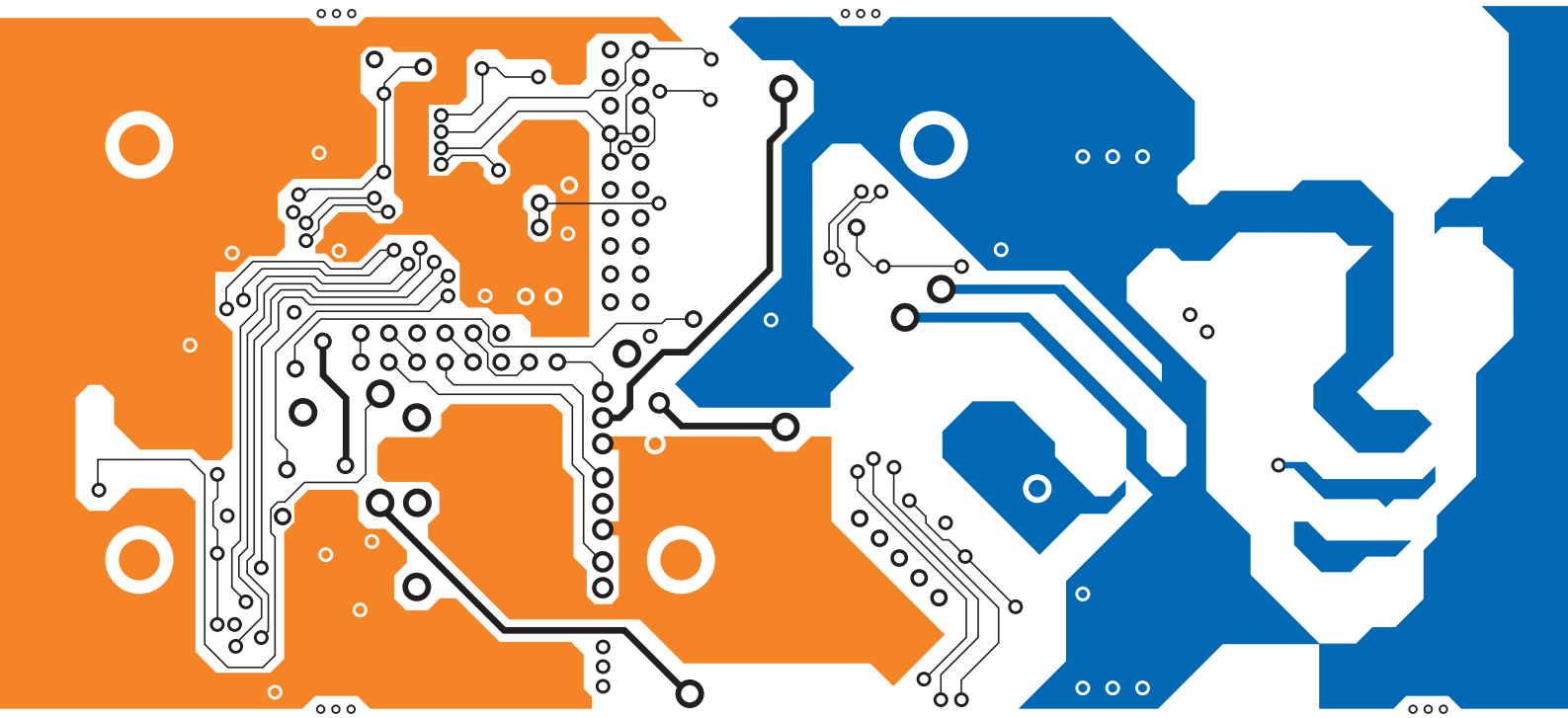
CODAN

NGT Transceiver

HF RADIO COMMUNICATIONS



REFERENCE MANUAL

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1 About this manual

This reference manual provides an overview of the NGT *AR*, *SR*, *AR Voice*, and *VR* Transceivers, how to install them in mobile and fixed stations, how to operate them, 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 Transceiver compliance—compliance information and safety notices

Section 3 HF radio transmission—provides an overview of HF communication

Section 4 The NGT 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 Operating the transceiver from a computer—explains how to operate the transceiver from a computer using CICS

Section 19 Connectors—explains the connectors in the transceiver system

Section 20 System messages—explains the system messages that may be displayed on the handset screen

Section 21 Accessories and hardware options—lists the accessories and hardware options available for the transceiver system

Section 22 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 Compatibility between CICS V2 and V3.00 (or later)—describes the compatibility issues between CICS V2 and V3.00

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

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

Definitions

Acronyms and abbreviations

This term	Means...
4WD	four wheel drive
addr	address
AGC	automatic gain control
ALC	automatic level control
ALE	automatic link establishment
AM	amplitude modulation
ASCII	American standard code for information interchange
BER	bit error rate
CALM	Codan automated link management
CB	citizen band
CIB	Codan interconnect bus
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
FCC	Federal Communications Commission
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

This term	Means...
IF	intermediate frequency
ISO	internal sales order
LBT	listen before transmit
LCD	liquid crystal display
LED	light emitting diode
LF	line feed
LSB	lower sideband
NC	normally closed
NO	normally open
NRI	NGT remote interface
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
PVC	polyvinyl chloride
R&TTE	radio and telecommunications terminal equipment
rcvd	received
RF	radio frequency
RFDS	Royal Flying Doctor Service
RTS	request to send
Rx	receive
SB	sideband
SINAD	(signal + noise + distortion)-to-(noise + distortion) ratio
SWR	standing wave ratio
tcvr	transceiver
TDM	time division multiplex
TPE	transmit program enable
Tx	transmit
TxD	transmit disabled

This term	Means...
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 @?@ 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 in a Codan Selcall network.
Codan interconnect bus (CIB)	The CIB is a proprietary Codan specification that uses a digital bus protocol and TDM audio bus to connect and communicate between Codan products.

This term	Means...
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.
fixed base station	A station that is permanently installed and cannot be moved without significant effort. It consists of a transceiver, a transceiver supply, an antenna, control and accessory devices, ancillary equipment, and appropriate connecting cables.
frequency	The number of cycles per second of a radio wave, usually expressed in kilohertz.
Get Position call	A call that gets the GPS position of a specific station.
Get Status call	A call that gets diagnostic information about the transceiver at a specific station.
handset	A hand-held device that is used to control the functions of a transceiver. It consists of a microphone, PTT button, display and keypad.
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.
junction box	The unit in a transceiver to which a handset, RF unit, speaker and related devices are connected. The junction box receives the instructions that a user enters through the handset and sends these instructions to the relevant devices. In an NGT *AR Voice* or *VR* Transceiver, the junction box is not required; the handset and speaker connect directly to the handset and speaker connector. In this case, all instructions are processed by the RF unit.
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.
Message call	A call that enables you to send a message to a specific station.
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.

This term	Means...
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.
RFDS Emgcy call	A call that enables you to contact the RFDS (NGT *AR* and *AR Voice* Transceivers only).
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.
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. The NGT *AR* and *SR* Transceivers also include a junction box.

Units

NOTE Imperial dimensions are in United States Customary Units.

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

Unit multipliers

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

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

About this issue

This is the sixth issue of the NGT Transceiver Reference Manual. This manual describes V4.3 firmware, which includes the distance and bearing capability with the GPS option, and the Open Selcall call system.

The NGT *VR Mobile* Transceiver (with RF Unit 2011 and no junction box) is now called the NGT *VR* Transceiver. The previous NGT *VR* Transceiver (with RF Unit 2010 and Junction Box 2030) is no longer available.

Associated documents

This manual is one of a series of publications related to the NGT *AR*, *SR*, *AR Voice*, and *VR* Transceiver. Associated documents are:

- NGT Transceiver Getting Started Guide (Codan part number 15-04127-EN)
- NGT System Programmer Help (Codan part number 15-04105-EN)
- Antenna Matrix (Codan part number 12-50133)
- NGT Transceiver System Technical Service Manual (Codan part number 15-02063-EN)
- Declaration of Conformity for the NGT *AR* Transceiver (Codan part number 19-40130)
- Declaration of Conformity for the NGT *SR* Transceiver (Codan part number 19-40121)
- Declaration of Conformity for the NGT *AR Voice* Transceiver (Codan part number 19-40123)
- Declaration of Conformity for the NGT *VR* Transceiver (Codan part number 19-40122)
- Declaration of Conformity for the 3020 Transceiver Supply (Codan part number 19-40127)

2 NGT Transceiver compliance

This section contains the following topics:

Introduction (12)

European Radio and Telecommunications Terminal Equipment Directive (13)

Electromagnetic compatibility and safety notices (14)

FCC compliance (16)

Introduction

This section describes how to ensure the NGT 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 Declarations of Conformity and Expert Letters of Opinion for this product range are listed on page 10, *Associated documents*. These documents can be made available upon request to Codan or a Codan-authorised supplier.

This section also contains the requirements for FCC compliance.

European Radio and Telecommunications Terminal Equipment Directive

The NGT Transceiver product range 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 ECR 209
- Article 3.1a: assessed against ICNIRP and FCC 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 Declarations of Conformity and Expert Letters of Opinion for this product range are listed on page 10, *Associated documents*. These documents can be made available upon request to Codan or a Codan-authorised 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.

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

- 1.5 m (5 ft) of any part of a mobile antenna
- 2 m (7 ft) of any part of a fixed antenna in a data installation of up to 125 W output
- 5 m (17 ft) 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 junction box (if fitted) and RF unit with the protective caps supplied to prevent electrostatic discharge passing through your NGT equipment.

Electrical safety

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

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

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

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 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

FCC compliance

FCC Part 90 certification

The NGT *SR* Transceiver has been tested and certified to FCC Part 90 (FCC identifier code DYYNGT-1).

FCC Part 15 compliance

Any modifications made to the NGT *SR* Transceiver and 3020 Transceiver Supply that are not approved by the party responsible for compliance may void your equipment's compliance under Part 15 of the FCC rules.

The NGT *SR* Transceiver and 3020 Transceiver Supply have been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by switching the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna
- increase the separation between the equipment and receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help

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 3 000 km (1 800 mi) and more are possible. Obstructions such as buildings and mountains have little effect on long-range communication. HF radio can cover such large distances because of the way the transmitted radio signal propagates.

HF radio waves propagate in three ways simultaneously:

- ground wave
- direct wave
- sky wave

Ground wave

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

Direct wave

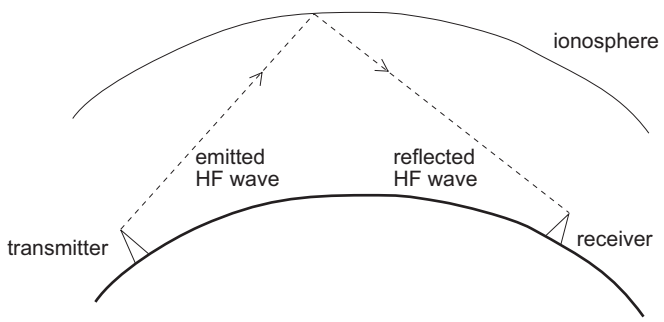
The direct wave travels in a direct line-of-sight from the transmitter to the receiver.

Sky wave

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

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

Figure 1: The reflective properties of the ionosphere



Frequency, distance and time of day

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

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

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

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

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

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

Channels and modes

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

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

Table 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 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 when you are not using the transceiver to communicate you switch scanning on. This ensures that you can receive calls from stations in your network.

The FED-STD-1045 ALE/CALM option

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

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

You are able to make 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, using the phonetic alphabet (see Table 3 on page 22). For example:

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

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

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

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

Keep communication as short as possible.

Table 3: The phonetic alphabet

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

4 The NGT Transceiver

The NGT Transceiver consists of a:

- 2020 Handset
- 2030 Junction Box (NGT *AR* and *SR* Transceivers only)
- 2010 RF Unit (NGT *AR* and *SR* Transceivers only)
- 2011 RF Unit (NGT *AR Voice* and *VR* Transceivers only)

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 junction box, or in the case of the NGT *AR Voice* and *VR* Transceivers, to the handset and speaker connector from the RF unit.

The junction box is a unit to which the handset, RF unit, speaker and related units are connected. It interprets the instructions you enter through the handset then sends them to the appropriate units.

NOTE In the case of NGT *AR Voice* and *VR* Transceivers, the functionality of the junction box is incorporated into the 2011 RF Unit.

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 *AR* and *SR* Transceivers

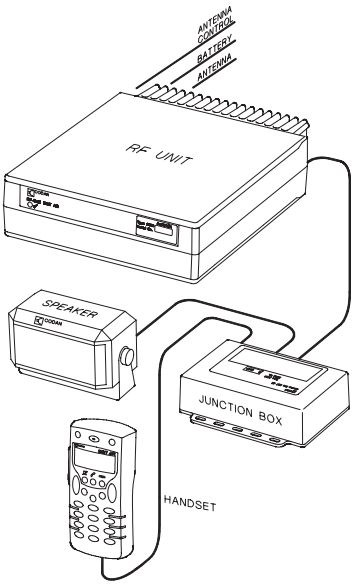
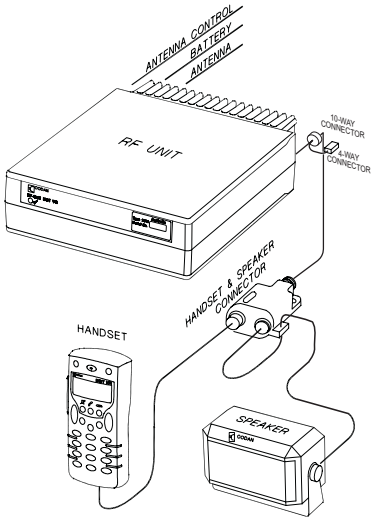


Figure 3: The NGT *AR Voice* and *VR* Transceivers



The 2020 Handset

Figure 4: The 2020 Handset

The handset comprises:

- an LCD
- navigation keys (▶, ◀, ✓, ✕, 🔍)
- 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 ✓ and ✕ keys

Press ✓ to:

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

Hold ✓ to edit settings.

Press ✕ to:

- 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 4: 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 101, *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 103, *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 85, *Muting the transceiver*.
SEC	Pressing or *holding* **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 105, *Using the voice encryptor*.
9	Pressing **9** displays your current GPS position, if the hardware option is fitted and enabled. For more information see page 228, *GPS Screen entry*.
EASITALK	Pressing **EASITALK** toggles the DSP noise reduction algorithm on or off. For more information see page 104, *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)	*Holding* ⚠ starts an automatic Emergency call transmission using call information contained in the Emergency entries in the Address List (see page 171, *Making several different types of calls*).

Table 4: Standard hot keys (cont.)

Hot key	Function
ⓘ + **9**	Pressing ⓘ + **9** enables you to change the default setting for the screen contrast. For more information see page 98, *Changing the screen contrast*.
ⓘ + **0**	Pressing ⓘ + **0** enables you to change the default setting for the screen and keypad backlighting. For more information see page 98, *Changing the screen brightness*.

The NGT desk console with handset

The NGT desk console is an optional accessory for fixed stations (Codan part number 15-10471 for NGT *AR* and *SR* Transceivers only, Codan part number 15-00766 for NGT *AR Voice* and *VR* Transceivers only). 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 5). 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 245, *Hot keys*).

Figure 5: The NGT desk console

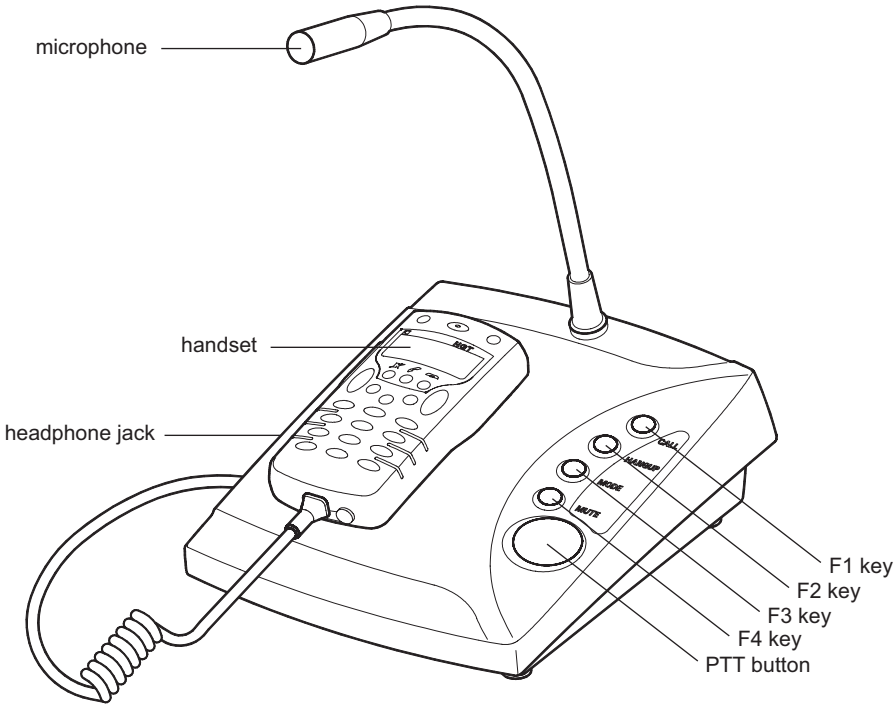


Table 5: Standard hot keys on the desk console

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

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5 Installation

This section contains the following topics:

Types of stations (32)

Types of mobile antennas (35)

Types of fixed antennas (36)

Installing the transceiver (43)

Radio frequency interference (mobile stations only) (58)

Noise suppression (61)

Tuning the mobile antenna (62)

Troubleshooting the installation (63)

Testing the installation (68)

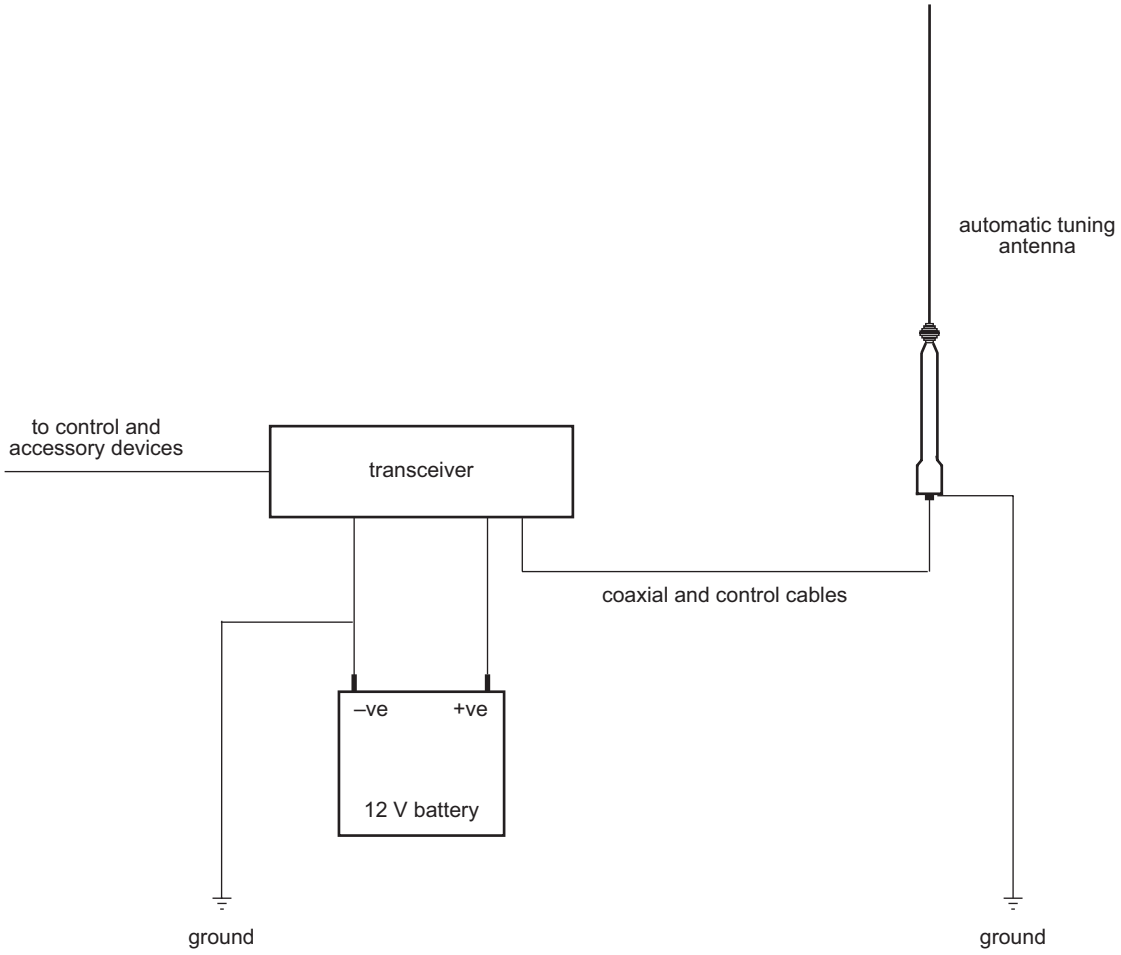
Types of stations

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 6).

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

Figure 6: A typical mobile station

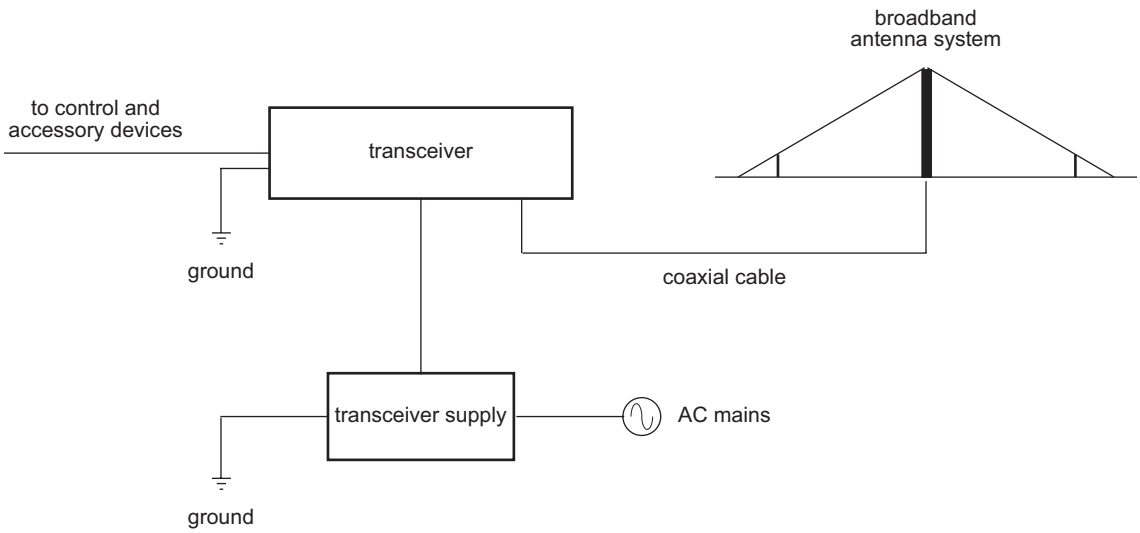


Fixed station

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 7: 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 36, *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 (7 yd) 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 (2 yd) 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 6: 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.

Tapped whip antenna

Description

The tapped whip antenna is manufactured with taps to match the frequencies fitted in the transceiver. The shorting strap should be wound tightly around the antenna in evenly spaced turns. Frequency selection is achieved by inserting the end of the shorting strap into the corresponding tap in the antenna. Up to 10 frequencies can be installed into the tapped whip during manufacture.

Advantages and limitations

Table 7: Advantages and limitations of the tapped whip antenna

Advantages	Limitations
Lightweight and simple to install. Cost-effective when limited frequencies are required.	The frequency range of the antenna is limited to those frequencies installed at the time of manufacture. The antenna lead must be manually adjusted when frequencies are changed. Poor communication will occur if the antenna lead is not plugged into the correct frequency tap.

Types of fixed antennas

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

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 49, *Grounding the antenna*).

For roof-mounted installations, metal roofing or a radial earth plane is recommended (see page 49, *Grounding the antenna*).

Advantages and limitations

Table 8: 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 (60 mi). 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 9: 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 10: 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 (22 yd) 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 11: Advantages and limitations of the long wire 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. 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.

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 12: 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 13: 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 (2 yd) apart

Advantages and limitations

Table 14: 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 (5 yd)
- 7.5 m (8 yd)

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 15: Advantages and limitations of the multichannel helical dipole antenna

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

Installing the transceiver

On receiving your NGT transceiver system, check the contents against the packing list. Make sure that nothing is missing 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.

NOTE Unused connectors on the junction box (if fitted) and RF unit must be covered with the protective caps supplied to prevent electrostatic discharge passing through your NGT equipment.

Positioning the transceiver

When choosing a location for the components of the transceiver system, you should be aware of the environmental ratings of each item of equipment as set out on page 341, *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)
- cargo barrier in station wagons

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

NOTE

Correct installation of the antenna provides efficient operation over the frequency range of the transceiver. A good installation 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 position of the antenna
- how to provide a good ground plane for the antenna
- the length of the antenna cable

To obtain optimal performance and good radiation efficiency from your transceiver, the antenna must be mounted in a position that:

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

Front-mounting is preferable, especially where the bonnet can provide a partial ground plane. A tapped whip antenna is designed for front-mounting at bonnet height. A bracket mount welded to a bullbar is recommended (see page 49, *Grounding the antenna* for bracket requirements).

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 (22 yd) 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 (2 in) 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 (½ in) 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 54, *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 47, *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 (¼ in) plate (minimum), gusseted both sides, or a 10 mm (½ in) 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 36, *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 (5 ft).

In areas of good ground conductivity, an effective ground can be established with an earth spike. The spike should be approximately 3 m (10 ft) 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 (4 in) 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 57, *Connecting the AC mains supply*).

Battery power supply

Batteries need to be well-charged and in good condition to ensure effective operation. Poor battery condition 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 16: 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. *Never* 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 55, *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 57, *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 56, *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 57, *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 (2 yd) away from the battery requires a cable with a cross-sectional area of approximately 4 mm^2 (11 AWG), whereas a transceiver 5 m (5 yd) away from the battery requires a cable with a cross-sectional area of approximately 10 mm^2 (7 AWG).

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 54, *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 (20 in) so that voltage drop is minimised.

To fit the terminal block:

- ❑ Cut the connector from the end of the battery cable.
- ❑ Strip 10 mm (½ in) 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 47, *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 55, *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 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 17)

Table 17: 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

Ignition system noise

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 (12 in) long (see page 61, *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.

Battery charging system noise

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 (12 in), 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 59, *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

Mobile antennas have a relatively narrow bandwidth. This is not important for automatic tuning antennas as they can be tuned at any exact frequency, but a pre-tuned multitap antenna can only be used over a small range of frequencies at each tap. Multitap antennas are accurately tuned at each tap point for a standard vehicle, which is usually a long wheelbase 4WD. The recommended mounting position is on the top of the bullbar on the opposite side to the driver's position. When the mounting position is altered, grounding is affected, which in turn changes the resonant frequency. This is not a problem if the frequency used at that tap still falls within the bandwidth.

Tuning the tapped whip antenna

To tune the tapped whip antenna:

- ❑ Wind the antenna lead evenly along the length of the antenna whip.
- ❑ Place the antenna lead into the tap point corresponding to the channel frequency on which you want to transmit.
- ❑ On the transceiver, scroll to the channel on which you want to transmit, then press PTT to tune.

  If tuning fails see page 63, *Troubleshooting the installation*.

Tuning the automatic tuning whip 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 18.

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

Table 18: 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 34, *Antenna supports in a fixed station*).
Antenna fails to tune certain channels or frequencies	The antenna and/or tuner may not be earthed correctly.	Improve the earth connection (see page 49, *Grounding the antenna* and page 50, *Grounding the tuner (fixed station only)*). Ensure a good earth connection to the vehicle body is provided by an earth braid or copper strap, keeping it as short as possible. 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. 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.
	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 68, *Voltage standing wave ratio*).
	Inadequate support of the antenna.	Ensure the antenna is adequately supported, so that it *does not* sway or sag. If required, use antenna supports such as guyed masts (see page 34, *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 18: 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 68, *Voltage 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 47, *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 47, *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 53, *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 18: Possible faults in the installation (cont.)

Symptoms	**Possible causes**	**Action**
Poor radiation efficiency	Poor installation.	Improve the earth connection (see page 49, *Grounding the antenna*).
	Incorrect positioning of the antenna.	Check the position of the antenna, ensuring that the vehicle body is not acting as a shield. 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 68, *Voltage standing wave ratio*). 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.
	The antenna and/or tuner may not be earthed correctly.	Improve the earth connection (see page 49, *Grounding the antenna* and page 50, *Grounding the tuner (fixed station only)*).

Table 18: 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 68, *Voltage 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 68, *Voltage 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 68, *Voltage 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 49, *Grounding the antenna* and page 50, *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 18: Possible faults in the installation (cont.)

Symptoms	**Possible causes**	**Action**
Tuning fails	Inadequate earthing.	Antenna mounting bracket should be welded or bolted directly to the chassis. All paint should be cleaned from mating surfaces. 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. 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 47, *Grounding the transceiver*).
Voltage drop in either 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

Voltage standing wave ratio

An SWR meter is a convenient way of measuring the forward and reflected powers between a transceiver and its antenna load. To ensure correct installation, the power and SWR assessment should be performed with the transceiver working in its normal antenna system. Insert the SWR meter into the coaxial line at the base of the antenna, then 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.

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6 Operating the transceiver

This section contains the following topics:

Switching on the transceiver (72)

The handset screen (73)

The channel screen (74)

Entering and editing text (76)

Quick Start (81)

Muting the transceiver (85)

Scanning channels (86)

Using the microphone (88)

Finding words and values (89)

Setting the basics (92)

Using hot keys (99)

Tuning the antenna (100)

Switching on Help Mode (102)

Using the clarifier (103)

Reducing background noise with Easitalk (104)

Using the voice encryptor (105)

Switching on the transceiver

To switch on the transceiver:

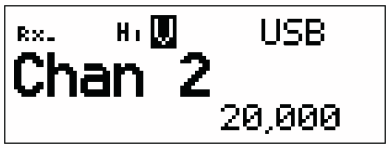
- ❑ Press ⏻.

  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 355, *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 119, *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* ⏻ for 2 seconds, then release.

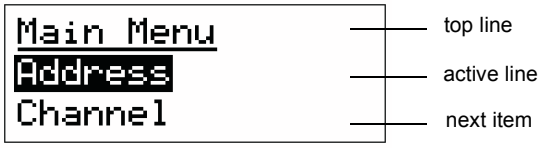
  The transceiver is switched off.

The handset screen

NOTE In the following example, you will need to log in as administrator to see the Main Menu (see page 136, *Logging into admin level from user level* and page 112, *The Main Menu*).

The screen on the handset consists of three lines.

Figure 8: The handset screen



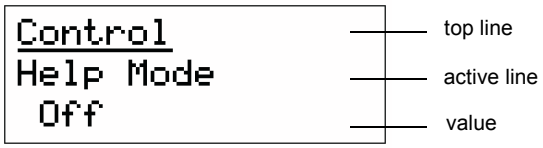
The information displayed on the top line depends on the task you are performing. It can display:

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

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

The bottom line is used when a list is displayed to show either the next item in the list (Figure 8), or the value in the first or only setting for the entry (Figure 9). When a value is displayed, it is indented under the name of the entry to which it applies. In Figure 9 the value indicates that Help Mode is switched off.

Figure 9: The handset screen displaying a value



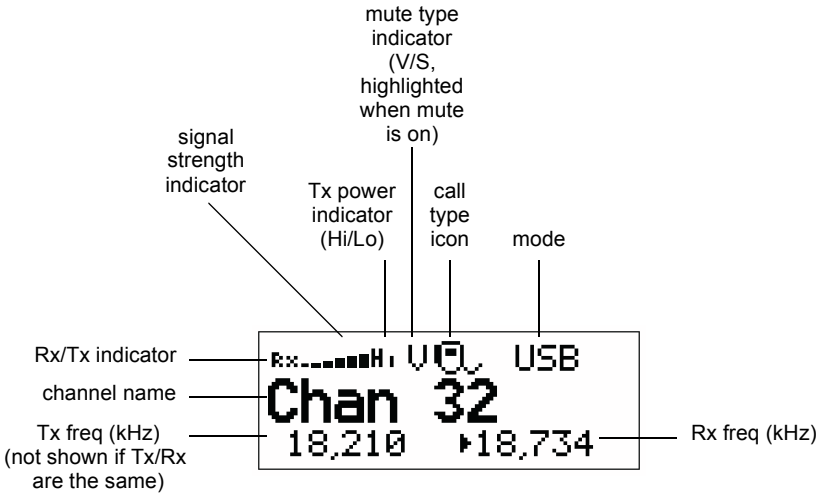
The handset screen also displays information screens such as the channel screen in the Channel List, and the time screen in the Control List.

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 10: 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 10). When high power is selected, **Hi** is displayed in this location.

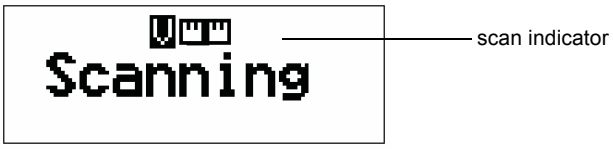
NOTE

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 347, *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 11). During a call, this indicator is replaced with an icon showing the type of call being sent or received (see Figure 10). These icons are listed in Table 26 on page 181.

When the transceiver is scanning, the channel screen is replaced by the scanning screen (see Figure 11).

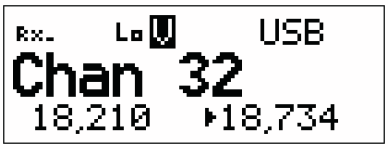
Figure 11: The scanning screen



Selecting a channel

To select a channel:

- ❑ Press ✕ 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.

You can also use the Find feature to find a channel (see page 89, *Finding words and values*).

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

Entering and editing text

There are several situations in which you may be prompted to enter or edit text, for example, when you enter the address of a station you want to call, when you select a setting in which text is required, or when you create an entry in a list. The numeric keypad on the 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 12: Editable screen showing upper-case text entry

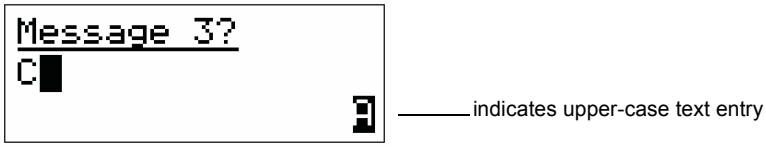


Figure 13: Editable screen showing lower-case text entry

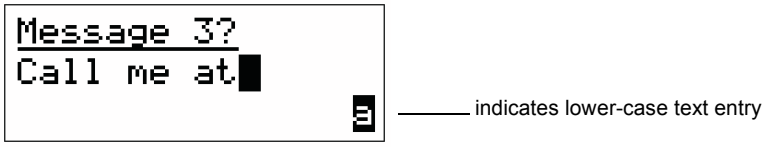


Figure 14: Editable screen showing numeric text entry

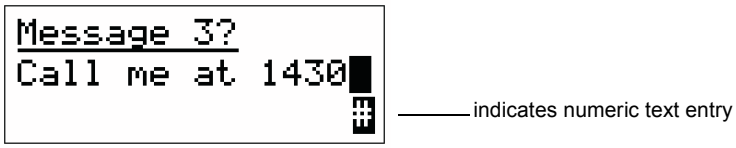
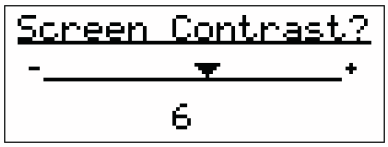


Figure 15: Editable screen showing slider



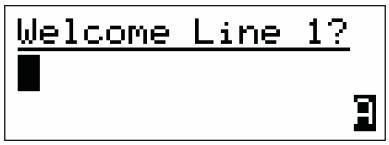
Editing a screen

NOTE In the following example, you will need to log in as administrator to see the Welcome Text entry in the Control List (see page 136, *Logging into admin level from user level*).

To gain access to an editable screen:

- *Hold* ✓.

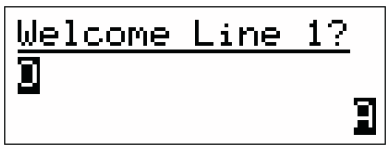
  A question mark is displayed at the end of the heading to show that you can now enter and/or edit text in the setting.



Entering text

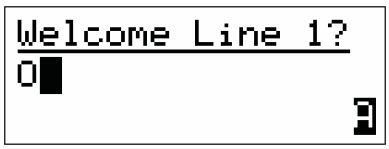
To enter text in an editable screen:

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

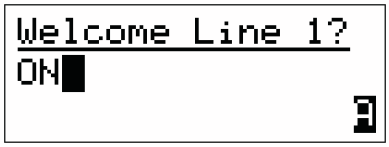


NOTE You can also *hold* the key until the letter you want is displayed, then release the key.

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

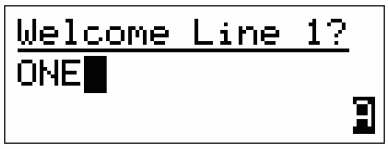


...then press the key repeatedly until the letter you want is displayed.



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

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



Changing between alpha and numerical characters

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

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

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

Moving the cursor

To move the cursor across the text:

- Use ◣ 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:

NOTE The characters that are available are:

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

- Use ◣ or ◥ to move the cursor to the character or space where you want to replace a character.

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

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

Entering text in an ALE call address

NOTE If the FED-STD-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**).

```
Selective?
@_
```

- ❑ Press * to enter @?@.

Saving text changes

To save the changes you have made:

- ❑ Press ✓.

  The question mark is removed from the heading.

```
Welcome Text
Welcome Line 1
 ONE+two=3
```

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

Quick Start

Quick Start provides a simple way of:

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

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

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

Quick Start is accessed via the 🔍 key. Standard List Manager functions as described on page 115, *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.

Quick Start is only available in countries that permit programming of transmit frequencies using the handset.

Opening and closing Quick Start

To open Quick Start:

❑ *Hold* 🔍.

To close Quick Start:

❑ Press or *hold* ✕.

Adding/Editing a channel

To add or edit a channel:

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

  NOTE For help with entering text see page 76, *Entering and editing text*.

  If you want to use an existing channel, scroll to the channel, then press ✓.
- ❑ Enter the receive frequency in kilohertz, then press ✓.

  NOTE You can enter the frequency to three decimal places. Press * to enter a decimal point, then continue with entering the frequency.
- ❑ Enter the transmit frequency in kilohertz, then press ✓.
- ❑ Scroll to the mode combination you want to use, then press ✓.

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

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

Setting up a scan list

To set up a scan list:

- ❑ *Hold* 🔍 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 will return to Quick Start.

  If you do not want to scroll through all the channels in your scan list, *hold* ✓ to return to Quick Start.
- ❑ Press ✕ to close Quick Start, if required.

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

Setting the time and date

To set the time and date:

- ❑ *Hold* 🔍 to open Quick Start.
- ❑ Scroll to **Set time/date**, then press ✓.

  The display will appear with a line under the day of the month.
- ❑ Use ◣ or ◥ to change the current setting to the correct value, then press ✓.

  The line will appear under the month.
- ❑ Repeat the previous step until you have made all of the changes to the time and date.

  When all the changes have been made, the transceiver will return to Quick Start.
- ❑ Press ✕ to close Quick Start, if required.

Setting your station self address

NOTE When Quick Start is available, any self address that you enter using this method will replace the previous self address. If you want to enter more than one self address, and hence disable the Quick Start features, see page 94, *Entering your station self address*.

To set your station self address:

- ❑ *Hold* 🔍 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 76, *Entering and editing text*.
- ❑ Press ✕ to close Quick Start, if required.

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

To add or edit an address that you call frequently:

- ❑ *Hold* 🔍 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 76, *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 will return to Quick Start.
- ❑ If you want to add more call addresses to your Address List or Call Book, scroll to **Address/CallBk** and repeat this process.
- ❑ Press ✕ to close Quick Start, if required.

Deleting an entry

To delete addresses, channels or phone links:

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

  You can delete items from the Address/CallBk, Channel or Phone Link Lists.
- ❑ Scroll to the list from which you want to delete an item, then press ✓.
- ❑ Scroll to the item you want to delete, then press ✓.

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

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

Muting the transceiver

NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see page 136, *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 220, *Auto Resume entries*).

NOTE For help with changing these entries in the Control List see page 202, *Entries in the Control List* and page 120, *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 150, *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 195, *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 220, *Auto Resume entries*).

When the transceiver detects voice, it notifies you according to the mute setting selected (see page 85, *Muting the transceiver*). If your transceiver is set to notify you when voice is detected, you can pause scanning, select the channel/mode on which the voice was heard, then resume scanning when required.

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

Switching scanning on or off

To switch scanning on or off:

- Press **SCAN**.

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

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

  NOTE

  When scanning is switched on, mute is also switched on.

  You cannot use the PTT button while the transceiver is scanning.

Pausing scanning

To pause scanning:

- ❑ Do one of the following:
  - to pause scanning on the current channel/mode, press ✓
  - to pause scanning and scroll to another channel/mode, press ▶ or ◀

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

  If you do not press a key within 30 seconds, the transceiver automatically resumes scanning.
- ❑ While scanning is paused, do one or more of the following:
  - to speak, *hold down* PTT
  - to resume scanning immediately, press ✓

Using the microphone

The microphone is located at the 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 202, *Entries in the Control List*).

Finding words and values

NOTE In the following examples, you will need to log in as administrator to see the Main Menu (see page 136, *Logging into admin level from user level*).

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

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

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

Finding a word

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

❑ From **Main Menu**, scroll to the list in which you want to search, then press ✔.

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

```
Control
Address
 1234/<all>
```

❑ Press 🔍 once.

The Find prompt is displayed on the top line.

```
Find:
Address
```

NOTE For help with finding a value see page 90, *Finding a value*.

❑ Enter the first character of the word you want to find.

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

```
Find:S
GPS Screen
```

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

NOTE

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

To backspace over text, press ✕.

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

```
Find:S
Mute Scan
```

NOTE

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

- Press ✓ to exit Find at the entry.

```
Control
Mute Scan
 Voice
```

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:

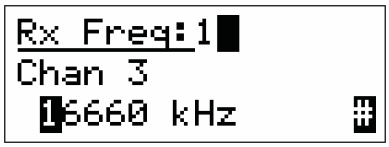
```
Rx Freq:
Chan 6
 8500 kHz
```

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.

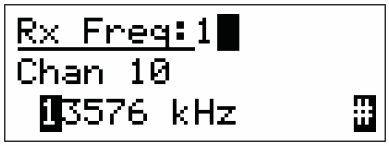
  

  If there aren't any values that begin with this character, the character is deleted and an error beep is made.

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

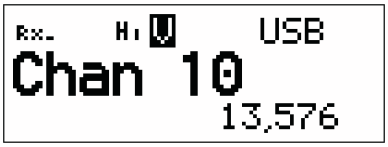
  To backspace over text, press ✕.

- 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 will need to log in as administrator to see the Main Menu (see page 136, *Logging into admin level from user level*).

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

Setting the time zone offset

To set your time zone offset from UTC time:

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

NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

```
Offset from UTC?
-_______T_______+
   0.00 hours
```

- ❑ 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* ✓.

NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

The cursor is placed under the day of the month.

```
Local Time?
13 Dec 2004
04:08:39
```

- ❑ 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 will need to log in as administrator to see the Main Menu (see page 136, *Logging into admin level from user level*).

To display the local time and date:

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

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

  The time screen is displayed.

```
13 Dec 2004
     1:09:48
          UTC -3
```

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

Entering your station self address

NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see page 136, *Logging into admin level from user level*). If you want to view a self address when you switch on your transceiver see page 234, *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 10 self addresses for your NGT *AR*, *SR*, and *AR Voice* Transceiver, or 3 self addresses for your NGT *VR* Transceiver. This section explains how to enter, edit and delete station self addresses.

Entering a self address

To enter your station self address:

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

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

```
Address/Network
(none)
```

If one or more self addresses have already been entered, the screen displays the number of self addresses. *Hold* 🔍 to open the List Manager.

```
Address/Network
1234/<all>
          1 of 1
```

❑ Scroll to **Add item**, then press ✔.

```
List Manager
Add item
Display options...
```

❑ Enter the self address of your station. For example:

```
Address?
2222
                #
```

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 76, *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 ✔.

```
Network?
<all>
Network A
```

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.

```
Address/Network
2222/Network A
          2 of 2
```

- ❑ 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.

```
Address/Network
1234/<all>
          1 of 1
```

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

  The self address is displayed.

```
Address?
1234
                #
```

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

NOTE For help with entering text see page 76, *Entering and editing text*.

The network is displayed.

```
Network?
<all>
Network A
```

- ❑ 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.

```
Address/Network
1234/Network A
          1 of 1
```

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

Deleting a self address

To delete a station self address:

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

```
Address/Network
2222/Network A
          2 of 2
```

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

```
List Manager
Delete item
Display options…
```

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

- ❑ Press ✓.

  The item is deleted and the List Manager remains open.

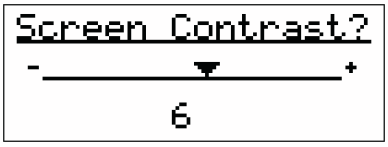
- ❑ Press ✕ until **Main Menu** is displayed.

Changing the screen contrast

To change the contrast of the screen:

- ❑ Press ⓘ + **9** to access the Screen Contrast entry in the Control List.

  The Screen Contrast slider screen is displayed.



- ❑ Use ◣ or ◥ to increase or decrease the contrast, then press ✓.

Changing the screen brightness

To change the brightness of the screen:

- ❑ 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 4 on page 27 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 5 on page 29 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 249, *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 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 75, *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 101, *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 bottom line. For example:

```
PTT to tune

SWR:1.0 Bat:12.7
```

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.

```
PTT to tune
   Tuning...
SWR:1.0 Bat:12.7
```

NOTE

An SWR of less than 2.5:1 is acceptable.

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

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.

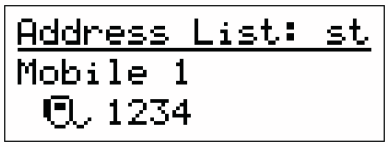
- Release PTT to stop tuning.

  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 16: The Address List with Help Mode switched on



To switch Help Mode on or off:

- Press **HELP**.

  Help Mode is automatically toggled on or off.

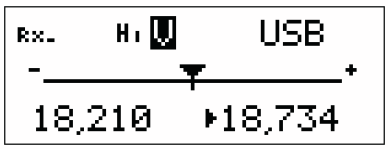
Using the clarifier

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:

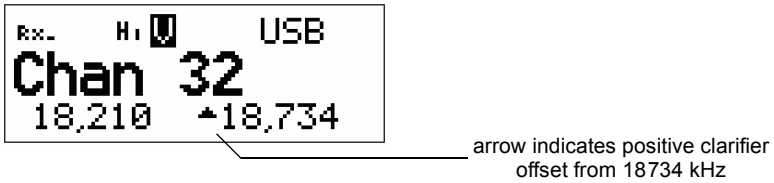
- Press **CLAR**.

  The Clarifier slider is displayed in the channel screen.



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

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



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

Reducing background noise with Easitalk

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

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

NOTE Easitalk uses one of three DSP algorithms to reduce the background noise. Depending on the conditions, you may need to change the algorithm in the Cfg Easitalk entry in the Control List. If you intend to change the algorithm regularly, set up a hot key on the **5** key to go to the next algorithm value in the Cfg Easitalk entry in the Control List (see page 348, *Example 5: changing a value to the next value in a list*).

Switching Easitalk on or off

To switch Easitalk on or off:

❑ Press **EASITALK**.

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

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

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

Using the voice encryptor

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

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

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

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

Using the voice encryptor

NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see page 136, *Logging into admin level from user level*).

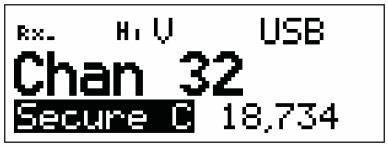
Using the voice encryptor

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:

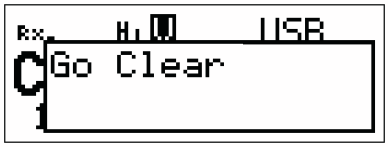


Switching off the voice encryptor

To switch off the voice encryptor:

- ❑ Press **SEC**.

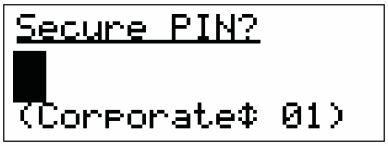
  The transceiver responds with two low short beeps and displays **Go Clear**. For example:



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.

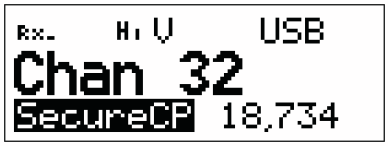


- ❑ Enter the 4-digit PIN that you have agreed to use with others for this session, then press ✓.

  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 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 120, *Changing a setting in the Control List* and page 202, *Entries in the Control List*.

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

- ❑ *Hold* **SEC**.

```
Secure PIN?
(Corporate$ 01)
```

- ❑ 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.

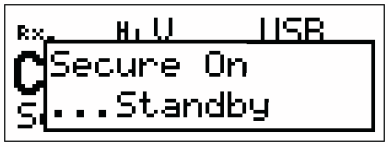
Using the voice encryptor in Standby Mode

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 will open mute when it detects a voice signal on the channel. When an encrypted transmission is received, the transceiver switches from Standby Mode to Secure Mode and the decrypted audio is heard.

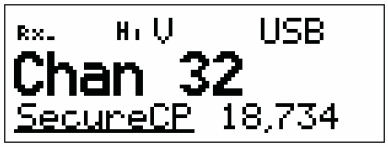
To enter Standby Mode:

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

  The voice encryptor switches to Standby Mode.



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

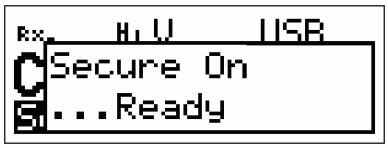


NOTE The transceiver will automatically switch from Standby Mode to Secure Mode if an encrypted transmission is received.

To exit Standby Mode:

- ❑ Press *.

  The voice encryptor switches from Standby Mode.



Setting up the voice encryptor

NOTE In the following discussion, you will need to log in as administrator to see the entries in the Control List (see page 136, *Logging into admin level from user level*).

Setting the Corporate key in an index

To set the Corporate key:

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

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

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

  NOTE If you need to program Index 2 or above with a secure key, you must use CICS (see page 284, *secure command*).

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

Setting up the voice encryptor for basic security use

To set up the voice encryptor:

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

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

- ❑ Scroll to **Corporate**, then press ✓.
- ❑ Lock and hide the Secure Mode entry in the Control List (see page 141, *Locking and unlocking information* and page 139, *Hiding and showing information*).
- ❑ If you want users to be able to use a PIN, enable the PIN mode (see page 367, *Restricting access to Voice Encryptor features*). Otherwise, disable the PIN mode.

Setting up the voice encryptor for advanced security use

To set up the voice encryptor:

- ❑ Set up the Corporate key, if required (see page 109, *Setting the Corporate key in an index*).
- ❑ Set up a hot key to access the Secure Index entry in the Control List so that the current Secure Index, as designated by the organisation, can be selected (see page 347, *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 keys via CICS (see page 284, *secure command*).
- ❑ If you want to change the base of all Corporate keys, modify the base key (Index 0) via CICS (see page 284, *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 (112)

Selecting a list (114)

The List Manager (115)

Setting a marker (118)

Setting the home screen (119)

Changing a setting in the Control List (120)

Making changes to all other lists (121)

Saving call log information to the Address List (125)

Saving GPS information to the Address List (127)

Hiding and showing settings (128)

Grouping and ungrouping entries (130)

Restricting access to information (134)

Logging into admin level (136)

Displaying full and normal view (138)

Hiding and showing information (139)

Locking and unlocking information (141)

The Main Menu

NOTE In the following discussion, you will need to log in as administrator to see the Main Menu (see page 136, *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 17: The contents of the Main Menu

Main Menu
Address
Channel
Control
Network
Phone Link

Entries, settings and values

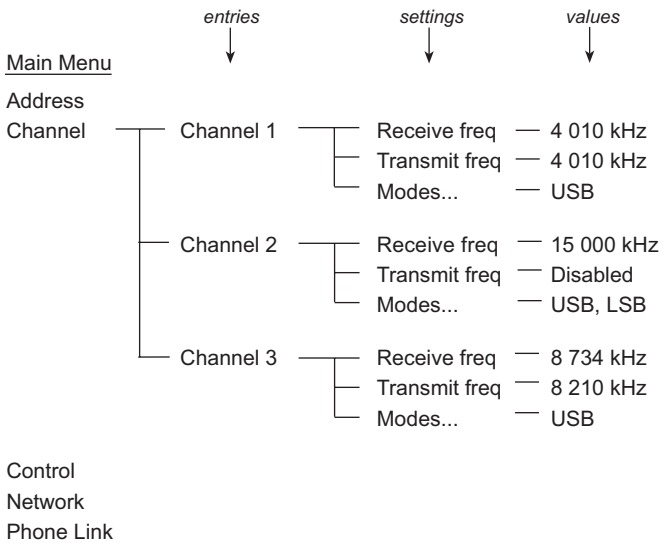
Each list contains entries. The entries in the Address List are the names of the stations you often call, for example, 'Home', 'Work'. The entries in the Channel List are the names of the channels you use, for example, 'Channel 1', 'Channel 2'.

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 18: Examples of entries, settings and values



Selecting a list

NOTE In the following example, you will need to log in as administrator to see the Main Menu (see page 136, *Logging into admin level from user level*).

To select a list from the Main Menu:

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

```
Main Menu
Address
Channel
```

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

```
Main Menu
Network
Phone Link
```

- ❑ 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.

```
Network
Network B
 Don't scan
```

- ❑ 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 19 on page 116 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 19 on page 116).
- ❑ Press ✓.

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

Entries in the List Manager

Table 19: List Manager entries and their functions

Entry		Enables you to...
Create entry		Create an entry in a list.
Copy entry		Copy an entry in a list.
Rename entry		Rename an entry in a list.
Delete entry		Delete an entry in a list.
Set marker		Set a marker on an entry in a list so that the next time you open the list, it is opened to this entry.
Add item		Add: • a mode to a channel in the Channel List • a channel/mode to a network in the Network List • your station self addresses to the Address entry in the Control List
Delete item		Delete: • a mode from a channel in the Channel List • a channel/mode from a network in the Network List • your station self addresses from the Address entry in the Control List
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 19: 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* ✕ 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 will need to log in as administrator to see the Control List (see page 136, *Logging into admin level from user level*).

❑ *Hold* 🔍 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* ✕.

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

❑ To return to the channel screen, press **VIEW**.

Changing a setting in the Control List

NOTE In the following example, you will need to log in as administrator to see the Control List (see page 136, *Logging into admin level from user level*).

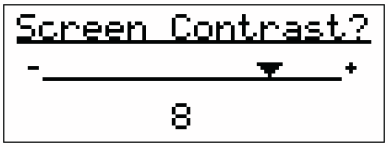
Most of the entries in the Control List contain a single setting. The steps in this section show you how to change these settings. The Address entry, which contains multiple settings, is covered on page 94, *Entering your station self address*.

To change a setting in the Control List:

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

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

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



- ❑ Scroll to the value you want (if it is a slider screen or a list) or enter text (for help see page 76, *Entering and editing text*).

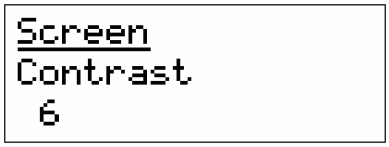
  If you do not want to save the change you made and you are in a setting where you can:

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

  The change is discarded and the setting is closed.

- ❑ Press ✓.

  The question mark is removed.



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

Making changes to all other lists

NOTE In the following examples, you will need to log in as administrator to see the lists (see page 136, *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 120, *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* 🔍 to open the List Manager.
- ❑ Scroll to **Create entry**, then press ✓.

```
List Manager
Create entry
Copy entry
```

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

```
New name?
Network B 1
```

- ❑ 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 76, *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 144
Network List	page 150
Phone Link List	page 162
Address List	page 167

  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

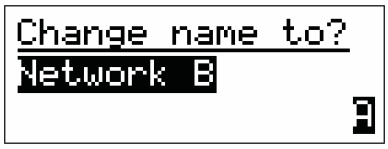
To rename an entry in a list:

- ❑ Go to the entry you want to rename.

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

- ❑ *Hold* 🔍 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 76, *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.

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

- ❑ *Hold* 🔍 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 76, *Entering and editing text*.

- ❑ Press ✓.

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

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

Editing an entry in a list

To edit an entry in a list:

- ❑ Go to the entry you want to edit.

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

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

For information on settings in the...	See...
Channel List	page 144
Network List	page 150
Phone Link List	page 162
Address List	page 167

- ❑ 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.

  NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

- ❑ *Hold* 🔍 to open the List Manager.
- ❑ Scroll to **Delete entry**, then press ✓.

```
List Manager
Delete entry
Display options...
```

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

```
Delete entry?
Network B
```

- ❑ 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 will be 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* 🔍 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 76, *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**. To forward this position to a different station, *hold* **CALL**, scroll to **Message?**, enter the new address, then 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. To forward this position to a different station, press **CALL**, enter the new address, then press **CALL**.
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 125, *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 76, *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 ✓.

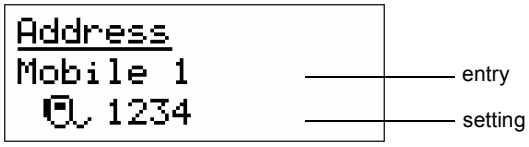
The entry in the Address List is created and the List Manager closes.

Hiding and showing settings

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

Figure 19 shows an entry (Mobile 1) in the Address List with the first setting for the entry (call type and address) displayed under it. The setting is indented to indicate that it belongs to the entry above it.

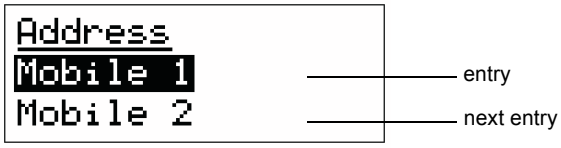
Figure 19: The Address List with settings shown



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

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

Figure 20: The Address List with settings hidden



NOTE In the following examples, you will need to log in as administrator to see the Control List (see page 136, *Logging into admin level from user level*).

Hiding settings in a list

To hide settings in a list:

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

```
Control
Help Mode
 Off
```

- ❑ *Hold* 🔍 to open the List Manager.
- ❑ Scroll to **Display options...**, then press ✓.
- ❑ Scroll to **Hide settings?**, then press ✓.

  The settings are hidden and the List Manager remains open.

```
Control
Help Mode
Key...
```

Showing settings in a list

To show settings in a list:

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

```
Control
Help Mode
Key...
```

- ❑ *Hold* 🔍 to open the List Manager.
- ❑ Scroll to **Display options...**, then press ✓.
- ❑ Scroll to **Show settings?**, then press ✓.

  The settings are shown and the List Manager remains open.

```
Control
Help Mode
 Off
```

Grouping and ungrouping entries

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

Figure 21: Ungrouped entries in a list

Control

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

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

Figure 22: Grouped entries in a list, level one

Control

Screen...
Time...

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

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

Control

Screen...
  Auto-Dim
  Brightness
  Contrast

Time...
  Local
  Screen
  Zone Offset

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

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

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

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

Figure 24: Ungrouped and grouped entries

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

NOTE In the following examples, you will need to log in as administrator to see the Control List (see page 136, *Logging into admin level from user level*).

Grouping entries

To group entries:

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

```
Control
Screen Auto-Dim
Screen Brightnes
```

- ❑ *Hold* 🔍 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.

```
Screen
Auto-Dim
Brightness
```

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.

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

Ungrouping entries

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

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

To ungroup entries:

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

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

- ❑ *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.

```
Control
Screen Auto-Dim
Screen Brightnes
```

Selecting a grouped entry

To select a grouped entry:

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

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

```
Screen
Auto-Dim
 Disabled
```

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.

```
Screen
Brightness
 Bright
```

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

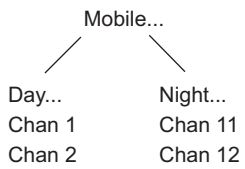
```
Control
Screen...
Time...
```

Locking and hiding grouped entries

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

For example, to lock all the channels in Figure 25 you would go to the group name Mobile... and lock it. To lock the night-time channels, you would go to the group name Night... For more information on locking and hiding entries see page 141, *Locking and unlocking information* and page 139, *Hiding and showing information*.

Figure 25: Locking and hiding grouped entries



Restricting access to information

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

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

User, admin and factory level

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

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

Admin level is for use by system administrators. Items locked and hidden at this level can only be unlocked and displayed by others logged into this level. This prevents users from being able to change and display these items. For details on admin level see Table 20 on page 135 and page 136, *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 249, *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 20 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 141, *Locking and unlocking information* and on page 139, *Hiding and showing information*.

Table 20: Restricting access to information at user and admin levels

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

Full and normal view

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

For example, if you have logged in as a user then switch to full view, information that has been hidden at user level is displayed and icons at the top right of the screen indicate the level at which any items have been locked and hidden. When you switch to normal view, the hidden items and the icons are removed. Full and normal view are covered in more detail on page 138, *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 19 on page 116). These entries enable you to lock and hide information at admin level.

When you log into admin level:

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

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

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

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

Logging into admin level from user level

To log into admin level from user level:

❑ *Hold* 🔍 to open the List Manager.

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

❑ Scroll to **Config...**, then press ✓.

❑ Scroll to **Admin login**, then press ✓.

❑ Enter the admin password, then press ✓.

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

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

❑ If you want to access the Main Menu, press ✕ until **Main Menu** is displayed.

Logging out of admin level

To log out of admin level:

- ❑ *Hold* 🔍 to open the List Manager.

  If Quick Start is enabled, scroll to **Advanced...**, then press ✓.
- ❑ Scroll to **Admin...**, then press ✓.
- ❑ Scroll to **Admin logout**, then press ✓.

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

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

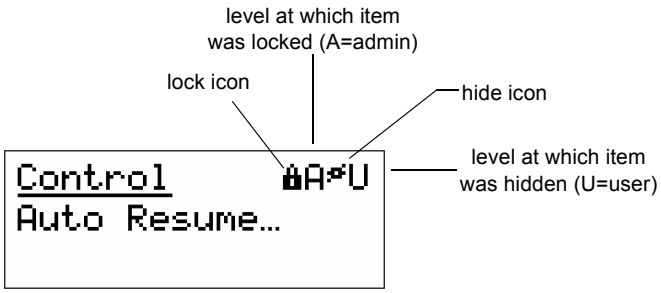
Displaying full and normal view

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

When you switch to full view, icons are displayed at the top right of the screen to indicate whether an item has been locked and/or hidden, and the level at which these restrictions were set (for more information on access levels see page 134, *Restricting access to information*). When you switch to normal view, the icons and any items that have been hidden are removed.

Figure 26 shows the 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 26: Full view



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

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

For more information on locking and hiding items at different levels see page 141, *Locking and unlocking information* and page 139, *Hiding and showing information*.

Switching between full and normal view

To switch between full and normal view:

- ❑ *Hold* 🔍 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 134, *Restricting access to information*). Table 21 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 21: Hiding items at user and admin levels

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

Hiding or showing an item at user level

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

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

  NOTE You may need to switch to full view to see the item (see page 138, *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 130, *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 138, *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 136, *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 130, *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 134, *Restricting access to information*). Table 22 summarises the effects of locking information at these levels.

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

Table 22: Locking items at user and admin levels

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

Locking or unlocking an item at user level

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

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

NOTE If you want to lock a group of entries in a list, make sure that the entries in the list are grouped, then go to the name of the group you want to lock. For more information on grouping entries see page 130, *Grouping and ungrouping entries*.

❑ *Hold* 🔍 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 136, *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 130, *Grouping and ungrouping entries*.

- ❑ *Hold* 🔍 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 handset, the locks are automatically reinstated.

To switch locks off or on at user level:

- ❑ *Hold* 🔍 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.

8 The Channel List

This section contains the following topics:

About channels (144)

Settings in the Channel List (144)

Programming the Channel List (145)

About channels

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

Settings in the Channel List

When you create a channel, you need to enter:

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

Channel names

A channel name can consist of letters, numbers or a combination of both. Before you name any channels, consider using group names to make navigation in the Channel List easier (for more information see page 130, *Grouping and ungrouping entries*).

CAUTION You should be aware of any restrictions placed on channel names in your transceiver when it is used with an HF Data Modem 3012,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. For example, if you have a narrow Morse filter fitted, USB CW and LSB CW are available.

Programming the Channel List

Creating a channel

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

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

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

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

To create a channel:

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

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

- ❑ Use the List Manager to create an entry (for help see page 121, *Creating an entry in a list* and page 76, *Entering and editing text*).

- ❑ Enter the setting information provided in the following table as required, then press ✓ to enter the information.

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

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

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

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

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

Renaming a channel

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

For example, if the channel you renamed is used in a network, go to the channel/mode list for the network, find the reference to the old channel name, then edit it so that the new name is displayed (for help see page 159, *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 122, *Renaming an entry in a list*.

Copying a channel

Copying a channel is a standard list function. For help see page 123, *Copying an entry in a list*.

Editing a channel

Editing a channel is a standard list function. For help see page 124, *Editing an entry in a list*.

Deleting a channel

Deleting a channel is a standard list function. For help see page 124, *Deleting an entry from a list*.

9 The Network List

This section contains the following topics:

About networks (148)

Settings in the Network List (150)

Special network names (156)

Programming the Network List (157)

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.

When you create a network, the transceiver prompts you to select a call system, then prompts you for further information based on your selection. Figure 27 shows an example of the information required to create networks based on the Codan Selcall, Open Selcall, ALE/CALM, and Voice Only call systems. This information is explained on page 150, *Settings in the Network List*.

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

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

Network List

Network A	Scan Network:	Scan voice
	Call System:	Codan Selcall
	Call Detect Time:	<default>
	Privacy Mode:	Registered
	Privacy Password:	******
	Nominal Preamble:	4 seconds
	Channel/Mode:	Chan 3/USB
		Chan 4/LSB
		Chan 5/USB
Network B	Scan Network:	Scan 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 will need to log in as administrator to see the Network List (see page 136, *Logging into admin level from user level*).

Network Name

CAUTION You should be aware of any restrictions placed on network names in your transceiver when it is used with an HF Data Modem 3012,Radio/ Telephone Interface RTU–292, or InterNav software.

Scan Network

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

NOTE The transceiver will scan a maximum of 100 channels at a time. If the total number of channels in all the networks you are scanning exceeds 100, only 100 of the channels will be scanned. Other NGT transceivers will scan up to the maximum number of channels supported by the type of transceiver.

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 23.

Table 23: 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 will need to recalculate the nominal preamble time, that is, the call detect time multiplied by the number of channels in the network (see page 153, *Nominal Preamble*).

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

CAUTION You should be aware of any restrictions placed on call detect times in your NGT networks when it is used with an HF Data Modem 3012. For more information see the *HF Data Modem 3012 Reference Manual*.

Sounding Interval

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

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

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

Privacy Mode

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

Privacy Mode	**Is used for...**
Registered	encrypting Phone calls that you make when you have registered with a network that encrypts telephone numbers (you are provided with a password that you need to enter into the Privacy Password setting)
Group	encrypting data in calls between two stations (you agree upon a password to enter into the Privacy Password setting)
None (lowest mode)	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. With 93XX transceivers you can use up to 6 characters for the password.

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 151, *Call Detect Time*). If you set the Nominal Preamble to <default> (see Table 24), the transceiver calculates the length of preamble at the time of the call, based upon the number of channels in the network.

Table 24: Default nominal preamble times

Call system	**Default nominal preamble time (sec/channel)**	**Nominal preamble time calculated by transceiver for 10 channels (sec)**
Codan Selcall	0.6	6
Open Selcall	0.6	6
ALE/CALM	0.8	8

Table 25: Nominal preamble times calculated from call detect time

Call system	**Default call detect time (sec)** **(from Table 23)**	**Nominal preamble time calculated by system administrator for 10 channels (sec)**
Codan Selcall	0.3	3
Open Selcall	0.3	3
ALE/CALM	0.12	1.2

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.

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 24) 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 130, *Grouping and ungrouping entries*.
- When you add a group of channels to a network, you need to select a mode for the group. The mode should be an allowed mode for all the channels in the group as the transceiver will only scan the channels for which the mode is allowed.

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

- A network cannot be scanned unless there are channel/modes in it. However, you can still use the network to make calls. The channel/modes from which you can select are all those in the Channel List.
- If you rename a channel in the Channel List and that channel is used in a network, you must delete the channel from the network and if necessary add the new channel name 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 81, *Quick Start*).

Programming the Network List

NOTE In the following discussion, you will need to log in as administrator to see the Network List (see page 136, *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 150, *Settings in the Network List* before you create a network.

To create a network:

- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Network**, then press ✓.
- ❑ Use the List Manager to create an entry (for help see page 121, *Creating an entry in a list* and page 76, *Entering and editing text*).
- ❑ Enter the setting information provided in the following table as required, then press ✓ to enter the information.

If this prompt is displayed...	**Do this...**
Scan Network?	• select whether the network is scanned or not NOTE If you want to scan a voice network for voice when the Mute Type is set to Selcall, select Scan voice (see page 85, *Muting the transceiver*).
Call System?	• select the call system you want to use
Call Detect Time?	• increase or decrease the call detect time, or • scroll to the far left of the line until **<default>** is displayed
Sounding Interval?	• select the value you want to use
Privacy Mode?	• select the mode you want to use
Privacy Password?	• enter the password you want to use with the Privacy Mode
Nominal Preamble?	• increase or decrease the nominal preamble time

If this prompt is displayed...	Do this...
Channel?	• select the channel you want to use NOTE If the channel is in a group, scroll to the group name, then press ✓, then scroll to the channel you want to use. If you want to use a group of channels, scroll to the group name, then *hold* ✓.
Mode?	• select the mode for the channel or group of channels you want to use
Add another Channel/ Mode?	• select the channel/mode you want to use NOTE If you do not want to add another channel/ mode, press ✕.

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

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

Renaming a network

When you rename a network, references to the network in other lists are not automatically updated; you need to go to the Address entry in the Control List to update any of your station self addresses that refer to the network, and to the Address 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 178, *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 122, *Renaming an entry in a list*.

Copying a network

Copying a network is a standard list function. For help see page 123, *Copying an entry in a list*.

Editing a network

Editing a network is a standard list function. For help see page 124, *Editing an entry in a list*.

Deleting a network

Deleting a network is a standard list function. For help see page 124, *Deleting an entry from a list*.

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10 The Phone Link List

This section contains the following topics:

About phone links (162)

Settings in the Phone Link List (162)

Programming the Phone Link List (163)

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 will need to log in as administrator to see the Phone Link List (see page 136, *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 will need to log in as administrator to see the Phone Link List (see page 136, *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 121, *Creating an entry in a list* and page 76, *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?	• 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?	• 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?	• 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 need to 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 178, *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 122, *Renaming an entry in a list*.

Copying a phone link

Copying a phone link is a standard list function. For help see page 123, *Copying an entry in a list*.

Editing a phone link

Editing a phone link is a standard list function. For help see page 124, *Editing an entry in a list*.

Deleting a phone link

Deleting a phone link is a standard list function. For help see page 124, *Deleting an entry from a list*.

11 The Address List

This section contains the following topics:

About the Address List (166)

Settings in the Address List (167)

Setting up the emergency key (169)

Storing GPS information in the Address List (173)

Programming the Address List (177)

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, type a message or 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 ⚠. Setting up this key is covered on page 169, *Setting up the emergency key*.

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 186, *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, Message, Phone, Selective, or Send Position call type.

Message

The Message setting in the Address List entry is available when you select Message as the call type (NGT *AR*, *SR*, and *AR Voice* Transceivers only). You can pre-store a standard message that is sent each time you make a call using this entry in the Address List. For example, you may need to notify your base station that you are shutting down for the day. Therefore, you would create an entry in your Address List to send a Message call (call type) to your base station (address) containing the message 'Shut down'. The Privacy Mode and Privacy Password in the network used for the call specify how the data is transmitted, for example, plain or encrypted (see page 152, *Privacy Mode*).

The Message setting may also be used to store your GPS location. If you name this Address List entry 'My GPS', the transceiver reads the GPS information stored in the Message setting and uses it as a point of reference for automatic distance and bearing calculations. When you view an Address List or call log entry containing GPS information for a remote station or specific location, the transceiver automatically calculates then displays the distance and bearing to that remote GPS position.

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

A Message call closes the link as soon as the message has been sent.

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.

Setting up the emergency key

When you press ⚠, the transceiver begins a call to the station specified in the Emergency 1 entry in the Address List. You can configure this entry to make any type of call available to you. Emergency and RFDS Emgcy calls will trigger an emergency alert tone at the receiving station. The ⚠ key can be set up to call one or more stations in an emergency.

CAUTION You should pre-set all the settings in the Emergency entries so that the call is made automatically during an emergency without the transceiver prompting for information.

Calling one station in an emergency

To set up the ⚠ key to call one station in an emergency:

- ❑ Press **VIEW** until the Address List is displayed.
- ❑ Scroll to **Emergency 1**, then press **CALL**.

NOTE If the Emergency 1 entry has been deleted, create a new entry and name it Emergency 1 (for help see page 177, *Creating an entry in the Address List*).

- ❑ Edit the details in each setting to suit the call you want to make (for help see page 124, *Editing an entry in a list*).

Calling several stations in an emergency

If you want to set up the ⚠ key to call several stations you can do so in two ways. You can:

- make one call to several stations simultaneously
- make several different types of calls in succession

Calling several stations simultaneously

If you want to call several stations simultaneously, set up the Emergency 1 entry in the Address List to make a call.

In an ALE/CALM network, calls to a group of stations can be made using the global ALL address syntax (@?@) through the Emergency, Message, Phone, Selective, or Send Position call type.

In a Codan Selcall or Open Selcall network, calls to a group of stations can be made using a group selcall address through the Emergency, Message, or Selective call type. A group 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.

To set up the ⚠ key to call several stations simultaneously:

- ❑ Press **VIEW** until the Address List is displayed.
- ❑ Scroll to **Emergency 1**, then press **CALL**.

NOTE If the Emergency 1 entry has been deleted, create a new entry and name it Emergency 1 (for help see page 177, *Creating an entry in the Address List*).

- ❑ Enter the details of the call you want to make (for help see page 124, *Editing an entry in a list*).
- ❑ Enter the group selcall address in the CallType–Address setting.

Making several different types of calls

NOTE

This capability is available for use in Codan Selcall and Open Selcall networks, enabling you to make different types of calls, or even the same call type on several channels.

In ALE/CALM networks, the channel selection is typically done automatically, so it is not necessary to set up the Emergency entries in the Address List to make chain calls.

If you want to make several different types of calls in succession, you need to create an entry in the Address List for each different type of call you want to make, and name the entries Emergency 1, Emergency 2, Emergency 3 and so on.

When you press ⚠, the transceiver calls the station (or stations) specified in the Emergency 1 entry, then pauses for about 10 seconds. It then calls the station in the Emergency 2 entry, and so on, until it calls the station in the last Emergency entry. Calls made this way are referred to as chain calls.

When the transceiver pauses between calls it displays the seconds remaining in the pause at the top right of the screen, as shown in Figure 28.

Figure 28: The handset screen during a chain call

```
Chain calls...   3
Emergency 1
 ⚠ 1234
```

You can terminate a chain call by pressing PTT. If you press PTT during:

- an Emergency or Selective call, you can continue with the current call but the chain call itself is terminated (that is, the transceiver will not call the *next* Emergency entry)
- a call in which data is being sent to another station (for example, a Message call), the current call and chain call are terminated

NOTE

If you want to make a call that sends data, and a call that enables you to speak to an operator, set up the Emergency entries to make the data call first: once you press PTT to speak to an operator, the chain call is terminated.

You can also terminate a chain call by pressing any key. The exceptions to this are that:

- you can press ✕ to remove messages on the screen, and press 🔈 and 🔈 to adjust the volume at any time, without terminating the call
- if you are prompted to select and/or enter details about the call (for example, a channel/mode), you can press any keys to do so without terminating the call

To set up the ⚠ key to call several stations in succession:

- ❑ Decide on the stations you want to call in an emergency, the type of call you want to make to each station, and the order in which you want to make the calls.
- ❑ Enter the details of the first call you want to make into the Emergency 1 entry (for help see page 178, *Editing an entry in the Address List*).
- ❑ Create an entry in the Address List, name it Emergency 2 and enter the details of the second call you want to make (for help see page 177, *Creating an entry in the Address List*).
- ❑ Create an entry for each subsequent call you want to make, naming the entries Emergency 3, Emergency 4 and so on.

  The number of Emergency entries you can create is limited by the number of entries you can store in the Address List.

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, or you can enter your position information into an entry in the Address List manually. 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
- create an entry in the Address List, then type in the location

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* 🔍 to open the List Manager.

- ❑ Scroll to **Save to Address**, then press ✓.

```
List Manager
Save to Address
Display options...
```

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 ✓.

```
Entry name?
My GPS
```

NOTE For help with entering text see page 76, *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.

Entering GPS information in the My GPS entry in the Address List

To create an entry in the Address List:

- ❑ Press **VIEW** until the Address List is displayed.
- ❑ *Hold* 🔍 to open the List Manager.
- ❑ Scroll to **Create entry**, then press ✓.

```
List Manager
Create entry
Copy entry
```

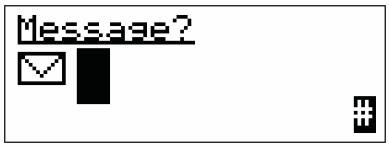
The transceiver suggests a name for the new entry based on the name of the entry you were on. For example:

```
New name?
FRED 1
```

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

```
New name?
My GPS
```

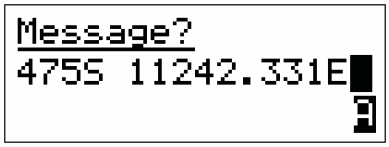
- ❑ Scroll to **Message?**, press ✕ repeatedly to delete the call address, then press ✓.



- ❑ Use one of the following example formats to enter your relevant GPS information:

Latitude (mandatory)	Longitude (mandatory)	Altitude, UTC, and type of reading (optional)
2418.475 S	11242.331 E	+12.5M 041725 (M)
2418.475S	11242.331E	

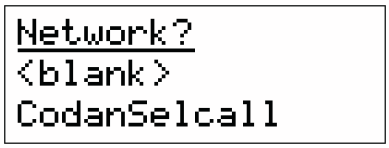
For example, enter **2418.475S 11242.331E +12.5M 041725 (M)**.



NOTE For help with entering text see page 76, *Entering and editing text*.

NOTE The space between the latitude/longitude number and the indicator is optional.

NOTE For more information on the type of reading see Table 30 on page 228.



- ❑ Scroll to **<blank>**, then press ✓.

  The entry is created and the List Manager remains open.

- ❑ 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 125, *Saving call log information to the Address List*). For more information on sending group calls see page 184, *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 127, *Saving GPS information to the Address List*. For example, if you save the location of your campsite to the Address List with the name ‘Bob’s campsite’, then decide that you would like to send Fred this information, all you need do is go to the ‘Bob’s campsite’ entry in the Address List, press **CALL**, enter Fred’s address, then continue with the call. Fred will receive a call titled ‘Bob’s campsite’ with distance and bearing information. If you want to encrypt your GPS information so that it may only be accessed by authorised users see page 152, *Privacy Mode*.

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 121, *Creating an entry in a list* and page 76, *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?	• 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>	• 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 NOTE If the call type is RFDS Emgcy, an address is not displayed: addresses are not required for these calls. NOTE If you selected **Phone?** as the call type, enter the telephone number you want to call. 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. NOTE For information on the address syntax for ALL calls see page 167, *CallType–Address*.
Message?	• enter the message you want to send, or • leave the message empty if you want to be prompted to choose a stored message when you make the call (see page 183, *Message call*)
Phone Link?	• 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

If this prompt is displayed...	Do this...
Network?	• 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?	• 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 ✕ 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 122, *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 123, *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 124, *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 124, *Deleting an entry from a list*.

12 Making and receiving calls

This section contains the following topics:

Calls you can make and receive (180)

Making a call (186)

Receiving a call (195)

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 in the transceiver.

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 80, *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, Message, Phone, Selective, or Send Position call type using the global ALL address syntax (see page 182, *Emergency call*, page 183, *Message call*, page 183, *Phone call*, page 184, *Selective call*, or page 184, *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 9 different types of calls available with an NGT Transceiver:

- Channel Test call
- Emergency call
- Get Position call (NGT *AR*, *SR*, and *AR Voice* Transceivers only)
- Get Status call
- Message call (NGT *AR*, *SR*, and *AR Voice* Transceivers only)
- Phone call
- RFDS Emgcy call (NGT *AR* and *AR Voice* Transceivers only)
- Selective call
- Send Position call (NGT *AR*, *SR*, and *AR Voice* Transceivers only)

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 26).

Table 26: Call types and icons

Call type	Icon
Channel Test	
Emergency	
Get Position	
Get Status	
Message	
Phone	
RFDS Emgcy	
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 global 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 187, *Testing a channel as part of a call 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. Emergency calls can be sent to several stations at once (see page 169, *Setting up the emergency key* and page 184, *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 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 206, *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.

If you want to obtain the GPS position of a station that has the GPS option installed in the transceiver (and a GPS receiver connected to it and configured), 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.

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 197, *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 206, *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.

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 197, *The Calls In Log*).

When you make a Get Status call you need to specify the type of information you require: Diagnostic, Configuration, or Other message. This is described in detail on page 351, *Get Status calls*.

Message call

If you want to send a typed message to another station, make a Message call. You can enter a message at the time you make a call, store up to 10 messages in the Control List for later use, and store messages in the Address List as part of a Message call.

You may insert keywords into the message that are recognised and expanded by the transceiver when the call is sent (see page 185, *Recognised variable expansion*). You can also forward GPS information that has been saved in the Address List to other stations (see page 176, *Saving GPS information*).

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

Message 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 Message call type, the link terminates immediately after the message is sent. Messages you receive are displayed on the handset, if permitted, and stored in the Calls In Log (see page 197, *The Calls In Log*).

Phone call

If you want to call a telephone number from the transceiver, make a Phone call. Before you make a Phone call you need to 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.

RFDS Emgcy call

NOTE You cannot use the global ALL address syntax with an RFDS Emgcy call.

If you want to trigger an emergency alert tone at an RFDS station, make an RFDS Emgcy call. RFDS Emgcy calls are made on channels reserved for emergency RFDS calls using specific RFDS networks.

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 184, *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 and you have connected and configured a GPS receiver.

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 193, *The Calls Out Log*).

Group calls in a Codan Selcall or Open Selcall network

Emergency, Message 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.

Recognised variable expansion

The variables listed in Table 27 may be added in a Message call. These variables are recognised by the NGT Transceiver's firmware. The firmware expands the variable by inserting the current information associated with the variable in the message.

Table 27: Recognised variables and their associated information

Keyword	Function when used in a message
$DATE	Inserts the current date in the following format: <name of day> <month> <day> <year>
$GPS	Inserts the current valid GPS position in the following format: <latitude> <longitude> <altitude> <UTC> (<type of reading>) NOTE If you enter text before $GPS, this is sent as a header for the GPS information stored in the Calls In Log.
$TIME	Inserts the current time in the following format: <hh>:<mm>:<ss>
$TZ	Inserts the time zone offset in the following format: <time zone offset>
$VER	Inserts the current version of the junction box firmware in the following format: <version number>

If you enter the following message...

$GPS

...the receiving station will display the current GPS of the sending station. For example:

89°58.041 N 138°41.234 E +0.0M 101622 (A)" 28 APR 02:05

NOTE For help on entering **$** see page 79, *Entering special characters in messages and names*.

NOTE The transceiver checks the length of the expanded message before transmission. If you receive an error stating that the message is too long, review the message and shorten the message as required.

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 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, that is, the channel is occupied. The transceiver will listen on a channel for the length of time specified in the Cfg LBT Period entry in the Control List. The transceiver will try busy channels twice before reporting that they are 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 🔍 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 🔍 to select a new channel, then press **CALL** to make a call on this channel using LBT
- *hold* 🔍 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 ⚠ key will override the LBT Mode if it is enabled at either level. For information on setting up the ⚠ key see page 169, *Setting up the emergency key*.

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 197, *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 193, *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 76, *Entering and editing text*.

If you want to...	Do this...
make a call from the Address List	• 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, *hold* **CALL**
make a call in an emergency	• *hold* ⚠ for at least 2 seconds
make a new call	• 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	• 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, *hold* **CALL**
repeat a call	• 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, *hold* **CALL**
make a Phone call from the Phone Link List	• 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	• select the phone link station through which you want to make the Phone call
Phone link addr?	• enter the address of the phone link station through which you want to make the Phone call (including @?@ for a global ALL call)
Select msg	• select the message you want to use NOTE For help on editing a message see page 231, *Messages entry*.
Status type?	• 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 NOTE For more information on the types of status information you can retrieve see page 351, *Get Status calls*.
Select network	• select the network in which you want to make the call
My address?	• select or enter the self address from which you want to send the call
Select chan/mode	**In an ALE/CALM network:** • 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 **In a Codan Selcall or Open Selcall network:** • select the channel/mode you want to use to make the call and check that it is clear of voice and data traffic 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 187, *Testing a channel as part of a call in a Codan Selcall or Open Selcall network*).

- 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...**
Chan busy: Try again? All|<N> chans busy: Try again?	**If Cfg LBT Mode is set to Enabled:** • press **CALL** to try the call again using LBT • press 🔍 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**. **If Cfg LBT Mode is set to Override allowed:** • 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 🔍 to select a new channel, then press **CALL** to make a call on this channel using LBT • *hold* 🔍 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.

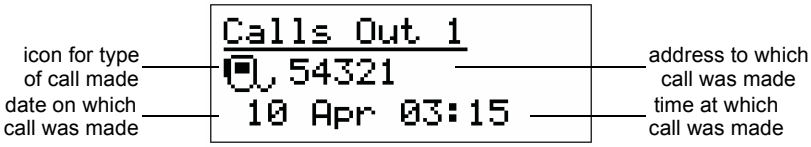
If you are making a...	Do this...
Channel Test call	• listen for the revertive signal NOTE The call is ended automatically but can be aborted by pressing PTT or **SCAN**.
Emergency call Selective call	**In an ALE/CALM network:** • wait until a message informs you that the call has been successful • *hold down* PTT then speak, releasing PTT when you have finished speaking • press **SCAN** to end the call and resume scanning **In a Codan Selcall or Open Selcall network:** • wait until a message informs you that the call has been sent and listen for audible beeps transmitted from the other station • *hold down* 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 Message call Send Position call	• wait until a message informs you that the call has been completed NOTE The call is ended automatically but can be aborted by pressing PTT or **SCAN**.
Phone call	• wait until you hear a reply from the person you called • *hold down* PTT then speak, releasing PTT when you have finished speaking • press **SCAN** to end the call **In an ALE/CALM network:** The transceiver resumes scanning. **In a Codan Selcall or Open Selcall network:** The transceiver prompts you to send a hangup signal. • to send a hangup signal, press ✓ • if the other party has sent a hangup signal via the phone line, press ✕ The transceiver resumes scanning.
RFDS Emgcy call	• wait until you hear a reply from RFDS personnel • *hold down* PTT then speak, releasing PTT when you have finished speaking • press **SCAN** to resume scanning

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:

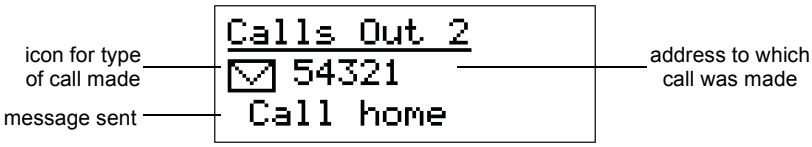
- type of call that was made
- address to which the call was made
- message or position that was sent if the call was a Message, Get Status or Send Position call
- time at which the call was made
- self address from which the call was made
- network in which the call was made
- channel/mode on which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

Figure 29: The Calls Out Log showing a Selective call made



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

Figure 30: The Calls Out Log showing a Message call made



Up to 20 calls can be stored at one time and you can repeat any of these calls directly from the log (see page 194, *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.

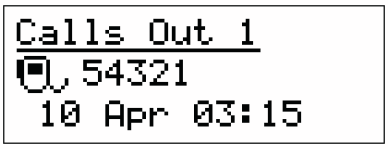
If you make a Get Position or Get Status call, an entry for the call is created in the Calls Out Log, and the information that is sent to you by the other station is stored in an entry for the call in the Calls In Log (see page 197, *The Calls In Log*).

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* 🔍 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.

NGT transceivers cannot respond to RFDS Emgcy calls.

The call alert

The call alert varies according to the type of call received. For Message, 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 28: Call types and alert tones

Call type	**Alert tone sounds like...**
Emergency	heehaw, heehaw, heehaw
Message	pip, pip, pip, pip, pip
Phone	a telephone ringing
Selective	a telephone ringing
Send Position	pip, pip, pip, pip, pip
Group calls: Emergency calls all other calls	 heehaw, heehaw, heehaw 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 136, *Logging into admin level from user level* and page 202, *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 message, 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 136, *Logging into admin level from user level* and page 202, *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 136, *Logging into admin level from user level* and page 202, *Entries in the Control List*).

Figure 31: An incoming call screen for a Selective call

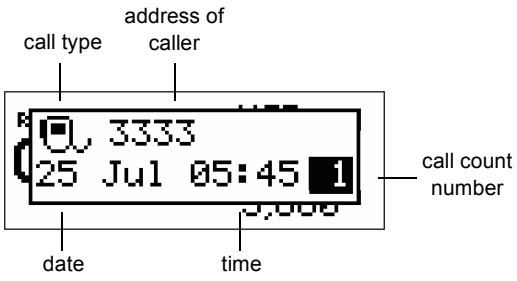


Figure 32: An incoming call screen for a Message call

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 31).

To remove the incoming call screen:

❑ Press ✕.

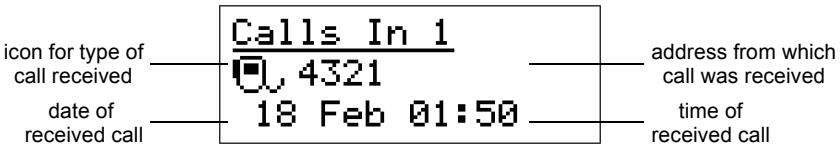
The Calls In Log

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
- message, GPS position or status information received if the call was a Message, Get Position, or Get Status call
- time at which the call was received
- self address to which the call was sent
- network in which the call was received
- channel/mode on which the call was received
- 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 33: The Calls In Log showing a Selective call received



If you receive a Message or 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 34: The Calls In Log showing a Message call received

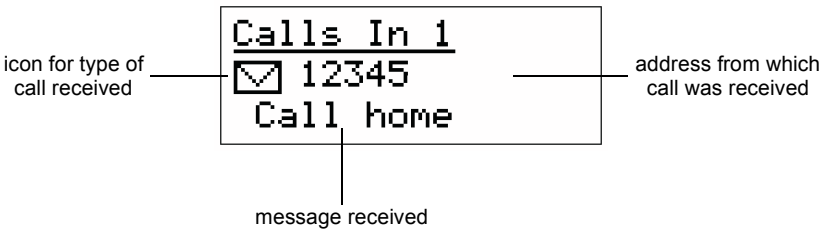
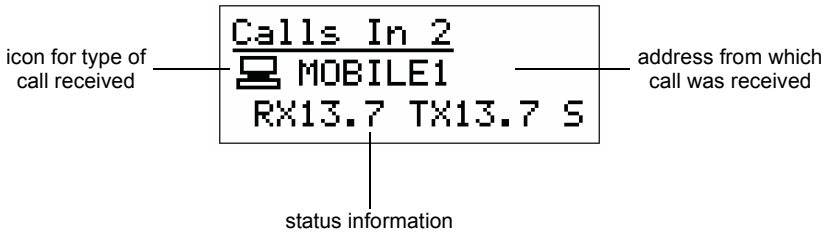


Figure 35: The Calls In Log showing a Get Status call received



Up to 20 calls can be stored at a time and you can return any of these calls directly from the log (see page 198, *Returning a call from the Calls In Log*).

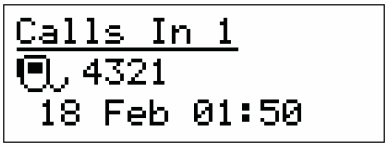
The calls are listed in the order in which they were received with the most recent call at the top of the list. If you receive two or more calls with the same call type and address (and message or GPS position, if applicable), only the most recent call is kept in the log.

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.

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13 The Control List

This section contains the following topics:

Entries in the Control List (202)

ALE entries (215)

Auto Resume entries (220)

Devices entry (221)

GPS Screen entry (228)

Messages entry (231)

RS232 startup entries (232)

Welcome text (234)

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 model of the transceiver and the options installed in it. Table 29 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 136, *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 249, *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 9way Mode and RS232 15way 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 29: Entries in the Control List

Name of entry	**Use this entry to...**	**Default**
Address	Program up to 10 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 94, *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 215, *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 215, *ALE BER*.	12 errors
ALE Call Threshold	Set the minimum score for a channel to be tried in ALE calls. For more information see page 216, *ALE Call Threshold*.	0%
ALE Call Weighting	Weight the LQA scoring of ALE channels for data or voice. For more information see page 216, *ALE Call Weighting*.	Mostly voice
ALE Golay	Set the value of the Golay threshold used in Golay testing. For more information see page 216, *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 217, *ALE Hangup ALL Call*.	Enabled
ALE LQA Average	Select the way that LQA information will be used when recording signal quality. For more information see page 217, *ALE LQA Average*.	Both
ALE LQA Clear	Clear the LQA information in the transceiver. For more information see page 217, *ALE LQA Clear*.	

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
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 218, *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 218, *ALE LQA Exchange*.	On
ALE LQA Mapping	Set the mapping of LQA information according to its frequency. For more information see page 218, *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 218, *ALE Retries*.	1
ALE Silent Mode	Prevent automatic ALE transmissions from the RF unit. For more information see page 219, *ALE Silent Mode*.	Off
ALE Site Mgr	Collect information on unknown ALE transceivers in the network. For more information see page 219, *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 220, *Auto Resume entries*.	Leave as is
Auto Resume Mode	Set the action performed when the Auto Resume Time ends. For more information see page 220, *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 220, *Auto Resume entries*.	2 minutes
Cfg Alert Tones	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: • provide a local alert tone and external alarm, if connected, when it receives a message or a non-message call, select Normal • provide an external alarm, if connected, when it receives a non-message call only, select Messages skip ext alarm • provides a local alert tone 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

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Cfg Auto Tune Mode	Set the Auto Tune Mode to suit the antenna. If you have: • 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 or RFDS Emgcy call.	10 seconds
Cfg Channel Scroll	Set the direction in which the ◣ key scrolls in the Channel List, that is, to the next channel or the previous channel. 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. 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.	Go to next chan
Cfg Def Scrn Layout	Set the default screen layout for the Main Menu, logs and lists. If you want the active line to: • display a large font, select Big middle line • display a small font, select 3 equal lines • display a dynamic font size in the channel screen only, select Resize channel names	Big middle line
Cfg Easitalk	Select a noise reduction algorithm.	Cepstral
Cfg Fast AGC	Switch fast auto 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

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Cfg Incoming Msg	Set whether or not the transceiver will display a message to the operator when it is received. If you want to: • 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 LBT Mode (RF unit/junction box firmware V4.00 or later)	Set whether or not the transceiver will listen for calls and traffic on a channel before initiating a call. If you want to: • use LBT for all calls, select Enabled • use LBT, with the option to override for all calls, select Override allowed • disable LBT for all calls, select Disabled For more information on listening before transmitting see page 186, *Listen Before Transmit Mode*. For RF unit/junction box firmware earlier than V4.00, the LBT functionality is included with *Selcall Lockout*.	Enabled or Disabled (*VR*)
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
Cfg Power Preference	Set the power preference to suit the power transmission level for your station. If you want to: • 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

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Cfg Respond GPS	Set the way in which the transceiver will handle its response to a Get Position call sent through an ALE/CALM, Codan Selcall, or Open Selcall network. If you want to: • respond to a Get Position call regardless of the Privacy Mode of the network through which the call was made, select Always • 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 Codan • 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 Encrypted • disable your response to any Get Position call, select Never NOTE You will still be able to make Send Position calls if this entry is set to Never. NOTE To respond to Get Position calls made in an Open Selcall network, the Cfg Respond GPS setting must be set to Always.	Always
Cfg Respond OTA	Set the way in which the transceiver will handle its response to an OTA command sent through an ALE/CALM or Codan Selcall network. If you want to: • respond to an OTA command regardless of the Privacy Mode of the network through which the call was made, select Always • 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 Codan • 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 Encrypted • disable your response to any OTA command, select Never For more information on OTA commands contact your Codan representative. NOTE To respond to Get Status calls made in an Open Selcall network, the Cfg Respond OTA setting must be set to Always.	Codan
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

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
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 Site Control (Split-site remote control systems only)	Set whether the local RF unit is a master or a slave.	Master
Cfg Site Mode (Split-site remote control systems only)	Display or set the functionality of the local RF unit depending upon what is set in the Cfg Site Control, Cfg Site Options and Site Tx/Rx entries. The possible settings are: • Not in use • Transceiver • Transmitter • Receiver	Transceiver
Cfg Site Options (Split-site remote control systems only)	Set the firmware to match the hardware capabilities of the local RF unit. The possible settings are: • No Tx, No Rx • Tx and Rx • Tx Only • Rx Only	Tx and Rx
Cfg TDM Mode (NGT *AR* and *SR* Transceivers only)	Set the ability of the RF unit to generate the TDM clock. Unless otherwise specified in installation instructions, this should always be Master.	Master
Cfg Voice Privacy Code	Set the code that enables Private level scrambling between transceivers in a network. Enter a scrambling code between 1 and 32. If the Voice Encryptor option is installed, you will be able to select Private as default in the Secure Mode entry, if required.	1
Clarifier	Improve the quality of received voice by adjusting the frequency of the currently selected channel/mode to exactly match that of the received signal. You can also display the Clarifier screen by pressing **CLAR**.	
Current Baud Rate (NRI remote control systems only)	Display the current baud rate between NGT remote interfaces. NOTE This entry is viewed via the Devices entry.	

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Customer Device	Display the Codan type number of the device.	2010 or 2011
Customer Name	Display the ISO (sales order number) customer name.	
Customer Profile	Display the ISO customer profile.	
Customer Radio	Display the ISO transceiver type.	*AR*, *SR*, *AR Voice*, *VR*
Customer Reference	Display the ISO customer reference.	
Devices	Do the following: • display the serial numbers of each device • enter option codes • display the firmware version in each device • display the product name of each device • rename the devices in the transceiver • gain access to the lists in each device For more information see page 221, *Devices entry*.	
Easitalk	Switch Easitalk on or off. You can also toggle Easitalk by pressing **EASITALK**.	Off
Error Threshold (NRI remote control systems only)	Set an acceptable level of errors for data transfer between NGT remote interfaces. NOTE This entry is viewed via the Devices entry.	
Free Tune	Use the transceiver to tune to any frequency between 250 kHz and 30 MHz.	
GPS Error Time	Set the time the transceiver waits to receive updated GPS information before it displays an error message. 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. When valid GPS data is received again a message is displayed on the handset to inform you of this.	10 minutes or Off
GPS Screen	Display information about your GPS position. For more information see page 228, *GPS Screen entry*.	

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Help Mode	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. You can also toggle Help Mode by pressing **HELP**.	Off
Inactivity Timeout (NRI remote control systems only)	Set the period of time after which the link between NGT remote interfaces will be terminated. NOTE This entry is viewed via the Devices entry.	
Key Beep	Switch key valid 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 *hold* 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 245, *Hot keys*.	3 seconds
Macro Single Step	Switch macro single stepping 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 245, *Hot keys*.	Off
Manual Tune	Manually tune the antenna. You can also display the Manual Tune screen by pressing **TUNE**.	
Max Baud Rate (NRI remote control systems only)	Set the maximum possible baud rate for data transfer between NGT remote interfaces. NOTE This entry is viewed via the Devices entry.	
Messages	Store up to 10 messages for use in Get Status and Message calls. For more information see page 231, *Messages entry*.	

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Min Baud Rate (NRI remote control systems only)	Set the minimum possible baud rate for data transfer between NGT remote interfaces. NOTE This entry is viewed via the Devices entry.	
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 237, *The Mode List*.	
Mute	Switch mute on or off. You can also toggle the mute on and off by pressing **MUTE**.	
Mute Scan	Set the type of mute selected when scanning starts. If you want mute to open when: • 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 (that is, the scanning rate is reduced), select Scan for Voice Scan for Voice automatically reverts to Voice when scanning stops. NOTE You can toggle the mute type, to prevent mute opening on detected voice, by pressing **V/S**.	Voice
Notes	Store up to three notes for general use or to be used in macros. The process for entering notes is the same as that for entering messages in the Messages entry. For more information see page 231, *Messages entry*.	
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.	
Retries (NRI remote control systems only)	Set the number of times that the NGT remote interfaces will attempt to establish a link. NOTE This entry is viewed via the Devices entry.	

Table 29: Entries in the Control List (cont.)

Name of entry	**Use this entry to...**	**Default**
RS232 9way Mode (NGT *AR* and *SR* Transceivers only)	Set the mode in which the RS232 9-way serial port operates. If the port is: • not in use, select None • receiving GPS information, select GPS • controlling and monitoring the transceiver, select CICS • controlling the transfer of data between a PC and a modem over a remote control link, select Modem Data • controlling the transfer of data between a PC using 9102 software and a modem over a remote control link, select PC Data • receiving information from a radio/telephone interface, select RTU Log	None
RS232 9way Speed (NGT *AR* and *SR* Transceivers only)	Set the baud rate of the RS232 9-way serial port on the junction box. Note that the following combinations of baud rates are not available: • 9-way 38400 with 15-way 19200 baud • 9-way 230400 with 15-way 38400 baud	9600
RS232 9way Startup (NGT *AR* and *SR* Transceivers only)	Set the serial commands you want to have performed by the 9-way port following power on, for example, setting the self address that will be used by CICS during transmissions, echo off etc. For more information see page 232, *RS232 startup entries*.	

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
RS232 15way Mode (NGT *AR* and *SR* Transceivers only)	Set the mode in which the RS232 15-way serial port operates. If the port is: • not in use, select None • receiving GPS information, select GPS • controlling and monitoring the transceiver, select CICS • connected to a 9001/3012 modem, select Fax/Data • connected to an RTU–282/292 telephone interconnect unit, select RTU–282/292 • connected to a single-tone low-rate FSK Pactor modem, select Pactor • connected to a split-site interface controller, select Split-site • connected to a multi-tone/PSK HAL or Clover modem, select HAL/Clover • connected to a non-Codan modem, select Modem Slow AGC • connected to a non-Codan modem located in an area that is prone to frequent lightning strikes, select Modem Fast AGC (this may improve the performance) • connected to a non-Codan modem that performs poorly using Modem Slow AGC or Modem Fast AGC, select Modem Hold AGC	None (*SR*) or GPS (*AR*)
RS232 15way Speed (NGT *AR* and *SR* Transceivers only)	Set the baud rate of the RS232 15-way serial port on the junction box. Note that the following combinations of baud rates are not available: • 9-way 38400 with 15-way 19200 baud • 9-way 230400 with 15-way 38400 baud	9600 (*SR*) or 4800 (*AR*)
RS232 15way Startup (NGT *AR* and *SR* Transceivers only)	Set the serial commands you want to have performed by the 15-way port following power on, for example, setting the self address that will be used by CICS during transmissions, echo off etc. For more information see page 232, *RS232 startup entries*.	
RS232 Mode (NGT *AR Voice* Transceivers only)	Set the mode in which the RS232 4-way serial port operates. If the port is: • not in use, select None • receiving GPS information, select GPS • controlling and monitoring the transceiver, select CICS	None
RS232 Speed (NGT *AR Voice* Transceivers only)	Set the baud rate of the RS232 4-way serial port.	9600
Scan	Switch scanning on or off.	
Scan Allow	Enable or disable scanning.	Yes

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Screen Auto-Dim	Set the time the transceiver waits after a key has been pressed to switch 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.	
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**. The options are: • Global • Corporate	Global
Selcall Lockout (RF unit/junction box firmware earlier than V4.00)	Switch selcall lockout on or off. Selcall lockout prevents calls from being made when the transceiver detects that another station is sending a call on the same channel. For RF unit/junction box firmware V4.00 or later, this functionality is included with *Cfg LBT Mode*.	
Site Config Master Site Config Slave1 ... (Split-site remote control systems only)	Select a site and view or set up the system. This entry maps to the *Cfg Site Control*, *Cfg Site Mode*, *Cfg Site Options* and *Cfg Auto Tune Mode* entries at the selected site.	
Site Equalise (Split-site remote control systems only)	Start the automatic equalisation process between the current site and a selected site (or all sites), or reset the equalisation values at the local site to their default settings.	
Site Info Master Site Info Slave1 ... (Split-site remote control systems only)	Display the following information about the currently selected site: • Site Name • Voltage • Temperature • RFU version • JB version • RC version	

Table 29: Entries in the Control List (cont.)

Name of entry	Use this entry to...	Default
Site Link Slave1 Site Link Slave2 ... (Split-site remote control systems only)	Display the following line status and equalisation values for the selected link: • Status • Local/Remote Result • Local/Remote Equalise • Local/Remote Gain • Local/Remote Threshold	
Site Rx (Split-site remote control systems only)	Set the receive site for the system by changing the setting in the Cfg Site Mode entry as required at all sites.	
Site Tx (Split-site remote control systems only)	Set the transmit site for the system by changing the setting in the Cfg Site Mode entry as required at all sites.	
Time Local	Set the local date and time. For more information see page 92, *Setting the time and date*.	
Time Screen	Display the current date and time. For more information see page 92, *Setting the time and date*.	
Time Zone Offset	Set the difference between the time displayed on the date/time screen and UTC. For more information see page 92, *Setting the time zone offset*.	0 hours
Update Main Menu	Refresh lists in the Main Menu. This may be required if devices are added or removed after the transceiver is switched on.	
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 234, *Welcome text*).	

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 will need to log in as administrator to see the Control List (see page 136, *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 216, *ALE Golay*.

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

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 mainly used to make voice calls you would select Mostly voice. When Lowest acceptable is selected the transceiver will attempt a call on the channel with the lowest frequency (with an LQA score above the set threshold), then attempt 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 has been 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 215, *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 enabled, the initiating station will send a link termination sequence when **SCAN** is pressed. All stations that entered the link will hang up the link and return to scanning when they receive this sequence.

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

Use the ALE LQA Clear entry to clear 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 it 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.

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 switched 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 switched 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 will need to log in as administrator to see the Control List (see page 136, *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. This enables you to ensure that the transceiver resumes scanning automatically if it is left unattended.

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. 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 selected 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 has been altered by the user, the transceiver will return 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 will need to log in as administrator to see the Control List (see page 136, *Logging into admin level from user level*).

The Devices entry in the Control List enables you to display information specific to the devices in the transceiver, for example, the junction box and RF unit. For each device 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 rename devices. Figure 36 shows the type of information that you can display about each device and the lists that are stored in each device (for more information about the lists stored in each device see page 226, *Accessing lists from the Devices entry*).

Figure 36: The Devices entry in the Control List (NGT *AR* and *SR* Transceivers only)

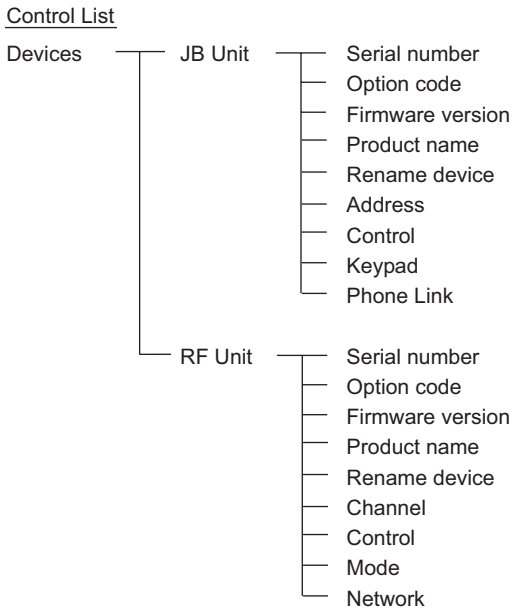
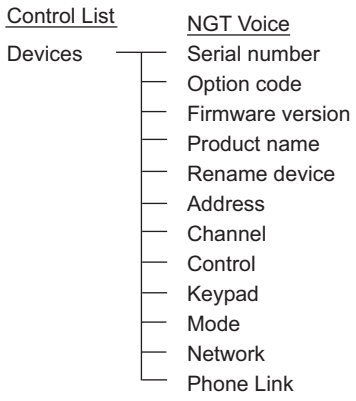


Figure 37: The Devices entry in the Control List (NGT *AR Voice* and *VR* Transceivers only)



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 ✓.

```
Select test?
-<Auto>
```

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 a device

To display the electronic serial number of a device:

- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **Devices**, then press ✓.
- ❑ Scroll to the device for which you want to display the ESN, then press ✓.

NOTE The LED on the front panel of a device flashes green/red to show that this is the device you have selected.

- ❑ Scroll to **Serial number**, then press ✓.

  The ESN for the device is displayed and scrolls across the screen.

```
Serial number
01-11C0-B40A-000
```

Installing an option in the transceiver

When you purchase an option for your transceiver (such as FED-STD-1045 ALE/CALM or GPS) you receive a 16-character option code and details of the device in which the option is to be installed. To install the option, you need to enter the option code into the correct device 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 **RF unit**, then press ✓.
- ❑ Scroll to **Option code**, then press ✓.

  The option code screen is displayed.

```
Option code?
```

- ❑ 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 a device

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

To display the firmware version of a device:

- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **Devices**, then press ✓.
- ❑ Scroll to the device for which you want to display the firmware version, then press ✓.

  NOTE The LED on the front panel of a device flashes green/red to show that this is the device you have selected.

- ❑ Scroll to **Firmware version**, then press ✓.

  The firmware version is displayed.

Displaying the product name of a device

To display the product name of a device:

- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **Devices**, then press ✓.
- ❑ Scroll to the device for which you want to display the product name, then press ✓.

  NOTE The LED on the front panel of a device flashes green/red to show that this is the device you have selected.

- ❑ Scroll to **Product name**, then press ✓.

  The product name is displayed.

Renaming a device

The devices in the transceiver are shipped with standard names, that is, JB Unit, RF Unit. If you have more than one type of unit in a transceiver system, you may want to rename the similar devices to distinguish between them. Use the Rename device setting under the Devices entry in the Control List.

To rename a device:

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

  NOTE The LED on the front panel of a device flashes green/red to show that this is the device you have selected.

- ❑ Scroll to **Rename device**, then *hold* ✓.

  The name of the device is displayed.

- ❑ Enter a new name for the device, then press ✓.

  NOTE For help with entering text see page 76, *Entering and editing text*.

Accessing lists from the Devices entry

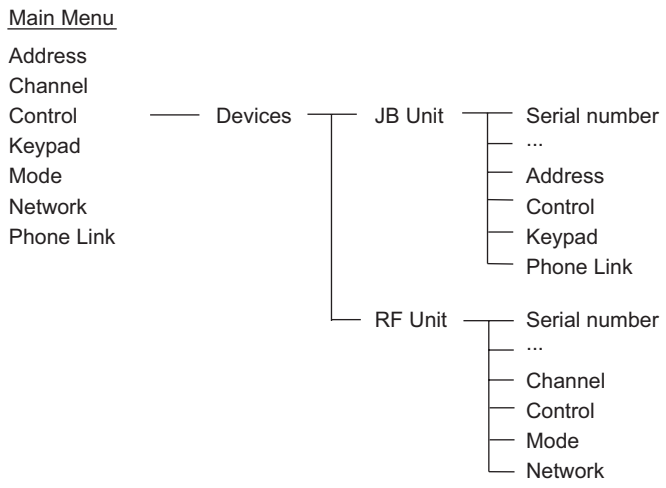
NOTE In the following discussion, you will need to log in as administrator to see the Main Menu and Control List (see page 136, *Logging into admin level from user level*).

The lists in the transceiver are physically stored in the devices that use them. The Address, Keypad and Phone Link Lists are stored in the junction box. The Channel, Mode and Network Lists are stored in the RF unit. A Control List is stored in each unit. There are no lists in the handset.

NOTE All lists are stored in the RF unit for the NGT *AR Voice* and *VR* Transceivers.

You can access all the lists through the Main Menu. You can also access them through the Devices entry in the Control List where they are listed under the device in which they are stored (see Figure 38). In the Main Menu, the Control List from each device is combined into one large list.

Figure 38: Lists as they are displayed in the Main Menu and under the Devices entry in the Control List



NOTE The entries under the JB Unit and RF Unit are merged into one list in the NGT *AR Voice* and *VR* Transceivers, as shown in Figure 37 on page 222.

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 device in which the list you want is stored, then press ✓.

NOTE The LED on the front panel of a device flashes green/red to show that this is the device you have selected.

- ❑ 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 138, *Displaying full and normal view* and page 136, *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

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

The GPS Screen entry in the Control List enables you to display your current GPS position. Press **9** to access the GPS screen.

NOTE The GPS Screen entry is only displayed if the GPS option is installed in the transceiver. NGT *VR* Transceivers do not support the GPS option.

Table 30 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 39: The GPS Screen entry in the Control List

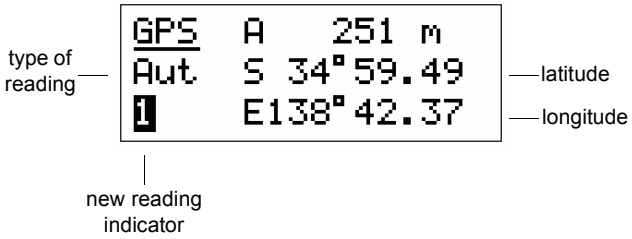


Table 30: Types of readings on the GPS screen

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 Transceiver is compatible with NMEA format 0183 V2.00. It will accept and process the following GPS receiver input sentences: RMC, GLL, and GGA.

NOTE In the following discussion, you will need to log in as administrator to see the Control List (see page 136, *Logging into admin level from user level*).

Before you display the GPS screen, make sure that:

- the GPS receiver has been correctly connected to the transceiver (usually to the 15-way connector on the junction box, or the 4-way connector on the 2011 RF Unit)
- the value in the corresponding RS232 9way Mode, the RS232 15way Mode, or the RS232 Mode entry in the Control List is set to GPS (depending on the serial port to which the GPS receiver is connected)
- the baud rate in the corresponding RS232 9way Speed, the RS232 15way Speed, or the RS232 Speed entry in the Control List has been set to the correct rate for the GPS receiver (typically 4 800)

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 **9**.

The GPS screen is displayed. For example:

```
GPS   A    251 m
Aut   S 34°59.49
1     E138°42.37
```

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 229, *Setting up the transceiver*).

❑ Press **9** 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 another station:

- ❑ Go to an Address List or Call Log entry containing a GPS position of the other station.

  The transceiver automatically calculates the distance to the other transceiver and its bearing from true north with respect to your current location.

```
Calls In 1
✉ ROADBLOCK:
 947 km, 280° T
```

CAUTION You must have valid GPS information stored in your transceiver from either of the following sources:

- a connected GPS receiver
- 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.

Messages entry

You can store up to 10 messages in the Messages entry for use in Message calls. When you make one of these calls, you can scroll through these messages then select and/or edit the one you want to send.

NOTE Notes may be entered in the Notes entry in the Control List using the same process.

To pre-type and store a message:

- ❑ Press **CALL**.
- ❑ Scroll to **Message?**, then press ✓.

```
Select msg (Hold
                1
```

- ❑ Scroll to the setting in which you want to enter your message, then *hold* ✓.

```
Edit msg?
                9
```

- ❑ Enter the message, then press ✓.

  NOTE For help with entering text see page 76, *Entering and editing text*.

- ❑ Press ✕ or PTT to cancel the call.

RS232 startup entries

NOTE In the following discussion, you will need to log in as administrator to see the Control List (see page 136, *Logging into admin level from user level*).

The RS232 startup entries are used to store CICS commands that configure the 9-way and 15-way serial ports for use when the transceiver is switched on, for example, self addresses. If you are entering CICS commands into these entries using the handset, there is a limit of 199 characters.

NOTE CICS is available with NGT *AR*, *SR*, and *AR Voice* Transceivers only.

Entering a serial command into a startup entry

To enter commands into a startup entry:

- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **RS232...**, then press ✓.
- ❑ Scroll to **9way Startup** or **15way Startup**, then press ✓.

  If there are no serial commands in the entry, **(none)** is displayed.
- ❑ If there are commands in the entry, *hold* 🔍 to open the List Manager, scroll to **Add item**, then press ✓.

  If there are no commands in the entry, press ✓ to open the List Manager, scroll to **Add item**, then press ✓.
- ❑ Enter the command, then press ✓.

  NOTE For help with entering text see page 76, *Entering and editing text*.

  The new command is stored and the List Manager remains open.
- ❑ If you want to view the command you have stored, press ✕ to close the List Manager.
- ❑ Press ✕ until **Main Menu** is displayed.

Editing a serial command in a startup entry

To edit an existing command in a startup entry:

- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **RS232...**, then press ✓.
- ❑ Scroll to **9way Startup** or **15way Startup**, then press ✓.
- ❑ Scroll to the command you want to edit, then *hold* ✓.
- ❑ Edit the command, then press ✓.

NOTE For help with entering text see page 76, *Entering and editing text*.

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

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 10 (the maximum allowable number of self addresses for the transceiver).

Table 31: Keywords that display a self address

Keyword	Displays...
$IDn	The nth self address. If the nth self address does not exist in the transceiver, the transceiver will leave the Welcome Text blank at startup. If there is no self address programmed into the transceiver, **No self address** is displayed.
$IDn/	The nth 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 nth self address applying to all networks. If there is no self address applicable to all networks, the transceiver will leave 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 station.

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 139, *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 32).

NOTE There are no entries for the **CALL**, , , , , , 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 that you can copy and assign 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 245, *Hot keys*.

Table 32: 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	GPS	WXY9	wxy9	9
Emergency	Call Emergency			
F1	Call Key			
F2	Scan Toggle			
F3	Next Mode			

Table 32: Entries in the Keypad List (cont.)

Name of key	Macros assigned to key	Upper case	Lower case	Numeric
F4	Mute			
Hang up	Scan Toggle			
Mute	Mute			
Power	Power Down			
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 to be used with a channel consisting of a sideband and an IF filter, as shown in Table 33.

Table 33: Examples of modes

Name of mode	Used in...	Sideband	IF centre	IF width
USB	*AR*, *SR*, *AR Voice*, *VR*	USB	1 500 Hz	2 500 Hz
LSB	*AR*, *SR*, *AR Voice*, *VR*	LSB	1 500 Hz	2 500 Hz
AM	*SR*, *VR*	AM	1 500 Hz	2 500 Hz
USB CW	*SR*	USB	900 Hz	500 Hz
LSB CW	*SR*	LSB	900 Hz	500 Hz
AM CW	*SR*	AM	900 Hz	500 Hz
USB PT	*SR*	USB	1 700 Hz	500 Hz
LSB PT	*SR*	LSB	1 700 Hz	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.

PT-type modes are used for narrow-band Pactor modems. CW-type modes are used for morse operation, where channel spacings may overlap. CW-type modes may also be used in situations where the signal-to-noise ratio needs improvement.

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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 (240)

Using the transceiver in Amateur Mode (243)

Using the transceiver in free tune

NOTE In the following discussion, you will need to log in as administrator to see the Control List (see page 136, *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 in amateur frequency bands (see Table 34 on page 243).

Entering a specific free-tune frequency

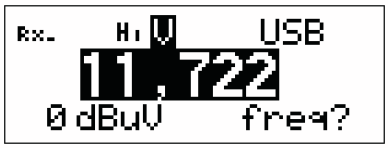
To enter a specific frequency:

- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **Free Tune**, then press ✓.

NOTE Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

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 346, *Example 3: accessing the Free Tune screen*.

- ❑ Press 🔍.



- ❑ 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 ✕.
  - to return to the Main Menu, press ✕ until **Main Menu** is displayed
  - to exit free-tune receive, go to the Channel List and select another channel (for help see page 75, *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:

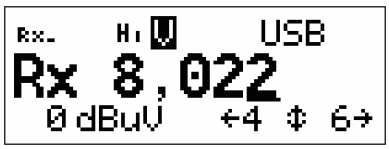
- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **Free Tune**, then press ✓.

Scroll to the entry or use the Find feature (for help see page 89, *Finding words and values*).

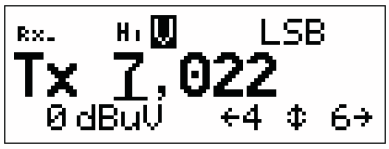
NOTE

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 346, *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.

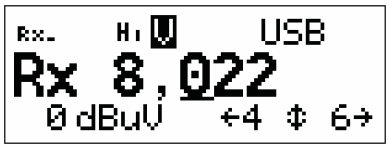


The **4** and **6** keys on the keypad can now be used as left/right scroll keys, as indicated on the Free Tune screen.

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 ✕.
- to return to the Main Menu, press ✕ until **Main Menu** is displayed
- to exit free-tune receive, go to the Channel List and select another channel (for help see page 75, *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.

Using the transceiver in Amateur Mode

If you have Amateur Mode enabled in your transceiver you will be able to transmit on the Amateur bands shown in Table 34. You will not be 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 bands.

Table 34: Amateur bands in the NGT transceiver

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 240, *Using the transceiver in free tune*. When you want to transmit on the selected frequency, press PTT to tune the antenna.

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17 Hot keys

This section contains the following topics:

About hot keys (246)

Full-time and part-time hot keys (246)

Assigning several macros to one key (247)

Automating several tasks with one macro (247)

Troubleshooting macros (247)

Storing macros (248)

Ideas for creating macros (248)

Creating a macro and assigning it to a hot key (249)

Copying a macro (252)

Moving a macro (253)

Renaming a macro (254)

Deleting a macro (254)

Creating a macro to perform two or more tasks (255)

Special macros (257)

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 4 on page 27 lists the standard hot keys on the handset. Table 5 on page 29 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**, ◣, ◥, ✓, ✕, 🔍, 🔊 and 🔊 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 35: 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	1 TUNE QZ, 2 CLAR ABC, 3 MODE DEF 4 GHI, 5 HELP JKL, 6 MNO 7 V/S PRS, 8 SEC TUV, 9 WXY * EASI TALK, 0 VIEW ␣, # CALL LOGS	**CALL** ◣ ◥ 🔍 ✓ ✕ 🔊 🔊 PTT button on handset and desk console

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 40.

Figure 40: Using a hot key to which several macros have been assigned

```
Hot key 5JKL?
Time
Help Mode
```

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 252, *Copying a macro* and page 253, *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 255, *Joining macros* and page 256, *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 343, *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* 🔍 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 36 on page 250 explains each option.
- ❑ Scroll to the timing with which you want the macro to operate, then press ✓ (see Table 36).
- ❑ 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 76, *Entering and editing text*.

  The macro is created and assigned to the key. The List Manager remains open.

Table 36: 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 36: 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 ✕.) 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* 🔍 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* 🔍 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* 🔍 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 76, *Entering and editing text*.

  The macro is renamed and the List Manager remains open.

Deleting a macro

To delete a macro:

- ❑ *Hold* 🔍 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 need to consider the order in which you want the macros performed. The transceiver will prompt you to select the macro you want performed first, then the macro you want performed second. It will then make a copy of the second and join it to the end of the first. The new combined macro takes the name of the first macro. You can rename the macro if necessary (see page 254, *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 252, *Copying a macro*).

To join two macros:

- ❑ Decide on the order in which you want the hot key to perform the macros.
- ❑ *Hold* 🔍 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, combined 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, combined macro takes the name of the first macro. You can rename the macro if necessary (see page 254, *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 252, *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* 🔍 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 36 on page 250 explains each option.
- ❑ Scroll to the timing with which you want the macro to operate, then press ✓ (see Table 36).
- ❑ 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 ✕ 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 37 on page 258.

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 252, *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. The:

- Call Emergency macro is assigned to the ⚠ key
- Call Key macro is assigned to the **CALL** key and the F1 key on the desk console
- Call Logs - Out macro is assigned to the **CALL LOGS** key
- Mute macro is assigned to the **MUTE** key and the F4 key on the desk console
- Power Down macro is assigned to the ⏻ key
- Scan Toggle macro is assigned to the **SCAN** key and the F2 key on the desk console

Table 37: Macros assigned to the Special entry in the Keypad List

Name of macro	Description
Call Emergency	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. The transceiver calls each emergency entry in sequence until the last entry has been called or you press PTT.
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 and Calls Out logs, beginning with the Calls In Log, then returns to the screen from which you began.
Call Logs - Out	Displays the Calls Out and Calls In logs, beginning with the Calls Out 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.

18 Operating the transceiver from a computer

This section contains the following topics:

About CICS (260)

Using CICS (260)

Setting up CICS (265)

Terms used in CICS and the NGT Transceiver (267)

CICS commands (268)

Summary of command syntax (293)

CICS response messages (296)

CICS error messages (300)

About CICS

NOTE CICS is not available with NGT *VR* Transceivers.

CICS is a set of commands that the transceiver understands. The commands are suitable for use from a computer. You can operate your transceiver with CICS instead of a handset. To use CICS you must connect your transceiver to a PC or personal organiser via an RS232 serial port (see page 265, *Setting up CICS*).

NGT *AR*, *SR*, and *AR Voice* Transceivers operate with CICS V3.00 (or later). Older Codan transceivers operate with CICS V2. For information on the compatibility between the two versions see page 357, *Compatibility between CICS V2 and V3.00 (or later)*.

CICS V3.20 includes the `lbt` command, which enables the NGT *AR*, *SR*, and *AR Voice* Transceivers to perform LBT. The LBT range of commands enables you to start the LBT process and override the global Cfg LBT Mode setting in the Control List of the transceiver during specific calls.

Using CICS

Entering commands

When you enter CICS commands you can enter up to 255 characters. Commands are processed when they are ended with an ASCII carriage return character. ASCII line feed characters are ignored. When echoing is on, a received carriage return character is echoed as the ASCII carriage return/line feed sequence (see page 273, *echo command*).

Structuring commands

Commands can include variables that are user-defined, for example, `gpsbeacon <destination>[@<network>]`, where destination is the address of the station you want to call. Each command and variable is separated by a space character. Variables inside single or double quotes are treated as a single variable. Space characters inside quoted text are treated as part of the text. Any user-defined variables that include a space character, such as a channel or network name, must have double quotes enclosing the variable.

Command line control commands

The **Backspace** key is used for basic editing in CICS. The use of other editing keys requires a VT100 terminal-emulation program such as HyperTerminal in Windows. All other characters are echoed as they are.

Table 38 lists the keys that can be used to edit commands in CICS.

Table 38: Editing keys used in CICS

Keys	Action
Delete	Deletes the character above the cursor.
Backspace	Deletes the character to the left of the cursor.
Ctrl+A	Moves to the start of the line.
Ctrl+C	Aborts the current command.
Ctrl+E	Moves to the end of the line.
Ctrl+K	Deletes from the cursor to the end of the text.
Ctrl+R	Refreshes the input line.
Ctrl+U	Deletes the entire line of text entered.
↑	Moves up through the commands entered previously.
↓	Moves down through the commands entered previously.
→	Moves one character to the left.
←	Moves one character to the right.

Special characters

An equal sign (=) or a question mark (?) can be used to initiate an action, or request information (see page 359, *Using '=' and '?'*).

Command prompt

CICS V3.00 (or later) has an optional prompt to enter commands, that is, >, which indicates commands can be entered (see page 281, *prompt command*).

Addresses in commands

Addresses can be specified with or without a network (see page 362, *Using addresses with or without a network*). An address in an ALE/CALM network must be upper-case letters or numbers, @ and ?. An address in a Codan Selcall network must be numbers. An address in an Open Selcall network must be upper-case letters or numbers.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the special ALE address syntax for ALL calls (@?@) to send an ALL call through any of the existing call commands in CICS (`alecall`, `aletelcall`, `call`, `gpsposition`, `pagecall`, `selcall`). For more information see page 180, *ALL address syntax*.

NOTE The use of the global ALL address syntax in the `gpsbeacon` and `statuscall` commands will not be effective due to collisions of responses.

ALE call options

When you make a call through CICS you can specify whether or not to override the global settings for the transceiver at the time of the call. For information on the correct syntax see Table 43 on page 293.

To enable LBT for a call	Type `+lbt`
To disable LBT for a call	Type `-lbt`

Recognised variable expansion

The variables listed in Table 39 may be added in a message. These variables are recognised by CICS V3.20 (or later) when they are enclosed in double quotes. CICS expands the variable by inserting the current information associated with the variable into the message with the command.

Table 39: Variable expansion in a command

Keyword	Function when used in a call command
$DATE	Inserts the current date in the following format: <name of day> <month> <day> <year>
$GPS	Inserts the current valid GPS position in the following format: <latitude> <longitude> <altitude> <UTC>
$TIME	Inserts the current time in the following format: <hh>:<mm>:<ss>
$TZ	Inserts the time zone offset in the following format: <time zone offset>
$VER	Inserts the current version of the junction box firmware in the following format: <version number>

A typical use for the variable expansion feature is as follows:

Command typed at initiating station	Information displayed at receiving station
`pagecall BH "$GPS"`	`PAGE-CALL: 'Ch 27980', 54321, BH, 26/04 04:50, "3459.490S 13842.370E +251.2M 105123 (A)"`

Sending and receiving calls

When you make calls using CICS commands, you do not need to use the `hangup` command when you are making successive calls or using the `chan` or `scan` commands. For example, after sending a Get Position call, CICS enables you to change the channel then send another Get Position call without using the `hangup` command to close the existing link.

CAUTION

If a response is not received to a Get Status, Get Position, or Message call (for example, a page call ack to a Message call) you *must* use the `hangup`, `chan`, `scan` or `call` command to receive subsequent calls. Control software using these commands must take this into account.

Responses and outputs

CICS is an interface from which random outputs will occur, for example, when calls are received. Additionally, depending on the configuration of the equipment, the order of responses to commands may change. Software operating on this interface must be able to adapt to these irregularities to enable correct system behaviour under all conditions. It is recommended that echo is switched off to avoid intermixing of the commands you enter with the responses from the system (see page 273, *echo command*).

Message length in a Message call

The permitted message length when making a Message call depends on the type of call system, the Privacy Mode selected, and the character set (see page 280, *pagecall command*).

Compatibility between CICS V2 and V3.00 (or later)

The compatibility issues between CICS V2 and V3.00 (or later) include:

- differences in how an action is initiated or information requested
- differences in how channel names are specified
- differences in how the scan channels are grouped, that is, in scan tables or networks
- use of upper-case or lower-case text
- use of quotation marks
- the specification of addresses with or without a network

The NGT transceiver can be configured to support most control software that is compatible with CICS V2 (see page 357, *Compatibility between CICS V2 and V3.00 (or later)*).

Setting up CICS

Connecting a computer to a transceiver

To connect a computer to a transceiver:

❑ Use a serial port (for example, COM1) on the computer to connect to:

- either serial port on the junction box (NGT *AR* and *SR* Transceivers only)
- the 4-way connector on the 2011 RF Unit (NGT *AR Voice* Transceivers only)

CAUTION If you are using a computer with Windows XP *and* you are likely to maintain a permanent connection between the COM port and the transceiver, you should always open a HyperTerminal session before switching the transceiver on.

Setting up a transceiver for CICS

NOTE The RS232 mode and speed entries available to you in the Control List will depend upon the type of NGT transceiver that you are using.

To set up a transceiver to be used with CICS:

❑ Make sure that the Control List settings for the serial port you are using have been set correctly. Check that:

- the RS232 9way Mode, RS232 15way Mode, or the RS232 Mode entry is set to CICS
- the corresponding RS232 9way Speed, RS232 15way Speed, or the RS232 Speed entry is set to the baud rate of the computer, for example, 19200 baud

CAUTION If you change the settings in these entries you must switch your transceiver off then on again for the changes to take effect.

Setting up a computer for CICS

To set up a computer for use with CICS:

- ❑ Start a terminal-emulation program, for example, HyperTerminal in Windows.
- ❑ Check the settings in the terminal-emulation program. Make sure that you:
  - select the serial port on the computer that has been connected to the junction box4-way connector on the 2011 RF Unit
  - select the baud rate that corresponds to the baud rate set in the Control List of the transceiver
  - set data bits to 8
  - set parity to none
  - set stop bits to 1

Terms used in CICS and the NGT Transceiver

The terms used in several CICS commands differ from those used in the transceiver. Table 40 lists these commands and the equivalent NGT Transceiver terms.

Table 40: CICS commands and the equivalent NGT Transceiver terms

CICS commands	Equivalent term in the NGT Transceiver
`alecall`	Selective call using an ALE/CALM network
`aletelcall`	Phone call using an ALE/CALM network
`gpsbeacon`	Get Position call using an ALE/CALM, a Codan Selcall, or an Open Selcall network
`gpsposition`	Send Position call using an ALE/CALM, a Codan Selcall, or an Open Selcall network
`pagecall`	Message call using an ALE/CALM, a Codan Selcall, or an Open Selcall network
`selbeacon`	Channel Test call using a Codan Selcall or an Open Selcall network
`selcall`	Selective call using a Codan Selcall or an Open Selcall network
`selfid`	Your station self address
`statuscall`	Get Status call using an ALE/CALM, a Codan Selcall, or an Open Selcall network
`telcall`	Phone call using an ALE/CALM, a Codan Selcall, or an Open Selcall network

CICS commands

This section covers the functions and syntax of the CICS commands. In this section:

- the function of each command is summarised in Table 41
- the syntax and function of each command is summarised in Table 43 on page 293

Table 41: CICS commands and their functions

Commands	Function	See...
`alecall`	Makes a call to addressed stations using an ALE/CALM network	page 270
`aletelcall`	Makes a Phone call to addressed stations using an ALE/CALM network	page 271
`call`	Makes a call on the current channel using an ALE/CALM, a Codan Selcall, or an Open Selcall network	page 272
`chan`	Controls the selection of channels in the transceiver	page 272
`echo`	Controls the echo state of the transceiver	page 273
`freq`	Displays the frequency of the current channel, or selects the channel by the frequency specified	page 274
`gpsbeacon`	Makes a Get Position call to an addressed station using an ALE/CALM, a Codan Selcall, or an Open Selcall network	page 275
`gpsposition`	Makes a Send Position call to addressed stations using an ALE/CALM, a Codan Selcall, or an Open Selcall network	page 276
`hangup`	Closes an active link between your transceiver and the station that you are calling	page 276
`help`	Displays the help available in CICS	page 277
`lbt`	Displays the global LBT Mode or monitors the current channel for the presence of data or voice	page 277
`lock`	Controls the lock status of the transceiver	page 278
`mode`	Controls the mode settings of the channels in the transceiver	page 279
`pagecall`	Makes a Message call to addressed stations using an ALE/CALM, a Codan Selcall, or an Open Selcall network	page 280
`prompt`	Controls the settings for the prompt on the command interface	page 281
`ptt`	Controls the settings for PTT	page 282
`scan`	Controls the settings for scanning in the transceiver	page 283
`secure`	Controls the voice encryptor status of the transceiver	page 284
`selbeacon`	Makes a Channel Test call to an addressed station using a Codan Selcall or an Open Selcall network	page 285
`selcall`	Makes a Selective call to an addressed station using a Codan Selcall or an Open Selcall network	page 286

Table 41: CICS commands and their functions (cont.)

Commands	Function	See...
`selfid`	Controls the list of self addresses used in CICS	page 286
`set`	Controls the settings in CICS	page 288
`sideband`	Controls the sideband setting for channels in the transceiver	page 288
`statusack`	Sends a response to a Get Status call	page 289
`statuscall`	Makes a Get Status call to an addressed station using an ALE/CALM, a Codan Selcall, or an Open Selcall network	page 290
`statustime`	Sets the length of time a station has to respond to a Get Status call	page 291
`telcall`	Makes a Phone call to an addressed station using an ALE/CALM, a Codan Selcall, or an Open Selcall network	page 292
`ver`	Displays the current version of CICS being used	page 292

alecall command

Use the `alecall` command to select the best channel on which to establish a link to addressed stations, then make a call on that channel.

To disconnect the link, either:

- use the `scan on` command to close the link and resume scanning (see page 283, *scan command*), or
- use the `hangup` command to terminate the link (see page 276, *hangup command*)

Syntax

NOTE

For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*
- recognised variables see page 262, *Recognised variable expansion*

```
alecall <destination>[@<network>] ["<message>"] [from <self
address>[@<network>]]
```

where:

`<destination>[@network]` is the address [and network] of the station you want to call.

`<message>` is the written text message that is to be sent to the station. Use single or double quotes, or backslashes to recognise spaces in the message text (see page 361, *Using quotation marks*).

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the `alecall` command.

aletelcall command

Use the `aletelcall` command to select the best channel on which to establish a link to an addressed station, then make a telcall on that channel. A telcall is a call to a telephone number.

NOTE

Before you can use the `aletelcall` command, you need to know the address of a station with a telephone interconnect unit (for example, JPS RTU–282/292) through which your call can be routed to the public telephone network.

To disconnect the link, either:

- use the `scan on` command to close the link and resume scanning (see page 283, *scan command*), or
- use the `hangup` command to terminate the link (see page 276, *hangup command*)

Syntax

NOTE

For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*
- recognised variables see page 262, *Recognised variable expansion*

```
aletelcall <destination>[@<network>] <telephone number>
[from <self address>[@<network>]]
```

where:

`<destination>[@<network>]` is the address [and network] of the station with a telephone interconnect unit.

`<telephone number>` is the telephone number to be dialled by the telephone interconnect unit.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

call command

Use the `call` command to establish a voice link with another station on the current channel in an ALE/CALM, a Codan Selcall, or an Open Selcall network.

Syntax

NOTE

For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*
- recognised variables see page 262, *Recognised variable expansion*

```
call <destination>[@<network>] [from <self
address>[@<network>]]
```

where:

`<destination>[@network]` is the address [and network] of the station you want to call.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the `call` command.

chan command

Use the `chan` command to:

- display the current channel in the transceiver
- change to the channel specified

NOTE

If you want to use the command to change to another channel, make sure that the channel has been programmed into the transceiver's Channel List (see page 145, *Programming the Channel List*).

Syntax

```
chan
```

```
chan <name>
```

where:

`chan` displays the name of the current channel.

`<name>` changes to the channel specified, if the channel has been programmed into the transceiver's Channel List. The name is case sensitive.

Compatibility with CICS V2

For the `chan` command to be compatible with transceivers using CICS V2, make sure that all the channel names in the transceiver are numerical.

Limitations

In CICS V3.00 (or later), channel names can be alphanumerical. In CICS V2 channel names must be numerical. CICS V2 treats channel ‘1’ and channel ‘001’ as the same channel: this is not the case with CICS V3.00 (or later).

echo command

Use the `echo` command to control the local behaviour of the CICS serial interface. Use it to:

- display the current echo state
- switch the echo state on and off

The default setting is that echo is on. With echo on, any character that is typed is echoed (mirrored) back to the screen. This corresponds to the use of Full Duplex Mode in terminal settings. If you have an automated system, the recommended setting for the system is echo off, which corresponds to Half Duplex Mode. This avoids intermixing echoes of the commands you enter and the responses from the system.

Syntax

```
echo
echo on
echo off
```

where:

`echo` displays the current echo state of the interface.

`on` enables echoing of characters entered.

`off` disables echoing of characters entered.

freq command

Use the `freq` command to:

- display the receive and/or transmit frequencies of the current channel in the transceiver
- select a channel by the receive frequency

NOTE Specify the frequency in kilohertz and use a decimal point (.) to specify a fraction part.

Syntax

```
freq
freq <frequency>
```

where:

`freq` displays the receive and/or transmit frequencies of the current channel.

`<frequency>` specifies a receive frequency value in kilohertz. The transceiver searches for a channel with this frequency. If an exact match cannot be found, the channel with the next higher receive frequency is selected.

Compatibility with CICS V2

CICS V2 does not accept a decimal point in the `freq` command. If you need to maintain compatibility with CICS V2 or less, do not enter a frequency with a fraction part.

Limitations

When you select a channel by frequency, `CHAN: <name>` is displayed when the transceiver changes the channel to match the frequency you requested. If the transceiver is already on a channel that matches this frequency, only the frequency is displayed.

gpsbeacon command

Use the `gpsbeacon` command to request the current GPS position of another station.

NOTE The transceiver of the receiving station *must* have the GPS option installed. If it has not been installed or GPS data is unavailable, a message is displayed to inform you of this.

Syntax

NOTE The use of the global ALL address syntax in the `gpsbeacon` command will not be effective due to collisions of responses.

NOTE For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*

```
gpsbeacon <destination>[@<network>] [from <self
address>[@<network>]]
```

where:

`<destination>[@<network>]` is the address [and network] of the station from which you want to receive a GPS position.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

gpsposition command

Use the `gpsposition` command to send your current GPS position to another station. The call is automatically answered by the receiving station.

NOTE The GPS option *must* be installed in your transceiver.

Syntax

NOTE For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*

```
gpsposition <destination>[@<network>] [from <self
address>[@<network>]]
```

where:

`<destination>[@<network>]` is the address [and network] of the station to which you want to send your GPS position.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the `gpsposition` command.

hangup command

Use the `hangup` command to close an active link created by a call with another station. If the transceiver was scanning before the call was made it will resume scanning once the link has been terminated.

Syntax

```
hangup
```

help command

Use the `help` command to:

- display the categories of help available
- display command details within categories

Syntax

```
help
help <category>
```

where:

`help` displays the categories of help available.

`<category>` displays detailed help for the commands within the specified category.

lbt command

The `lbt` command is available with CICS V3.20 or later.

Use the `lbt` command to:

- display the global LBT Mode
- perform a check on the current channel for the presence of data or voice

Syntax

```
lbt
lbt measure
```

where:

`lbt` displays the current LBT Mode.

`measure` checks the current channel for the presence of data or voice, then displays whether the channel is busy or vacant.

lock command

Use the `lock` command to:

- display the current lock status of the transceiver
- set whether or not the transceiver is locked
- break a lock from another interface

When a lock is on the transceiver, it only responds to the interface issuing the command, that is, CICS. When more than one lock is on, a single `lock off` command releases the entire system.

Syntax

```
lock
lock on
lock off
lock abort
```

where:

`lock` displays the current lock state of the system.

`on` attempts to lock the system.

`off` releases the lock(s) on the system.

`abort` attempts to break a lock from another interface.

mode command

Use the `mode` command to:

- display the mode setting for the current channel
- set a new mode setting for the selected channel (depending on the modes permitted for that channel)

A mode is a type of reception or transmission you can use with a channel. It consists of a sideband, an IF centre and IF width. Most transceivers have modes such as USB and LSB. However, transceivers can be configured with additional modes available under different names.

NOTE The `mode` command and `sideband` command can be used interchangeably (see page 288, *sideband command*). If you are using CICS V3.00 (or later), the `mode` command is preferred.

Syntax

```
mode
mode <name>
```

where:

`mode` displays the mode of the current channel.

`<name>` sets the mode of the channel to the mode specified, but only if the mode is permitted for the channel.

pagecall command

Use the `pagecall` command to send a written message to another station. The receiving station automatically sends an acknowledgment response when the call is received.

NOTE The permitted message length depends on the type of call system, the Privacy Mode selected, and the character set (see Table 42).

Table 42: Variations in message length

Call system	Privacy Mode	Character set	Maximum message length (number of text characters)
ALE	None	ASCII-256	64–84
ALE	Group	ASCII-256	50
ALE	Registered	ASCII-256	50
Codan Selcall	None	ASCII-127	64
Codan Selcall	Group	ASCII-256	64
Codan Selcall	Registered	ASCII-256	64
Open Selcall		ASCII-64	32

NOTE ASCII-64: This protocol uses all upper-case and numeric characters and some punctuation characters.

NOTE ASCII-127: This protocol uses all printable ASCII characters up to decimal 127.

NOTE ASCII-256: This protocol uses full binary encoding of all 8-bit characters.

Syntax

NOTE For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*
- recognised variables see page 262, *Recognised variable expansion*

```
pagecall <destination>[@<network>] "<message>" [from <self
address>[@<network>]]
```

where:

`<destination>[@<network>]` is the address [and network] of the station to which you want to send the message.

`<message>` is the written text message that is to be sent to the station. Use single or double quotes, or backslashes to recognise spaces in the message text (see page 361, *Using quotation marks*).

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

If you have the FED-STD-1045 ALE/CALM option installed, you can use the global ALL address syntax (@?@) with the `pagecall` command.

Compatibility with CICS V2

In CICS V3.00 (or later) the permitted message length depends on the type of call system, the Privacy Mode selected and the character set (see Table 42). In CICS V2 you can enter up to 64 text characters.

prompt command

Use the `prompt` command to:

- set the type of prompt that will be displayed on the command interface
- disable the prompt output

Syntax

```
prompt
prompt time
prompt <text string>
prompt off
```

where:

`prompt` enables the prompt output on the command interface if it has been disabled previously and displays the current prompt type, that is, time or the text string.

`time` switches the prompt output to that of the time since the transceiver was last reset.

`<text string>` switches the prompt output to the text string entered.

`off` disables the prompt output on the command interface.

ptt command

Use the `ptt` command to:

- display the current PTT status of the transceiver
- switch between transmit and receive modes
- switch between voice and data modes

The `ptt` command operates for 30 seconds. If you require a longer PTT, repeat the `ptt on` command before the PTT times out.

Data Mode is the default mode when the transceiver is switched on, as PTT in CICS is generally only used with data applications.

Syntax

```
ptt
ptt on
ptt on voice
ptt on data
ptt on talk
ptt off
```

where:

`ptt` displays the current PTT state of the transceiver.

`on` switches the transceiver to Transmit Mode using the selected signal.

`off` switches the transceiver to Receive Mode using the selected signal.

`voice` switches the transceiver to send/receive voice (enhanced) signals.

`data` switches the transceiver to send/receive data (raw) signals.

`talk` switches the transceiver to send/receive compressed voice signals and holds the automatic gain control during breaks in speech (available with CICS V3.20 or later).

scan command

Use the `scan` command to:

- display the current scanning state of the transceiver (if scanning is on, the name of the network being scanned is also displayed)
- control whether scanning is on or off
- specify the network to be scanned

NOTE Issuing a `scan on` command when a lock is on will automatically unlock the interface (see page 278, *lock command*).

Syntax

```
scan
scan on
scan off
scan <network>
```

where:

`scan` displays the current scanning state of the transceiver, that is, whether scanning is on or off.

`on` starts scanning all networks that are set to scan.

`off` stops scanning and enables channels to be changed manually.

`<network>` switches to the specified network and starts scanning that network.

Compatibility with CICS V2

In CICS V2, scan tables are used instead of networks. The scan tables are named with single numeric digits. To maintain compatibility with CICS V2 or less, networks must be named with single numeric digits.

secure command

NOTE The `secure` command is only available when the voice encryptor hardware option is installed, and special firmware is programmed into the transceiver and enabled.

The `secure` command is available with CICS V3.10 or later.

Use the `secure` command to:

- activate the voice encryptor feature in the NGT Transceiver
- display the current secure state of the transceiver (Corporate, Global or Off)
- select the secure index
- program the secure key
- set the default secure mode

Syntax

```
secure
secure corp [<PIN>]
secure global [<PIN>]
secure off
secure on [PIN]
```

where:

`secure` displays the current voice encryptor state.

`corp [PIN]` switches on Corporate Mode voice encryptor with or without a specified PIN.

`global [PIN]` switches on Global Mode voice encryptor with or without a specified PIN.

`off` switches off the voice encryptor feature.

`on [PIN]` switches on the voice encryptor using the mode set with the `secure mode corp` or `secure mode global` commands.

The following `secure` commands are available following the `login admin` command:

```
secure index
secure key [#n] [<key-code>]
secure mode corp
secure mode global
```

where:

`secure index` selects one of the different Corporate keys if the secure key #n has been set.

`secure key [#n] [<key-code>]` sets the Corporate key for index n (8 digits for index 1; 16 digits for indices 2–n). #0 sets the base key, which alters all of the keys.

`secure mode corp` sets the default voice encryptor mode to use the Corporate key.

`secure mode global` sets the default voice encryptor mode to use the Global key.

selbeacon command

Use the `selbeacon` command to test the quality of a selected channel before you use it to transmit voice or data. The command sends a request to the station you want to call on the channel you have selected. This receiving station automatically responds with an audible test signal. The volume and clarity of the returned signal indicates the quality of the channel.

Syntax

NOTE You cannot use the global ALL address syntax (@?@) with a `selbeacon` command.

```
selbeacon <destination>[@<network>] [s] [from <self
address>[@<network>]]
```

where:

`<destination>[@network]` is the address [and network] of the station you want to call.

`s` makes the call in Silent Mode.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

selcall command

Use the `selcall` command to make a Selective call to an addressed station.

Syntax

NOTE You cannot use the global ALL address syntax (@?@) with a `selcall` command.

NOTE For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*

```
selcall <destination>[@<network<] [s] [from <self
address>[@<network>]]
```

where:

`<destination>[@network]` is the address [and network] of the station you want to call.

NOTE If the network specified is ALE/CALM, the call will be an ALE call, and the ALE call options will be available.

`s` makes the call in Silent Mode.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

selfid command

A self address is an address for your station. Other stations can selectively call your station using your self address. You can set a number of self addresses for your station.

Use the `selfid` command to:

- display the current list of self addresses for the CICS interface
- create new self addresses for the CICS interface
- change the current self addresses for the CICS interface

The initial list of self addresses used by the CICS interface are those that currently exist in the Address entry in the Control List of the transceiver.

NOTE Changes to the list of self addresses used by the CICS interface will not affect the list of self addresses in the Address entry in the Control List of the transceiver. The changes are lost when the transceiver is switched off. If you want to retain a list of self addresses for use with CICS you can enter them using the RS232 9way or 15way Startup entries in the Control List of the transceiver.

Syntax

```
selfid
selfid <self address>[, <self address>]
```

where:

`selfid` displays your current list of self addresses used by the CICS interface.

`<self address>` sets the self addresses for the CICS interface to the one or more addresses specified on the command line. The addresses can be simple or fully qualified, for example, `12359` or `12359@*SELCALL`, `RICKY` or `RICKY@PRIMWEST`. If no network is specified, the self address applies to all networks.

Compatibility with CICS V2

In CICS V2, self addresses must be specified without a network.

Limitations

The only calls displayed are those addressed to the list of self addresses used by the CICS interface. When the NGT Transceiver is switched on, all self addresses assigned to networks are added to the list of self addresses for CICS by default. When a self address is added through CICS, these default addresses are removed from the list and the new one is added.

If the Address entry in the Control List of the transceiver contains wildcard self addresses, for example, 12.., these are only used by CICS in RTU–282/292 mode.

set command

Use the `set` command to:

- display the current option(s) available
- change the setting of the GP input to lock or pause

When the GP port Q line input is asserted, scanning on the transceiver is stopped via a lock or a pause, as specified in this command.

Syntax

```
set
set gp lock
set gp pause
```

where:

`set` displays the options available.

`gp lock` locks the GP input.

`gp pause` pauses the GP input.

sideband command

Use the `sideband` or `sb` command to:

- display the sideband for the current channel
- select the sideband for the current channel, if it is permitted for that channel

The sidebands are:

- USB
- LSB
- AM

NOTE The `sideband` and `mode` commands can be used interchangeably (see page 279, *mode command*). If you are using CICS V3.00 (or later), the `mode` command is preferred.

Syntax

```
sideband
sideband usb
sideband lsb
sideband am
sb
sb usb
sb lsb
sb am
```

where:

`sideband` or `sb` displays the sideband for the current channel.

`usb` selects USB for the current channel, if it is permitted for that channel.

`lsb` selects LSB for the current channel, if it is permitted for that channel.

`am` selects AM for the current channel, if it is permitted for that channel.

statusack command

Use the `statusack` command to send a reply to a Get Status call you have received. A status call acknowledgment response contains the status information requested. It is sent automatically if a status call requesting remote diagnostics (1) was sent (see page 290, *statuscall command*). The `statusack` command must be sent within the statustime specified by the station that sent the call (see page 291, *statustime command*).

Syntax

```
statusack <destination>[@<network>] "<message>"
```

where:

`<destination>[@<network>]` is the address [and network] of the station that requested the status information.

`<message>` is the status information requested by the station that sent the status call. The message is sent within single or double quotes to allow the use of spaces in the message.

statuscall command

Use the `statuscall` command to obtain information on the status of a transceiver or attached equipment at another station. A status call is typically used to request information about a remote transceiver.

NOTE For a description of each type of status information see page 351, *Get Status calls*.

When you request status information, you need to specify the type of information you require.

The receiving station will automatically send the status information requested. The receiving station is required to respond to a status call within the timeout period (see page 291, *statustime command*). If a response to a status call is not sent within the timeout period an error message is displayed.

Syntax

NOTE The use of the global ALL address syntax in the `statuscall` command will not be effective due to collisions of responses.

NOTE For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*

```
statuscall <destination>[@<network>] "<message>" [from
<self address>[@<network>]]
```

where:

`<destination>[@<network>]` is the address of the station from which you require status information.

`<message>` is the number that corresponds to the type of status information that you request, that is, **0** for Open diagnostics, **1** for Codan diagnostics, **2** for Codan configuration, or an over-the-air command.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

statustime command

Use the `statustime` command to specify the amount of time that the receiving station has to respond to a status call (see page 290, *statuscall command*). The response can be the requested information or a `STATUSNACK`.

NOTE

Be aware that the NGT Transceiver adds 45 seconds to the status time you have entered. For example, if you have entered 10 seconds for the statustime, the receiving station has 10 seconds to prepare the response and 45 seconds to send the call to the requesting station.

If a `statusack` response is not received on the CICS port of the receiving station within this time, a message is displayed to inform you of this.

You can use the `statustime` command to:

- display the current statustime
- set a new statustime

Syntax

```
statustime
statustime <timeout value>
```

where:

`statustime` displays the current timeout value (in seconds).

`<timeout value>` sets the time (in seconds) in which the receiving station has to respond to a statuscall.

Limitations

The timeout value is local to this CICS interface.

telcall command

Use the `telcall` command to make a call to a telephone number.

NOTE Before you can make a Phone call you need to know the address of a station with a telephone interconnect unit (for example, JPS RTU–282/292) through which your call can be routed to the public telephone network.

Syntax

NOTE For more information on:

- address syntaxes see page 262, *Addresses in commands*
- call options see page 262, *ALE call options*

```
telcall <destination>[@<network>] <telephone number> [from
<self address>[@<network>]]
```

where:

`<destination>[@<network>]` is the address [and network] of the station with a telephone interconnect unit.

`<telephone number>` is the telephone number to be dialled by the telephone interconnect unit.

`from <self address>[@<network>]` is the self address [and network] you want to use for this call.

ver command

Use the `ver` command to display the version of CICS that is being used.

Syntax

```
ver
```

Summary of command syntax

Table 43 summarises the syntax of each CICS command.

Table 43: Summary of CICS command syntax

Command syntax	Function
alecall <destination>[@<network>] [±lbt] ["<message>"] [from <self address>[@<network>]]	Makes a call to addressed stations using any, or the specified, ALE/CALM network from the self address specified.
aletelcall <destination>[@<network>] [±lbt] <telephone number> [from <self address>[@<network>]]	Makes a Phone call to addressed stations using any, or the specified, ALE/CALM network from the self address specified.
call <destination>[@<network>] [±lbt] [from <self address>[@<network>]]	Makes a call to addressed stations using any, or the specified, ALE/CALM, Codan Selcall, or Open Selcall network from the self address specified.
chan [<name>]	Displays the current channel, or switches to the channel specified.
echo [off|on]	Displays the current echo status, or switches to Half Duplex Mode (off) or Full Duplex Mode (on, default).
freq [<frequency>]	Displays the common receive/transmit frequency or the separate receive and transmit frequencies (in kHz) for the current channel, or selects the channel that has the receive frequency specified (in kHz). If the channel with the exact receive frequency is not found, the channel with the next higher frequency is selected.
gpsbeacon <destination>[@<network>] [±lbt] [from <self address>[@<network>]]	Makes a Get Position call to an addressed station using any, or the specified, ALE/CALM, Codan Selcall, or Open Selcall network from the self address specified.
gpsposition <destination>[@<network>] [±lbt] [from <self address>[@<network>]]	Makes a Send Position call to addressed stations using any, or the specified, ALE/CALM, Codan Selcall, or Open Selcall network from the self address specified.
hangup	Closes an active link between your transceiver and the station that you are calling.
help [<category>]	Displays the categories of help available, or detailed help for the commands within the selected category.
lbt [measure]	Displays the current LBT Mode, or performs a check on the current channel for the presence of data or voice.

Table 43: Summary of CICS command syntax (cont.)

Command syntax	Function
`lock [abort|off|on]`	Displays the current lock status of the transceiver, attempts to break a lock, releases all locks, or sets a lock.
`mode [<name>]`	Displays the mode of the current channel, or sets the mode of the current channel to that specified, if the mode is permitted for that channel.
`pagecall <destination>[@<network>] [±lbt] "<message>" [from <self address>[@<network>]]`	Makes a Send Position call to addressed stations using any, or the specified, ALE/CALM, Codan Selcall, or Open Selcall network from the self address specified. Your message must be written within double or single quotes. See Table 42 on page 280 for details on the message length.
`prompt [off|<text string>|time]`	Enables the prompt output on the command interface and displays the current prompt type, switches between a variable text string prompt or the time prompt (time since the transceiver was last reset), or disables the prompt.
`ptt [off|on] [data|voice|talk]`	Displays the current PTT state of the transceiver and places the transceiver into PTT for 30 seconds. Sets the PTT to: • Receive Mode with a data, voice or talk signal • Transmit Mode with a data, voice or talk signal
`scan [<network>|off|on]`	Displays the current scanning state of the transceiver, and if scanning is on, displays the names of networks that are currently being scanned. Switches scanning off or on and switches to the network specified and begins scanning on that network.
`secure [corp|global|off|on [PIN]]`	Displays the current voice encryptor state, switches on Corporate/Global Mode or the default mode voice encryptor with or without a specified PIN, or switches secure mode off.
`secure index`	Selects 1 of n different Corporate keys. Requires login by administrator.
`secure key [#n] [<key-code>]`	Sets the Corporate key for an index n. Requires login by administator.
`secure mode [corp|global]`	Sets the default mode voice encryptor (Corporate or Global). Requires login by administrator.
`selbeacon <destination>[@<network>] [s] [from <self address>[@<network>]]`	Makes a Channel Test call to an addressed station using any, or the specified, Codan Selcall or Open Selcall network from the self address specified.

Table 43: Summary of CICS command syntax (cont.)

Command syntax	Function
selcall <destination>[@<network>] [±lbt] [s] [from <self address>[@<network>]]	Makes a Selective call to an addressed station using any, or the specified, Codan Selcall or Open Selcall network from the self address specified. If the network specified is ALE/CALM, the call will be an ALE call, and the ALE call options will be available.
selfid [<self address>[, <self address>]]	Displays the current list of self addresses used by CICS, or creates new self addresses for CICS.
set [gp lock|pause]	Displays the current operational settings for CICS, or locks or pauses a GP input.
sideband [am|lsb|usb] sb [am|lsb|usb]	Displays the sideband of the current channel, or changes the sideband of the current channel to AM, LSB or USB, *only* if permitted for that channel.
statusack <destination>[@<network>] "<message>"	Sends a response to a Get Status call with the status information requested.
statuscall <destination>[@<network>] [±lbt] "<message>" [from <self address>[@<network>]]	Makes a Get Status call to an addressed station using any, or the specified, ALE/CALM, Codan Selcall, or Open Selcall network from the self address specified.
statustime [<timeout value>]	Displays the amount of time (in seconds) the receiving station has to respond to a Get Status call, and sets this time.
telcall <destination>[@<network>] [±lbt] <telephone number> [from <self address>[@<network>]]	Makes a Phone call to addressed stations using any, or the specified, ALE/CALM, Codan Selcall, or Open Selcall network from the self address specified.
ver	Displays the version of CICS being used.

CICS response messages

Table 44 summarises CICS response messages and their meanings.

Table 44: CICS response messages

Response message	Description
ALE-LINK: <channel>, <caller address>, <self address>, <time>	An ALE link has been established.
ALE-LINK: FAILED	The ALE link between your transceiver and the station you are calling has failed because the outgoing call was not started or was aborted. This message is preceded by a message stating the reason for the failure.
CALL DETECTED	A call has been detected.
CALL FAILED	An outgoing call has not started or was aborted. This message is preceded by a message stating the reason for the failure.
CALL SENT	An outgoing call has been sent.
CALL STARTED	An outgoing call has been initiated.
CHAN: <name>	The transceiver has changed the channel to that specified. This message is only shown when the system is not scanning. Names that include spaces are displayed within double quotes.
CICS: V<version number>	The current version status of CICS.
ECHO: OFF	Echo is switched off, that is, Half Duplex mode.
ECHO: ON	Echo is switched on, that is, Full Duplex mode.
EMERGENCY: <channel>, <caller address>, <destination>, <date> <time>, [<gps position>|NO GPS UNIT CONNECTED|NO VALID GPS POSITION]	An Emergency call has been received.
FREQ: xxxxx.x RX, INHIBIT TX	The receive frequency of the current channel. The transmit frequency is inhibited or it is a TxD channel.
FREQ: xxxxx.x RX, yyyyy.y TX	The receive and transmit frequencies of the current channel.
FREQ: xxxxx.x RX/TX	The receive and transmit frequencies (in kHz) of the current channel are the same.

Table 44: CICS response messages (cont.)

Response message	Description
GPS-POSITION: <channel>, <caller address>, <self address>, <date> <time>, <gps position>|NO GPS CONNECTED|NO VALID GPS POSITION	The GPS position of another station has been received.
LBT: ABORTED	The LBT measurement process has been aborted.
LBT: ALL CHANNELS BUSY	All of the channels tested for voice and data were busy. No call was sent.
LBT: DISABLED	The global LBT Mode is disabled.
LBT: ENABLED	The global LBT Mode is enabled.
LBT: OCCUPIED	The channel tested is occupied with traffic.
LBT: VACANT	The channel tested is clear of voice and data traffic.
LOCK	The GP input has been set to lock.
LOCK: ABORT	A lock is released from another interface.
LOCK: BUSY	The system is locked and cannot be used from this interface.
LOCK: OFF	The system is currently unlocked.
LOCK: ON	The system is currently locked.
MODE: <name>, <sideband>, <ifwidth>, <ifcentre>	The current mode of the channel.
NO EXTERNAL UNIT CONNECTED OR NO RESPONSE	A Get Status call has been sent to a transceiver that does not have the required equipment attached.
NO RESPONSE	A Get Status call has been sent and the receiving station has not responded to your request for information.
OK	The command has been accepted and is being processed. Normally displayed for any command that does not respond with some value immediately.
Options: gp	Identifies GP input as the only option that can be changed by the user. You can change the setting of the GP input to lock or pause.
PAGE-CALL: <channel>, <caller address>, <self address>, <date> <time>, "<message>"	A Message call has been received.
PAGE-CALL-ACK: <channel>, <self address>, <caller address>, <date> <time>	A Message call acknowledgment response has been received.
PAUSE	The GP input has been set to pause.

Table 44: CICS response messages (cont.)

Response message	Description
PROMPT: <time>|<text string>	The mode of the current prompt has been requested.
PTT: OFF	PTT is currently off, that is, the local transceiver is in Receive Mode.
PTT: ON [, DATA|VOICE|TALK]	PTT is currently on, that is, the local transceiver is in Transmit Mode. Data is the default mode.
PTT: REJECTED	You cannot transmit.
SCAN: ALE, <network>, <network>	Scanning has started on the ALE/CALM networks specified.
SCAN: OFF	Scanning has stopped.
SCAN: ON, <network>, <network>	Scanning has started on the networks specified.
SECURE INDEX	The index of the Corporate key currently in use.
SECURE MODE: CORP|GLOBAL	The current default setting of the voice encryptor.
SECURE: CORP|GLOBAL [PIN]	The current state of the voice encryptor.
SECURE: OFF	The current state of the voice encryptor.
SELCALL: <channel>, <caller address>, <self address>, <date> <time>	A Selective call has been received.
SELFID-LIST: <self address>, <self address>, <self address>	The list of current self addresses used by the CICS interface.
SIDEBAND: AM	The sideband for the current channel is AM.
SIDEBAND: LSB	The sideband for the current channel is LSB.
SIDEBAND: USB	The sideband for the current channel is USB.
STATUS-ACK: <channel>, <caller address>, <self address>, <date> <time>, "<message>"	A Get Status call acknowledgment response has been requested and sent.
STATUS-CALL: <channel>, <caller address>, <self address>, <date> <time>, "<message>"	A Get Status call request message has been received.
STATUS-CALL-ACK: <channel>, <caller address>, <self address>, <date> <time>, "<message>"	A Get Status call acknowledgment response has been requested and sent.

Table 44: CICS response messages (cont.)

Response message	Description
STATUSTIME: <n>	The current timeout value, where *n* is the amount of time (in seconds) the receiving station has to respond to a Get Status call.
TEL-CALL: <channel>, <caller address>, <self address>, <date> <time>, <telephone number>|DISCONNECTED	A Phone call has been received or disconnected.

CICS error messages

Table 45 summarises CICS error messages and their meanings.

Table 45: CICS error messages

Error message	Description
`ERROR: Admin access required`	The command that you entered requires an administrator login. Type `login admin`. Enter the admin password for the transceiver connected.
`ERROR: Bad command`	The syntax of the command entered is incorrect. Use the `help` command to look for the categories of available commands and use the `help <category>` command to get information on the available commands within a category. For information on CICS functionality use the `help cics` command.
`ERROR: Call failed`	The outgoing call has not started. This message is preceded by a message stating the reason for the failure. Check the destination address and use the `selbeacon` command to send a Channel Test call to the destination. You may need to select another frequency.
`ERROR: Call reply error XXX`	There has been an internal problem making the call. Under normal conditions this error should not occur. Switch the transceiver off then on again.
`ERROR: Call type not allowed`	This type of call cannot be made. Check if the option associated with the call type is installed in the transceiver.
`ERROR: Channel not found`	The channel you entered is not programmed in the transceiver. Either program the channel into your transceiver, or select another channel for the call.
`ERROR: Citizen band frequency but not citizen band channel`	You are not permitted to transmit on this CB frequency as it does not correspond with a CB channel within the transceiver. Select another frequency.
`Error: Command failed`	The command you entered has failed. Check the syntax required for the command.
`ERROR: Data too long`	The message is too long. Shorten the message, or split the message over a number of calls. The maximum number of characters permitted in a call type is provided in Table 42 on page 280.
`ERROR: FROM selfid <self address> not valid`	The self address contains characters that are not permitted. Check that the self address is correct for the type of network in which it is being used (see page 94, *Entering your station self address*).

`ERROR: Internal error`
`ERROR: Internal error XXXX`
`ERROR: Internal get`
`ERROR: Internal set`
	Under normal conditions this error should not occur. It is an indication that something went wrong with internal processing. Contact your Codan representative.

Table 45: CICS error messages (cont.)

Error message	Description
`ERROR: Invalid address`	The destination address that you are using for the call contains characters that are not permitted, or the statusack has an invalid source address. Check all addresses for the call.
`ERROR: Invalid call options`	The call options that you have entered for the call: • do not match those allowed for the call system • have been repeated • are not recognised when inserted after a message
`ERROR: Invalid call type for network`	The call type used for the call is not supported by the network. Select a call type that is valid for the network, or select a different network.
`ERROR: Invalid call type or selfid for scanning networks`	You have started a call during scanning. CICS attempts to select the first suitable network, however in this case, there are no suitable networks. Do one of the following before making the call again: • switch off scanning • specify the network for the call • select a different call type • select a different self address
`ERROR: Invalid characters in selfid`	The self address contains characters that are not permitted. Check that the self address is correct for the type of network in which it is being used (see page 94, *Entering your station self address*).
`ERROR: Invalid destination address`	The destination address used for the call type or network is incorrect, for example, alpha characters in a Codan Selcall network. Correct the destination address and try the call again.
`ERROR: Invalid network name`	The name of the network used for the call does not exist or does not support the call type (see page 150, *Network Name*).
`ERROR: Invalid selfid for specified address`	The entry in the self address list is incorrect. Check that the self address and assigned networks in the self address list are correct.
`ERROR: Invalid selfid for specified network`	The self address contains characters that are not permitted by the network specified, for example, alpha characters in a Codan Selcall network. Correct the self address.
`ERROR: Invalid selfid network`	The network in the self address list is incorrect. The self address list has been updated with a network using the `selfid` command. The network specified does not exist. Select a valid network for the self address.
`ERROR: Invalid source address`	The self address used for the call has not been accepted. Check that the self address is correct for the network's call system.
`ERROR: LBT option not installed`	You have attempted to use LBT but it is not installed in your transceiver.

Table 45: CICS error messages (cont.)

Error message	Description
`ERROR: LBT wrong mode`	You have attempted to use LBT when the transceiver is unable to perform LBT, for example, when the transceiver is scanning.
`ERROR: Low battery voltage`	CICS has attempted a PTT and detected that the battery voltage is low. Recharge the battery.
`ERROR: Max index allowed is n`	You have attempted to set a Secure Index that is greater than `n`. Enter a Secure Index that is less than or equal to `n`.
`ERROR: Message too big`	The message length is too long. Shorten the message, or split the message over a number of calls. The maximum number of characters permitted in a call type is provided in Table 42 on page 280.
`ERROR: Mode is not allowed`	The mode is not permitted for the selected channel. Select another mode.
`ERROR: Mode not found`	The mode requested is not available on this transceiver. Select another mode.
`ERROR: Network in address not found`	The network used in the call address is not programmed in the Network List of the transceiver. Either program the network into your transceiver, or select another network for the call.
`ERROR: Network not found`	You have used the `scan [on|off|<network>]` command. The network specified is not programmed in the Network List of the transceiver. Repeat the `scan` command using `on`, `off` or a valid network name.
`ERROR: No active link`	You have used the `hangup` command, but no call is currently in progress.
`ERROR: No ale network`	You have used the `alecall` or `aletelcall` commands. The transceiver has searched for an ALE/CALM network but one was not found.
`ERROR: No call system for current channel`	You have made a call on the currently selected channel and mode (scan is off). No channel is specified in the call information. CICS searches all networks for one that contains the currently selected channel and mode, but has not found a network. Select another channel and/or mode.
`ERROR: No channels found`	You have made a call on the currently selected channel (scan is off), but a channel cannot be selected because no channels are programmed or you were in free tune (see page 239, *Using the transceiver in free tune and Amateur Mode*). Exit free tune if required. Program some channels into your transceiver, or if not permitted to do so, contact your Codan representative.
`ERROR: No GPS unit connected`	You have sent GPS information in a call, however, the transceiver has detected that a GPS unit is not connected in the system. Check the cable connections to the GPS unit and that the RS232 mode and speed entries in the Control List are set correctly. The GPS option must also be installed.

Table 45: CICS error messages (cont.)

Error message	Description
`ERROR: No key at this index`	You have selected a Secure Index that does not have a Secure Key set. Select another index, or program a key for this index.
`ERROR: No link available`	There is no link available to the addressed station. This is caused by updates occurring in the RF unit, or an NRI link is being established. Wait a few minutes for the link to be established. If the link is still unavailable, try the call again.
`ERROR: No modes programmed`	No modes are programmed in the transceiver. Contact your Codan representative.
`ERROR: No modes with this sideband`	No modes are programmed with this sideband. Contact your Codan representative.
`ERROR: No network for selfid`	The command entered included a self address for which there is no suitable network, for example, the self address contained alpha characters but there is no ALE/CALM network.
`ERROR: No networks found`	You have set the transceiver to scan or are making a call while scanning is on, but the transceiver cannot find any networks that are set to be scanned. Change the Scan Network setting in the networks you want to scan (see page 157, *Programming the Network List*).
`ERROR: No response from RF unit`	There has been a problem making the call or requesting PTT such that there is no response from the RF unit. Check cable connections or allow time for an NRI link to be established. Wait for a minute or two for the RF unit to recover automatically.
`ERROR: No selfid`	You have made a call on the currently selected channel (scan is off) without specifying a network. The transceiver has located a network containing the channel, but no self address is set for this network in the self ID list. Select a different channel, select a self address to use with the network, or specify a network that has a valid self address in the call information.
`ERROR: No selfid for network`	The specified network does not have a self address. Check the command syntax and the self address list.
`ERROR: No valid GPS position`	The GPS position is either too old or not valid yet. Check the cables connected to the GPS unit.
`ERROR: Not an ALE network`	The command entered requires an ALE/CALM network, but the network specified with the command is not an ALE/CALM network.
`ERROR: Not supported`	The request cannot be executed because the option is not installed in your transceiver. If you want to use the option, contact your Codan representative.
`ERROR: PTT active`	The transceiver is currently transmitting and prevents the command from being executed. For example, you will *not* be able to change channels when the system is transmitting. Wait until the transceiver has completed the transmission, then send the new command.

Table 45: CICS error messages (cont.)

Error message	Description
`ERROR: PTT rejected`	PTT did not succeed. For more information see page 334, *PTT rejected from <location of PTT: reason>*.
`ERROR: Request failed`	The information requested cannot be retrieved from the RF unit. Check the cable connections.
`ERROR: Scan list empty`	The `scan on` command failed because no networks are set for scanning, these networks do not contain any channels, or the Scan Allow entry is disabled. The `scan <network>` command failed because these networks do not contain any channels, or the Scan Allow entry is disabled. Change the Scan Network entry to Scan (see page 150, *Scan Network*), add channels to the network if necessary, or enable the Scan Allow entry.
`ERROR: Scanning is on`	The system is currently scanning and cannot complete the command. Use the `scan off` command to switch off scanning, then try the new command again.
`ERROR: Secure is On`	The command you entered is not allowed while the Voice Encryptor option is active. Use the `secure off` command to exit secure mode, then try the new command again.
`ERROR: Selfid list empty`	Your transceiver does not have any self addresses programmed.
`ERROR: Selfid list too long`	There are too many self addresses in the self address list. Delete self addresses until the list contains no more than 10 self addresses.
`ERROR: Selfid too long`	The self address or the total length of the self address and network name exceeds a specified limit for the call system used in the network. Shorten the length of the self address and/or the network name.
`ERROR: Sideband not allowed`	The sideband is not permitted for this channel. Select another mode.
`ERROR: Synthesiser is unlocked`	You cannot transmit while the synthesiser is unlocked. Switch the transceiver off then on again. If the error persists, contact your Codan representative.
`ERROR: System is busy`	There has been a problem making the call or updating the self address list. Wait for a few minutes, then repeat the command.
`ERROR: System locked`	The system is locked and the command cannot be executed. Wait for the lock to be released (for example, a data call ending), or to timeout, then try the command again.
`ERROR: Transceiver cut out`	The PTT has timed out according to the value set in the Cfg PTT Cutout Time entry in the Control List. If your transmission is long, set the Cfg PTT Cutout Time entry to 30 minutes.
`ERROR: Transceiver is tuning`	The `PTT` command has been rejected because the transceiver is currently tuning. Wait until the transceiver completes the tuning cycle, then try the `ptt` command again.

Table 45: CICS error messages (cont.)

Error message	Description
`ERROR: Transmit inhibited`	You have tried to transmit on a receive-only channel. Select a channel that has a transmit frequency.
`ERROR: Tx disabled because of TPE link`	You are not permitted to transmit a signal with the TPE link in its current position and the programming options installed in your transceiver. Contact your Codan representative.
`ERROR: Unable to send data`	There has been a problem sending data with the call. This message is preceded by a message stating the reason for the data not being sent. Refer to the description for the previous message to resolve the problem.
`ERROR: Unknown network name in selfid`	The network for the self address does not exist as the network may have been deleted after it was allocated to the self address. Program the network into the Network List in your transceiver, or edit the self address so that it uses a current network.
`ERROR: XR or VP not installed`	You have attempted to use a voice encryption option that is not installed in your transceiver. If you want to use this option, contact your Codan representative.

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19 Connectors

This section contains the following topics:

RF unit connectors (308)

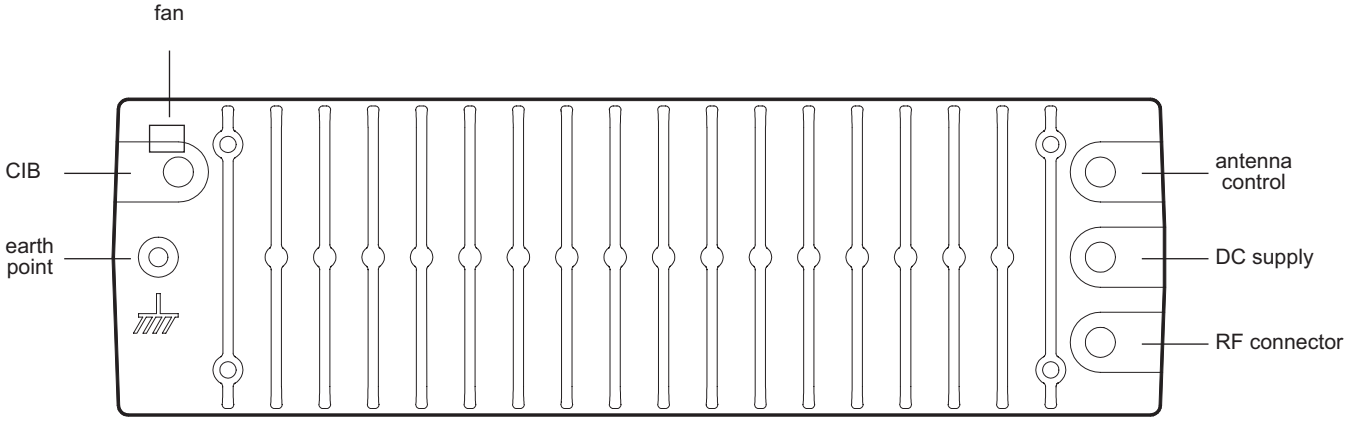
Junction box connectors (NGT AR and SR Transceivers only) (315)

Desk console connectors (324)

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 41: Back panel of the RF unit



NOTE In NGT *AR Voice* and *VR* Transceivers, the CIB connector is replaced by a 10-way connector on a flying lead. The handset and speaker cable and connector attach to this.

NOTE The 4-way connector is attached to the rear of the 10-way connector.

CIB connector (NGT *AR* and *SR* Transceivers only)

The CIB connector is a flying lead located on the left side of the back panel. The CIB is a proprietary Codan specification that uses a digital bus protocol and TDM audio bus to connect and communicate between Codan products. For more information about the CIB specification please contact your Codan representative.

The recommended maximum length of CIB cable is 30 m (33 yd). If you need a longer cable, contact your Codan representative. The maximum current that the CIB can supply to ancillary products is 2 A (nominal). Equipment connected to and powered by the CIB must operate between 10.8 and 16 V DC. Only Codan supplied or approved cables should be used.

Figure 42: Front view of the CIB connector on the RF unit

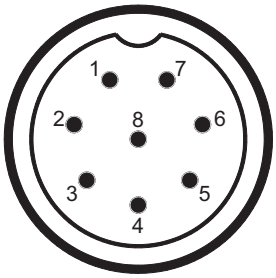


Table 46: Pinouts of the CIB connector on the RF unit

Pin no.	Function	Signal levels
1	Ground	0 V
2	System data	1 to 5 V logic
3	System data	1 to 5 V logic
4	Power on	Momentary 0 V = PWR ON
5	+6 V standby	+6 V
6	System audio	5 to 10 V sync and TDM
7	System audio	0 to 5 V sync and TDM
8	‘A’ rail protected (2 A)	+13.6 V nominal

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 43: Front view of the antenna control connector on the RF unit

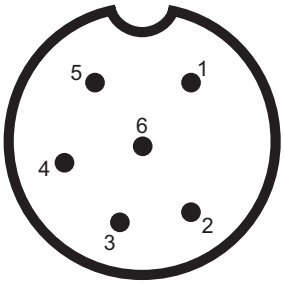


Table 47: Pinouts of the antenna control connector on the RF unit

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 (2 A) (NGT *AR* and *SR* Transceivers only)	+13.6 V nominal
	‘A’ rail protected (rating not specified) (NGT *AR Voice* and *VR* Transceivers only)	
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. Any piece of equipment connected to the CIB is powered through the DC supply connector.

Table 48: 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, for example, for continual data communication.

Figure 44: Front view of the fan connector on the RF unit

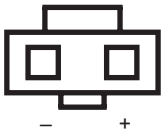


Table 49: Pinouts of the fan connector on the RF unit

Pin no.	Function
–	0 V
+	+13.6 V nominal (when fan is activated)

10-way connector (NGT *AR Voice* and *VR* Transceivers only)

The 10-way connector is a flying lead located on the top left side of the back panel. It connects to the handset and speaker via a control cable (Codan part number 08-06022-001).

Figure 45: Front view of the 10-way connector on the RF unit (NGT *AR Voice* and *VR* Transceivers only)

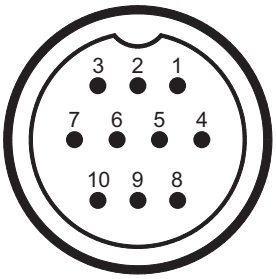


Table 50: Pinouts of the 10-way connector on the RF unit (NGT *AR Voice* and *VR* Transceivers only)

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 (NGT *AR Voice* Transceivers only)

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 controlling and monitoring the transceiver, programming the transceiver settings, and sending and receiving message calls.

The serial data connector may be used in a number of modes:

None	to be used when no external device is connected to the transceiver
GPS	to receive GPS position information
CICS	to control and monitor the transceiver
RTU Log	to receive radio/telephone interface activity information

When in CICS Mode, the interface will accept any of the CICS commands as detailed on page 259, *Operating the transceiver from a computer*.

When 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 139, *Hiding and showing information*.

The operating parameters can be set to the following:

Baud rate	4800, 9600, 19200, 38400
Data bits	8
Stop bits	None
Parity	1

Figure 46: Front view of the 4-way connector on the RF unit (NGT *AR Voice* Transceivers only)

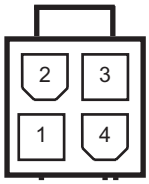


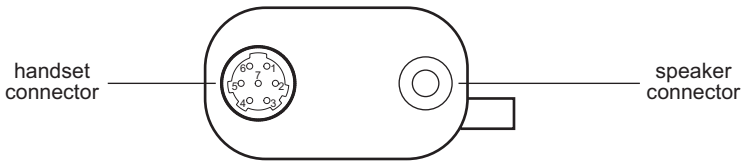
Table 51: Pinouts of the 4-way connector on the RF unit (NGT *AR Voice* Transceivers only)

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 (NGT *AR Voice* and *VR* Transceivers only)

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.

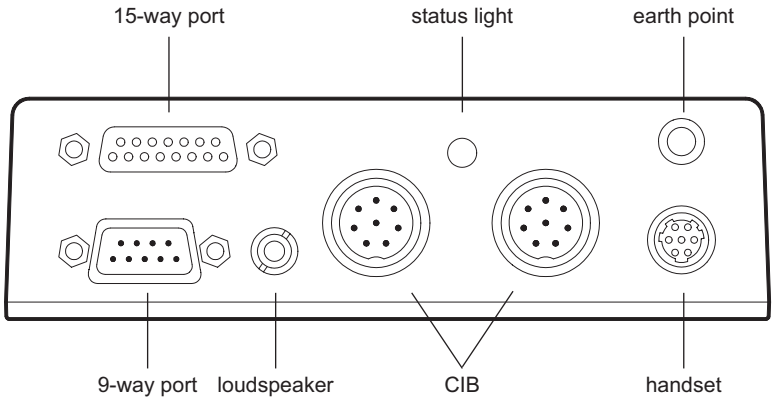
Figure 47: Front view of the handset and speaker connector attached to the RF unit (NGT *AR Voice* and *VR* Transceivers only)



The handset and speaker connector replaces the connectors on the junction box in NGT *AR Voice* and *VR* Transceivers. The pinouts for the handset and speaker connector are the same as the pinouts for the handset connector and the speaker connector on the junction box. This information is provided in Table 52 on page 316 and Table 54 on page 318 respectively.

Junction box connectors (NGT *AR* and *SR* Transceivers only)

Figure 48: Connector panel of the junction box



Handset connector

The handset interface has signals for:

- power to the handset
- a PWR ON request line wire to switch on the system
- the microphone audio
- communication between the handset and junction box

Figure 49: Front view of the handset connector on the junction box

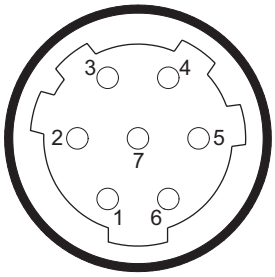


Table 52: Pinouts of the handset connector on the junction box

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

CIB connectors

There are two CIB connectors on the junction box to enable daisy-chaining to other CIB equipment. The CIB is a proprietary Codan specification that uses a digital bus protocol and TDM audio bus to connect and communicate between Codan products. For more information about the CIB specification please contact your Codan representative.

The recommended maximum length of CIB cable is 30 m (33 yd). If you require a longer cable, contact your Codan representative. The maximum current that the CIB can supply to ancillary products is 2 A (nominal). Equipment connected to and powered by the CIB must operate between 10.8 and 16 V DC. Only Codan supplied or approved cables should be used.

Figure 50: Front view of a CIB connector on the junction box

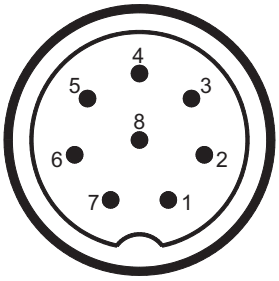


Table 53: Pinouts of the CIB connectors on the junction box

Pin no.	Function	Signal levels
1	Ground	0 V
2	System data	1 to 5 V logic
3	System data	1 to 5 V logic
4	Power on	Momentary 0 V = PWR ON
5	+6 V standby	+6 V
6	System audio	5 to 10 V sync and TDM
7	System audio	0 to 5 V sync and TDM
8	‘A’ rail protected (2 A)	+13.6 V nominal

Speaker connector

The speaker should be 4 Ω with a power rating of 5 W.

Table 54: Pinouts of the speaker connector on the junction box

Connection	Function
Tip	Speaker audio output
Sleeve	Ground

9-way serial data connector

The serial data (RS232) connector can be used for controlling and monitoring the transceiver, programming the transceiver settings, and sending and receiving message calls.

NOTE The following modes are not available with the NGT *VR* Transceiver.

The serial data connector may be used in a number of modes:

None	to be used when no external RS232 device is connected to the transceiver
GPS	to receive GPS position information
CICS	to control and monitor the transceiver
Modem Data	to control the transfer of data between a PC and a modem over a remote control link
PC Data	to control the transfer of data between a PC using 9102 software and a modem over a remote control link
RTU Log	to receive radio/telephone interface information

When in CICS Mode, the interface will accept any of the CICS commands as detailed on page 259, *Operating the transceiver from a computer*.

When 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 9way Mode and RS232 9way 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 139, *Hiding and showing information*.

The operating parameters can be set to the following:

Baud rate	300, 1200, 2400, 4800, 9600, 19200, 38400
Data bits	8
Stop bits	None
Parity	1

Figure 51: Front view of the 9-way serial data connector on the junction box

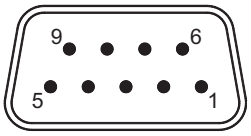


Table 55: Pinouts of the 9-way serial data connector on the junction box

Pin no.	**Function**	**Signal levels**
1	Not connected	
2	RS232 Receive data	RS232 input
3	RS232 Transmit data	RS232 output
4	DTR	RS232 output
5	Ground	0 V
6	DSR	RS232 input
7	RTS	RS232 output
8	CTS	RS232 input
9	Not connected	

15-way GPIO connector

The GPIO connector is used to interface a variety of third party products such as morse keys, GPS units etc.

Figure 52: Front view of the 15-way GPIO connector on the junction box

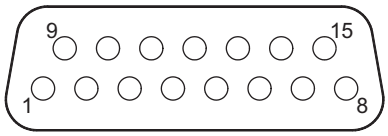


Table 56: Pinouts of the 15-way GPIO connector on the junction box

Pin no.	Function	Signal levels
1	RTS	0 to 5 V output
2	RS232 Receive data	RS232 input
3	RS232 Transmit data	RS232 output
4	Ground	0 V
5	Tx audio input (50 kΩ balanced)	300 mV p–p for ALC threshold
6	External alarm relay	Contacts rated 50 V, 1 A
7	External alarm relay	Closed for alarm
8	‘A’ rail	+13.6 V nominal
9	CTS	RS232 input
10	PTT input	5 V TTL logic active low
11	Morse input	5 V TTL logic active low
12	Spare input/output	5 V TTL logic
13	Quiet (Q) line input	5 V TTL logic active high when Fax/ Data Mode selected 5 V TTL logic active low when all other modes selected
14	System audio output unbalanced	
15	Tx audio input (50 kΩ balanced)	300 mV p–p for ALC threshold

NOTE External alarm relay: internal link to select normally open or closed. Can be configured to switch to ground or the ‘A’ rail.

The following sections describe the function of the 15-way GPIO connector and corresponds to the information provided in Table 56.

Morse input

When a ground is detected on the morse input, the transceiver generates a 900 Hz morse tone on air. This functionality is typically provided with a morse key.

PTT

This function puts the transceiver into Tx Mode and enables the audio Tx path via the GPIO connector (pins 5 and 15).

Q line

The Q line switches the transceiver between Data and Voice Modes, and stops the transceiver from scanning. When the transceiver is in Data Mode it uses slow AGC, and an ALC that is suitable for data transmission.

If you want to use a non-Codan data modem with the NGT, set the 15way Mode entry to None and connect pins 10 and 13 together. The PTT output from the non-Codan modem must connect to pins 10 and 13 of the 15-way GPIO connector.

Relay contact

The relay can be wired by a user to ring bells or to sound a car horn. If a call is received, the bell or horn will sound for 2 minutes. If it is an emergency call, it will toggle on and off at a 1 second rate. The contact can be configured via internal links to do one of the following in the case of an alarm:

- join pins 6 and 7 together (normal, not available when 600 Ω balanced audio output is used), or
- switch pin 6 to ground, or
- switch pin 6 to battery volts (‘A’ rail)

NOTE The external alarm will not be activated under certain settings of the Cfg Alert Tones entry in the Control List (see page 203, *Cfg Alert Tones*).

Serial data

The serial data (RS232) connector can be used for controlling and monitoring the transceiver, programming the transceiver settings, and sending and receiving message calls.

NOTE The following modes are not available with the NGT *VR* Transceiver.

The serial data connector may be used in a number of modes:

None	to be used when no external RS232 device is connected to the transceiver
GPS	to receive GPS position information
CICS	to control and monitor the transceiver
Fax/Data	to use a 9001 or 3012 modem
RTU–282/292	to use an RTU–282/292 telephone interconnect unit

When in CICS Mode, the interface will accept any of the CICS commands as detailed on page 259, *Operating the transceiver from a computer*.

When 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 15way Mode and RS232 15way 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 139, *Hiding and showing information*.

The operating parameters can be set to the following:

Baud rate	300, 1200, 2400, 4800, 9600, 19200, 38400
Data bits	8
Stop bits	1
Parity	None

System power (‘A’ rail protected)

System power is switched off when the transceiver is switched off. Any load connected to this supply must be taken into account and be within the CIB specification.

Tx audio input

Audio input from external equipment for example, data modems, is connected between pins 5 and 15 and is a balanced floating input. The input signal should be nominally 1 V p–p and not exceed 3 V p–p.

System audio output

This supplies raw audio (Easitalk off) from the receiver at a level of 1 V p–p when the RS232 15way Mode entry is set to Fax/Data. When the RS232 15way Mode entry is set to None, CICS, GPS or RTU–282/292, the audio output is determined by the Easitalk setting on the handset. It is unaffected by the volume control.

Desk console connectors

The NGT Desk Console (Codan part number 15-10471) contains a junction box. For junction box connector descriptions see page 315, *Junction box connectors (NGT AR and SR Transceivers only)*.

Headphone jack

The headphone jack comprises a 6.3 mm (¼ in) jack with 600 Ω nominal impedance.

Table 57: Pinouts of the headphone jack on the desk console

Connection	Function
Ring	Audio
Tip	Audio
Sleeve	Ground

Handset connector (Code 766 Desk Console only)

The rear panel of the desk console has a handset connector. The details of this connector are provided in Table 52 on page 316.

10-way connector (Code 766 Desk Console only)

The 10-way connector on the 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 50 on page 312.

20 System messages

This section lists the system messages that may be displayed by the handset and a description of each for a standard NGT installation. For extended NGT systems, refer to the troubleshooting information provided with the system.

Table 58: 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.
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 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 223, *Installing an option in the transceiver*).
Call error: check cables and 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.
Call error: message too long	The message you have entered has too many characters. The permitted message length depends on the type of call system, the Privacy Mode selected, and the character set (see Table 42 on page 280). Reduce the length of your message.

Table 58: System messages (cont.)

Message	Description
Call error: no GPS info to send	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: • the cable between the GPS receiver and the transceiver is connected correctly • the value in the RS232 15way Mode entry in the Control List is set to GPS • the baud rate in the corresponding RS232 15way Speed entry in the Control List is set to the correct baud rate for the GPS receiver Try the call again.
Call error: specify status message	You have attempted to make a Get Status call without specifying the type of information you want from the other station. When you try the call again, ensure that you specify this information when prompted for a message.
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	The transceiver could not connect to the station you called because: • the station did not respond • the channel was of poor quality Try again later.
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	The transceiver could not make the call because: • one or more details of the call were incorrect • the system was busy Check the details of the call and/or wait for 10 seconds before you try the call again.
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. *Hold down* 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. *Hold down* PTT then speak.

Table 58: System messages (cont.)

Message	Description
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 223, *Installing an option in the transceiver*).
Calling... <call type icon> <address>	Your call has started. Wait for the next message.
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: • 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. For example, you created a macro to go to the Message setting of an entry in the Address List. You then changed this entry to make a Selective call instead of a Message call. The message setting is no longer relevant to the entry so it is not displayed. When you use the macro, however, it still tries to go to this setting. 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.

Table 58: System messages (cont.)

Message	Description
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.
Channel busy: <name of channel>	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.
Data call started	An incoming or outgoing call using a modem has started.
Data changed by another user	Another user is changing the entries in the list. Exit from the list, wait for the user to finish changing the entries, then select the list again to update the entries.
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.

Table 58: System messages (cont.)

Message	Description
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.
Group chan not found: <name of channel>	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. To avoid this message, delete the channel/mode from the entry you used to make the call.
Hangup sent ...listen	You have ended a Phone call. Listen for the revertive to confirm that the telephone interconnect unit received your hangup signal.
Information sent...	The transceiver has sent the data in your Message or Send Position call.
Invalid addr: <address>	The address you have entered has invalid syntax for an ALE global 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.

Table 58: System messages (cont.)

Message	Description
Invalid mode: <channel/mode> in <network>	A channel in a network you are scanning has a mode that is no longer valid for it. This may be because: • the mode is not an allowed mode for the channel • the mode is no longer in the Mode List The channel/mode combination will not be scanned. To avoid this message, do one or more of the following: • 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
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.
Lists locked: Enter the Admin Password from the previous RF unit <serial number>	The junction box has been attached to a new RF unit. Enter the admin password from the RF unit to which the junction box was connected.
Lists locked: Set the same Admin Password on each JB. Last RF unit is <serial number>	The junction boxes in your transceiver system have different admin passwords. Enter the same admin password on each junction box.
Lists unlocked	You have entered the correct admin passwords across all junction boxes and the lists are unlocked.
Locked entry Locked list Locked setting	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. For example, if an entry was locked at user level and you logged in as a user, you could unlock the entry using the Unlock? entry in the List Manager (see page 141, *Locking and unlocking information*). To unlock the item, use the appropriate entry in the List Manager.

Table 58: System messages (cont.)

Message	Description
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.
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 junction box 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 JB <junction box version at which macro update occurred> and higher	NSP has downloaded an old set of macros that are inconsistent with the current version of junction box firmware. Load the new Keypad List from the transceiver into a new profile for use with this version of junction box 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 will need to recreate them.
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.
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: JB Control List reset	The junction box entries in the Control List have been reset to their factory-default settings due to a memory error. If you changed any values in these entries you will need to re-enter them.
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 will need to recreate and/or re-enter them.
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 will need to recreate them.
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 the lists affected.

Table 58: System messages (cont.)

Message	Description
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 will need to recreate them.
Memory error: station addresses reset	Your station self addresses have been reset due to a memory error. Re-enter these self addresses.
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>	The channel on which you are attempting to make a call is in the channel/mode list of the network you are using, but: • the mode is no longer an allowed mode for the channel • the name of the mode has been changed in the Mode List Begin the call again and select another channel/mode. 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.
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.
Network not found: <name of network>	The network in which you have attempted to make a call is not in the Network List. Select another network. To avoid this message, change the network in the entry in which this error occurred.
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 RFDS network in Network List	You have attempted to make an RFDS Emgcy call but there are no networks with a two-tone calling system in the Network List. Create a suitable network.
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.

Table 58: System messages (cont.)

Message	Description
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	This message is displayed when: • the Network List is empty • the only network in the Network List is an RFDS network, and the call you are attempting to make is not an RFDS Emgcy call Create a suitable network in the Network List.
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>	The channel/mode on which you have attempted to make a call is not in the network. 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. Select a different channel/mode or network. 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.
Number too high	You have entered a number that exceeds the maximum value for the setting. Enter a lower number.
Number too low	You have entered a number below the minimum value for the setting. Enter a higher number.
Other station ended call	The station you called has ended the call.
Position rcvd: <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.
Power fault on CIB	A short circuit has been detected on the CIB. Repair the short circuit.
Power fault on CIB recovered	The power fault on the CIB has been rectified.

Table 58: System messages (cont.)

Message	Description
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	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. Release the PTT button if it is held down and/or increase the PTT cutout time if necessary.
PTT error: check firmware versions	You have attempted to PTT but an inconsistency between junction box and RF unit firmware exists. Check the firmware versions and reprogram as required.
PTT rejected from <location of PTT: reason>	The transceiver could not transmit from a specific location for the reason stated. The possible locations are the handset, desk console, morse key, GPIO port, CICS on the 9-way port and CICS on the 15-way port. The possible reasons are that: • 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 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
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.

Table 58: System messages (cont.)

Message	Description
RFDS called Wait for reply	You have made an RFDS Emgcy call. Wait for a response from RFDS personnel, press PTT then speak.
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 key that has not been set up in the secure index.
Secure error: no keys set	No keys have been programmed since the voice encryptor was installed. Program a secure key (see page 105, *Using the voice encryptor*).
Secure error: try again	The voice encryptor module has reset unexpectedly. Press **SEC** to go secure.
Serial port <name of serial port> changed to <new baud rate>	You have changed the baud rate of one serial port on the junction box but the combination of this baud rate and that of the other serial port on the junction box is not supported (for example, 38400 baud on the 9-way port and 19200 baud on the 15-way port is not supported). The transceiver has automatically changed the baud rate of the other serial port to create a valid combination.
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 58: System messages (cont.)

Message	Description
Tcvr busy: retry in 10 seconds	The transceiver is busy. This may be because: • it is receiving an incoming call • it is processing a change made to your station self address • too many messages are being sent between units on the CIB Wait for 10 seconds then try the task again.
Text too long	You have entered a line of text that is too long. Reduce the length of the text.
Too many chans for auto ALE call	The ALE/CALM network in which you are attempting to make a call contains more than 100 channels. The transceiver will attempt to make the call on a maximum of 100 channels. To avoid this message and to ensure the transceiver uses all the channels in the network, go to the Network List and reduce the number of channels in the network to 100 or less.
Too many chans to scan	More than 100 channels have been set to be scanned. The transceiver will only scan 100 of them. In the Network List: • 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
Too many devices connected	The Main Menu is full because there are too many devices connected to the CIB. Switch the transceiver off, disconnect a device, then switch the transceiver on.
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	Automatic tuning of the antenna has timed out because: • 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.

Table 58: System messages (cont.)

Message	Description
Unknown error <error number>	The firmware versions in two of the transceiver's devices are incompatible. Contact your Codan representative.
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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21 Accessories and hardware options

The following accessories and hardware options are available for your NGT Transceiver.

Table 59: List of accessories and hardware options

Code	Accessories
02-10234	NGT System Programmer (including programming cable)
08-05610-001	CIB cable (0.5 m)
08-05610-002	CIB cable (2 m)
08-05610-006	CIB cable (6 m)
08-05610-015	CIB cable (15 m)
08-05610-030	CIB cable (30 m)
08-05627-006	Antenna Control cable to the 9350 Antenna
08-05712-001	Interface cable from the junction box to the 9001/3012 Data Modem (1 m)
08-05712-002	Interface cable from the junction box to the 9001/3012 Data Modem (2 m)
08-05866-001	Interface cable from the junction box to the RTU–282/292
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
15-00662	Morse Key for NGT
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 (NGT *AR Voice* and *VR* Transceivers only)
15-02063-EN	Service manual for the NGT series transceiver

Table 59: List of accessories and hardware options (cont.)

Code	**Accessories**
15-10469	Cooling fan for RF unit (Option F)
15-10471	Desk console (NGT *AR* and *SR* Transceivers only)
15-10479	FED-STD-1045 ALE/CALM option
15-10506	500 Hz filter (factory fit)
15-10507	Voice Encryptor option
15-10514	2 700 Hz filter (factory fit)
15-10518	Amateur Mode option
30-11208-000	Rubber feet for RF unit

The following table shows typical values.

Table 60: Specifications for the NGT Transceiver

Item	Specification		
Channel capacity	NGT *AR*, *SR*, *AR Voice*:	400	
	NGT *VR*:	20	
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	NGT *SR*, *VR*:	High:	125 W (PEP)
		Low:	10 W (PEP)
	NGT *AR*, *AR Voice*:	High:	100 W (PEP)
		Low:	10 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 µV PD –105 dBm	
	Frequency: 1.6 to 30 MHz	RF amp on: 0.12 µV 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		

Table 60: Specifications for the NGT Transceiver (cont.)

Item	Specification		
Supply current	Receive (NGT *AR*, *SR*):	(no signal):	1 A
	Receive (NGT *AR Voice*, *VR*):	(no signal):	630 mA (nominal)
	Transmit:	J3E voice: J3E two tone:	8 A 9–16 A
Size, weight and sealing	2010/2011 RF Unit (excluding vehicle mounting frame)		
	Size:	210 mm W × 270 mm D × 65 mm H (8.4 in W × 10.8 in D × 2.6 in H)	
	Weight:	3.3 kg (7.3 lb)	
	Sealing:	IP52	
	2020 Handset		
	Size:	65 mm W × 35 mm D × 130 mm H (2.6 in W × 1.4 in D × 5.2 in H)	
	Weight:	0.3 kg (0.7 lb)	
	Sealing:	IP41	
	2030 Junction Box (NGT *AR* and *SR* Transceivers only)		
	Size:	135 mm W × 106 mm D × 38 mm H (5.4 in W × 4.3 in D × 1.5 in H)	
	Weight:	0.4 kg (0.9 lb)	
	Sealing:	IP41	
	Handset and speaker connector (NGT *AR Voice* and *VR* Transceivers only)		
	Size:	42 mm W × 55 mm D × 22 mm H (1.7 in W × 2.2 in D × 0.9 in H)	
	Sealing:	IP41	

Appendix A Hot key examples

This section contains the following topics:

Example 1: selecting a specific channel (344)

Example 2: displaying an information screen (345)

Example 3: accessing the Free Tune screen (346)

Example 4: displaying and/or changing a setting in the Control List (347)

Example 5: changing a value to the next value in a list (348)

Example 6: opening a list at the marker entry (349)

Example 7: making a call using a specific entry in the Address List (350)

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* 🔍 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 136, *Logging into admin level from user level*).
- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **Time...**, then press ✓.
- ❑ Scroll to **Screen**, then press ✓.
- ❑ *Hold* 🔍 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 136, *Logging into admin level from user level*).
- ❑ Press ✕ 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* 🔍 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 ✕ to leave it as it is.

When you run this macro, the transceiver:

- goes to the Cfg Power Preference 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 136, *Logging into admin level from user level*).
- ❑ Press ✕ until **Main Menu** is displayed.
- ❑ Scroll to **Control**, then press ✓.
- ❑ Scroll to **Cfg...**, then press ✓.
- ❑ Scroll to **Power Preference**, then *hold* ✓.

  A question mark is displayed at the end of the top line to indicate that you can now change the value.
- ❑ *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 **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 136, *Logging into admin level from user level*).
- ❑ Press ✕ 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* 🔍 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 118, *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* 🔍 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.

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 61, Table 62 and Table 64). 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 61.

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 61: 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=nnnnnn	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 62 or Table 63 (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 62: 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 (dBµV)
S2=nnn	Signal strength 2 seconds after call was received (dBµV)
SWRn.n	SWR of the antenna
Pnnn	Power output of the transmitter (W)
Tnn	Temperature (°C)

Table 63: 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=nnnµV	Signal strength of received call (dBµV)
S2=nnnµV	Signal strength 2 seconds after call was received (dBµV)
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 64.

- ❑ 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 64: Information retrieved in a Codan configuration Get Status call made to a Codan transceiver (firmware V4.10 or later)

Information received	**Description**
AR SR VR AR Voice VR Mobile ASR SRx 2110	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 65: 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 junction box or 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.

```
Enter password?
```

- ❑ *Hold* 🔍 to display the Option code screen.

  The ESN is displayed on the bottom line of the screen.

```
Option code?

02-085E-CB02-000
```

- ❑ Do one of the following:
  - To exit this screen and return to the Enter password screen, *hold* ✕.
  - 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 120, *Changing a setting in the Control List*).

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Appendix D Compatibility between CICS V2 and V3.00 (or later)

NOTE CICS V2 is present in older Codan transceivers. CICS V3.00 or later is present in all NGT transceivers.

There are a number of compatibility issues between CICS V2 and V3.00 (or later).

There are differences in:

- using = and ? to initiate a query or an action
- naming of channels
- selecting channels to be scanned
- using upper and lower-case text
- using quotation marks so spaces are recognised in text
- structuring IDs (self addresses)

For a brief outline of compatibility issues between CICS V2 and V3.00 (or later) see Table 66.

Table 66: Compatibility issues between CICS V2 and V3.00 (or later)

Feature	**CICS V2**	**CICS V3.00 (or later)**	**More information**
Use = and ? to initiate a query or an action	= defines an action. ? defines a query.	Commands followed by text characters are treated as actions. Commands entered on their own are treated as queries. NOTE = and ? still work.	page 359
Channel names	All channels must be named numerically.	Channels can be named alphanumerically.	page 360
Scanning	Scan tables are used.	Networks are used.	page 360
Text	All text is converted to upper-case letters unless it is within quotation marks, then the text remains as typed.	Text is recognised in upper-case or lower-case letters.	page 361
Use of quotation marks to recognise spaces in text messages	Only applicable when written messages are expected, for example, a message in a Message call. For spaces to be included in these messages, the text must be within *double* quotes.	Single or double quotes are applicable to any text.	page 361
Address	Addresses cannot be specified with a network.	Addresses can be specified with or without a network.	page 362

Using ‘=’ and ‘?’

CICS V2

CICS V2 uses an equal sign (=) and a question mark (?) to initiate an action or a query (see Table 67).

Table 67: Symbols used in CICS V2

Symbol	Meaning
=	Initiates an action, for example, CHAN=1 is used to switch to channel 1.
?	Requests information, for example, CHAN? is used to request the current channel number.

CICS V3.00 (or later)

CICS V3.00 does not use symbols to initiate an action or a query. It assumes that a command followed by text characters is an action, and any command alone is a query, as shown in the following example.

Command	Meaning	Function
`chan <name>`	Initiates a change in channel (action).	Changes to the channel specified.
`chan`	Querying the current channel (query).	Displays the current channel.

Compatibility between CICS V2 and V3.00 (or later)

For backwards compatibility, CICS V3.00 replaces any equal sign (=) and question mark (?) that is in the command line with a space, unless the symbol is preceded by a \, or it is within double quotes.

Using channel names or channel numbers

CICS V2

CICS V2 requires channel names to be numeric.

CICS V3.00 (or later)

CICS V3.00 responds to channel names that are numeric, alphabetic, or a mixture of both.

Compatibility between CICS V2 and V3.00 (or later)

For backwards compatibility you must name all channels numerically.

NOTE In CICS V3.00, a channel name such as ‘0001’ is not identical to ‘1’ as it is in CICS V2.

Using scan tables or networks

CICS V2

In CICS V2, up to three scan tables can be used to define the lists of channels to be scanned. The scan tables are identified by a single numeric digit.

CICS V3.00 (or later)

In CICS V3.00, networks define the lists of channels to be scanned. Each network is identified by a name.

Compatibility between CICS V2 and V3.00 (or later)

For backwards compatibility the networks *must* be named with single numeric digits like the scan tables.

The `scan` command is compatible between CICS V2 and V3. It is used to start and stop scanning and to specify the network(s) or scan table to be scanned.

Using upper-case or lower-case text

CICS V2

CICS V2 converts all text characters into upper case except when they are within double quotes. In this case, the text characters remain as typed.

CICS V3.00 (or later)

CICS V3.00 does not convert text characters into upper case. All CICS commands are recognised in either upper case, lower case, or a mixture of upper and lower case.

Compatibility between CICS V2 and V3.00 (or later)

For backwards compatibility, type all text characters in upper case unless the text is within double quotes.

Using quotation marks

CICS V2

In CICS V2, double quotes can only be used to recognise spaces in an expected written message, such as a message in a Message call, for example, “`Hi Ricky`”.

CICS V3.00 (or later)

In CICS V3.00, spaces in text are recognised if the text is within single or double quotes, or the spaces are preceded by a backslash, for example, `Hi\ Ricky`.

NOTE Single and double quotes can be applied to any text.

Compatibility between CICS V2 and V3.00 (or later)

For backwards compatibility all messages must be within double quotes.

Using addresses with or without a network

CICS V2

In CICS V2, addresses cannot be specified with a network.

CICS V3.00 (or later)

In CICS V3.00, addresses can be specified with or without a network name attached. For example, an address can be `JOE`, or can be network-specific such as `RICKY@CODAN`. Specifying the network enables the transceiver to make the call using that particular network.

When using the global ALL address syntax (@?@) you can specify the address followed by the network. For example, a global ALL address syntax would be sent as `@?@@CODAN`.

Compatibility between CICS V2 and V3.00 (or later)

If an address has not been specified with a network, CICS must select a network.

NOTE If you have specified an alphanumeric address, for example, `FRED`, CICS will automatically select an ALE/CALM network to make the call.

When scanning is on, CICS selects the first network that:

- matches the type of call system you have selected, that is, if you are making an ALE call, the network selected will be an ALE/CALM network
- has the address you have specified

When scanning is off, CICS selects the network based on the following criteria:

- the network must have the current channel in it
- the address must be assigned to that network
- the network must match the call system you selected, that is, if you are making an ALE call, the network selected will be an ALE/CALM network

Appendix E Limiting user access

This section contains the following topics:

Introduction (364)

Syntax for the Message 10 entry (364)

Activating configuration commands in the Message 10 entry (365)

Restricting access to the List Manager (365)

Restricting access to admin level (366)

Restricting access to call types (366)

Enabling the automatic removal of the incoming call pop-up (367)

Restricting access to holding CALL (367)

Restricting access to Voice Encryptor features (367)

Introduction

You can limit access by users to certain areas in the NGT transceiver's user interface 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 365, *Restricting access to the List Manager*)
- restrict access to the admin level (category BAL) (see page 366, *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 366, *Restricting access to call types*)
- enable the automatic removal of an incoming call pop-up (category TIC) (see page 367, *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 367, *Restricting access to holding CALL*)
- restrict access to the secure PIN function with the Voice Encryptor feature (category BSP) (see page 367, *Restricting access to Voice Encryptor features*)
- restrict access to the Secure Standby Mode (category SSD) (see page 367, *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 68 and Table 69), 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 68.

Table 68: 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 138, *Displaying full and normal view*).
Grp (Group)	Prevent toggling between grouped and ungrouped entries (see page 130, *Grouping and ungrouping entries*).
HP (Home Page)	Prevent changing the home screen (see page 119, *Setting the home screen*).
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 118, *Setting a marker*).
SS (Show Settings)	Prevent toggling between hiding and showing settings for an entry (see page 128, *Hiding and showing settings*).
UH (User Hide)	Prevent changing the hide or show status of an entry at user level (see page 139, *Hiding and showing information*).
UL (User Lock)	Prevent changing the locked or unlocked status of an entry at user level (see page 141, *Locking and unlocking information*).
ULO (User Locks Off)	Prevent toggling between Locks off and Locks on at user level (see page 142, *Switching locks off or on at user level*).
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 69.

Table 69: 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
M	Message
P	Phone
RFDS	RFDS Emergency
S	Selective
SP	Send Position

For example, if you want to restrict access to using Message and Get Position call types, enter the following into the Message 10 entry:

#$! BCT-M,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.

NOTE In firmware earlier than V4.00, this feature only disables Hold-Call when the call is made from the channel screen using a !default network.

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 70.

Table 70: 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 *holds* **SEC**. The function of *holding* **SEC** enters Secure Mode in the default setting.
SSD (Secure Standby Disable)	Prevent access to Secure Standby Mode (see page 108, *Using the voice encryptor in Standby Mode*).

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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