tried and found to be busy using LBT, you can listen for traffic on the channel then, if clear, override LBT by *holding CALL*.

When the Cfg LBT Mode is set to **Override allowed**, and the transceiver detects that the channel(s) tried is(are) busy, it will prompt you to try the call again. You can:

- press **CALL** to try the call again using LBT
- *hold CALL* to try the call again without LBT (send the call regardless of any detected traffic)
- press **Q** to select a new channel, then press **CALL** to make a call on this channel using LBT
- *hold Q* to select a new channel and try the call on this channel without LBT (send the call regardless of any detected traffic)

Calls using the Emergency call type or calls made through the **Δ** key will override the LBT Mode if it is enabled at either level.

Testing the quality of a channel in a Codan Selcall or Open Selcall network

If you want to test the quality of a particular channel/mode in a Codan Selcall or Open Selcall network before you use it to transmit voice or data, you can do so in two ways. You can:

- start making a call then, when prompted to select a channel/mode, test one or more channel/mode combinations
- make a separate Channel Test call before you make the other call

Testing a channel as part of a call in a Codan Selcall or Open Selcall network

NOTE This is the recommended method of making a Channel Test call.

To test a channel/mode as part of a call:

- ☐ Start the call using your preferred method.
For example, go to the Address List, then select the entry for the station you want to call.
- ☐ When the transceiver prompts you to select a channel/mode, scroll to the channel/mode you want to test, then *hold* **CALL**.
- ☐ Listen for the revertive signal from the other station.
The volume and clarity of the signal indicates the quality of the channel/mode. You may need to try another channel.
- ☐ When you have found a suitable channel/mode, press **CALL** to continue the call.

Making a Channel Test call in a Codan Selcall or Open Selcall network

To make a Channel Test call in a Codan Selcall or Open Selcall network:

- ☐ Press **CALL**.
- ☐ Type the address of the station you want to call, scroll to **Channel Test?** for the call type, then press ✓.
- ☐ Scroll to the Codan Selcall or Open Selcall network in which you want to make the call, then press ✓.
- ☐ Scroll to the channel/mode you want to test, then press **CALL**.
- ☐ Listen for the revertive signal from the other station.
The volume and clarity of the signal indicates the quality of the channel/mode.

Other ways to make calls

Making a new call

Making a new call is as simple as pressing **CALL**, typing the address of the station you want to call, then following the prompts. You can make a new call at any time.

Returning a call

The details of the calls you receive are stored in the Calls In Log. Up to 20 calls can be stored at a time and you can return any of these calls directly from this log.

When you return a call from the Calls In Log, you can either use as many details of the original call as possible, or review all details and select new details if necessary.

For more information on the log see [page 183, *The Calls In Log*](#).

Repeating a call

The details of the calls you make are stored in the Calls Out Log. Up to 20 calls can be stored at one time and you can repeat any of these calls directly from this log.

When you repeat a call from the Calls Out Log, you can either use as many details of the original call as possible, or review all details and select new details if necessary.

For more information on the log see [page 179, *The Calls Out Log*](#).

Making a call from the Phone Link List

If you make frequent Phone calls from the transceiver you may want to make them from the Phone Link List. When you begin a call from this list, the call type is always Phone (so you don't have to scroll to it), and you are not prompted to select a phone link; the call uses the entry you were on when you began the call.

You may be prompted to select certain details about the call depending on the configuration of the transceiver.

Making a voice call

The simplest type of call is a voice call. To make a voice call you:

- select a channel and mode
- press PTT to tune the antenna
- wait until the channel is clear of voice and data traffic
- *hold down* PTT and begin speaking

Your call can be heard by any station tuned to or scanning this channel with their mute switched off, and the Mute Scan entry set to **Scan for Voice** or **Voice**.

Calling methods

To make any type of call to a specific station:

- ☐ Decide on the method you want to use to make the call, then use the information in the following table to start the call.

NOTE For help with entering text see [page 72, Entering and editing text](#).

If you want to...	Do this...
make a call from the Address List	<ul style="list-style-type: none"> go to the entry you want to call in the Address List to use as many details from the entry as possible, press CALL, or to review all details and/or select new ones, <i>hold CALL</i>
make a Marine Emgcy call	<ul style="list-style-type: none"> <i>hold</i> ▲ for at least 2 seconds
make a new call	<ul style="list-style-type: none"> press CALL select the call type you want to use enter the address (including @?@ for a global ALL call) of the station(s) you want to call, or if you are making a Phone call, enter the phone number you want to call press CALL
return a call	<ul style="list-style-type: none"> press CALL LOGS twice to open the Calls In Log go to the call you want to return to use as many details from this call as possible, press CALL, or to review all details and/or select new ones, <i>hold CALL</i>
repeat a call	<ul style="list-style-type: none"> press CALL LOGS to open the Calls Out Log go to the call you want to repeat to automatically repeat this call, press CALL, or to review all details and/or select new ones, <i>hold CALL</i>
make a Phone call from the Phone Link List	<ul style="list-style-type: none"> go to the phone link through which you want to make this call press CALL enter the telephone number you want to call (you can enter up to 16 digits) press CALL

- You may be prompted for details about the call depending on the method you chose to make the call, the call type you selected, and the configuration of the transceiver.

If you are prompted for any details, use the information in the following table to enter them, then press **CALL**.

If this prompt is displayed...	Do this...
Select link	<ul style="list-style-type: none"> select the phone link station through which you want to make the Phone call
Phone link addr?	<ul style="list-style-type: none"> enter the address of the phone link station through which you want to make the Phone call (including @?@ for a global ALL call)
Status type?	<ul style="list-style-type: none"> select the type of status information you want to retrieve from the remote station, or select Other message to enter an over-the-air command into a message entry <p>NOTE For more information on the types of status information you can retrieve see page 269, Get Status calls.</p>
Select network	<ul style="list-style-type: none"> select the network in which you want to make the call
My address?	<ul style="list-style-type: none"> select or enter the self address from which you want to send the call
Select chan/mode	<p>In an ALE/CALM network:</p> <ul style="list-style-type: none"> select <auto> if you want the transceiver to select the best channel/mode for the call, starting with the channel on which the most recent successful link was established, or select the channel/mode you want to use to make the call <p>In a Codan Selcall or Open Selcall network:</p> <ul style="list-style-type: none"> select the channel/mode you want to use to make the call and check that it is clear of voice and data traffic <p>NOTE In a Codan Selcall or Open Selcall network, you can test the quality of the selected channel by sending a Channel Test call (see page 172, Testing a channel as part of a call in a Codan Selcall or Open Selcall network).</p>

- ❑ If LBT Mode is set to **Enabled** or **Override allowed**, you may be prompted to try the channels again. Use the information in the following table to answer the prompt.

If this prompt is displayed...	Do this...
<p>Chan busy: Try again?</p> <p>All <N> chans busy: Try again?</p>	<p>If Cfg LBT Mode is set to Enabled:</p> <ul style="list-style-type: none"> press CALL to try the call again using LBT press Q to select a new channel, then press CALL to make a call on this channel using LBT <p style="padding-left: 40px;">If only one channel was tried and found to be busy using LBT, you can listen for traffic on the channel then, if clear, override LBT by <i>holding</i> CALL.</p> <p>NOTE</p> <p>If Cfg LBT Mode is set to Override allowed:</p> <ul style="list-style-type: none"> press CALL to try the call again using LBT <i>hold</i> CALL to try the call again without LBT (send the call regardless of any detected traffic) press Q to select a new channel, then press CALL to make a call on this channel using LBT <i>hold</i> Q to select a new channel and try the call on this channel without LBT (send the call regardless of any detected traffic)

NOTE To abort the call before a connection to the other station is made, press PTT.

- To complete the call, use the information in the following table.

If you are making a...	Do this...
Channel Test call	<ul style="list-style-type: none"> listen for the revertive signal <p>NOTE The call is ended automatically but can be aborted by pressing PTT or SCAN.</p>
Emergency call Selective call	<p>In an ALE/CALM network:</p> <ul style="list-style-type: none"> wait until a message informs you that the call has been successful <i>hold down</i> PTT then speak, releasing PTT when you have finished speaking press SCAN to end the call and resume scanning <p>In a Codan Selcall or Open Selcall network:</p> <ul style="list-style-type: none"> wait until a message informs you that the call has been sent and listen for audible beeps transmitted from the other station <i>hold down</i> PTT then speak, releasing PTT when you have finished speaking press SCAN to end the call and resume scanning
Get Position call Get Status call Send Position call	<ul style="list-style-type: none"> wait until a message informs you that the call has been completed <p>NOTE The call is ended automatically but can be aborted by pressing PTT or SCAN.</p>
Marine Emgcy call	<ul style="list-style-type: none"> wait until you hear a reply <i>hold down</i> PTT then speak, releasing PTT when you have finished speaking press SCAN to resume scanning <p>NOTE The call is ended automatically but can be aborted by pressing PTT or SCAN.</p>

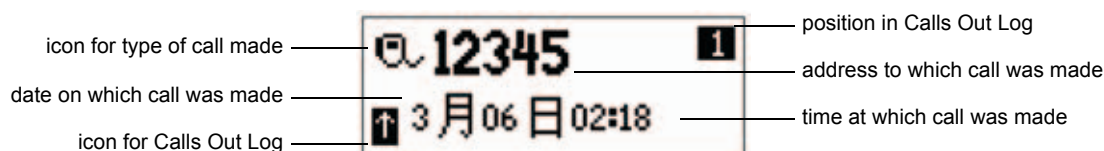
If you are making a...	Do this...
Phone call	<ul style="list-style-type: none"> • wait until you hear a reply from the person you called • <i>hold down</i> PTT then speak, releasing PTT when you have finished speaking • press SCAN to end the call <p>In an ALE/CALM network: The transceiver resumes scanning.</p> <p>In a Codan Selcall or Open Selcall network: The transceiver prompts you to send a hangup signal.</p> <ul style="list-style-type: none"> • to send a hangup signal, press ✓ • if the other party has sent a hangup signal via the phone line, press ✕ <p>The transceiver resumes scanning.</p>

The Calls Out Log

When you make a call, an entry for the call is created in the Calls Out Log. The entry lists:

- the type of call that was made
- the address to which the call was made
- the message or position that was sent if the call was a Get Status or Send Position call
- the time at which the call was made
- the self address from which the call was made
- the network in which the call was made
- the channel/mode on which the call was made
- the phone link that was used, if the call was a Phone call

Figure 25: The Calls Out Log showing a Selective call made



If you make a Get Status or Send Position call, the information sent is displayed instead of the date and time.

Up to 20 calls can be stored at one time and you can repeat any of these calls directly from the log (see [page 180, Repeating a call from the Calls Out Log](#)).

The calls are listed in the order in which they were made with the most recent call at the top of the list. If you make two or more calls with the same call type and address (and message or GPS position, if applicable), only the most recent call is kept in the log.

If you make a Get Position or Get Status call, an entry for the call is created in the Calls Out Log, and the information that is sent to you by the other station is stored in an entry for the call in the Calls In Log (see [page 183, The Calls In Log](#)).

Displaying an entry in the Calls Out Log

To display an entry in the Calls Out Log:

- ☐ Press **CALL LOGS** to open the Calls Out Log.

The details of the last call sent are displayed.



- ☐ Scroll through the entries.
- ☐ To display more information about an entry, press ✓.
- ☐ Scroll through the settings.
- ☐ Press ✕ to return to the entry.
- ☐ Press ✕ to close the Calls Out Log and return to the screen from which you began.

Repeating a call from the Calls Out Log

To repeat a call from the Calls Out Log:

- ☐ Press **CALL LOGS** to open the Calls Out Log.
- ☐ Scroll to the call you want to repeat.
- ☐ Either:
 - press **CALL** to automatically repeat the call, or
 - *hold* **CALL** to review all details and/or select new ones

Deleting an entry from the Calls Out Log

To delete an entry from the Calls Out Log:

- ☐ Press **CALL LOGS** to open the Calls Out Log.
The details of the last call sent are displayed.
- ☐ Scroll to the entry you want to delete.
- ☐ *Hold* ℹ to open the List Manager.
- ☐ Scroll to **Delete entry**, then press ✓.
The transceiver asks you to confirm that you want to delete the entry.
- ☐ Press ✓.
The entry is deleted and the List Manager remains open.
- ☐ Press ✕ repeatedly to return to the screen from which you began.

Receiving a call

There are two ways you can receive a call. You can listen to a channel and respond when you hear a voice, or you can wait until an alert tone notifies you of a call addressed to your station. This section covers receiving calls addressed to your station.

When you receive a call addressed to your station, the transceiver sounds an audible alert tone, displays an incoming call screen, if permitted, and creates an entry in the Calls In Log.

NOTE These events do not occur when you receive a Channel Test, Get Position, or Get Status call as the transceiver automatically responds to these calls.

The call alert

The call alert varies according to the type of call received. For Phone, Selective and Send Position calls it continues for about 10 seconds, then changes to a series of pips until you press a key. For Emergency calls it continues for 5 minutes then changes to a series of pips.

Table 25: Call types and alert tones

Call type	Alert tone sounds like...
Emergency	heehaw, heehaw, heehaw
Phone	a telephone ringing
Selective	a telephone ringing
Send Position	pip, pip, pip, pip, pip
<i>Group calls:</i> Emergency calls	heehaw, heehaw, heehaw
all other calls	beep, beep, beep, beep, beep, beep

NOTE If you want to switch off the audible alert tone when a call is received, set the Cfg Alert Tones entry in the Control List to **Disabled** (see [page 129, Logging into admin level from user level](#) and [page 186, Entries in the Control List](#)).

The incoming call screen

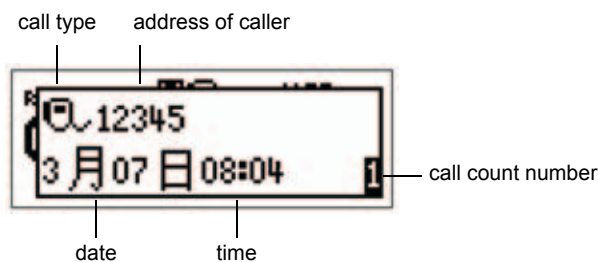
The incoming call screen displays:

- the type of call being received
- the address of the station making the call
- the date and time at which the call was received
- the GPS position or status information, if sent
- the call count number

NOTE If you want to switch off the audible alert tone when a message is received, set the Cfg Alert Tones entry in the Control List to **Disabled** (see [page 129, Logging into admin level from user level](#) and [page 186, Entries in the Control List](#)).

NOTE If you want to prevent a message being displayed when it is received, set the Cfg Incoming Msg entry in the Control List to **Just log** (see [page 129, Logging into admin level from user level](#) and [page 186, Entries in the Control List](#)).

Figure 26: An incoming call screen for a Selective call



If you receive one or more calls while the transceiver is unattended, the incoming call screen displays the details of the most recent call. The call count number at the bottom right of the screen indicates the number of calls received since the first call (see [Figure 26](#)).

To remove the incoming call screen:

- ☐ Press **X**.

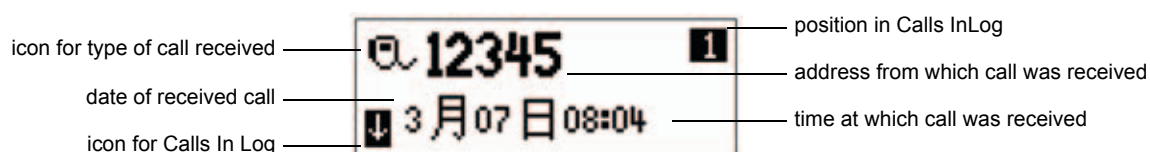
The Calls In Log

When you receive a call, an entry is created in the Calls In Log. The entry lists:

- the type of call received and the address of the caller
- the GPS position or status information received if the call was a Get Position, or Get Status call
- the time at which the call was received
- the self address to which the call was sent
- the network in which the call was received
- the channel/mode on which the call was received
- the phone link that was used, if the call was a Phone call

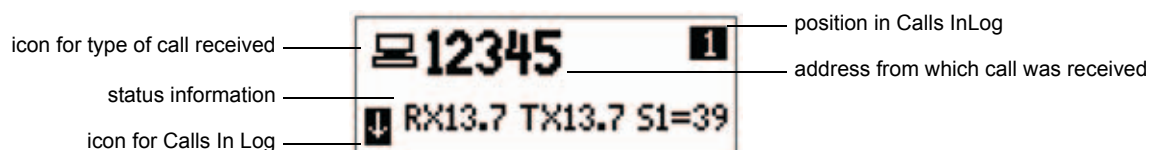
NOTE Entries are not created for Channel Test, Get Position, and Get Status calls.

Figure 27: The Calls In Log showing a Selective call received



If you receive a Send Position call, or you have made a Get Position or Get Status call, the information received is displayed instead of the date and time.

Figure 28: The Calls In Log showing a Get Status call received



Up to 20 calls can be stored at a time and you can return any of these calls directly from the log (see [page 184, Returning a call from the Calls In Log](#)).

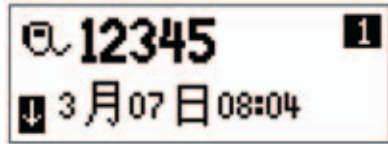
The calls are listed in the order in which they were received with the most recent call at the top of the list. If you receive two or more calls with the same call type and address (and message or GPS position, if applicable), only the most recent call is kept in the log.

Displaying an entry in the Calls In Log

To display an entry in the Calls In Log:

- ☐ Press **CALL LOGS** twice to open the Calls In Log.

The details of the last call received are displayed.



- ☐ Scroll through the entries.
- ☐ To display more information about an entry, press **✓**.
- ☐ Scroll through the settings.
- ☐ Press **✗** to return to the entry.
- ☐ Press **✗** to close the Calls In Log and return to the screen from which you began.

Returning a call from the Calls In Log

To return a call from the Calls In Log:

- ☐ Press **CALL LOGS** twice to open the Calls In Log.
- ☐ Scroll to the call you want to return.
- ☐ Either:
 - press **CALL** to use as many details from this call as possible, or
 - *hold* **CALL** to review all details and/or select new ones

Deleting an entry from the Calls In Log

To delete an entry from the Calls In Log:

- ☐ Press **CALL LOGS** twice to open the Calls In Log.
The details of the last call received are displayed.
- ☐ Scroll to the entry you want to delete.
- ☐ *Hold* **☎** to open the List Manager.
- ☐ Scroll to **Delete entry**, then press **✓**.
The transceiver asks you to confirm that you want to delete the entry.
- ☐ Press **✓**.
The entry is deleted and the List Manager remains open.
- ☐ Press **✗** repeatedly to return to the screen from which you began.

13 The Control List

This section contains the following topics:

[Entries in the Control List \(186\)](#)

[ALE entries \(196\)](#)

[Auto Resume entries \(202\)](#)

[Devices entry \(203\)](#)

[GPS Screen entry \(209\)](#)

[Welcome text \(212\)](#)

Entries in the Control List

The entries in the Control List enable you to customise the transceiver and control the way it operates. The entries vary according to the options installed in the transceiver. [Table 26](#) provides a complete list of the entries in the Control List that can be changed at user and admin level. Some of the entries are covered in more detail in the sections after the table.

- NOTE** The Control List is admin hidden, by default. You will only be able to access the Control List to view and/or change entries by logging into admin level (see [page 129, Logging into admin level from user level](#)). If the user needs to access any entries in the Control List, the administrator should set up hot keys to these entries (see [page 227, Creating a macro and assigning it to a hot key](#)).
- CAUTION** Some entries in the Control List alter the configuration of the transceiver, for example, RS232 Mode. If your transceiver does not respond as expected after an entry in the Control List has been altered, switch the transceiver off then on again.

Table 26: Entries in the Control List

Name of entry	Use this entry to...	Default
Address	Program up to 5 self addresses for your station and specify the network or networks in which you want to use them. For more information on self addresses see page 90, Entering your station self address .	
ALE Accept ALL Call	Set whether or not your transceiver will accept ALL calls that it detects. For more information see page 196, ALE Accept ALL Call .	Enabled
ALE BER	Increase or decrease the value of the BER threshold used in BER testing. For more information see page 196, ALE BER .	12 errors
ALE Call Scan	Set whether or not your transceiver will scan channels for incoming calls between a call attempt on each channel. If you want the transceiver to: <ul style="list-style-type: none"> only scan the channels in the network through which the outgoing call is being made, select Outgoing network scan all the channels in the networks that are set to be scanned, select Scanned networks make outgoing calls without any scanning cycles between call attempts, select Disabled For more information see page 197, ALE Call Scan .	Disabled
ALE Call Scan Cycles	Set the number of scan cycles that the transceiver performs between call attempts when the ALE Call Scan entry is set to Outgoing network or Scanned networks .	1
ALE Call Threshold	Set the minimum score for a channel to be tried in ALE calls. For more information see page 197, ALE Call Threshold .	0%

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
ALE Call Weighting	Weight the LQA scoring of ALE channels for data or voice. For more information see page 198, ALE Call Weighting .	Mostly voice
ALE Golay	Set the value of the Golay threshold used in Golay testing. For more information see page 198, ALE Golay .	2
ALE Hangup ALL Call	Set whether or not the initiator of an ALL call can hang up the call to all linked stations. For more information see page 198, ALE Hangup ALL Call .	Enabled
ALE Hangup Phone Call	Set whether or not a member of an ALE link to an automated telephone interconnect unit sends a link termination sequence when SCAN is pressed. For more information see page 198, ALE Hangup Phone Call .	Enabled
ALE Hangup Voice Call	Set whether or not a member of an ALE link sends a link termination sequence when SCAN is pressed. For more information see page 199, ALE Hangup Voice Call .	Enabled
ALE LQA Average	Select the way that LQA information will be used when recording signal quality. For more information see page 199, ALE LQA Average .	Both
ALE LQA Clear	Clear the LQA information in the transceiver. For more information see page 199, ALE LQA Clear .	
ALE LQA Decay	Set the length of time it takes for LQA information to artificially decay, or switch this feature off. For more information see page 200, ALE LQA Decay .	15 days
ALE LQA Exchange	Exchange LQA information with stations during each call so that the link quality can be assessed in both directions. For more information see page 200, ALE LQA Exchange .	On
ALE LQA Mapping	Set the mapping of LQA information according to its frequency. For more information see page 200, ALE LQA Mapping .	Frequency
ALE Retries	Set the number of times the transceiver retries a channel when attempting to establish an ALE link before trying the next best channel in the network. For more information see page 201, ALE Retries .	1
ALE Silent Mode	Prevent automatic ALE transmissions from the RF unit. For more information see page 201, ALE Silent Mode .	Off
ALE Site Mgr	Collect information on unknown ALE transceivers in the network. For more information see page 201, ALE Site Mgr .	Off
Audio Volume	Set the audio volume of the transceiver.	8
Auto Resume Listen	Set the scan method used when scanning is switched on by the Auto Resume Mode entry. For more information see page 202, Auto Resume entries .	Leave as is

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Auto Resume Mode	Set the action performed when the Auto Resume Time ends. For more information see page 202, Auto Resume entries .	Start scan
Auto Resume Time	Set the length of time after scanning stops that the transceiver performs the action set in the Auto Resume Mode entry. For more information see page 202, Auto Resume entries .	2 minutes
Cfg Alert Tones	<p>Set whether or not the transceiver will give an alert tone (beep or ring) when it receives a message or a call. If you want the transceiver to:</p> <ul style="list-style-type: none"> provide a local alert tone <i>and</i> external alarm, if connected, when it receives a message or a non-message call, select Normal provide a local alert tone <i>and</i> an external alarm, if connected, when it receives a non-message call only, select Messages skip ext alarm provide a local alert tone only when it receives a non-message call, select Messages don't ring provide no alert tones or external alarms, if connected, when it receives any type of call, select Disabled 	Normal
Cfg Auto Tune Mode	<p>Set the Auto Tune Mode to suit the antenna. If you have:</p> <ul style="list-style-type: none"> a broadband antenna or an antenna that does not require a tuning cycle, select None an antenna that uses a Codan antenna tuning interface (for example, 9350, 4203, 8558), select Codan interface an antenna that does not conform to Codan's antenna tuning interface but provides automatic tuning capability (for example, 9103), select SWR measurement a high-power amplifier with a broadband antenna or an antenna that does not require a tuning cycle, select Amplifier only a high-power amplifier with a tuner that does not conform to Codan's antenna tuning interface but provides automatic tuning capability, select Amplifier with tuner 	Codan interface
Cfg Call Status Time	Set the maximum length of time a receiving station has to respond to a Get Status call with the information you requested.	5 seconds
Cfg Chain Call Pause	Set the length of time the transceiver pauses between chained calls, for example, during an Emergency call.	10 seconds

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Cfg Channel Scroll	<p>Set the direction in which the ▶ key scrolls in the Channel List, that is, to the next channel or the previous channel.</p> <p>By default, pressing ▶ scrolls to the next highest number/next alphabetically sorted name in the Channel List, that is, 1-2-3-4 or Chan A-Chan B-Chan C-Chan D.</p> <p>If you want the ▶ key to scroll in the opposite direction, as it does in other lists in the transceiver, select Go to prev chan.</p>	Go to next chan
Cfg Def Scrn Layout	<p>Set the default screen layout for the Main Menu, logs and lists. If you want the active line to:</p> <ul style="list-style-type: none"> display a small font over three lines, select 3 line display a large font over two lines everywhere, select 2 line/All Big display a large font over two lines in all screens except messages, status lines and pop-ups, select 2 line/Big display a small font over two lines, select 2 line 	3 line
Cfg Easitalk	Select a noise reduction algorithm.	Cepstral
Cfg Fast AGC	Switch fast automatic gain control on or off.	Disabled
Cfg In Call Timeout	Set the length of time from the last key press on the handset after which incoming calls on the handset will be hung up.	30 seconds
Cfg Incoming Msg	<p>Set whether or not the transceiver will display a message to the operator when it is received. If you want to:</p> <ul style="list-style-type: none"> display messages and log them in the Calls In Log, select Show and log prevent messages from being displayed, but still log them in the Calls In Log, select Just log 	Show and log
Cfg Language	Select the language for the user interface.	Chinese
Cfg LBT Mode	<p>Set whether or not the transceiver will listen for calls and traffic on a channel before initiating a call. If you want to:</p> <ul style="list-style-type: none"> use LBT for every call, select Enabled use LBT, with the option to override for every call, select Override allowed disable LBT for all calls, select Disabled <p>For more information on listening before transmitting see page 171, Listen Before Transmit Mode.</p>	Override allowed
Cfg LBT Period	Set the length of time that the transceiver will listen for calls and traffic on a channel before initiating a call.	2 seconds

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Cfg Power Preference	Set the power preference to suit the power transmission level for your station. If you want to: <ul style="list-style-type: none"> transmit with high power, select High transmit with low power, select Low 	
Cfg PTT Beeps	Transmit astrotones when the PTT button is released during a call. This saves your having to say 'over' each time you release PTT.	On
Cfg PTT Cutout Time	Set the length of time after PTT is held down for the transceiver to cease transmission and switch to receive. This ensures that, even if PTT is 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 also use this entry to switch this feature off.	10 minutes
Cfg Respond GPS	<p>Set the way in which the transceiver handles its response to a Get Position call sent through an ALE/CALM, Codan Selcall, or Open Selcall network. If you want to:</p> <ul style="list-style-type: none"> respond to a Get Position call regardless of the Privacy Mode of the network through which the call was made, select Always respond respond in a proprietary Codan-encoded format to a Get Position call on a network with the Privacy Mode set to Registered, Group or None, select To Codan requests respond to a Get Position call from another Codan transceiver on a network with the Privacy Mode set to Group and a common Privacy Key, select To encrypted requests disable your response to any Get Position call, select Never respond <p>NOTE The setting To Codan requests specifically excludes calls made using an Open Selcall network.</p> <p>NOTE You are still able to make Send Position calls if this entry is set to Never respond.</p> <p>NOTE To respond to Get Position calls made in an Open Selcall network, the Cfg Respond GPS setting must be set to Always respond.</p>	Always respond

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Cfg Respond OTA	<p>Set the way in which the transceiver handles its response to an OTA command sent through an ALE/CALM or Codan Selcall network. If you want to:</p> <ul style="list-style-type: none"> respond to an OTA command regardless of the Privacy Mode of the network through which the call was made, select Always respond respond in a proprietary Codan-encoded format to an OTA command on a network with the Privacy Mode set to Registered, Group or None, select To Codan requests respond to an OTA command from another Codan transceiver on a network with the Privacy Mode set to Group and a common Privacy Key, select To encrypted requests disable your response to any OTA command, select Never respond <p>For more information on OTA commands contact your Codan representative.</p> <p>NOTE The setting To Codan requests specifically excludes calls made using an Open Selcall network.</p> <p>NOTE To respond to Get Status calls made in an Open Selcall network, the Cfg Respond OTA setting must be set to Always respond.</p>	To Codan requests
Cfg RF Pre-Amp	Switch the RF pre-amplifier on or off. To increase the receive sensitivity of the RF unit, select On . To reduce it, select Off .	On
Cfg Scan Voice Extend	Set the period of time that the transceiver holds the scan when voice is detected. The transceiver will continue to extend by this amount each time voice is detected on the channel, up to the maximum hold period set in the Cfg Scan Voice Max Hold entry. If you do not want the transceiver to hold the scan after voice is detected, set this entry to Disabled .	5 seconds
Cfg Scan Voice Max Hold	Set the maximum length of time that the transceiver pauses on a channel after voice has been detected. This entry overrides the extend function in the Cfg Scan Voice Extend entry.	5 seconds
Cfg Tx Power	<p>Set the maximum transmit power for the transceiver. If you are using the transceiver:</p> <ul style="list-style-type: none"> in a fixed or vehicular mobile situation, select Maximum in a portable transceiver situation, select 50 W 	Maximum
Clarifier	<p>Improve the quality of received voice by adjusting the frequency of the currently selected channel/mode to exactly match that of the received signal.</p> <p>You can also display the Clarifier screen by pressing CLAR.</p>	
Customer Device	Display the Codan type number of the device.	2011

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Customer Name	Display the ISO (sales order number) customer name.	
Customer Profile	Display the ISO customer profile.	
Customer Radio	Display the ISO transceiver type.	CR
Customer Reference	Display the ISO customer reference.	
Devices	<p>Do the following:</p> <ul style="list-style-type: none"> • display the serial number • enter option codes • display the firmware version • display the product name • rename the transceiver • gain access to the lists <p>For more information see page 203, <i>Devices entry</i>.</p>	
Easitalk	<p>Switch Easitalk on or off.</p> <p>You can also toggle Easitalk by pressing EASITALK.</p>	On
Free Tune	Use the transceiver to tune to any frequency between 250 kHz and 30 MHz.	
GPS Error Time	<p>Set the time the transceiver waits to receive updated GPS information before it displays an error message. The GPS Error Time entry is only active when the RS232 Mode is set to GPS.</p> <p>NOTE You cannot make Send Position calls until the transceiver receives valid GPS information. If you send an Emergency call before valid GPS information is received, the message No GPS data available is sent with the call. If you receive a Get Position call, the same message is sent to the caller.</p> <p>When valid GPS data is received, a message is displayed on the handset to inform you of this.</p>	10 minutes
GPS Screen	Display information about your GPS position. For more information see page 209, <i>GPS Screen entry</i> .	
Help Mode	<p>Switch Help Mode on or off. When Help Mode is switched on, the the handset screen displays a detailed description of the screen you are on. When Help Mode is switched off, the top line displays the standard description for the screen.</p> <p>You can also toggle Help Mode by pressing HELP.</p>	Off

Table 26: Entries in the Control List (cont.)





Name of entry	Use this entry to...	Default
Key Beep	Switch valid key beeps on or off. When you press a key that is appropriate for the task you are performing, the transceiver makes a valid beep. When you press an inappropriate key, the transceiver makes an error beep. The Key Beep entry enables you to switch valid key beeps on or off. You cannot switch off error beeps.	On
Key Hold Time	Set the length of time that a key must be held down for a <i>hold</i> action.	0.5 seconds
Key Repeat Rate	Set the speed with which the  ,  ,  and  keys repeat when they are held down.	0.2 seconds
Key Scroll Speed	Set the speed with which the characters on a key scroll when the key is held down.	1 second
Key Timeout	Set the time the transceiver waits between two presses of the same key to display the next character on the key. When this time elapses, the transceiver inserts the character displayed and moves the cursor to the next space.	1 second
Macro Pause	Set the pause time of macros that have been set to operate Before pause or After pause . The macro pause time is also the time that each step in a macro is displayed when the Macro Single Step entry is switched on. For more information on macros and hot keys see page 223, Hot keys .	3 seconds
Macro Single Step	Switch single-stepping through macros on or off. This enables you to debug macros by running them a step at a time. For more information on macros and hot keys see page 223, Hot keys .	Off
Manual Tune	Manually tune the antenna. You can also display the Manual Tune screen by pressing TUNE .	
Messages	Store up to 10 messages for use in Get Status calls.	
Mode	Change the mode used with the currently selected channel. You can also change the mode by pressing MODE . For more information on modes see page 215, The Mode List .	
Mute	Switch mute on or off. You can also toggle the mute on and off by pressing MUTE .	

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Mute Scan	<p>Set the type of mute selected when scanning starts. If you want mute to open when:</p> <ul style="list-style-type: none"> a selective call to your station is detected, or when voice is detected during scanning of channels in a voice network, select Selcall voice is detected on a channel in a voice network, select Voice voice is detected on a channel in any type of network, select Scan for Voice <p>NOTE Scan for Voice slows the scanning rate across all networks and automatically reverts to Voice when scanning stops.</p> <p>NOTE You can toggle the current mute type, to prevent mute opening on detected voice, by pressing V/S. This does not change the stored setting.</p>	Voice
Password Admin	Store a numeric password (up to 10 digits) for administrator access to the transceiver.	
Password User	Store a numeric password (up to 6 digits) for user access to the transceiver.	
Power Off	Switch off the transceiver.	
RS232 Mode	<p>Set the mode in which the RS232 4-way serial port operates. If the port is:</p> <ul style="list-style-type: none"> not in use, select None receiving GPS information from an external GPS receiver, select GPS 	GPS
RS232 Speed	Set the baud rate of the RS232 4-way serial port.	4800
Scan	Switch scanning on or off.	
Scan Allow	Enable or disable scanning.	Yes
Screen Auto-Dim	Set the time the transceiver waits after a key has been pressed before switching off the backlighting on the handset screen. The backlighting is automatically switched on again when a key is pressed.	5 minutes
Screen Brightness	Set the brightness of the screen.	
Screen Contrast	Set the contrast of the screen.	
Screen Scroll Rate	Set the speed with which characters on the screen scroll when the line length exceeds the screen width.	0.8 seconds
Screen Scroll Step	Set the number of characters on the screen that scroll as a block when the line length exceeds the screen width.	1
Secure Index	Select the Corporate key.	

Table 26: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Secure Key	Set the Corporate key for a particular index.	
Secure Mode	Set the default operating mode of the voice encryptor when you press SEC . If you want to: <ul style="list-style-type: none"> use a base key for encryption that is common to all Codan CES encryptors, select Global use a key for encryption that you enter as a Secure Key, select Corporate 	Global
Time Local	Set the local date and time. For more information see page 88, <i>Setting the time and date</i> .	
Time Screen	Display the current date and time. For more information see page 88, <i>Setting the time and date</i> .	
Time Zone Offset	Set the difference between the time displayed on the date/time screen and UTC. For more information see page 88, <i>Setting the time zone offset</i> .	0 hours
Update Main Menu	Refresh lists in the Main Menu.	
Welcome Screen	Display the welcome screen. This screen is briefly displayed when the transceiver is switched on.	
Welcome Text	Store up to three lines of text to be displayed on the welcome screen. If all three lines of text are blank, the welcome screen is not displayed when the transceiver is switched on. If you want to display a self address following power on, or set the transceiver to beep when it enters this screen, you can enter a keyword into the welcome text (see page 212, <i>Welcome text</i>).	

ALE entries

- NOTE** You must have the FED-STD-1045 ALE/CALM option installed to use the ALE entries in the Control List.
- NOTE** In the following discussion, you must log in as administrator to see the Control List (see [page 129, *Logging into admin level from user level*](#)).
- CAUTION** Do not attempt to change the ALE settings in the Control List unless you are familiar with ALE operation. For more information on ALE, refer to FED-STD-1045 ALE.
- The initial values that are set in your transceiver by Codan should provide good performance.

ALE Accept ALL Call

ALL calls are not addressed to a specific station. If your station detects a call with a global ALL address syntax, it will enter the linked state and alert the operator. If you do not want to receive global ALL calls, disable this feature.

ALE BER

ALE control information is sent and received in blocks of data called ALE words. Each word is sent three times to reduce the effects of fading, interference and noise. When the words are decoded, the transceiver records the number of errors that occurred in the transmission.

The number of errors indicates the quality of the channel used. A bit error rate of 0 indicates perfect reception. A bit error rate of 48 indicates that all bits of the ALE word were bad.

The ALE BER entry enables you to specify the number of errors you will tolerate in this test, which indicates the quality of the channels on which you are prepared to accept calls. Also see [page 198, *ALE Golay*](#).

CAUTION It is recommended that this entry is not altered from the factory setting.

ALE Call Scan

The ALE Call Scan entry enables you to set whether or not your transceiver will perform a scan cycle between call attempts. When this entry is set to **Disabled**, the normal ALE calling sequence is used, that is, the transceiver attempts a call on the first channel in accordance with its settings for LBT and number of retries, then tries the next channel, and so on until the call is successful. The transceiver may miss incoming calls during this outgoing call activity. When the ALE Call Scan entry is set to **Outgoing network**, the transceiver performs a scan cycle between call attempts, scanning the channels in the network through which the call is being made. When the ALE Call Scan entry is set to **Scanned networks**, the transceiver performs a scan cycle between call attempts, scanning the channels in all the networks in the transceiver that are set to be scanned. Following the scan cycle, the transceiver checks if the channel for the call attempt is unoccupied, and if so, attempts the call. If the call is not successful, the transceiver performs another scan cycle, then either retries the same channel (depending on the setting in ALE Retries), or moves to the next channel.

ALE Call Scan Cycles

The ALE Call Scan Cycles entry sets the number of times the transceiver cycles through scanning the channels in the selected network(s) between call attempts.

ALE Call Threshold

When the quality of a channel is tested it is given an LQA score. This score is based on the results of local and remote measurements for BER and SINAD, and on the call weighting value set in the ALE Call Weighting entry.

NOTE If the ALE LQA Exchange entry is set to **Off**, remote measurements are not used.

Generally, a score of 25% indicates the minimum acceptable standard for voice communication. A score of 50% or higher indicates a good channel. The ALE Call Threshold entry enables you to set:

- the minimum score a channel must achieve for it to be tried in ALE calls
- the minimum acceptable standard for the channel at the time when a link is being established

NOTE The transceiver will attempt to make calls on channels for which there is no score, but only after channels with a score above the threshold have been tried.

ALE Call Weighting

When the quality of a channel is tested it is given an LQA score. The ALE Call Weighting entry enables you to weight the scoring process according to the use of the transceiver. For example, if the transceiver is used to make voice calls, you would select **Mostly voice**. When **Lowest acceptable** is selected, the transceiver attempts a call on the channel with the lowest frequency (with an LQA score above the set threshold), then attempts the channel with the next higher frequency and LQA score etc, until a link is established. In some situations where propagation distances may be less than a few hundred kilometres, weighting the LQA scores in this way increases their effectiveness.

ALE Golay

ALE control information is sent and received in blocks of data called ALE words. After a word is received, BER tested and accepted, the transceiver performs a Golay test to check it for errors, and correct it if necessary.

The number of error bits per word indicates the quality of the channel used to transmit the word. Golay testing can detect and correct up to three error bits per ALE word. It can also detect four error bits, but is not guaranteed to correct all four. Note that excessive errors can sometimes create false readings.

The ALE Golay entry enables you to specify the number of errors you will tolerate and correct in this test, which indicates the quality of the channels on which you are prepared to accept calls. Also see [page 196](#), *ALE BER*.

CAUTION It is recommended that this entry is not altered from the factory setting.

ALE Hangup ALL Call

During an ALL call, a link is established implicitly without the receiving stations responding to the initiating station. When the ALE Hangup ALL Call entry is set to **Enabled**, the initiating station sends a link termination sequence when **SCAN** is pressed. All stations that entered the link hang up the link and return to scanning when they receive this sequence.

ALE Hangup Phone Call

During any ALE Phone call, a link is established between the initiating station and the station with an automated telephone interconnect unit, for example, the RTU-292. When the ALE Hangup Phone Call entry is set to **Enabled**, all stations receive a link termination sequence when **SCAN** is pressed at one of the stations. All stations that entered the link hang up the link and return to scanning when they receive this sequence. This setting may be required in ALE/CALM networks with an automatic interconnect unit. If the ALE Hangup Phone Call entry is set to **Disabled**, a link termination sequence is not sent when **SCAN** is pressed at any of the stations in the link. In this case, a hangup sequence must be sent separately to the telephone interconnect unit to clear the telephone line, or it will hangup after a timeout period is exceeded.

ALE Hangup Voice Call

During any ALE call, a link is established between the initiating and receiving stations. When the ALE Hangup Voice Call entry is set to **Enabled**, all stations receive a link termination sequence when **SCAN** is pressed by one of the stations. All stations that entered the link hang up the link and return to scanning when they receive this sequence. If the ALE Hangup Voice Call entry is set to **Disabled**, a link termination sequence is not sent when **SCAN** is pressed at a station. In this case, only this station ends its link.

ALE LQA Average

When the transceiver periodically tests the quality of the channels in your network, it stores the results for future use. The transceiver uses an averaging method to reduce the effect that the new reading may have on the current channel values.

The ALE LQA Average entry enables you to select the averaging method used. If you want to:

- disable the averaging feature and replace the old results with the new results, select **New**
- retain 75% of the old results and 25% of the new, select **Mainly old**
- retain 87.5% of the old results and 12.5% of the new, select **Old**
- replace the old results with the average of the old and new results, select **Both**

ALE LQA Clear

The ALE LQA Clear entry clears the LQA information in the transceiver. If a large amount of information is stored this may take a few minutes. If a significant change has occurred to the transceiver, the ALE LQA information will adapt more rapidly to the new environment if the information is cleared.

ALE LQA Decay

When your transceiver periodically records the quality of the channels in your network, it stores the results for future use. Several factors can affect the accuracy of these results including:

- an insufficient number of ALE sounding transmissions being made in your network
- an insufficient number of ALE calls being made (which prevents the transceiver from exchanging channel quality information with other transceivers)
- stations moving their location
- antenna loading, nearby physical structures, and local noise for stations mounted in vehicles

These factors can lead to the deterioration of good channels going unnoticed. To avoid this, use the ALE LQA Decay entry to artificially decay channel quality information over time. This forces the transceiver to continually work against the artificial decay to maintain an accurate picture of channel quality that does not overestimate actual conditions.

For mobile stations the recommended decay period is 1–4 days. For base stations the recommended decay period is 15–30 days.

If you do not want to use this feature, select **Disabled**.

ALE LQA Exchange

If you want the transceiver to send and receive LQA information to and from other stations during calls, set the ALE LQA Exchange entry to **On**.

If the ALE LQA Exchange entry in your transceiver is set to **Off**, it will not request LQA information from other stations. Your transceiver will receive any LQA information sent from the other station.

NOTE When the ALE LQA Exchange entry is set to **On**, it increases the length of time it takes to establish a call by approximately 4 seconds for every 10 channels on which the call is tried.

NOTE Exchange of LQA information may affect interoperability with non-Codan transceivers. If interoperability is affected, switch off ALE LQA Exchange.

ALE LQA Mapping

The ALE LQA Mapping entry determines the method by which the LQA information is stored within the transceiver, that is, according to frequency or channel name.

ALE Retries

When you make a call in an ALE/CALM network, the transceiver attempts to establish an ALE link with the other station on the best available channel. If you want the transceiver to retry each channel before trying the next best channel in the network, set the number of retries you want in the ALE Retries entry. The transceiver can retry channels up to five times. If you do not want the transceiver to retry channels, set the ALE Retries entry to zero.

ALE Silent Mode

The ALE Silent Mode entry disables automatic ALE transmissions from the transceiver. When ALE Silent Mode is set to **On**, you can send ALE calls but not receive them, and the transceiver receives sounding signals but does not send them. When ALE Silent Mode is set to **Off**, the transceiver operates as a normal ALE station.

ALE Site Mgr

The ALE Site Mgr entry enables the transceiver to collect information on other transceivers with which it communicates. Each time your transceiver detects an unknown station address it requests:

- the ESN of the transceiver
- any other station self addresses stored in that transceiver
- the tuning time of the transceiver's antenna

It requests this information up to three times, and only NGT Transceivers in which the FED-STD-1045 ALE/CALM option is installed can respond.

NOTE If your network consists of only a few NGT Transceivers with the FED-STD-1045 ALE/CALM option installed and many other transceivers, you may want to set the ALE Site Mgr entry to **Off** to reduce network traffic.

The information collected enables your transceiver to optimise calls to the other transceiver (by adjusting the time taken to wait for the antenna to tune) and to minimise soundings.

Auto Resume entries

NOTE In the following discussion, you must log in as administrator to see the Control List (see [page 129, *Logging into admin level from user level*](#)).

The auto resume entries—Auto Resume Time, Auto Resume Mode and Auto Resume Listen—enable you to set the transceiver to automatically begin a task when scanning is switched off and there has been no PTT, channel change, scan on/off, mute on/off, or call sending activity for a certain length of time.

Use the Auto Resume Time entry to specify the time you want the transceiver to wait, since the last key was pressed, before it begins the task. You can select from 1–20 minutes.

Use the Auto Resume Mode entry to specify the task that is performed after the time period. If you:

- want the transceiver to start scanning, select **Start scan**
- want the transceiver to close the link to end any call in progress and, if it was scanning prior to the call, resume scanning, select **Close link**
- do not want the transceiver to resume scanning, select **Off**

If you select **Start scan** as the value in the Auto Resume Mode entry, use the Auto Resume Listen entry to specify the scan method you want to use. If you want the transceiver to:

- scan according to the value set in the Mute Scan entry, select **Leave as is**
- scan for voice and calls addressed to your station, select **Voice and calls**
- scan only for calls addressed to your station, select **Calls only**

NOTE If the scan method is altered by the user, the transceiver returns to the scan method specified in the Auto Resume Listen entry following the time that is specified in the Auto Resume Time entry.

Devices entry

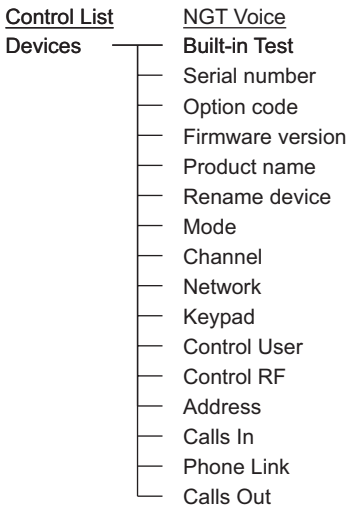
NOTE In the following discussion, you must log in as administrator to see the Control List (see [page 129, Logging into admin level from user level](#)).

The Devices entry in the Control List enables you to display information specific to the transceiver. You can display the:

- list of built-in tests
- ESN
- version of firmware installed
- product name
- lists stored in the device

You can also use the Devices entry to install new options and to rename the device. [Figure 29](#) shows the type of information that you can display about the device and the lists that are stored in the device.

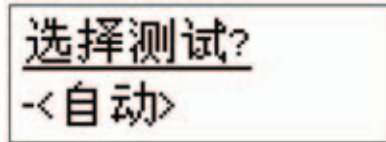
Figure 29: The Devices entry in the Control List



Selecting a built-in test

To select a built-in test:

- ☐ Press **✕** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Devices**, then press **✓**.
- ☐ Scroll to **Built-in Test**, then press **✓**.



The hyphen next to the test name, in this case **<Auto>**, indicates that the test has not been run in this session of testing.

- ☐ Scroll to the test that you want to perform, then press **✓**.

When the test is in progress, the hyphen is replaced by a large dot.

When the test has been completed, the hyphen is replaced by a **✓** or a **✕** to show that the test has passed or failed respectively.

Displaying the electronic serial number of your transceiver

To display the electronic serial number of your transceiver:

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

The ESN for your transceiver is displayed and scrolls across the screen.



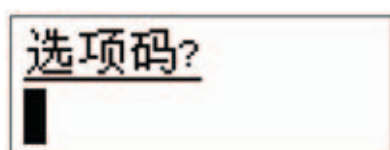
Installing an option in the transceiver

When you purchase an option for your transceiver (such as the FED-STD-1045 ALE/CALM option or GPS option) you receive a 16-character option code. To install the option, you must enter the option code using the Devices entry in the Control List.

To install an option in the transceiver:

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

The option code screen is displayed.



- ☐ Enter the code, then press **✓**.

NOTE The transceiver automatically adds dashes after each four digits.

The option is installed.

NOTE Depending on the option you installed, a message may be displayed that asks you to restart the transceiver.

Displaying the firmware version of your transceiver

If you need to check the firmware version of your transceiver, use the Firmware version setting under the Devices entry in the Control List.

To display the firmware version of your transceiver:

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

The firmware version is displayed.

Displaying the product name of your transceiver

To display the product name of your transceiver:

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

The product name is displayed.

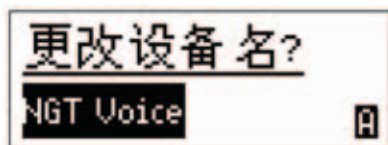
Renaming your transceiver

The transceiver is shipped with a standard name, that is, NGT Voice. If you want to rename the transceiver, use the Rename device setting under the Devices entry in the Control List.

To rename your transceiver:

- ☐ Press **✕** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Devices**, then press **✓**.
- ☐ Scroll to **Rename device**, then *hold* **✓**.

The name of the transceiver is displayed.



- ☐ Enter a new name for the transceiver, then press **✓**.

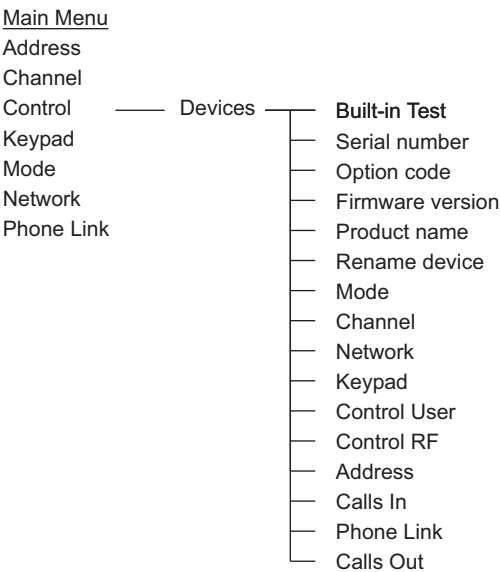
NOTE For help with entering text see [page 72, Entering and editing text](#).

Accessing lists from the Devices entry

NOTE In the following discussion, you must log in as administrator to see the Main Menu and Control List (see [page 129, Logging into admin level from user level](#)).

You can access all the lists through the Main Menu. You can also access them through the Devices entry in the Control List (see [Figure 30](#)).

Figure 30: Lists as they are displayed in the Main Menu and under the Devices entry in the Control List



Displaying a list using the Devices entry

To display a list using the Devices entry in the Control List:

- ☐ Press **✕** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Devices**, then press **✓**.
- ☐ Scroll to the list you want, then press **✓**.

NOTE If the list is not displayed it may be hidden at user or admin level. Switch full view on, and/or log into admin level to display the list (for help see [page 131, Displaying full and normal view](#) and [page 129, Logging into admin level](#)).

You may view and edit entries and settings in the list while it is displayed.

Displaying and editing channels using the Devices entry

When you access the Channel List from the Main Menu, the transceiver selects each channel as you scroll to it. If you access the Channel List through the Devices entry, you can display and edit the channels without stopping channel scanning.

GPS Screen entry

NOTE In the following discussion, you must log in as administrator to see the Main Menu (see [page 129, Logging into admin level from user level](#)).

You can configure the GPS receiver to report in metric or imperial units via the Cfg Units entry in the Control List.

The GPS Screen entry in the Control List enables you to display your current GPS position.

NOTE If the user needs to access the GPS Screen regularly, set up a hot key on the **9** key to display the GPS Screen entry in the Control List (see [page 263, Example 2: displaying an information screen](#)).

NOTE The GPS Screen entry is only displayed if the GPS option is installed in the transceiver.

[Table 27](#) explains the abbreviations for each type of reading you may receive. This information is provided by the GPS receiver. In normal situations, you will only see automatic readings.

The new reading indicator is a number that increments each time a new reading is received. Each increment confirms that your GPS receiver is functioning correctly. The indicator cycles from 1 to 9.

Figure 31: The GPS Screen entry in the Control List

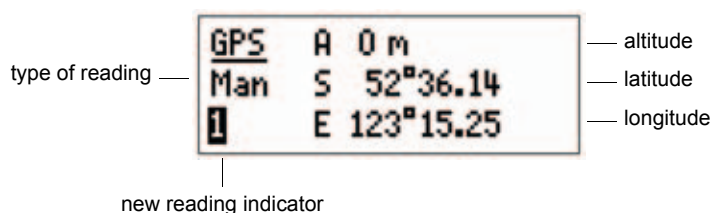


Table 27: Types of readings on the GPS screen

Abbreviation		Description
On GPS screen	In message text	
Aut	A	Automatic reading
Bad	N	Bad reading
Dif	D	Differential reading
Est	E	Estimated reading
Man	M	Manual reading

NOTE For information on GPS readings refer to the documentation provided with your GPS receiver.

Setting up the transceiver

NOTE The NGT CR Transceiver is compatible with NMEA format 0183 V2.00. It accepts and processes the following GPS receiver input sentences: RMC, GLL, and GGA.

NOTE In the following discussion, you must log in as administrator to see the Control List (see [page 129, Logging into admin level from user level](#)).

Before you display the GPS screen, make sure that:

- the GPS receiver has been connected correctly to the 4-way connector on the 2011
- the value in the RS232 Mode entry in the Control List is set to **GPS**
- the baud rate in the RS232 Speed entry in the Control List has been set to the correct rate for the GPS receiver (typically 4800)

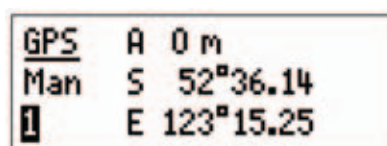
NOTE If you change the mode and/or baud rate in the Control List, switch the transceiver off then on again for the changes to take effect.

Displaying the GPS screen

To display the GPS screen:

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

The GPS screen is displayed. For example:



NOTE If **no data** is displayed on the GPS screen, the transceiver has not received any valid GPS data. Check that the GPS receiver is connected correctly to the transceiver, and that the mode and speed for the corresponding serial port have been set correctly (see [page 210, Setting up the transceiver](#)).

- ☐ Press **✕** to return to the screen from which you began.

Showing distance and bearing

NOTE Automatic distance and bearing calculations only occur when the GPS option is installed in your transceiver.

To show the distance and bearing to a remote transceiver:

- ☐ Go to an Address List or Call Log entry containing a GPS position of the remote transceiver.

The transceiver automatically calculates the distance to the remote transceiver and its bearing from true north with respect to your current location.



You must have valid GPS information stored in your transceiver from either of the following sources:

CAUTION

- a connected GPS receiver, or
- the My GPS entry in the Address List (if you don't have a GPS receiver connected)

CAUTION

If you don't have a GPS receiver connected and are using the My GPS entry in the Address List to enable the distance and bearing display, you should set the GPS Error Time entry in the Control List to **Off**.

Welcome text

Self addresses

If you want to view a self address in your transceiver during startup, you can programme the Welcome Text entry in the Control List with a keyword that displays the self address.

NOTE In the following table, n ranges from 1 to 5 (the maximum allowable number of self addresses for the transceiver).

Table 28: Keywords that display a self address

Keyword	Displays...
\$IDn	The n th self address. If the n th self address does not exist in the transceiver, the transceiver leaves the Welcome Text blank at startup. If the transceiver does not have a self address programmed, No self address is displayed.
\$IDn/	The n th self address, if it exists, with the associated network. If the self address is valid for all networks, then the network names are not appended.
\$IDn*	The n th self address applying to all networks. If there is no self address applicable to all networks, the transceiver leaves the Welcome Text blank at startup.
\$ID?	The self address used in the last call sent from this transceiver. This self address is used as the default for any future calls sent from this transceiver.

Beep

If you want the transceiver to emit a beep when any Welcome Text is displayed, you can programme the Welcome Text entry in the Control List with **\$BEEP** anywhere in the lines of text.

14 The Keypad List

The Keypad List stores information about the keys on the handset and desk console and the events that occur when the keys are pressed.

NOTE The transceiver is shipped with the Keypad List hidden at admin level. To display the list see [page 132, Hiding and showing information](#).

The Keypad List contains an entry for each key on the handset and desk console. Each entry stores a list of the macros assigned to the key, and a list of the upper-case, lower-case and numeric characters that you can enter using the key (see [Table 29](#)).

NOTE There are no entries for the **CALL**, **▶**, **▼**, **Q**, **✓**, **✕**, **Ⓜ** and **Ⓜ** keys as you cannot assign macros to these keys.

It also contains two entries that you can use to create and maintain macros. The Special entry contains a number of macros that you cannot create from the handset but can be copied and assigned to any key. The Unassigned entry is a place where you can store macros for which you have no immediate use. For more information on macros and the Special and Unassigned entries see [page 223, Hot keys](#).

Table 29: Entries in the Keypad List

Name of key	Macros assigned to key	Upper case	Lower case	Numeric
#	Call Logs - Out	A	a	#
*	Easitalk	. , ' ? ! & # \$ * () - + /	. , ' ? ! & # \$ * () - + /	.
0	Channel Screen	0 space	0 space	0
1QZ	Manual Tune	QZ1	qz1	1
2ABC	Clarifier	ABC2	abc2	2
3DEF	Next Mode	DEF3	def3	3
4GHI		GHI4	ghi4	4
5JKL	Help Mode	JKL5	jkl5	5
6MNO		MNO6	mno6	6
7PRS	Mute Type	PRS7	prs7	7
8TUV	Secure	TUV8	tuv8	8
9WXY		WXY9	wxy9	9
Emergency	Call Emergency			
Hang up	Scan Toggle			
Mute	Mute			
Power	Power Down			

Table 29: Entries in the Keypad List (cont.)

Name of key	Macros assigned to key	Upper case	Lower case	Numeric
Special	Power Down			
	Mute Type			
	Mute			
	Call Logs - Out			
	Call Logs - In			
	New Call			
	End Call			
	Call Key			
	Scan Toggle			
	Call Emergency			
	Secure			
Unassigned				

15 The Mode List

The Mode List stores information about the modes available in the transceiver. A mode is a set of parameters used with a channel consisting of a sideband and an IF filter, as shown in [Table 30](#).

Table 30: Modes for the NGT *CR* Transceiver

Name of mode	Sideband	IF centre	IF width
USB	USB	1 500 Hz	2 500 Hz
LSB	LSB	1 500 Hz	2 500 Hz
AM	AM	1 500 Hz	2 500 Hz

The modes from which you can select depend on the options installed in the transceiver. The Mode List is display-only: you cannot add, edit or delete modes from it.

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16 Using the transceiver in free tune and Amateur Mode



This section contains the following topics:

[Using the transceiver in free tune \(218\)](#)

[Using the transceiver in Amateur Mode \(221\)](#)

Using the transceiver in free tune

NOTE In the following discussion, you must log in as administrator to see the Control List (see [page 129, Logging into admin level from user level](#)).

The transceiver can be used as a free-tune receiver. This enables you to tune to any frequency within the transceiver's operating range of 250 kHz to 30 MHz. In some circumstances, the options installed on your transceiver may enable you to transmit while free tuning, for example, the Amateur Mode option enables you to transmit during free tune when tuned to Amateur Band frequencies (see [Table 31 on page 221](#)).

Entering a specific free-tune frequency

To enter a specific frequency:

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

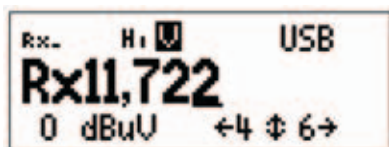
NOTE If you intend to use this feature regularly, set up a hot key on the **4** key to take you to the Free Tune entry in the Control List, then wait. The hot key will enter Free Tune with the cursor in the same position as when the hot key was created. For information on setting up the hot key see [page 264, Example 3: accessing the Free Tune screen](#).

- ☐ Press **Q**.



- ☐ Enter a new frequency or edit the existing frequency as required, then press **✓**.
- ☐ Do one or more of the following:
 - to exit to the screen from which you began, press **X**
 - to return to the Main Menu, press **X** until **Main Menu** is displayed
 - to exit free-tune receive, go to the Channel List and select another channel (for help see [page 71, Selecting a channel](#))

If you re-enter Free Tune prior to selecting another channel in the Channel List, the selected frequency will be the same as that last used.



Tuning to a free-tune frequency

To tune to a frequency:

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

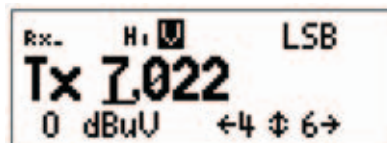
NOTE

If you intend to use this feature regularly, set up a hot key on the **4** key to take you to the Free Tune entry in the Control List, then wait. The hot key will enter Free Tune with the cursor in the same position as when the hot key was created. For information on setting up the hot key see [page 264, Example 3: accessing the Free Tune screen](#).

The transceiver tunes to the frequency that was currently selected in the Channel List and the cursor is placed under the last digit.



If you are able to transmit during Free Tune, the Rx will be replaced by a Tx within the Amateur Band frequencies, as shown below.

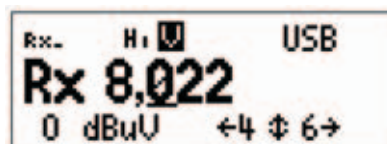


The **4** and **6** keys on the keypad can now be used as left/right scroll keys, as indicated on the Free Tune screen.

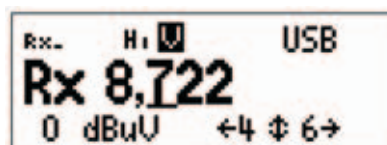
NOTE

Press **6** repeatedly to insert a decimal point and enable the frequency to be tuned to two decimal places (0.01 kHz).

- ☐ To increase or decrease the frequency by units of one, ten, one hundred and so on, move the cursor to the appropriate position...



...then press the **▶** and **◀** keys. The transceiver tunes to the new frequency.





☐ Do one or more of the following:

- to exit to the screen from which you began, press **X**
- to return to the Main Menu, press **X** until **Main Menu** is displayed
- to exit free-tune receive, go to the Channel List and select another channel (for help see [page 71, *Selecting a channel*](#))

If you re-enter Free Tune prior to selecting another channel in the Channel List, the selected frequency is the same as that last used.



Using the transceiver in Amateur Mode

If you have Amateur Mode enabled in your transceiver, you are able to transmit on the Amateur Bands shown in [Table 31](#). You are not able to transmit on frequencies outside of these bands using Free Tune Mode. You may be able to transmit on pre-configured channels outside Amateur Band frequencies.

Table 31: Amateur Band frequencies

Frequency (MHz)
1.8–2.0
3.5–4.0
7.0–7.3
10.1–10.15
14.0–14.35
18.0–18.2
21.0–21.45
24.8–25.0
28.0–29.7

Amateur Mode uses the frequency entered on the Free Tune screen. For information on using the Free Tune screen see [page 218, *Using the transceiver in free tune*](#). When you want to transmit on the selected frequency, press PTT to tune the antenna.

This page has been left blank intentionally.

17 Hot keys

This section contains the following topics:

[About hot keys \(224\)](#)

[Full-time and part-time hot keys \(224\)](#)

[Assigning several macros to one key \(225\)](#)

[Automating several tasks with one macro \(225\)](#)

[Troubleshooting macros \(225\)](#)

[Storing macros \(226\)](#)

[Ideas for creating macros \(226\)](#)

[Creating a macro and assigning it to a hot key \(227\)](#)

[Copying a macro \(230\)](#)

[Moving a macro \(231\)](#)

[Renaming a macro \(232\)](#)

[Deleting a macro \(232\)](#)

[Creating a macro to perform two or more tasks \(233\)](#)

[Special macros \(235\)](#)

About hot keys

If you want to automate some of the tasks you perform with the transceiver you can create hot keys on the handset and desk console to perform the tasks for you. For example, if you frequently call a particular station using an entry in the Address List you can create a hot key to select the Address List from the Main Menu, search for the entry, then make the call. Performing these tasks is then as simple as pressing the hot key.










Hot keys can be created to perform any task or series of tasks that involve using a list. These include:

- opening a list at a particular entry
- displaying the GPS screen or time screen in the Control List
- calling a specific station
- changing a setting

Table 3 on page 26 lists the standard hot keys on the handset. Table 4 on page 28 lists the standard hot keys on the desk console.











Creating a hot key is a simple process. The transceiver prompts you for information about the way you want the hot key to operate and puts this information into a macro. It then prompts you to press the key to which you want to assign the macro (that is, the key that you want to be the hot key for the task), then enter a name for the macro. Using the hot key is as simple as pressing the key.

Full-time and part-time hot keys

Any key can be used as a hot key except the **CALL**, , , , , ,  or  key. If you want to be able to use a hot key at any time, regardless of any task you may be performing, use the **MUTE**, **SCAN**, , or  keys on the handset, or the F1–F4 keys on the desk console. These keys can be used as full-time hot keys.

The remaining keys on the handset, that is, 0–9, ***** and **#**, can be used as part-time hot keys. They operate as hot keys at any time except when you are entering or editing text. In this situation they are used to enter characters and cannot be used as hot keys.

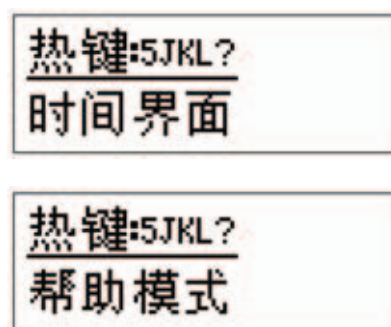
Table 32: Full-time and part-time hot keys

Full-time hot keys	Part-time hot keys	Keys that cannot be used as hot keys
MUTE SCAN   F1–F4 keys on desk console	<div>1 TUNE QZ</div> <div>2 CLAR ABC</div> <div>3 MODE DEF</div> <div>4 GHI</div> <div>5 HELP JKL</div> <div>6 MNO</div> <div>7 VIS PRS</div> <div>8 SEC TUV</div> <div>9 WXY</div> <div>* EASI TALK</div> <div>0 VIEW </div> <div># CALL LOGS</div>	<div>CALL   </div> <div>   </div> <div>PTT button on handset and desk console</div>

Assigning several macros to one key

Several macros can be assigned to one key. When you use a hot key to which several macros have been assigned, the list of macros is displayed so you can select the one you want, as shown in [Figure 32](#).

Figure 32: Using a hot key to which several macros have been assigned



The order in which the macros are listed can be changed. When you assign a macro to a key you are prompted to select the position in the list in which you want to insert the new macro. You can also change the order after you have assigned the macro to a key by copying or moving the macro to and from the same or a different key. For more information see [page 230, Copying a macro](#) and [page 231, Moving a macro](#).

Automating several tasks with one macro

Macros can be created to perform two or more tasks in succession. For example, you can create a macro that selects a particular channel then makes a call, or that displays your GPS position then sends that position to a particular station.

You can create a macro that performs several tasks by either joining two macros or adding to a macro. For more information see [page 233, Joining macros](#) and [page 234, Adding to a macro](#).

Troubleshooting macros

If you need to troubleshoot your macros, the Macro Single Step entry in the Control List may help you. When this entry is switched on and you run a macro, each individual step in the macro is displayed on the screen. The length of time each step is displayed can be set using the Macro Pause entry in the Control List.

Storing macros

Macros are physically stored in the Keypad List. The Keypad List contains an entry for each key on the handset and desk console. When a macro is assigned to a key, it is stored in the Macro setting for the key.

If you do not want to assign a macro to a key (because, for example, you have no immediate use for it but do not want to delete it), you can assign or move it to the Unassigned entry in the Keypad List for future use. You can do this by pressing ✓ when prompted to assign a macro to a key.

Ideas for creating macros

Before you create a macro you may want to read the examples provided on [page 261](#), *Hot key examples* for ideas about the types of tasks you can automate and the options available to you.

Creating a macro and assigning it to a hot key

To create a macro and assign it to a hot key:

- ☐ Decide on the task you want the hot key to perform.
- ☐ Navigate to the list, entry or setting in which the task begins.

For example, if the task is to open a list at a particular entry, navigate to that entry. If the task is to enter a particular value in a setting, navigate to the setting and enter the value.

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Create macro**, then press **✓**.

The transceiver prompts you to select the action you want the macro to perform and/or the timing with which you want it to operate.

NOTE The information for which you are prompted and the options from which you can select vary according to the list, entry or setting from which you began.

- ☐ If you are prompted to select the action you want the macro to perform, scroll to the option you want, then press **✓**.

[Table 33 on page 228](#) explains each option.

- ☐ Scroll to the timing with which you want the macro to operate, then press **✓** (see [Table 33](#)).
- ☐ Press the key to which you want to assign the macro.

To assign the macro to the Unassigned entry in the Keypad List, press **✓**.

You cannot assign the macro to the Special entry.

The macros assigned to the key or entry are displayed. At the end of the list, or if there are no macros assigned to the key or entry, **<end>** is displayed.

If you pressed the wrong key, press **✕** to go back a step, then press the key to which you want to assign the macro.

- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press **✓**.

To insert the macro at the end of the list, scroll to **<end>**, then press **✓**.

- ☐ Type a name for the new macro, then press **✓**.

NOTE For help with entering text see [page 72, Entering and editing text](#).

The macro is created and assigned to the key. The List Manager remains open.

Table 33: Macro options

Option	Setting	Select this option if you want the macro to...
Macro action?	Go to this entry	Display the list or entry you were on when you created the macro.
	Go to marker	Display the list or entry on which a marker has been set.
	Go to this chan	Select the channel you were on when you created the macro.
	Display chan	Display the currently selected channel.
	Go to this freq	Select the free-tune frequency and cursor position you were on when you created the macro.
	Display freq	Display the currently selected frequency in the Free Tune screen with the cursor position you were on when you created the macro.
	Set this value	Change the value in the setting you were on to the value that was displayed when you created the macro. For example, if you entered a value of 100 in the setting, then began creating the macro, the macro would set the value to 100.
	Set next value	Go to the setting you were on when you created the macro, then select the next possible value for the setting. For example, if the possible values for the setting you were on were Off and On, and prior to running the macro the value was set to Off, the macro would set the value to On.
	Display value	Display the value in the setting you were on when you created the macro.

Table 33: Macro options (cont.)

Option	Setting	Select this option if you want the macro to...
Macro operates?	Immediately	Perform the task immediately without displaying the screen involved. For example, select a new channel without displaying the channel screen in the Channel List.
	Before pause	Perform the task immediately, save the new value if the macro changed a value, briefly display the screen involved, then return to the screen you were on when you pressed the hot key. For example, select a new channel, briefly display the channel screen in the Channel List, then return to the screen you were on when you pressed the hot key. NOTE To change the length of time the screen is displayed, use the Macro Pause entry in the Control List.
	After pause	Perform the task immediately, briefly display the screen involved, save the new value if the macro changed a value, then return to the screen you were on when you pressed the hot key. (If the macro changes a value, the pause gives you a chance to cancel the change before it is saved by pressing X .) For example, change a value in a Control List entry, briefly display the entry, save the change, then return to the screen you were on when you pressed the hot key. NOTE To change the length of time the screen is displayed, use the Macro Pause entry in the Control List.
	Wait	Perform the task immediately, then remain on the screen involved.

Copying a macro

Use the Copy macro entry in the List Manager to:

- copy a macro from one key and assign the copy to the same or a different key
- copy a macro from the Special or Unassigned entry in the Keypad List and assign it to a key

NOTE You cannot copy a macro to the Special entry in the Keypad List.

To copy a macro:

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Copy macro**, then press **✓**.
- ☐ Do one of the following:
 - press the key to which the macro you want to copy is assigned
 - press **✓** to go to the Unassigned entry
 - press **↵** to go to the Special entry

The macros assigned to the key or entry are displayed.

If there are no macros assigned to the key or entry, **(none)** is displayed. Press **✗** to go back a step, then press the key to which the macro is assigned.

- ☐ Scroll to the macro you want to copy, then press **✓**.
- ☐ Press the key to which you want to copy the macro.

If you want to copy the macro to the Unassigned entry in the Keypad List, press **✓**.

The macros assigned to the key or entry are displayed. At the end of the list, or if no macros are assigned to the key or entry, **<end>** is displayed.

If you pressed the wrong key, press **✗** to go back a step, then press the key to which you want to assign the macro.

- ☐ Scroll to the macro you want to have in the list immediately after the copied macro, then press **✓**.

To insert the macro at the end of the list, scroll to **<end>**, then press **✓**.

The macro is copied and the List Manager remains open.

Moving a macro

Use the Move macro entry in the List Manager to:

- move a macro from one key to another
- change the order in which macros are listed on a hot key
- move a macro to or from the Unassigned entry in the Keypad List

NOTE

You cannot move macros to or from the Special entry in the Keypad List, but you can copy them and rename the copies if necessary.

To move a macro:

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Move macro**, then press **✓**.
- ☐ Do one of the following:
 - press the key to which the macro you want to move is assigned
 - press **✓** to go to the Unassigned entry

The macros assigned to the key or entry are displayed.

If there are no macros assigned to the key or entry, **(none)** is displayed. Press **✕** to go back a step, then press the key to which the macro is assigned.

- ☐ Scroll to the macro you want to move, then press **✓**.
- ☐ Press the key to which you want to move the macro.

If you want to move the macro to the Unassigned entry in the Keypad List, press **✓**.

The macros assigned to the key or entry are displayed. At the end of the list, or if no macros are assigned to the key or entry, **<end>** is displayed.

If you pressed the wrong key, press **✕** to go back a step, then press the key to which you want to assign the macro.

- ☐ Scroll to the macro you want to have in the list immediately after the moved macro, then press **✓**.

To insert the macro at the end of the list, scroll to **<end>**, then press **✓**.

The macro is moved and the List Manager remains open.

Renaming a macro

NOTE You cannot rename macros in the Special entry in the Keypad List, but you can copy them and rename the copies if necessary.

To rename a macro:

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Rename macro**, then press **✓**.
- ☐ Do one of the following:
 - press the key to which the macro you want to rename is assigned
 - press **✓** to go to the Unassigned entry

The macros assigned to the key or entry are displayed.

If there are no macros assigned to the key or entry, **(none)** is displayed. Press **✕** to go back a step, then press the key to which the macro is assigned.

- ☐ Scroll to the macro you want to rename, then press **✓**.

The name is highlighted.

- ☐ Enter a new name for the macro, then press **✓**.

NOTE For help with entering text see [page 72, *Entering and editing text*](#).

The macro is renamed and the List Manager remains open.

Deleting a macro

To delete a macro:

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Delete macro**, then press **✓**.
- ☐ Do one of the following:
 - press the key to which the macro you want to delete is assigned
 - press **✓** to go to the Unassigned entry

The macros assigned to the key or entry are displayed.

If there are no macros assigned to the key or entry, **(none)** is displayed. Press **✕** to go back a step, then press the key to which the macro is assigned.

- ☐ Scroll to the macro you want to delete, then press **✓**.

The macro is deleted and the List Manager remains open.

Creating a macro to perform two or more tasks

If you want to create a macro that performs two or more tasks in succession you can do so by joining two macros or by adding to a macro.

For example, if you have created a macro to display the GPS screen in the Control List and another to send your GPS position to a particular station, you can join them to create one macro. If you have created a macro that performs the first task, you can add to it by creating a macro to perform the second task, then add this macro to the first macro in one step.

Joining macros

Joining macros involves joining two existing macros. Before you begin you must consider the order in which you want the macros performed. The transceiver prompts you to select the macro you want performed first, then the macro you want performed second. It then makes a copy of the second and joins it to the end of the first. The new macro takes the name of the first macro. You can rename the macro if necessary (see [page 232, Renaming a macro](#)).

NOTE You cannot join two macros if the first macro is assigned to the Special entry in the Keypad List. You can, however, make a copy of this macro, assign it to a key or to the Unassigned entry in the Keypad List, then join another macro to the copy (for help see [page 230, Copying a macro](#)).

To join two macros:

- ☐ Decide on the order in which you want the hot key to perform the macros.
- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Join macros**, then press **✓**.
- ☐ Do one of the following to select the macro you want performed *first*:
 - press the key to which the macro is assigned
 - press **✓** to go to the Unassigned entry

The list of macros assigned to the key or entry is displayed.

If there are no macros assigned to the key or entry, **(none)** is displayed. Press **✕** to go back a step, then press the key to which the macro is assigned.

- ☐ Scroll to the macro you want performed *first*, then press **✓**.
- ☐ Press the key to which the macro you want performed *second* is assigned.

The list of macros assigned to the key or entry is displayed.

If there are no macros assigned to the key or entry, **(none)** is displayed. Press **✕** to go back a step, then press the key to which the macro is assigned.

- ☐ Scroll to the macro you want performed *second*, then press ✓.

A copy of the second macro is joined to the end of the first macro. The new macro takes the name of the first macro. The List Manager remains open.

Adding to a macro

Adding to a macro involves creating a macro then adding it to the end of an existing macro in one step. The new macro takes the name of the first macro. You can rename the macro if necessary (see [page 232, Renaming a macro](#)).

NOTE You cannot add to a macro if the macro is assigned to the Special entry in the Keypad List. You can, however, make a copy of this macro, assign it to a key or to the Unassigned entry in the Keypad List, then add to the copy (for help see [page 230, Copying a macro](#)).

To add to a macro:

- ☐ Navigate to the list, entry or setting in which the task you want to add to the existing macro begins.

For example, if the task is to open a list at a particular entry, navigate to that entry. If the task is to enter a particular value in a setting, navigate to the setting and enter the value.

- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press ✓.
- ☐ Scroll to **Add to macro**, then press ✓.
- ☐ If you are prompted to select the action you want the macro to perform, scroll to the option you want, then press ✓.

NOTE The information for which you are prompted and the options from which you can select vary according to the list, entry or setting from which you began.

[Table 33 on page 228](#) explains each option.

- ☐ Scroll to the timing with which you want the macro to operate, then press ✓ (see [Table 33](#)).
- ☐ Do one of the following:
 - press the key to which the macro you want to add this macro is assigned
 - press ✓ to go to the Unassigned entry

The list of macros assigned to the key or entry is displayed.

If there are no macros assigned to the key or entry, **(none)** is displayed. Press **X** to go back a step, then press the key to which the macro is assigned.

- ❑ Scroll to the macro to which you want to add the new macro, then press ✓.

The new macro is added to the end of the existing macro. The new, combined macro takes the name of the existing macro. The List Manager remains open.

Special macros

The transceiver is shipped with 11 macros that cannot be recreated from the handset. These macros are assigned to the Special entry in the Keypad List and are listed in [Table 34 on page 236](#).

You cannot assign macros to, or delete macros from, the Special entry. You can, however, copy these macros from this entry and assign them to various keys or to the Unassigned entry in the Keypad List (for help see [page 230, Copying a macro](#)). You can then use the copy as you would any other macro.

The transceiver is shipped with copies of six of these macros assigned to various keys on the handset and desk console, that is:

- the Call Emergency macro, which is assigned to the **▲** key
- the Call Key macro, which is assigned to the **F2** key and the F1 key on the desk console
- the Call Logs - Out macro, which is assigned to the **CALL LOGS** key
- the Mute macro, which is assigned to the **F1** key and the F4 key on the desk console
- the Power Down macro, which is assigned to the **ⓘ** key
- the Scan Toggle macro, which is assigned to the **F3** key and the F2 key on the desk console

Table 34: Macros assigned to the Special entry in the Keypad List

Name of macro	Description
Call Emergency	<p>Begins a call to the Emergency 1 entry in the Address List. If there are other emergency entries in the list (named Emergency 2, Emergency 3 and so on) the macro pauses for approximately 10 seconds after the first call has ended, then begins a call to the next emergency entry.</p> <p>The transceiver calls each emergency entry in sequence until the last entry has been called, or you press PTT.</p>
Call Key	Begins a call, enabling the user to enter call information when prompted. This macro is for use on the desk console.
Call Logs - In	Displays the Calls In Log the Calls Out Log, then returns to the screen from which you began.
Call Logs - Out	Displays the Calls Out Log the Calls In Log, then returns to the screen from which you began.
End Call	Ends a call if a call is in progress.
Mute	Toggles mute on or off.
Mute Type	Toggles between Selcall mute and Voice mute.
New Call	Displays the new call screen with the address and call type of the last call made.
Power Down	Switches off the transceiver.
Scan Toggle	Ends a call if a call is in progress, or switches scanning on or off.
Secure	Toggles Voice Encryptor on or off, if installed with special firmware programmed and enabled in the transceiver.

This section contains the following topics:

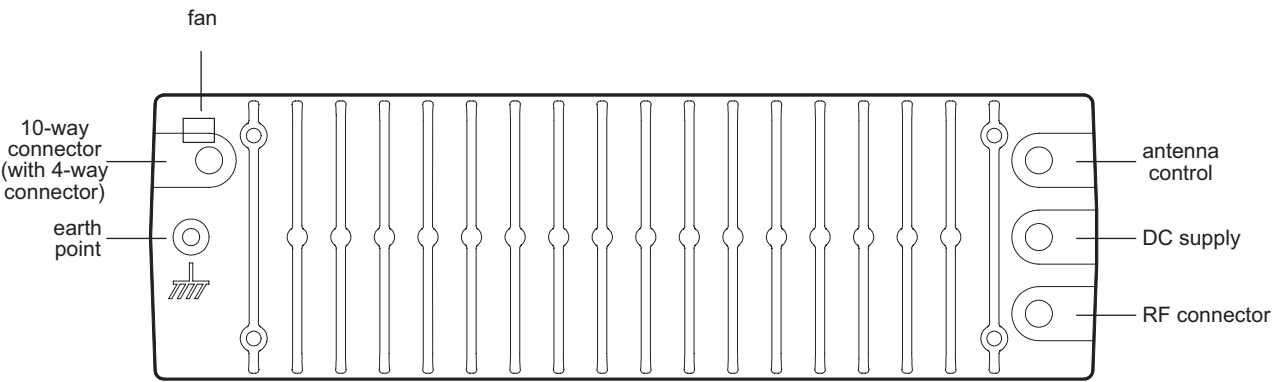
[RF unit connectors \(238\)](#)

[Desk console connectors \(244\)](#)

WARNING Only suitably qualified personnel should use the information contained in this section. Failure to observe this warning could result in damage to the transceiver.

RF unit connectors

Figure 33: Back panel of the RF unit



NOTE The 4-way connector is attached to the rear of the 10-way connector.

Antenna control connector

The antenna control connector is a flying lead located on the right side of the back panel. The antenna control connector connects to automatic tuning antennas and broadband antennas (no automatic tuning required). It supplies power to the antenna and transmits control signals to and from the antenna.

Figure 34: Front view of the antenna control connector on the RF unit

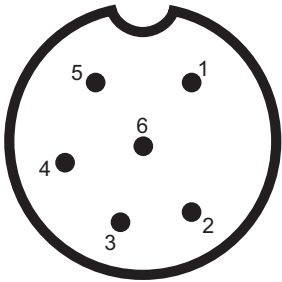


Table 35: Pinouts of the antenna control connector on the RF unit

Pin no.	Function	Signal levels
1	Tune in/out	5 V logic, active low
2	Scan	Active low (open collector)
3	Tuned in	5 V logic
4	‘A’ rail protected (1–2 A) nominal	+13.6 V nominal
5	External ALC input	Control at 3.6 V
6	Ground	0 V

DC supply connector

The DC supply connector is located on the right side of the back panel. The DC supply connector supplies power to the transceiver system and ancillary products.

Table 36: Pinouts of the DC supply connector on the RF unit

Pin	Function
+	+13.6 V nominal (10.8 to 16 V DC)
–	Ground

RF connector

The RF connector is a flying lead located on the right side of the back panel. It is used to connect to an antenna.

Fan connector

The fan connector is located at the top left of the back panel. The fan connector is used when additional cooling is required for the heatsink

Figure 35: Front view of the fan connector on the RF unit

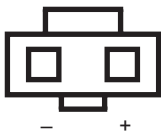


Table 37: Pinouts of the fan connector on the RF unit

Pin no.	Function
–	0 V
+	+13.6 V nominal (when fan is activated)

10-way connector

The 10-way connector is a flying lead located on the top left side of the back panel. It connects to either the handset and speaker via a control cable (Codan part number 08-06022-001), or directly to the Code 766 Desk Console.

Figure 36: Front view of the 10-way connector on the RF unit

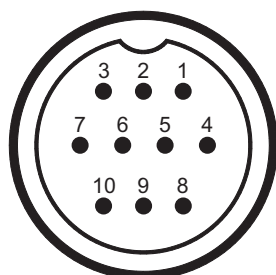


Table 38: Pinouts of the 10-way connector on the RF unit

Pin no.	Function	Signal levels
1	Loudspeaker audio +	Approx. 12 V p-p at onset of clipping
2	Loudspeaker audio –	0 V
3	Microphone audio +	Nominally 500 mV p-p to ground with normal speech
4	Microphone audio –	Nominally 500 mV p-p to ground with normal speech
5	Handset data +	1 to 5 V logic
6	Handset data –	1 to 5 V logic
7	Power on	Momentary 0 V = PWR ON
8	Standby power for handset	+5 V standby power or +9 V handset power
9	‘A’ rail protected	+13.6 V nominal
10	Ground	0 V

4-way serial data connector

The 4-way connector is a flying lead located on the back of the 10-way connector.

The serial data (RS232) connector can be used for connecting to an external GPS receiver.

In GPS Mode, the interface will accept and process GPS receiver input sentences (RMC, GLL, and GGA) defined by NMEA format 0183 V2.00. If the interface detects the RMC sentence, it will ignore all data derived from any other type of sentence as the RMC sentence guarantees data validity via checksums.

The operating parameters of the serial data connector are set up in the RS232 Mode and RS232 Speed entries in the Control List.

NOTE

If these entries are not displayed in the Control List, they may have been hidden at user or admin level. For more information on displaying hidden entries see [page 132, Hiding and showing information](#).

The operating parameters can be set to the following:

Baud rate	300, 1 200, 2 400, 4 800, 9 600, 19 200, 38 400, 38 400, 115 200, 230 400
Data bits	8
Stop bits	None
Parity	1

Figure 37: Front view of the 4-way connector on the RF unit

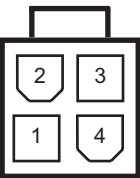


Table 39: Pinouts of the 4-way connector on the RF unit

Pin no.	Function	Signal levels
1	‘A’ rail protected (0.5 A)	+13.6 V nominal
2	Ground	0 V
3	RS232 Transmit data	RS232 output
4	RS233 Receive data	RS232 input

Handset and speaker connector

The handset and speaker connector is part of the control cable (Codan part number 08-06022-001) that connects to the 10-way connector on the RF unit. This cable is not used with a Code 766 Desk Console.

Figure 38: Front view of the handset and speaker connector attached to the RF unit

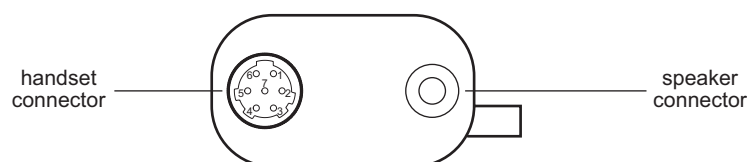


Table 40: Pinouts of the handset connector

Pin no.	Function	Signal levels
1	Standby power for handset	+5 V standby power, or +9 V handset power
2	Handset data	1 to 5 V logic
3	Handset data	1 to 5 V logic
4	Ground	0 V
5	Microphone audio	Nominally 500 mV p-p to ground with normal speech
6	Microphone audio	Nominally 500 mV p-p to ground with normal speech
7	Power on	Momentary 0 V = PWR ON

The speaker should be 4 Ω with a power rating of 5 W.

Table 41: Pinouts of the speaker connector

Connection	Function
Tip	Speaker audio output
Sleeve	Ground

Desk console connectors

Headphone jack

The headphone jack comprises a 6.3 mm jack with 600 Ω nominal impedance.

Table 42: Pinouts of the headphone jack on the desk console

Connection	Function
Ring	Audio
Tip	Audio
Sleeve	Ground

Handset connector

The rear panel of the Code 766 Desk Console has a handset connector. The details of this connector are provided in [Table 40 on page 243](#).

10-way connector

The 10-way connector on the Code 766 Desk Console is on a flying lead from the rear of the unit. This connector is used to connect the Code 766 to the 10-way connector from the RF Unit 2011 The details of this connector are provided in [Table 38 on page 241](#).

19 System messages

This section lists the system messages that may be displayed by the handset of the transceiver, and a description of each message.

Table 43: System messages

Message	Description
*** NSP ***	NSP is being used to upload or download information to the transceiver. Wait until NSP has finished. You may then need to switch the transceiver off then on again.
Admin password incorrect	You have entered an incorrect admin password. Enter the correct password.
Administrator logged out	You have logged out of admin level and have returned to user level.
Antenna untuned	The antenna is no longer tuned. Tune the antenna.
BIT failed: <name of test and/or reason for failure>	The built-in test selected has failed. Switch the transceiver off then on again, then repeat the test.
Call aborted	You have aborted the current call by pressing PTT while the call was being made.
Call already in progress	A call is currently in progress. End or abort the call before you start another.
Call completed	The call in which you were transferring data has been automatically completed.
Call completed No GPS unit connected	You have sent a Get Position call to a remote transceiver that does not have a GPS unit connected.
Call error: call system not configured	The option for the call system with which you have attempted to make a call has not been installed in the transceiver. Select a network with a different call system or, if you know the option code for the call system, install it using the Option code setting under the Devices entry in the Control List (see page 205, Installing an option in the transceiver).
Call error: check cables then restart tcvr	An error has occurred in a device. Switch the transceiver off, check that the cables are connected correctly, then switch the transceiver on. If the problem persists, contact your Codan representative.

Table 43: System messages (cont.)

Message	Description
Call error: no GPS info to send	<p>You have attempted to make a Send Position call but the transceiver did not have any GPS information to send. This may be because the transceiver has not received any valid GPS data and/or because it has not been correctly configured to operate with a GPS receiver. Check that:</p> <ul style="list-style-type: none"> the cable between the GPS receiver and the transceiver is connected correctly the value in the RS232 Mode entry in the Control List is set to GPS the baud rate in the corresponding RS232 Speed entry in the Control List is set to the correct baud rate for the GPS receiver <p>Try the call again.</p>
Call error: stop scan then retry	An error occurred when the transceiver tried to stop scanning. Press SCAN to stop scanning, then try the call again.
Call failed: auto timeout exceeded	An automated part of a call took too long. The transceiver has ended the call.
Call failed: could not connect	<p>The transceiver could not connect to the station you called because:</p> <ul style="list-style-type: none"> the station did not respond the channel was of poor quality <p>Try again later.</p>
Call failed: no response received	The transceiver did not receive a response from the station you called. Try the call on a different channel.
Call rejected: check call details then retry	<p>The transceiver could not make the call because:</p> <ul style="list-style-type: none"> one or more details of the call were incorrect the system was busy <p>Check the details of the call and/or wait for 10 seconds before you try the call again.</p>
Call sent <call type icon> <address>	The Emergency or Selective call you made in a Codan Selcall or Open Selcall network has been sent to the other station. <i>Hold down</i> PTT then speak.
Call succeeded <call type icon> <address>	The Emergency or Selective call you made in an ALE/CALM network has been automatically answered by the other station. <i>Hold down</i> PTT then speak.
Call type not installed: <call type icon>	The option to make this type of call has not been installed in the transceiver. Select a different call type or, if you know the option code for the call type, enter it using the Option code setting under the Devices entry in the Control List (see page 205, Installing an option in the transceiver).
Calling... <call type icon> <address>	Your call has started. Wait for the next message.

Table 43: System messages (cont.)

Message	Description
Calling... Trying <name of channel>/<name of mode>	You have started a call in an ALE/CALM network. The transceiver is attempting to make the call on the channel/mode displayed.
Can't change frequency	You cannot edit frequencies in this transceiver.
Can't change mode	You cannot change the mode on the current channel for one of the following reasons: <ul style="list-style-type: none"> The mode you want to set is not an allowed mode for the channel. Select another mode. The channel/mode has been locked. You may be able to unlock it if it is locked at the same access level as that into which you are logged. The TxD option has been installed in the transceiver which prevents you from changing modes on transmit channels. For more information contact your system administrator.
Can't change mode: channel has changed	The channel has been reprogrammed and the mode is no longer valid.
Can't change mode: tcvr is scanning	You cannot change the current mode because the transceiver is scanning. Press SCAN to stop scanning, then try again.
Can't clarify chan: tcvr is scanning	You cannot use the clarifier while the transceiver is scanning. Press SCAN to stop scanning, then try again.
Can't edit this item	You have used a macro to go to a setting that can no longer be edited. To avoid this message, delete the macro.
Can't free tune: tcvr is scanning	You have attempted to use the transceiver as a free-tune receiver while the transceiver is scanning. Press SCAN to stop scanning, then try again.
Can't make Chan Test call in ALE network	You have attempted to make a Channel Test call in an ALE/CALM network.
Can't modify <name of macro> macro	You have attempted to modify a macro stored in the Special entry in the Keypad List. Make a copy of the macro first, assign the copy to a key or to the Unassigned entry in the Keypad List, then modify the copy.
Can't toggle scan: try again	An error has occurred while switching scanning on or off. Press SCAN to toggle scanning.
Can't tune: tcvr is scanning	You have attempted to manually tune the antenna while the transceiver is scanning. Press SCAN to stop scanning, then try again.
Chain call ended	You have ended a chain call by pressing a key.

Table 43: System messages (cont.)

Message	Description
Channel busy: <name of channel>/<name of mode>	The channel/mode on which you are attempting to make a call is busy.
Channel busy: Try again later	Your call cannot be made because the channel is busy. Wait for the channel to clear, or select a different channel, then try again.
Channel List is empty	There are no channels in the Channel List. Create one or more channels.
Channel not found: <name of channel>	The channel/mode on which you are attempting to make a call is in the channel/mode list of the network you are using, but it is not in the Channel List. Start the call again and select another channel/mode. To avoid this message, delete the channel/mode from the network.
Channel Test ...listen	Listen for the revertive from the station you called.
Channel Test sent...	Your Channel Test call has been sent. Wait for the revertive.
Device error in <name of device>	An error has occurred in one of the transceiver's devices. Switch the transceiver off then on, then retry the task that caused the error.
Error reading <name of list/entry/device>	An error occurred when the transceiver tried to read the list, entry or device displayed. Switch the transceiver off, check that the cables are connected correctly, then switch the transceiver on. If the problem persists, contact your Codan representative.
Error reading an entry: skipping it	An error occurred when the transceiver tried to read an entry. Switch the transceiver off, check that the cables are connected correctly, then switch the transceiver on. If the problem persists, contact your Codan representative.
Error reading call type	An error occurred when the transceiver tried to read the call type of the outgoing call. Switch the transceiver off, check that the cables are connected correctly, then switch the transceiver on. If the problem persists, contact your Codan representative.
Error updating list: check cables then restart tcvr	An error occurred when the transceiver tried to update a list. Switch the transceiver off, check that the cables are connected correctly, then switch the transceiver on. If the problem persists, contact your Codan representative.
Error updating list: check setting value and length	An error occurred when the transceiver tried to update a list. Check the value of the setting or the length of a message before attempting to save the setting.
GPS position established	The transceiver is now receiving valid GPS information.

Table 43: System messages (cont.)

Message	Description
Group chan not found: <name of channel>	<p>The channel/mode on which you are attempting to make a call is no longer in the group specified in the Network List. Select another channel.</p> <p>To avoid this message, delete the channel/mode from the entry you used to make the call.</p>
Hangup sent ...listen	You have ended a Phone call. Listen for the revertive to confirm that the telephone interconnect unit received your hangup signal.
High Power Only	You have attempted to change the transmit power level to one that is not permitted for the frequency selected.
Information sent...	The transceiver has sent the data in your Send Position call.
Information sent...listen	The transceiver has sent a message using an Open Selcall calling system. Listen for the revertive to confirm the receipt of the message at the remote station.
Invalid addr: <address>	The address you have entered has invalid syntax for an ALE ALL call.
Invalid addr for call system: <destination address>	The address of the station you are trying to call is not valid for the call system of the network you are using (for example, you are making the call in a Codan Selcall network but the destination address contains letters). Correct the address, or select a different network, then try again.
Invalid addr for call system: <your station self address>	The self address from which you want to make this call is not valid for the call system of the network you are using (for example, you are making the call in a Codan Selcall network but the self address for this network contains letters). Correct the self address, or select a different network, then try again.
Invalid addr for call type: <address>	You have entered an invalid address syntax for the call type, for example, you are making an ALL call in a Channel Test call.
Invalid mode: <channel/mode> in <network>	<p>A channel in a network you are scanning has a mode that is no longer valid for it. This may be because:</p> <ul style="list-style-type: none"> the mode is not an allowed mode for the channel the mode is no longer in the Mode List <p>The channel/mode combination will not be scanned.</p> <p>To avoid this message, do one or more of the following:</p> <ul style="list-style-type: none"> go to the Channel List and modify the allowed modes for the channel go to the Network List and modify the channel/mode list in the network install the correct option for the mode

Table 43: System messages (cont.)

Message	Description
Invalid option code	You have entered an invalid option code. Enter the correct code.
Item already exists	You have attempted to add an item to a list that is identical to an existing item. Add a unique item.
Key <name of key> is stuck	A key on the handset is stuck down. Release the key.
Link quality <progress of clearing action>	You have selected to clear the ALE link quality analysis information from the transceiver and the progress of the clearing activity is displayed.
List is full	You have attempted to create an entry or add an item to a list that is full. Delete some entries/items.
Locked entry Locked list Locked setting	<p>You have attempted to edit a locked list, entry or setting. If the item was locked at the same access level as that into which you are logged, or at a lower level, you can unlock the item using the Unlock? entry in the List Manager.</p> <p>For example, if an entry was locked at user level and you logged in as a user, you can unlock the entry (see page 134, Locking and unlocking information).</p>
Low battery	Battery voltage is very low. Recharge or replace the battery. If the transceiver is installed in a vehicle, start the vehicle to recharge the battery.
Low Power Only	You have attempted to change the transmit power level to one that is not permitted for the frequency selected, for example, a CB frequency.
Macro error: recreate macro for <name of macro>	An error occurred when the transceiver tried to create the macro. Create the macro again.
Macro memory is full	The memory storage for macros is full. You must delete one or more macros before you can create another.
Macro update needed Delete a few unused macros to make room for new macros	The macros programmed through NSP are inconsistent with the current version of RF unit firmware, and the transceiver has insufficient memory space to update the macros. Delete one or two macros then switch the transceiver off then on again.
Macros updated Reload Keypad List in NSP and save a new profile for use with version <firmware version> and higher	NSP has downloaded an old set of macros that are inconsistent with the current version of RF unit firmware. Load the new Keypad List from the transceiver into a new profile for use with this version of RF unit firmware and higher.
Memory error: Address List reset	The Address List has been reset to its factory-default contents due to a memory error. If you created any entries in this list you must recreate them, as required.

Table 43: System messages (cont.)

Message	Description
Memory error: all lists reset	Firmware in the transceiver has been upgraded. As the layout of data in each list has changed from the previous version of firmware, all lists have been reset to their factory-default contents. Recreate the entries and/or re-enter the values in each list, as required.
Memory error: Calls In Log reset	The entries in the Calls In Log have been deleted due to a memory error.
Memory error: Calls Out Log reset	The entries in the Calls Out Log have been deleted due to a memory error.
Memory error: Keypad List reset	The Keypad List has been reset to its factory-default contents due to a memory error. If you created any macros or modified any key assignments you must recreate and/or re-enter them, as required.
Memory error: macros reset	The macro database has been reset to its factory-default contents due to a memory error. If you created any macros you must recreate them, as required.
Memory error: one or more lists reset	Firmware in the transceiver has been upgraded. As the layout of data in some lists has changed from the previous version of firmware, some lists have been reset to their factory-default contents. Recreate the entries and/or re-enter the values in each list, as required.
Memory error: Phone Link List reset	The Phone Link List has been reset to its factory-default contents due to a memory error. If you created any entries in this list you must recreate them, as required.
Memory error: station addresses reset	Your station self addresses have been reset due to a memory error. Re-enter these self addresses, as required.
Memory error: write failed	An error occurred when the transceiver tried to write to non-volatile memory. Retry the task that caused the error. If the problem persists, contact your Codan representative.
Mode not found: <name of mode>	<p>The channel on which you are attempting to make a call is in the channel/mode list of the network you are using, but:</p> <ul style="list-style-type: none"> the mode is no longer an allowed mode for the channel the name of the mode has changed in the Mode List <p>Begin the call again and select another channel/mode.</p> <p>To avoid this message, modify the channel/mode setting for the entry you are using to make the call. You can also check the allowed modes for the channel in the Channel List and/or check the name of the mode in the Mode List.</p>
Name already exists	You have attempted to create an entry in a list with the same name as an existing entry. Create an entry with a unique name.

Table 43: System messages (cont.)

Message	Description
Network not found: <name of network>	<p>The network in which you have attempted to make a call is not in the Network List. Select another network.</p> <p>To avoid this message, change the network in the Address List entry in which this error occurred.</p>
Network chan/mode list is empty	There are no channels in the channel/mode list of the network you are scanning. Enter some channels.
New option installed: restart tcvr	A new option has been installed in the transceiver. Switch the transceiver off then on for the option to take effect.
No data available	The information you requested from the other station is unavailable.
No mode for <name of channel>	There are no allowed modes for the channel. Go to the Channel List and select a mode for the channel.
No networks set to be scanned	You have switched scanning on but no networks have been set to be scanned. Go to the Network List, go to the network you want to scan, then change the value in the Scan Network setting from Don't scan.
No tuner	The transceiver has attempted to tune the antenna, but there may be no tuner (the antenna may not require one), or the antenna may be faulty.
No valid GPS info within timeout period	No valid GPS information has been received within the time set in the GPS Error Time entry in the Control List.
No valid network in Network List	<p>This message is displayed when the Network List is empty.</p> <p>Create a suitable network in the Network List.</p>
Not found: <name of entry>	A setting in this list refers to an entry in another list, but that entry is no longer there. Select a different entry or recreate the missing entry.
Not in Channel List: <name of channel>	One of the channels in the network you are scanning is not in the Channel List. Either remove the channel from the channel/mode list of the network, or recreate the channel in the Channel List.
Not in network: <channel/mode>	<p>The channel/mode on which you have attempted to make a call is not in the network.</p> <p>For example, the Address List entry you are calling specifies the network in which the call is to be made, but the channel/mode is not in that network.</p> <p>Select a different channel/mode or network.</p> <p>This message may also be displayed when you are editing a channel/mode in the Address or Phone Link List and the channel/mode is not in the network specified. Select a different channel/mode or network.</p>
Number too high	You have entered a number that exceeds the maximum value for the setting. Enter a lower number.

Table 43: System messages (cont.)

Message	Description
Number too low	You have entered a number below the minimum value for the setting. Enter a higher number.
Other tcvr ended call	The station you called has ended the call.
Position: <GPS position>	The transceiver has received the GPS position of the station you called.
Power fault on antenna	The antenna power has failed due to excessive current being drawn by the antenna. Check the antenna connectors, and if the problem persists, check the antenna.
Power fault on antenna recovered	The power fault on the antenna has been rectified.
PTT aborted: confirmations lost	The device that was transmitting (for example, a modem) has been disconnected. Reconnect the device, then try the task again.
PTT aborted: timeout period exceeded	<p>The transceiver has ceased transmission because the maximum transmission time set in the Cfg PTT Cutout Time entry in the Control List was exceeded. This may have occurred because you held PTT down too long or made a long transmission using a modem.</p> <p>Release the PTT button if it is held down and/or increase the PTT cutout time if necessary.</p>
PTT rejected from <location of PTT: reason>	<p>The transceiver could not transmit from a specific location for the reason stated. The possible locations are the handset, desk console, morse key, and CICS on the 1-way port.</p> <p>The possible reasons are that:</p> <ul style="list-style-type: none"> • you are on a receive-only channel • the mode is not allowed for this channel • you are in the CB frequency range but are not on a specific CB channel • you are using a transceiver in which the channel programming option and the position of the TPE link does not permit transmission • the system is locked • the transceiver is scanning • the battery charge is low • the synthesiser is unlocked • the transceiver is tuning • the maximum transmission time set in the Cfg PTT Cutout Time entry in the Control List was exceeded

Table 43: System messages (cont.)

Message	Description
Read only entry Read only list Read only setting	You have attempted to edit a locked list, entry or setting. The item was locked at a higher access level than that into which you are logged. You cannot unlock it unless you log into that higher level. For example, if an entry was locked at admin level and you have logged in as a user, you must log in as an administrator before you can unlock the entry.
Receive-only channel	You have attempted to transmit on a receive-only channel. Select a channel on which you can transmit.
Request sent...	Your request that information (such as a GPS position) be automatically sent to you from another station has been sent. Wait for the next message.
Secure error: hardware fault	Switch the transceiver off, check that the cables are connected correctly, then switch the transceiver on. If the problem persists, contact your Codan representative.
Secure error: index key not set	You have selected a Secure Key that has not been set up in a Secure Index.
Secure error: no keys set	No Secure Keys have been programmed since the voice encryptor was installed. Program a Secure Key (see page 101, Using the voice encryptor).
Secure error: try again	The voice encryptor module has reset unexpectedly. Press SEC to go secure.
Service option enabled	The service option in the transceiver is enabled. Contact your Codan representative to have this option disabled.
Settings hidden in <name of entry>	You have attempted to display the settings for an entry where all the settings have been hidden at user level. To display the settings, use the Full view? entry in the List Manager. To display the settings in normal view, use the Show? entry in the List Manager.
Status rcvd: <Get Status information>	The transceiver has received the Get Status information from the station you called.
Synthesiser lock error	The frequency synthesiser has not locked on a frequency. Contact your Codan representative.
Synthesiser lock recovered	The frequency synthesiser can now lock on a frequency.
System error <error number>	A system error has occurred. The transceiver will restart automatically. Retry the task you were performing when the error occurred. If the problem persists, note the system error number in the message, then contact your Codan representative.

Table 43: System messages (cont.)

Message	Description
Tcvt busy: retry in 10 seconds	<p>The transceiver is busy. This may be because:</p> <ul style="list-style-type: none"> • it is receiving an incoming call • it is processing a change made to your station self address <p>Wait for 10 seconds, then try the task again.</p>
Text too long	You have entered a line of text that is too long. Reduce the length of the text.
Too many chans to scan	<p>More than 100 channels have been set to be scanned. The transceiver will only scan 100 of them.</p> <p>In the Network List:</p> <ul style="list-style-type: none"> • remove some channels from the channel/mode list of one or more of the networks that are set to be scanned • reduce the number of networks that are set to be scanned by changing the value of the Scan Network setting in one or more networks to Don't scan
Tune aborted	Automatic tuning of the antenna was aborted because you pressed PTT during an automatic tuning cycle.
Tune antenna then retry call	Your call cannot be made until the antenna is tuned. Tune the antenna then try the call again.
Tune failed	The transceiver could not automatically tune the antenna.
Tune successful	The transceiver has tuned the antenna successfully.
Tuner timeout	<p>Automatic tuning of the antenna has timed out because:</p> <ul style="list-style-type: none"> • the transceiver could not tune the antenna within the specified timeout period • the tuner cable is not connected • the Cfg Auto Tune Mode is set incorrectly
Tuning...	The transceiver is automatically tuning the antenna.
Waiting for response	You have requested that information (such as a GPS position) be automatically sent to you from another station. The transceiver is waiting for a response from that station. Wait for the next message.

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20 Accessories and hardware options

The following accessories and hardware options are available for your NGT *CR* Transceiver.

Table 44: List of accessories and hardware options

Code	Accessories
02-10234	NGT System Programmer (including programming cable)
15-00112	Vehicle installation hardware kit
15-00129	Handset cradle
15-00130	Vehicle mounting cradle—complete with DC power cable (6 m)
15-00131	Cradle adaptor
15-00172-002	3 RU rack-mounted tray with speaker grille and handset
15-00508	Voltage regulator (24 to 12 V)
15-00602	Headphones for desk console
15-00649	Extension speaker
15-00702	Cable kit for float charging batteries
15-00704	Vehicle interference suppression kit
15-00711	Bulkhead mounting fuse holder for transceiver DC power cable—supplied with 32 A fuse
15-00712	32 A fuse for code 15-00711
15-00766	Code 766 Desk Console
15-02063-EN	Service manual for the NGT series transceiver
15-10469	Cooling fan for RF unit (Option F)
15-10479	FED-STD-1045 ALE/CALM option
15-10507	Voice Encryptor option
15-10518	Amateur Mode option
30-11208-000	Rubber feet for RF unit

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21 Specifications

The following table shows typical values.

Table 45: Specifications for the NGT CR Transceiver

Item	Specification
Channel capacity	100
Frequency range	Transmit: 1.6 to 30 MHz Receive: 250 kHz to 30 MHz
Operating mode	Single sideband (J3E, USB–LSB AM, H3E (optional))
Transmitted power	125 W (PEP)
Spurious and harmonic emissions	Better than 65 dB below PEP
Receiver sensitivity	Frequency: 0.25 to 30 MHz RF amp off: 1.25 μ V PD –105 dBm Frequency: 1.6 to 30 MHz RF amp on: 0.12 μ V PD –125 dBm For 10 dB SINAD with greater than 50 mW audio output
Selectivity	Greater than 70 dB at –1 kHz and +4 kHz reference suppressed carrier frequency USB Pass Band: –6 dB 300 to 2600 Hz Ripple: 2 dB p–p 500 to 2500 Hz
Frequency stability	± 0.3 ppm (–30 to +60°C)
Supply voltage	12 V DC nominal, negative earth Normal operating range: 10.8 to 16 V DC Maximum operating range: 9 to 16 V DC Reverse polarity protection provided
Overvoltage protection	Shutdown at 16 V DC (nominal) for duration of overvoltage
Supply current	Receive: (no signal): 630 mA (nominal) Transmit: J3E voice: 8 A J3E two tone: 9–16 A

Table 45: Specifications for the NGT*CR* Transceiver (cont.)

Item	Specification
Size, weight and sealing	2011 RF Unit (excluding vehicle mounting frame)
	Size: 210 mm W × 270 mm D × 65 mm H
	Weight: 3.3 kg
	Sealing: IP52
	2020 Handset
	Size: 65 mm W × 35 mm D × 130 mm H
	Weight: 0.3 kg
	Sealing: IP41
	Handset and speaker connector
	Size: 42 mm W × 55 mm D × 22 mm H
	Sealing: IP41

This section contains the following topics:

Example 1: selecting a specific channel (262)

Example 2: displaying an information screen (263)

Example 3: accessing the Free Tune screen (264)

Example 4: displaying and/or changing a setting in the Control List (265)

Example 5: changing a value to the next value in a list (266)

Example 6: opening a list at the marker entry (267)

Example 7: making a call using a specific entry in the Address List (268)

Example 1: selecting a specific channel

This example shows you how to create a macro to select a specific channel in the Channel List.

When you run this macro, the transceiver:

- opens the Channel List
- selects the channel specified in the macro
- briefly displays the new channel
- returns you to the screen you were on

To create this macro:

- ☐ Press **VIEW** until the channel screen is displayed.
- ☐ Scroll to the channel you want the macro to select.
- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Create macro**, then press **✓**.

The transceiver asks you to select the action you want the macro to perform.

- ☐ Scroll to **Go to this chan**, then press **✓**.

The transceiver asks you to select the timing with which the macro operates.

- ☐ Scroll to **Before pause**, then press **✓**.

NOTE

When you use a macro to select a channel, the channel is always selected before the channel screen is displayed. You can therefore select Before pause or After pause. The end result is the same.

- ☐ Press the key to which you want to assign the new macro.
- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press **✓**.
- ☐ Type a name for the macro, then press **✓**.

The macro is created and assigned to the key, and the List Manager remains open.

Example 2: displaying an information screen

The time and GPS screens are information screens. You can view the information on these screens but you cannot change it. This example shows you how to create a macro to display the time screen in the Control List.

When you run this macro, the transceiver:

- goes to the Time Screen entry in the Control List
- briefly displays the current time and date
- returns you to the screen you were on

To create this macro:

- ☐ Log into admin level (for help see [page 129, Logging into admin level from user level](#)).
- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Time...**, then press **✓**.
- ☐ Scroll to **Screen**, then press **✓**.
- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Create macro**, then press **✓**.

The transceiver asks you to select the timing with which the macro operates.

- ☐ Scroll to **Before pause**, then press **✓**.

NOTE This macro displays an information screen and does not change any values, so you can select Before pause or After pause. The end result is the same.

- ☐ Press the key to which you want to assign the new macro.
- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press **✓**.
- ☐ Type a name for the macro, then press **✓**.

The macro is created and assigned to the key, and the List Manager remains open.

Example 3: accessing the Free Tune screen

The Free Tune screen is a special entry in the Control List that enables you to select any frequency within the transceiver's range. Once a frequency has been selected you will be able to receive a signal on this frequency, if there is one being transmitted. This example shows you how to create a macro to display the Free Tune screen in the Control List.

When you run this macro, the transceiver:

- goes to the Free Tune entry in the Control List
- displays the current frequency
- waits for you to enter a new frequency

To create this macro:

- ☐ Log into admin level (for help see [page 129, Logging into admin level from user level](#)).
- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Free Tune**, then press **✓**.
- ☐ Position the cursor under the number that you are most likely to change while free tuning.
- ☐ Hold **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Create macro**, then press **✓**.

The transceiver asks you to select the action you want the macro to perform.

- ☐ Scroll to **Display freq**, then press **✓**.

The transceiver asks you to select the timing with which the macro operates.

- ☐ Scroll to **Waits**, then press **✓**.
- ☐ Press the key to which you want to assign the new macro.
- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press **✓**.
- ☐ Type a name for the macro, then press **✓**.

The macro is created and assigned to the key, and the List Manager remains open.

Example 4: displaying and/or changing a setting in the Control List

This example shows you how to create a macro to display and/or change a setting in the Control List. You can then change the value or press **X** to leave it as it is.

When you run this macro, the transceiver:

- goes to the Cfg Alert Tones entry in the Control List
- displays the current value
- waits for you to act

To create this macro:

- ☐ Log into admin level (for help see [page 129, Logging into admin level from user level](#)).
- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Cfg...**, then press **✓**.
- ☐ Scroll to **Alert Tones**, then *hold* **✓**.

A question mark is displayed at the end of the top line to indicate that you can now change the value.

- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Create macro**, then press **✓**.

The transceiver asks you to select the action you want the macro to perform.

- ☐ Scroll to **Display value**, then press **✓**.

The transceiver asks you to select the timing with which the macro operates.

- ☐ Scroll to **Waits**, then press **✓**.
- ☐ Press the key to which you want to assign the new macro.
- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press **✓**.
- ☐ Type a name for the macro, then press **✓**.

The macro is created and assigned to the key, and the List Manager remains open.

Example 5: changing a value to the next value in a list

For many entries in the Control List, changing a value involves selecting a value from a short list of possible values. This example shows you how to create a macro to change the current value to the next value in one of these entries, whatever that value may be.

For entries where the values are on and off, creating a macro to go to the next value means you can toggle the entry on and off using the same macro.

This example shows you how to create a macro to switch Help Mode on or off. (This is one of the standard macros shipped with the transceiver and is assigned to the **5** key.)

When you run this macro, the transceiver:

- goes to the Help Mode entry in the Control List
- changes the value to the next value in the list (that is, from On to Off, or Off to On)
- saves the value

The timing with which this macro operates is immediate. This means that the macro operates in the background and simply displays the result (that is, Help Mode is switched on or off).

To create this macro:

- ☐ Log into admin level (for help see [page 129, Logging into admin level from user level](#)).
- ☐ Press **X** until **Main Menu** is displayed.
- ☐ Scroll to **Control**, then press **✓**.
- ☐ Scroll to **Help Mode**, then *hold* **✓**.

A question mark is displayed at the end of the top line to indicate that you can now change the value.

- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Create macro**, then press **✓**.

The transceiver asks you to select the action you want the macro to perform.

- ☐ Scroll to **Set next value**, then press **✓**.

The transceiver asks you to select the timing with which the macro operates.

- ☐ Scroll to **Immediately**, then press **✓**.

If you want to briefly view the value to which the setting is changing, scroll to **Before pause**, then press **✓**.

- ☐ Press the key to which you want to assign the new macro.
- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press **✓**.
- ☐ Type a name for the macro, then press **✓**.

The macro is created and assigned to the key, and the List Manager remains open.

Example 6: opening a list at the marker entry

This example shows you how to create a macro to open a list at the entry on which a marker has been set.




When you run this macro, the transceiver:

- opens the list
- goes to the entry on which the marker has been set
- waits for you to act

To create this macro:

- ☐ Set a marker on the entry to which you want the macro to go (see [page 114, *Setting a marker*](#)).




If you have already set the marker, open the list in which the entry is stored.

- ☐ *Hold*  to open the List Manager.
- ☐ Scroll to **Macros...**, then press .
- ☐ Scroll to **Create macro**, then press .

The transceiver asks you to select the action you want the macro to perform.

- ☐ Scroll to **Go to marker**, then press .

The transceiver asks you to select the timing with which the macro operates.

- ☐ Scroll to **Waits**, then press .
- ☐ Press the key to which you want to assign the new macro.
- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press .
- ☐ Type a name for the macro, then press .

The macro is created and assigned to the key, and the List Manager remains open.

Example 7: making a call using a specific entry in the Address List

This example shows you how to create a macro to make a call using a specific entry in the Address List.

When you run this macro, the transceiver:

- opens the Address List
- goes to the entry specified in the macro
- begins a call to the address specified in the entry

The timing with which this macro operates is **Immediately**. This means that the macro begins the call without displaying the Address List entry first. The transceiver may, however, prompt you for information about the call depending on the details supplied in the entry.

To create this macro:

- ☐ Press **VIEW** until the Address List is displayed.
- ☐ Scroll to the entry you want the macro to call.
- ☐ *Hold* **Q** to open the List Manager.
- ☐ Scroll to **Macros...**, then press **✓**.
- ☐ Scroll to **Create macro**, then press **✓**.

The transceiver asks you to select the action you want the macro to perform.

- ☐ Scroll to **Go to this entry**, then press **✓**.

The transceiver asks you to select the timing with which the macro operates.

- ☐ Scroll to **Immediately**, then press **✓**.
- ☐ Press the key to which you want to assign the new macro.
- ☐ Scroll to the macro you want to have in the list immediately after the new macro, then press **✓**.
- ☐ Type a name for the macro, then press **✓**.

The macro is created and assigned to the key, and the List Manager remains open.

Appendix B Get Status calls

When you make a Get Status call, you need to specify the type of status information you want to retrieve from the remote station (see [Table 46](#), [Table 47](#) and [Table 49](#)). You will be prompted by the transceiver to specify the type of information during the Get Status call.

Information retrieved in an Open diagnostic Get Status call

Open diagnostic information may only be retrieved from another transceiver using a Get Status call in an Open Selcall network. It may contain all or part of the information in [Table 46](#).

To obtain Open diagnostic information:

- ☐ Press **CALL**.
- ☐ Type the address of the station you want to call, scroll to **Get Status?** for the call type, then press **CALL**.
- ☐ Scroll to **1: Diagnostic**, then press **CALL**.
- ☐ Scroll to an Open Selcall network, then press **CALL**.
- ☐ Scroll to the channel/mode combination you want to use, then press **CALL**.

Table 46: Information retrieved in an Open diagnostic Get Status call

Information received	Description
RXnn.n	Battery voltage in receive
TXnn.n	Battery voltage in transmit
S1=nn	Signal strength of received call
SWR=n.n	SWR of the antenna
Vn.nn	Transceiver power
Base Mobile	Transceiver antenna type
FwrPower=nn	Forward power
RevPower=nn	Reflected power
Tcvr930 2000	Transceiver type
Vn.nn	Firmware version
T=nn	Temperature in °C
ID=nnnnnnn	Last Called ID

Information retrieved in a Codan diagnostic Get Status call

Codan diagnostic information may only be retrieved from another transceiver using a Get Status call in a Codan Selcall network. It contains the information in [Table 47](#) or [Table 48](#) (for older Codan transceivers).

To obtain Codan diagnostic information:

- ☐ Press **CALL**.
- ☐ Type the address of the station you want to call, scroll to **Get Status?** for the call type, then press **CALL**.
- ☐ Scroll to **1: Diagnostic**, then press **CALL**.
- ☐ Scroll to a Codan Selcall network, then press **CALL**.
- ☐ Scroll to the channel/mode combination you want to use, then press **CALL**.

Table 47: Information retrieved in a Codan diagnostic Get Status call made to a Codan transceiver

Information received	Description
RXnn.n	Battery voltage in receive
TXnn.n	Battery voltage in transmit
S1=nnn	Signal strength of received call (dB μ V)
S2=nnn	Signal strength 2 seconds after call was received (dB μ V)
SWRn.n	SWR of the antenna
Pnnn	Power output of the transmitter (W)
Tnn	Temperature ($^{\circ}$ C)

Table 48: Information retrieved in a Codan diagnostic Get Status call made to a Codan 9323 or 9360 transceiver

Information received	Description
RX=nn.nV	Battery voltage in receive
TX=nn.nV	Battery voltage in transmit
S1=nnn μ V	Signal strength of received call (dB μ V)
S2=nnn μ V	Signal strength 2 seconds after call was received (dB μ V)
GAIN=nnn	RF gain on or off
SWR=n.n	SWR of the antenna
PWR=nnnW	Power output of the transmitter (W)

Information retrieved in a Codan configuration Get Status call

Codan configuration information may only be retrieved from another transceiver using a Get Status call in a Codan Selcall, Open Selcall or ALE/CALM network. It contains the information in [Table 49](#) and [Table 50](#).

To obtain configuration information from a Codan transceiver:

- ☐ Press **CALL**.
- ☐ Type the address of the station you want to call, scroll to **Get Status?** for the call type, then press **CALL**.
- ☐ Scroll to **2: Configuration**, then press **CALL**.
- ☐ Scroll to the network you want to use, then press **CALL**.
- ☐ Scroll to the channel/mode combination you want to use, then press **CALL**.

Table 49: Information retrieved in a Codan configuration Get Status call made to a Codan transceiver

Information received	Description
AR SR VR AR Voice VR Mobile ASR SRx CR 2110 2110v	Product type as held in the Customer Radio entry in the Control List
RF:n.nn JB:n.nn NRI:n.nn 2110:n.nn	Product name as held in the Devices entry in the Control List, followed by the firmware version number for the device

Table 50: Information retrieved in a Codan configuration Get Status call made to a Codan 9323 or 9360 transceiver

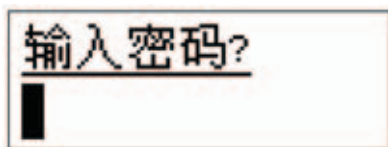
Information received	Description
nnn-nnn/nn.nn	Main processor: last six digits of 90-20nnn-nnn firmware set number/firmware version number
nnn-nnn/n.nn	Control head: last six digits of 90-20nnn-nn firmware set number/firmware version number
TxD/TxE/TxP	Channel programming capability
S	Selcall option (S or SEL) installed
SLO	Selcall lockout option installed
GPS	GPS option installed
ES	Emergency selcall option installed
ALE	ALE option installed
AM	AM option installed

Appendix C Forgotten passwords

If you have forgotten your user password, contact Codan to obtain a code to erase your password. You will be asked to quote the ESN of the 2011 RF Unit.

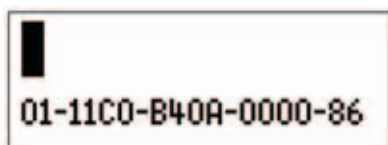
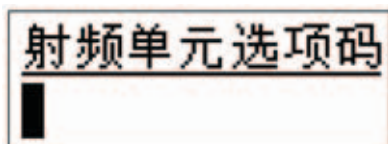
To obtain the required ESN and/or enter the code provided by Codan:

- ☐ Switch on the transceiver then wait until you are prompted to enter a password.



- ☐ Hold **Q** to display the Option code screen.

The ESN is displayed on the bottom line of the screen.



- ☐ Do one of the following:
 - To exit this screen and return to the Enter password screen, hold **X**.
 - To enter the code to erase your password, start typing. The transceiver automatically enters dashes in the appropriate places. When you have entered the code, press **✓**. The password is erased and the home screen is displayed.

NOTE The ESN is displayed in a similar manner during Admin login.

NOTE To enter a new password, use the Password User or Password Admin entry in the Control List (for help see [page 116, Changing a setting in the Control List](#)).

This page has been left blank intentionally.

This section contains the following topics:

[Introduction \(276\)](#)

[Syntax for the Message 10 entry \(276\)](#)

[Activating configuration commands in the Message 10 entry \(277\)](#)

[Restricting access to the List Manager \(277\)](#)

[Restricting access to admin level \(278\)](#)

[Restricting access to call types \(279\)](#)

[Enabling the automatic removal of the incoming call pop-up \(279\)](#)

[Restricting access to holding CALL \(280\)](#)

[Restricting access to Voice Encryptor features \(280\)](#)

Introduction

You can limit access by users to certain areas in the user interface for the NGT CR Transceiver by entering special configuration commands in the Message 10 entry in the Control List. These commands may prevent accidental changes to setup information, and enable you to hide information on a need-to-know basis.

You can:

- restrict access to the List Manager in total, or restrict access to certain functions (category LM, see [page 277, Restricting access to the List Manager](#))
- restrict access to the admin level (category BAL, see [page 278, Restricting access to admin level](#))
- restrict the call types that can be used to make a call unless they have already been used in an address entry (category BCT, see [page 279, Restricting access to call types](#))
- enable the automatic removal of an incoming call pop-up (category TIC, see [page 279, Enabling the automatic removal of the incoming call pop-up](#))
- restrict access to **holding CALL** and hence preventing changes to calling information (category HCD, see [page 280, Restricting access to holding CALL](#))
- restrict access to the secure PIN function with the Voice Encryptor feature (category BSP, see [page 280, Restricting access to Voice Encryptor features](#))
- restrict access to the Secure Standby Mode (category SSD, see [page 280, Restricting access to Voice Encryptor features](#))

NOTE These configuration commands operate at the user level. If you are logged into admin level you will have full access to the above functions, regardless of the setting in the Message 10 entry.

Syntax for the Message 10 entry

The following rules apply to configuration commands used in the Message 10 entry in the Control List:

- Commands must begin with the characters **#\$!** followed by a space, for example, **#\$! BSP**. If you do not use these characters, the transceiver will read any characters in the entry as a standard message.
- Category commands must be followed by a hyphen, then the specific commands (see [Table 51](#) and [Table 52](#)), separated by commas. Each category and corresponding commands are separated by a space, for example:

LM-FV,UL BCT-M,GP

Activating configuration commands in the Message 10 entry

After entering a configuration command in the Message 10 entry, you must switch your transceiver off then on again.

Restricting access to the List Manager

A configuration command for restricting access to the List Manager begins with **#\$! LM-**. Follow this command with the codes you want to use from [Table 51](#). Separate the commands with a comma.

Table 51: Codes for restricting access to the List Manager

Use this code...	If you want to...
Ad (Advanced)	Prevent access to the Advanced... features in the List Manager via the Quick Start menu.
AO (Administration Only)	Prevent access to the List Manager.
Ent (Entries)	Prevent creating, renaming, copying, editing and deleting entries unless it is via the Quick Start menu.
FV (Full View)	Prevent access to full view (see page 131, <i>Displaying full and normal view</i>).
Grp (Group)	Prevent toggling between grouped and ungrouped entries (see page 123, <i>Grouping and ungrouping entries</i>).
HP (Home Page)	Prevent changing the home screen (see page 115, <i>Setting the home screen</i>).
Itm (Item)	Prevent adding and deleting items unless it is via the Quick Start menu.
Mcr (Macro)	Prevent use of macros.
SM (Set Marker)	Prevent changing the marker on any list (see page 114, <i>Setting a marker</i>).
SS (Show Settings)	Prevent toggling between hiding and showing settings for an entry.
UH (User Hide)	Prevent changing the hide or show status of an entry at user level (see page 132, <i>Hiding and showing information</i>).
UL (User Lock)	Prevent changing the locked or unlocked status of an entry at user level (see page 134, <i>Locking and unlocking information</i>).

Table 51: Codes for restricting access to the List Manager (cont.)

Use this code...	If you want to...
ULO (User Locks Off)	Prevent toggling between Locks off and Locks on at user level (see page 135, <i>Switching locks off or on at user level</i>).
BIT (Built-in Test)	Prevent access to built-in tests.

For example, if you want to restrict access to all features in the List Manager, enter the following into the Message 10 entry:

#\$! LM-AO

If you want to restrict access to full view and ungrouping entries that are already grouped, enter the following into the Message 10 entry:

#\$! LM-FV,Grp

Restricting access to admin level

If you want to prevent entry to admin level, enter the following into the Message 10 entry:

#\$! BAL

CAUTION

This command can only be removed from the Message 10 entry using NSP.

Restricting access to call types

A configuration command for restricting access to call types begins with **#\$! BCT-**. Follow this command with the codes you want to use from [Table 52](#). Separate the commands with a comma.

Table 52: Codes for restricting access to call types

Use this code...	If you want to restrict access to this call type...
AL	ALL
CT	Channel Test
E	Emergency
GP	Get Position
GS	Get Status
ME	Marine Emergency
P	Phone
S	Selective
SP	Send Position

For example, if you want to restrict access to using Marine Emgcy and Get Position call types, enter the following into the Message 10 entry:

#\$! BCT-ME,GP

Enabling the automatic removal of the incoming call pop-up

A pop-up message is displayed when you receive an incoming call. This message usually remains on the display until you acknowledge it by pressing ✓ or ✕. When you use the Timeout Incoming Call (TIC) configuration command, the incoming call pop-up is removed after 30 seconds.

If you want to automatically remove all incoming call pop-ups after 30 seconds, enter the following into the Message 10 entry:

#\$! TIC

Restricting access to *holding* CALL

When you *hold* **CALL**, you gain access to changing call details as you make a call. If you want to prevent the user from having access to networks and channels, use the Hold Call Disable configuration command.

For example, if you want to disable the *hold* **CALL** function, enter the following into the Message 10 entry:

```
#$! HCD
```

Restricting access to Voice Encryptor features

You can restrict access to two features of the Voice Encryptor. A configuration command for restricting access to these features begins with **#\$!** . Follow this command with the codes you want to use from [Table 53](#).

Table 53: Codes for restricting access to Voice Encryptor features

Use this code	If you want to...
BSP (Block Secure PIN)	Prevent access to the Secure PIN function when the user <i>holds</i> SEC . The function of <i>holding</i> SEC enters Secure Mode in the default setting.
SSD (Secure Standby Disable)	Prevent access to Secure Standby Mode (see page 104 , <i>Using the voice encryptor in Standby Mode</i>).

If you want to disable the Secure PIN function, enter the following into the Message 10 entry:

```
#$! BSP
```

If you want to disable the Secure Standby Mode, enter the following into the Message 10 entry:

```
#$! SSD
```

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