



**Tait Orca Conventional  
Programming Application  
User's Manual**

**September 2004  
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# Part 1: Using the Conventional Programming Application

This part describes the basic operation of the Conventional Programming Application.

## Topics

- [Getting Started](#)
- [The Application Interface](#)
- [Conventional Programming Application Basics](#)



# Getting Started

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This application provides an easy way of changing settings and features of Tait Orca portable radios using a standard IBM-compatible PC.

This manual is intended as an installation guide and reference for the Conventional Programming Application. It provides the following information:

- installation instructions and hardware setup
- an overview of the Conventional Programming Application
- reference guide to all parameters and settings

## Minimum System Requirements

The application requires the following minimum configuration:

- an IBM compatible PC with an 80486 microprocessor (or better)
- Windows® 95, Windows 98, Windows 2000 or Windows NT® 4
- 16 MB of RAM
- a VGA colour graphics display
- a hard disk drive with 8 MB of free space (20 MB Recommended)
- CD-ROM drive
- a printer (if you intend to keep a hard copy of data)
- a Microsoft or compatible mouse and driver (if you wish to use the program with a mouse)

## Equipment Supplied

- application CD-ROM
- radio programming lead with an RJ-11 telephone-style socket at one end and an accessory connector at the other (TOPA-SV-007)
- radio programming cable with a 9-pin or 25-pin serial connector at one end and an RJ-11 telephone-style plug at the other

## Application Installation

To install the application:

1. Insert the CD-ROM into your CD drive.
2. If the autorun does not automatically start, double-click on My Computer.

3. Double-click on the CD-ROM drive to view the CD's contents.
4. Double-click on the file setup.exe.

The installation program will guide you through the installation process. Read the information presented on the screen carefully.

## Connecting a Radio to the PC

To connect the radio to the PC:

1. Connect the programming cable to the programming lead.
2. Connect the accessory connector to the radio.
3. Connect the serial connector to the computer's serial port.

Plug the serial connector into one of the COM ports. You can specify the COM port the application uses to communicate with the radio using the [File>Preferences](#) command.

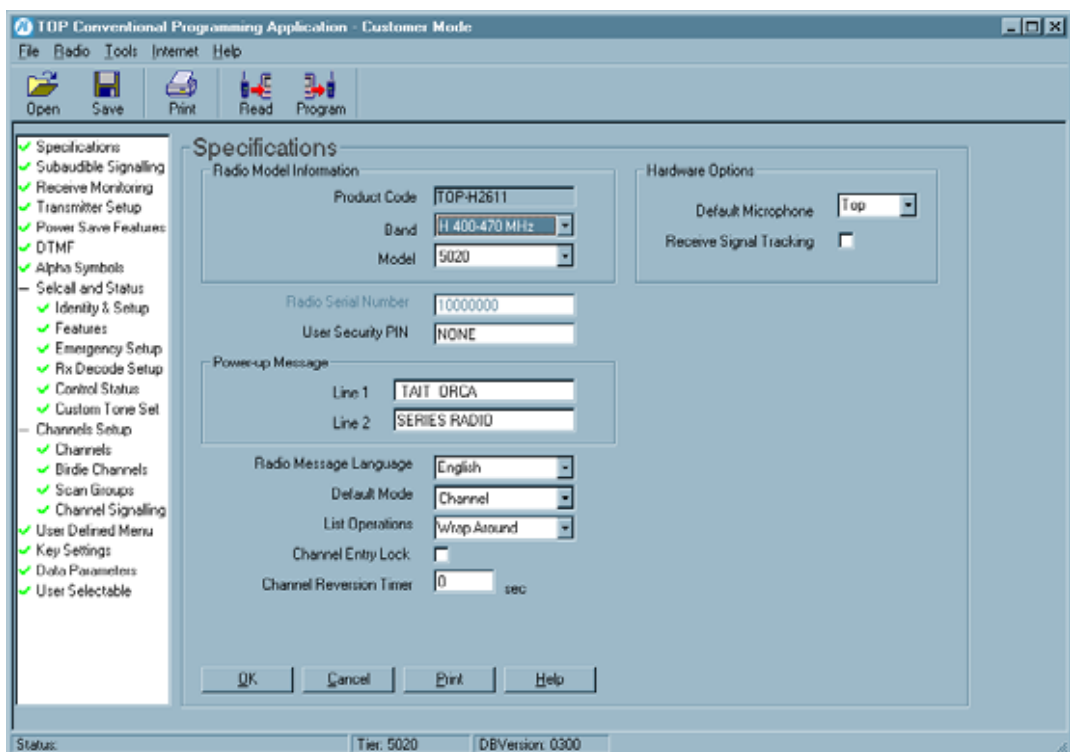
Once connected, the radio must be switched on before it can be programmed. To ensure the radio does not switch itself off during the session, use a fully-charged battery or a DC service adaptor (TOPA-SV-005).

*If your serial connector is 25-pin and your computer has a 9-pin serial port, you will need an adaptor cable. This is available from your PC dealer.*

# Conventional Programming Application Basics

When you first start the Conventional Programming Application, the main window appears showing:

- **Menus:** A series of menus along the top of the window. See “[Menu Commands](#)” on page 15.
- **Toolbar:** A toolbar with a series of buttons. See “[The Toolbar](#)” on page 20.
- **Forms tree:** A list of forms. See “[The Forms Tree](#)” on page 20.



Before changing any radio settings you can:

- [read a radio](#) or
- [open a radio programming database that has been saved to disk](#) or
- [create a new radio programming database file](#)

Press the F1 key for context-sensitive help.

## Reading a Radio

To read a radio, the radio must first be connected to the PC. Once the radio is connected:

- select [Radio>Read](#) or
- select the Read button from the tool bar

As the programming database is read from the radio, the application indicates the radio type and tier, and the database, hardware and software version numbers. If you get an error indicating that the correct COM port is not selected, you can change the COM port by selecting the [File>Preferences](#) command.

Once the radio's programming database has been read, you can begin changing data. Click on the name of a form in the forms tree. See "[The Forms Tree](#)" on page 20 for more information.

## Opening a Radio Programming Database

To open a radio [programming database](#) file saved to disk:

- select [File>Open](#) or
- select the Open button from the tool bar

Once the data has been loaded, you can begin changing data. Click on the name of a form in the forms tree. See "[The Forms Tree](#)" on page 20 for more information.

## Creating a New Database

To create a new database when you first launch the application, start changing the default data in the various forms. See "[The Forms Tree](#)" on page 20 for more information.

To begin a new database from an existing database, select [File>New](#).

To save the database, select [File>Save](#).

# The Application Interface

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The application interface consists of:

- **Menus:** A series of menus along the top of the window. See “[Menu Commands](#)” on page 15.
- **Toolbar:** A series of buttons. See “[The Toolbar](#)” on page 20.
- **Forms tree:** A list of forms. See “[The Forms Tree](#)” on page 20.

## Menu Commands

The bar along the top of the main window shows the following menus:

- [File](#)
- [Radio](#)
- [Tools](#)
- [Internet](#)
- [Help](#)

**Keyboard:** Select a menu by pressing the Alt key, then the first letter of the menu’s name. Use the up and down arrow keys to scroll through the list of commands, and press the Enter key to select a command. Select another menu using the left and right arrow keys. Press the Esc key to close a menu; the menu bar remains selected. Press the Esc key again to return to the main window.

**Mouse:** Select a menu by clicking on it, then clicking on the required command.

## File Menu

The commands available from the File menu are:

- [New](#)
- [Open](#)
- [Save](#)
- [Printer Settings](#)
- [Print](#)
- [Preferences](#)
- [Exit](#)

### ***New***

Selecting the File>New command loads the application’s default data. Warning: default data should not be programmed to a radio.

## **Open**

Selecting the File>Open command opens an existing file.

If a file was saved with comments, the comments will be displayed in the Comments window and the radio information will be displayed in the Radio Information window.

## **Save**

Selecting the File>Save command opens the Save file window. If the file has not previously been saved, the application uses the radio's serial number to suggest a file name.

Any comments you enter in the Comments window will be saved with the file, together with the information displayed in the Radio Information window.

## **Printer Settings**

Selecting the File>Printer Settings command opens the Print Setup dialog in which you can select the printer you wish to print to.

## **Print**

Selecting the File>Print command opens the Print Selections window. You can then select one or more forms using the > button (select highlighted form) or >> button (select all forms), and print data in those forms using the Print button.

If you wish to print data from the current form only, you can select the Print button at the bottom of that form.

## **Preferences**

Selecting the File>Preferences command opens the Preferences form. The options are:

- [Select Application Language](#)
- [Communication Port](#)
- [WWW Addresses](#)

Select the Advanced button to change Advanced Options, which are:

- [Startup Mode](#)
- [Prompt to warn about losing data on read/write](#)
- [Highlight factory only fields as they become editable](#)

### *Select Application Language*

Select the language the application will be displayed in. Changing the application language will cause the default data file to be loaded, so ensure you save any data files before changing languages.

### *Communication Port*

Select the port used for communicating with radios.



## *WWW Addresses*

If you wish to change the URL used when the options in the [Internet](#) menu are selected, enter the new information in the appropriate WWW Address field.

- Tait World Address: The address used when the Internet>[TaitWorld](#) command is selected
- Tait Support Address: The address used when the Internet>[Tait Support](#) command is selected
- Tait Application Upgrade Address: The address used when the Internet>[Tait Update](#) command is selected

## *Startup Mode*

The Startup Mode options determine whether the application starts up in Customer or Factory mode.

If you wish to be prompted to run in Factory mode when you launch the application, tick the box. If not, untick the box and select a Default Startup Mode. There are three options:

- Save On Exit: The application starts in the mode in which it was last running.
- Customer: The application will always start in Customer mode.
- Factory: The application will always start in Factory mode. Note that a DBYXY Security Key must be attached to the PC's Parallel Port to run the application in factory mode.

## *Prompt to warn about losing data on read/write*

When this option is ticked, the application will warn you when:

- the Radio>[Read](#) command has been selected and the application's current data will be overwritten
- the Radio>[Program](#) command has been selected and a radio's programming database is about to be overwritten.

If you do not wish to be warned upon selecting these commands, untick this box.

## *Highlight factory only fields as they become editable*

When this option is ticked, factory only fields that can be edited will be displayed as white text on a black background.

## **Exit**

Selecting the File>Exit command exits the application. You will be asked to confirm your decision.

## **Radio Menu**

The commands available from the Read menu are:

- [Read](#)
- [Program](#)

### **Read**

Selecting the Radio>Read command reads the radio's programming database and loads the relevant information into the application's forms. If there are errors in the programming database, the application will display a log of those errors, including the actions taken to correct the information.

### **Program**

Selecting the Radio>Program command programs the radio's programming database with the settings in the application's forms.

## **Tools Menu**

Selecting another Tait application from the Tools menu launches the application. If the application cannot be found, you will be prompted to locate the executable (\*.exe) file. If you browse for and select a new executable file, the path for that application will be updated and the application will be launched. Next time you select that application from the Tools menu the new path for the executable file will be used.

The other option in the Tools menu is Radio Messages. Selecting the Radio Messages command opens the Radio Messages form. In the Radio Messages form, you can change the display messages that the radio is programmed with. You must enter a password before you can change messages. If you do not have a password, contact your local Tait office.

Select the language for which you wish to change messages. The Description field tells you where the Radio Message is used. Each message is restricted in length; you cannot enter more characters than permitted for a message.

Select the OK button to save the changed radio messages and exit the form or the Cancel button to discard changes and exit the form. Selecting the Restore Original Radio Messages button changes all radio messages to their default values.

## **Internet Menu**

The commands available from the Internet menu are:

- [TaitWorld](#)
- [Tait Support](#)
- [Tait Update](#)

### **TaitWorld**

Selecting the Internet>TaitWorld command launches your default browser and loads the TaitWorld web page. Enter the address used in the [Preferences](#) form (File>Preferences).

### ***Tait Support***

Selecting the Internet>Tait Support command launches your default browser and loads the Tait support request web page. Enter the address used in the [Preferences](#) form (File>Preferences).

### ***Tait Update***

Selecting the Internet>Tait Update command launches your default browser and loads the Tait technical issues web page. Enter the address used in the [Preferences](#) form (File>Preferences).

If you do not have a Username and Password, contact your local Tait office.

## **Help Menu**

The commands available from the Help menu are:

- [Contents](#)
- [Search For Help On...](#)
- [About](#)

For context-sensitive help, press the F1 key.

### ***Contents***

Selecting the Help>Contents command launches the online help, open at the Contents tab.

### ***Search For Help On...***

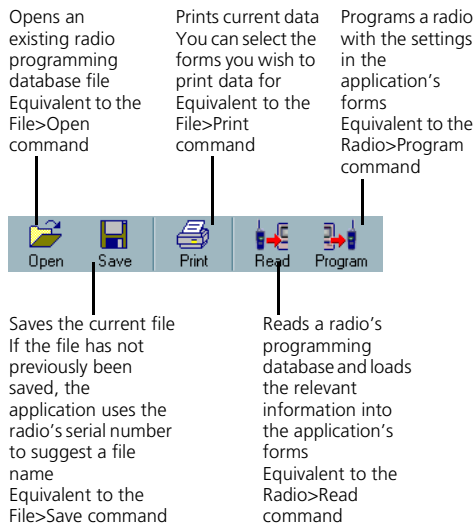
Selecting the Help>Search For Help On... command launches the online help, open at the Search tab.

### ***About***

Selecting the Help>About command displays information about the application.

## The Toolbar

The toolbar commands are as follows.



## The Forms Tree

The forms tree on the lefthand side of the main window lists the forms available.

Two options, Selcall and Status and Channels Setup, have a + beside them. Selecting either option displays additional forms.

**Keyboard:** Scroll through the forms using the up and down arrow keys. Press the Enter key or the spacebar to open the form, or, in the case of the Selcall and Status and Channels Setup options, display additional forms.

**Mouse:** Click on the name of a form to open it and begin changing data, or on the Selcall and Status and Channels Setup options to display additional forms.

The buttons along the bottom of each form are as follows.

- **OK:** Saves the form data and exits the form. Pressing the Esc key or Alt-O also saves data and exits the form.
- **Cancel:** Discards any changes made and exits the form. Pressing Alt-C also discards changes and exits the form.
- **Print:** Sends data from the current form directly to the printer selected in [Printer Settings](#). Pressing Alt-P also prints current data. If you wish to print data in other forms, select File>[Print](#).
- **Help:** Displays online help for the form. Pressing F1 or Alt-H also displays online help for the form.

## Changing Data

If a field's data is greyed out, then that data is displayed for information only and cannot be changed. If a field name is greyed out, then that option is not available for the radio being programmed. For information on a field that is greyed out, select the Help button at the bottom of the screen, then select the name of the field you want information on.

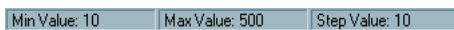
Keyboard: Use the Tab key to move between fields.

Mouse: Click on a field.

How you change the data for each field depends on how that data is displayed. There are three options:

- text box
- combo box
- tick box

Where a range of possible numeric values is available for a field, then that range is shown in the bottom righthand corner of the form.



## Text Box

A text box is used for numeric and alphanumeric data.



Keyboard: Select a text box using the Tab key. Enter the required data.

Mouse: Select a text box by clicking on it with the mouse. Enter the required data.

## Combo Box

A combo box is used for fields that have a range of possible values and appears as a box with an arrow at the righthand side.

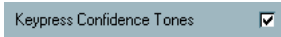


Keyboard: Select a combo box using the Tab key. You can then display the options available by pressing the Alt key and the down arrow key at the same time. Use the up and down arrow keys to scroll through the options until the required value is displayed, then press the Enter key.

Mouse: Select a combo box by clicking on it, which displays the list of values. Select the required value from the combo box.

## Tick Box

A tick box is used for fields that are either enabled or disabled. If the box is ticked, the field is enabled; if the box is blank the field is disabled.



Keyboard: Select a tick box using the Tab key. Use the spacebar to enable and disable the field.

Mouse: Select a text box and change its value by clicking on it with the mouse.

When the field is selected, a dashed box appears next to the tick box.



## Using Arrays

An array is used where many lines of data are required, each containing the same type of information. The data in an array is displayed in [text boxes](#) and [combo boxes](#). Combo boxes in an array appear to be text boxes until they are selected, when an arrow appears on the righthand side.

Forms that contain arrays also contain additional buttons:

- Add: Adds a new row enabling data entry. Pressing F2 also adds a new row.
- Insert (Channels form): Inserts a new row using the next available ID, then reorders all rows by ID number.
- Repeat: Duplicates the data from the selected row, giving it a new name.
- Delete: Removes the currently selected row of data. Pressing F3 also deletes the selected row.

Keyboard: Select the different fields in an array using the Tab key or the right and left arrow keys. Pressing the up or down arrow keys moves up or down a row of data.

Mouse: Click on the required field.

## Copy and Paste data in the Channels Form

You can copy data from the Channels Form grid and paste it into another application. You can also copy data from a spreadsheet or text editor and paste it into the Channels

Form grid. This can be useful when you need to configure a number of records. Note that this functionality is available in the Channels Form grid only.

### **Clipboard data format**

The clipboard data needs to be in the format used by the Channel Form grid.

The first row of the grid must contain all the column headings: "ID", "Channel Name", "Rx Freq (MHz)", etc.

Each channel is configured on a separate row. The settings must be valid and should correspond to the column headings. The application will reset invalid fields to default values.

**NOTE:** In a spreadsheet, each field should appear in a unique cell. If you use a text editor, separate rows by carriage returns and columns by tabs.

### **How to Copy and Paste**

You must access the Cut, Copy, Paste and Select All options by right clicking inside the form. There are no key-stroke combinations available.

### **How to copy from the grid**

1. Click on the channel that you want to copy.
  - To select additional channels, hold down the control or shift key and select the channels.
  - To select all the channels, right click inside the Channels Form grid and select Copy All from the pop-up menu.
2. Right click on the selection. Select Copy from the pop-up menu

### **How to paste data into the grid**

1. Right click inside the Channels Form grid. Select Paste from the pop-up menu.

**NOTE:** If a channel that is being pasted has a unique ID, it will be added to the list. If the channel ID is already in use, that channel will be overwritten by the new data.





## Part 2: Basic Radio Settings

This part contains detailed information on changing basic radio settings.

### Forms

- [Specifications Form](#)
- [Subaudible Signalling Setup Form](#)
- [Receive Monitoring Form](#)
- [Transmitter Setup Form](#)



# Specifications Form

The Specifications form shows basic radio information such as the radio model and the frequency band. You can also set various radio interface options in this form, including the [power-up message](#), the [security PIN](#) and the radio message language. The Specifications form is shown below.

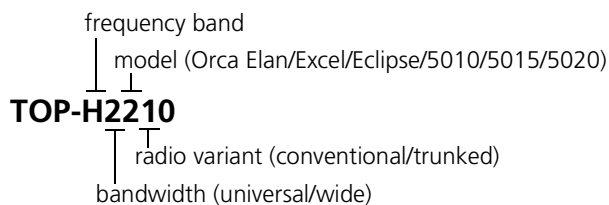
The screenshot shows a 'Specifications' window with the following fields and options:

- Radio Model Information:** Product Code (TOP-H2610), Band (H 400-470 MHz), Model (5020).
- Hardware Options:** Default Microphone (Top), Receive Signal Tracking (checkbox).
- Radio Serial Number:** 10000000
- User Security PIN:** NONE
- Power-up Message:** Line 1 (TAIT ORCA), Line 2 (SERIES RADIO)
- Radio Message Language:** English
- Default Mode:** Channel
- List Operations:** Wrap Around
- Channel Entry Lock:** checkbox
- Channel Reversion Timer:** 0 sec

Buttons at the bottom: OK, Cancel, Print, Help.

## Radio Model Information

The radio model information fields show the radio product code and information contained in the product code (e.g. TOP-H2210) that is particularly relevant to radio programming.



You cannot directly modify the [Product Code](#) field. However, if you change [Band](#) and/or [Model](#), [Product Code](#) is updated to reflect the new values. Fields that are not relevant to the different [Band](#) and/or [Model](#) are automatically set to their default values.

You may wish to read data from a radio of a different type and use the settings as a template for programming radios of

another variant. If so, change the values of [Band](#) and/or [Model](#) after loading the template file but before changing any other radio settings.

## Product Code

The Product Code field is automatically read from the radio's memory and shows the radio's model number, which you can find on the back of the radio. However, if the radio has been upgraded, the model number on the back of the radio will not match that read from the radio.

## Band

The Band field sets the frequency band the radio operates at and is indicated by the fourth position (first after the hyphen) in the [Product Code](#) number.

**TOP-H2210**  
T  
frequency band

This letter indicates the frequency band as outlined in the table on the right.

The Band field must be set correctly in order to validate channel settings, and changing the value of Band will:

- amend the [Product Code](#) field to reflect the different frequency band
- set the values of [Rx and Tx Frequencies \(Channels form\)](#) to 0, as any frequency values previously entered are invalid for the new Band

Band	Frequency Range
A	66-88 MHz
B	136-174 MHz
C	174-225 MHz
D	220-270 MHz
E	270-310 MHz
F	290-340 MHz
G	336-400 MHz
H	400-470 MHz
I	450-530 MHz
J	806-870 MHz
K	896-941 MHz

Note: Contact your local Tait office for information on the availability of different frequency bands.

## Model

The Model field indicates the radio model, which is indicated by the sixth position (third after the hyphen) of the product code.

**TOP-H2210**  
T  
radio model

- 1 = [Orca Elan](#)
- 2 = [Orca Excel](#)
- 3 = [Orca Eclipse](#)
- 4 = [Orca 5010](#)
- 6 = [Orca 5020](#)
- 7 = [Tait Radio Modem](#)
- 8 = [Orca 5015](#)

The Model field must be set correctly as not all programmable features are available for all radio models. Changing the value of Model will:

- amend the **Product Code** field to reflect the different model
- make selectable fields relevant to the new Model that were greyed out for the previous Model
- grey-out fields not relevant to the new Model

## Radio Serial Number

The Radio Serial Number is automatically read from the radio's memory. It is used for identification only and so the data in the field is greyed out. The Radio Serial Number has no effect on the normal operation of the radio.

## User Security PIN

The User Security PIN field does not apply to **Orca Elan** and **Orca 5010** radios.

User Security PIN sets the **PIN number** the user is required to enter during the power-up sequence. Enter a number up to five digits long, or NONE if no PIN number is required.

## Power-up Message

The Power-up Message fields set the **power-up message**, which can be up to 24 characters chosen from:

A to Z 0 to 9 ! @ # \$ % ^ & \* + - = { } ( ) [ ] < > : ; ? | ,  
. \_ " ' space

Enter up to 12 characters in each box, including leading spaces if you want the message to be centred.

Although **Orca Elan** and **Orca 5010** radios do not display a power-up message, the Power-up Message fields can be programmed as an aid to identifying radios.

## Radio Message Language

The Radio Message Language field does not apply to **Orca Elan** or **Orca 5010** radios.

The Radio Message Language field sets the language radio messages appear in. Select from the languages listed.

## Default Mode

The Default Mode field sets the mode the radio reverts to at power up and after 10 seconds of no user activity. The modes available and the radios they are available on are outlined in [Table 1 on page 30](#).

### security PIN

*A security PIN (personal identification number) is a number up to five digits long the user is required to enter when the radio first powers up. When a security PIN is required, the radio displays the message ENTER CODE and then waits for the correct PIN to be entered before displaying the power-up message. The radio cannot be used until the correct PIN has been entered.*

### power-up message

*The power-up message is the message displayed after the radio is turned on.*

If Default Mode is set to NONE, the radio powers up in the mode selected when the radio was last on.

Table 1: Default modes available for Tait Orca conventional radios

Option	Elan	Excel	Eclipse	5010	5015	5020	Description
Channel	✓	✓	✓	✓	✓	✓	Channel Entry Mode. In channel entry mode, or channel selection mode, the user can change to a different channel or scan group. Channel entry mode is automatically available on all radios.
DTMF	✗	✓	✓	✗	✓	✓	DTMF Dialling Mode. In DTMF dialling mode, the user can dial DTMF strings. DTMF dialling mode is available when the Manual DTMF Dialling field in the DTMF form is enabled.
Selcall	✗	✓	✓	✗	✓	✓	Selcall Dialling Mode. Using Selcall dialling, the user can dial Selcall sequences using the keypad.
Status	✗	✗	✓	✗	✗	✓	Status Entry Mode. In status entry mode, the radio user can change the status to reflect their current activity. The corresponding status digit is sent with Selcall sequences that include a variable status.
Alpha Symbol	✗	✗	✓	✗	✗	✓	Alphanumeric Entry Mode. In alphanumeric entry mode, the user can select and execute up to 20 alpha symbols.
Menu	✗	✗	✓	✗	✗	✓	User Function Menu Entry Mode. In user function menu entry mode, the user can customise radio options. For Orca Eclipse radios, the user defined menu is set up in the User Selectable Parameters Form. For Orca 5020 radios, the user defined menu is set up in the User Defined Menu Form.
None	✓	✓	✓	✓	✓	✓	No Default Mode. When no default mode has been programmed, the radio powers up in the mode selected when the radio was last on.

## List Operations

The List Operations field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

The List Operations field determines the behaviour of scrolling lists. There are two options.

- **Wrap Around:** The list is treated as a continuous loop, with the first and last entries adjacent. The next entry displayed after the last is the first, and vice versa.
- **Stop at End of List:** The list movement stops when the first or last entry is reached.

The setting of List Operations does not apply to volume selection, which is always Stop at End of List.

## Channel Entry Lock

The Channel Entry Lock field applies to [Orca Excel](#), [Orca 5015](#) and [Orca 5020](#) radios.

Channel entry lock prevents the user from selecting a new channel from the keypad when a valid channel has already been selected from the [16-way selector](#). When the user tries to enter a new channel, the radio gives a long, low-pitched beep to indicate that the action is invalid.

If channel entry lock is enabled, the radio user needs to change to a position on the 16-way selector for which no channel or [scan group](#) has been programmed in order to select a channel from the keypad. If channel entry lock is enabled and you wish the user to be able to select channels greater than 16 from the keypad, be sure to leave at least of one of positions 1 to 16 blank.

## Channel Reversion Timer

The Channel Reversion Timer field applies only to [Orca Excel](#), [Orca 5015](#) and [Orca 5020](#) radios. Set the [channel reversion timer](#) to a time from 10 to 250 seconds in steps of one second.

You can also set this field to 0, which disables the [channel reversion timer](#). Disabling the channel reversion timer is not recommended since it may cause confusion for the user as the channel the radio is on does not always correspond to that indicated by the [16-way selector](#).

## Default Microphone

The setting of the Default Microphone field determines which microphone operates during normal operation. Select Top or Bottom. While the radio is in [handset mode](#), the bottom microphone operates, regardless of the setting of this field.

If the radio being programmed is not capable of supporting this feature, the Default Microphone feature is set to Bottom when the radio is programmed. Radios with a blue function key 1 support this feature.

## Received Signal Tracking

The Received Signal Tracking field sets the [received signal tracking](#) option.

It is recommended that this feature only be enabled when operating universal band radios on a wideband system and where there is noticeable distortion in the received audio due to a frequency offset in the received signal. Enabling received signal tracking improves the quality of the received audio by allowing the radio to track directly onto the received frequency.

### 16-way selector

*The 16-way selector is the larger of the two switches on the top of Orca Elan, Orca Excel, Orca 5010, Orca 5015 and Orca 5020 radios. Each position on the 16-way selector can denote a channel or a scan group.*

### channel reversion timer

*The channel reversion timer determines how long the radio remains on a channel selected from the keypad after a period of inactivity. When the channel reversion timer expires, the radio reverts to the channel indicated by the position of the 16-way selector.*

### handset operation

*Tait Orca radios can be operated as a normal radio where the user holds the radio with the microphone about 15 cm away from the mouth or it can be operated like a telephone handset. Handset mode is useful in noisy environments, when privacy is required or in quiet environments when the lowest volume setting seems too loud.*

### received signal tracking

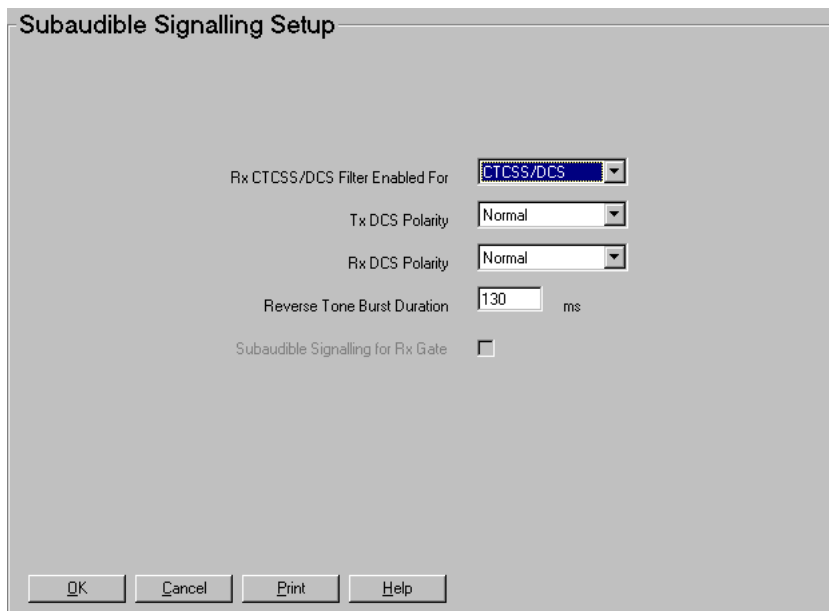
*Received signal tracking eliminates any frequency offset between the incoming signal and the radio's receiver, making the radio more tolerant of frequency errors in other radios.*

If the radio being programmed is not capable of supporting this feature, it is disabled when the radio is programmed.



# Subaudible Signalling Setup Form

The fields in the Subaudible Signalling Setup form determine settings for CTCSS and DCS transmissions. CTCSS and DCS for individual channels are set in the Channels form (Rx and Tx Signalling fields). The Subaudible Signalling Setup form is shown below.



For more information on subaudible signalling, see:

- “[Squelch and Signalling: Filtering Out Unwanted Noise and Traffic](#)” on page 145
- “[Signalling](#)” on page 146

## Rx CTCSS/DCS Filter Enabled For

The Rx CTCSS/DCS Filter Enabled For field determines the settings for the radio’s [CTCSS/DCS filter](#). The filter can be automatically switched off for channels that do not have [CTCSS](#) or [DCS](#).

- All: The filter is active on all channels, regardless of whether they are programmed with CTCSS or DCS.
- CTCSS/DCS: The filter is active only on channels that have CTCSS or DCS programmed for the receive frequency.

## Tx DCS Polarity

The Tx DCS Polarity field sets the polarity of all transmitted [DCS](#) codes defined in the [Channels](#) form. Some systems require the DCS code to be inverted when transmitted. Select Normal or Inverted.

### CTCSS/DCS filter

*The CTCSS/DCS filter removes any CTCSS or DCS tones that may be present on the received audio. The filter limits the range of frequencies the radio passes from the incoming signal to the speaker and so in some situations affects signal quality. Filtering can be automatically switched off for channels that do not have CTCSS or DCS.*

### DCS polarity

*DCS signals are susceptible to polarity inversion at various points in the signal path from originator to recipient. On some systems, consistent inversions can be compensated for by forcing the radio to decode the inverse of every codeword.*

## Rx DCS Polarity

The Rx DCS Polarity field sets the polarity of all received DCS codes defined in the Channels form. Select Normal or Inverted.

## Reverse Tone Burst Duration

The Reverse Tone Burst Duration field specifies how long a CTCSS reverse tone burst is transmitted. Reverse tone burst transmission increases the speed of receiver shutdown in some repeaters and associated equipment.

Set a value from 0 to 250 ms in steps of 1 ms. Setting this field to 0 disables reverse tone burst transmission.

The recommended value is 130 ms, which works for all CTCSS tones between 67.0 and 250.3 Hz. It should not be necessary to deviate from 130 ms unless your system has specific requirements.

### **reverse tone burst**

*Reverse tone bursts can be used when CTCSS subaudible signalling is used. When reverse tone bursts are enabled, the phase of the generated tones is reversed for a number of cycles just before transmission ceases, which can increase the speed of receiver shutdown in some repeaters and associated equipment. The phase reversal occurs after any ANI transmission.*

## Subaudible Signalling for Rx Gate

The Subaudible Signalling for Rx Gate field applies to the Tait Radio Modem only.

Subaudible Signalling for Rx Gate determines whether the radio should detect valid subaudible signalling before the Rx Gate line is asserted. If checked, valid subaudible signalling must be detected before the Rx Gate line is asserted. If unchecked, the Rx Gate line is set to an asserted state based on squelch only.

# Receive Monitoring Form

The fields in the Receive Monitoring form set properties related to the operation of the radio's **monitor** function. Four other fields specific to Selcall affect monitor:

- [Third Tone Monitor Reset](#) and [Appended C Tone Monitor Reset](#) in the [Selcall Features](#) form
- [RMR Sequence](#) and [Selcall Muting](#) in the [Selcall Identity \(Rx\)](#) tab.

The Receive Monitoring form is shown below.

Receive Monitoring

Monitor Function Disables: All Mutes

Auto Quiet Time: 0 sec

Auto Quiet Timer Countdown: Continuous

Monitor State at Power Up: Inactive

Monitor With Call Setup:

Monitor With Call Received:

[MON] Key Short Press:

[MON] Key Long Press:

Audio Noise Reduction:

OK Cancel Print Help

For more information on monitor, see:

- [“Monitor: Listening In On Channel Traffic”](#) on page 148

## Monitor Function Disables

The Monitor Function Disables field determines whether **monitor** disables the **Selcall** signalling **mute** or the Selcall signalling mute and the **subaudible signalling** mutes.

- **All Mutes:** Both the Selcall signalling mute and the subaudible signalling mute (**CTCSS** and **DCS**) are disabled when monitor is activated. The radio user is able to hear all traffic.
- **Selcall Mute:** Only the Selcall signalling mute is disabled when monitor is activated. The radio user only hears traffic that has valid subaudible signalling.

### monitor

*Monitor allows the radio user to override a channel's signalling and so hear all traffic on a channel. Note that monitor is not permitted in some countries.*

### mute

*A mute controls the circumstances under which a received signal is passed to the radio's speaker. When a mute is active, the radio's speaker only unmutes under certain conditions, determined by the type of signalling operating on a channel.*

## Auto Quiet Time

The Auto Quiet Time field sets the duration of the [auto quiet timer](#). When the programmed duration of the auto quiet timer expires, [monitor](#) deactivates and the radio resumes quiet operation. Enter a value between 1 and 255 seconds in steps of 1 second, or 0 to disable the auto quiet timer.

## Auto Quiet Timer Countdown

The Auto Quiet Timer Countdown field determines whether the auto quiet timer resets or continues its countdown after being suspended.

- Continuous: The auto quiet timer resumes from the point at which it was suspended.
- Reset: The auto quiet timer resets to its programmed value ([Auto Quiet Time](#) field) and begins counting down once again.

## Monitor State at Power Up

The Monitor State at Power Up field determines whether [monitor](#) is inactive or active when the radio is turned on.

- Active: Monitor is activated when the radio is turned on.
- Inactive: Monitor is not activated when the radio is turned on.

## Monitor with Call Setup

The Monitor with Call Setup field determines whether [monitor](#) is activated when an outgoing Selcall call is made.

- Enabled: Monitor is activated when a Selcall call is successfully sent.
- Disabled: The radio can transmit Selcall calls without activating monitor. Monitor must be activated via another method before communication commences.

Selcall must be enabled ([Enable Selcall](#) field, [Selcall Identity \(Rx\)](#) tab) before this field can be enabled.

## Monitor with Call Received

The Monitor with Call Received field determines whether [monitor](#) is activated when a Selcall call is received that matches one of the radio's RxDecode sequences and has no control status attached.

- Enabled: Monitor activates upon the receipt of an appropriate Selcall call.
- Disabled: The radio user has to press a radio key to answer the call before monitor is activated.

### auto quiet timer

*The auto quiet timer determines how long monitor remains active. The auto quiet timer is suspended while the radio is transmitting or while there is valid activity on a channel. Once a transmission is complete or when the radio is switched to another channel, the auto quiet timer either begins counting down once again (continuous) or resets to the programmed duration of the auto quiet timer (reset).*

### Rx decode sequence

*The Rx decode sequence is the radio's unique identity on a Selcall system. When the radio's Rx decode sequence is decoded as the receiver identity in an incoming Selcall sequence, the radio recognises the sequence as intended for it and responds appropriately.*

## [MON] Key Short Press

The [MON] Key Short Press field applies only to [Orca 5015](#), [Orca Excel](#) and [Orca Eclipse](#) radios.

- Enabled: A brief press of the monitor key toggles [monitor](#) on and off.
- Disabled: A brief press of the monitor key only disables monitor.

## [MON] Key Long Press

The [MON] Key Long Press field applies only to [Orca 5015](#), [Orca Excel](#) and [Orca Eclipse](#) radios.

When [MON] Key Long Press is enabled, a long press of the monitor key activates the [squelch override](#) function. This can be useful where there is activity in marginal areas and the signal is too weak to be reliably heard.

If squelch override is already active when the monitor key is pressed, then squelch override is deactivated and monitor is activated.

### **squelch override**

*Squelch override allows the user to disable the radio's squelch and so hear all activity on a channel, including noise.*

## Audio Noise Reduction

The Audio Noise Reduction field applies only to [Orca 5010](#), [Orca 5015](#) and [Orca 5020](#) radios.

When the Audio Noise Reduction field is checked, weak signals such as background noise are reduced when the mute is open and nobody is talking on the channel. This applies to all channels.

# Transmitter Setup Form

Transmitter options are set in the Transmitter Setup form. The Transmitter Setup form is shown below.

Transmitter Setup

Transmit Timer Duration  sec

Transmit Lockout Duration  sec

Tx Inhibit

Repeater Talk Around

OK Cancel Print Help

## Transmit Timer Duration

The Transmit Timer Duration field sets the duration of the [transmit timer](#). Enter a value between 1 and 250 seconds in steps of 1 second, or 0 to disable the transmit timer. However, it is recommended that you do not disable the transmit timer as frequent lengthy transmissions, whether intentional or accidental, could damage the radio's transmitter and can be a nuisance to others. The recommended value is 60 seconds.

Once the transmit timer expires, the radio may be prevented from transmitting for the duration of the transmit lockout timer, which is set in the [Transmit Lockout Duration](#) field.

## Transmit Lockout Duration

The Transmit Lockout Duration field sets the duration of the [transmit lockout](#) timer. Enter a value between 1 and 250 seconds in steps of 1 second, or 0 to disable the transmit lockout timer. The recommended value is 10 seconds for the [Tait Radio Modem](#), and 30 seconds for all other radios.

## Tx Inhibit

The Tx Inhibit field sets the [transmit inhibit](#) conditions. There are three options:

### transmit timer

*The transmit timer determines the longest continuous transmission permitted by a radio. When the transmit timer expires, the radio emits a series of warning tones before returning to the receive state.*

### transmit lockout

*The transmit lockout feature prevents the radio from transmitting once the transmit timer has expired.*

### transmit inhibit

*The transmit inhibit feature determines under what conditions a press of the PTT results in the radio not transmitting.*

- None: The radio always transmits when the PTT is pressed, even when there is traffic on the channel.
- Busy: The radio does not transmit when the PTT is pressed if there is activity on the channel, whether it is **valid** or **invalid**.
- Mute: The radio does not transmit when the PTT is pressed, unless there is **valid activity** on the channel. If **monitor** has been activated, the radio transmits regardless of valid or invalid activity.

If **Selcall muting** has been enabled (**Selcall Tone Options** tab) for the channel's **Selcall system**, then the radio user cannot initiate a call by pressing the PTT, regardless of the setting of Tx Inhibit. A Selcall call initiation (via the press of a function key or the call key) follows the conditions set in Tx Inhibit.

#### **Selcall muting**

*When Selcall muting is enabled, the radio only unmutates when a valid Selcall sequence is received. The radio user cannot initiate calls using the PTT unless monitor is active, but can only make Selcall calls.*

## **Repeater Talk Around**

When the Repeater Talk Around field is enabled, a long press of the channel key (**Orca 5015**, **Orca Excel** and **Orca Eclipse** radios) activates **repeater talkaround**. This field must be enabled before **Repeater Talk Around** can be assigned to a function key setting (**Key Settings I** tab).

#### **repeater talkaround**

*Repeater talk around allows the radio user to bypass repeater operation and so communicate directly with other radios. While repeater talk around is active, all transmissions are made on the receive frequency programmed for the channel.*





# Part 3: Setting Up Channels and Scan Groups

This part contains detailed information on setting up channels and scan groups.

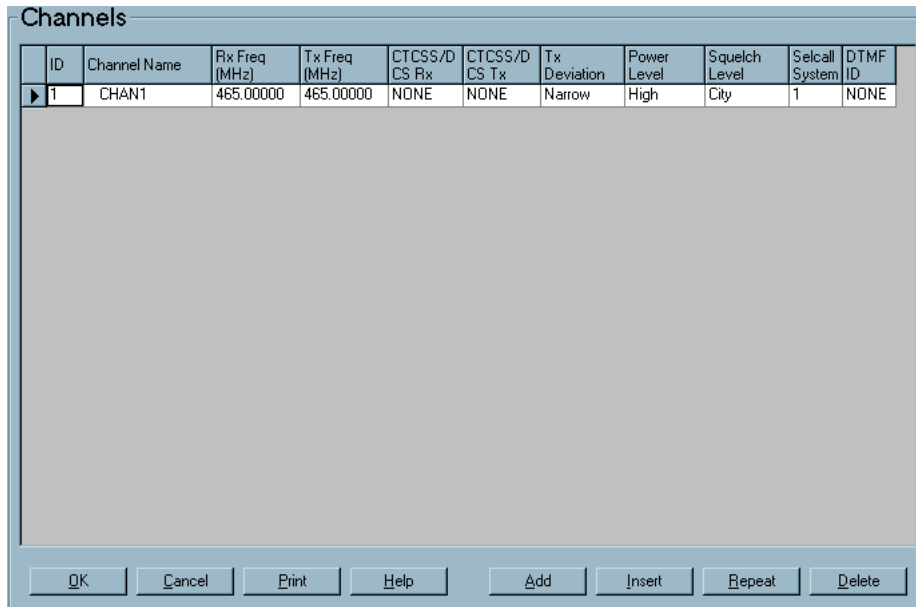
## Forms

- [Channels Form](#)
- [Channel Selection form](#)
- [Birdie Channels Form](#)
- [Scan Groups Form](#)
- [Channel Signalling Presets Form](#)



# Channels Form

The main settings for [channels](#) are set up in the Channels form. The Channels form is shown below.



The screenshot shows a window titled "Channels" containing a table with the following data:

ID	Channel Name	Rx Freq (MHz)	Tx Freq (MHz)	CTCSS/D CS Rx	CTCSS/D CS Tx	Tx Deviation	Power Level	Squelch Level	Selcall System	DTMF ID
1	CHAN1	465.00000	465.00000	NONE	NONE	Narrow	High	City	1	NONE

Below the table are several control buttons: OK, Cancel, Print, Help, Add, Insert, Repeat, and Delete.

The Channels form contains default values for one channel. Select the Add button or press the F2 key to add a new channel at the end of the list, or the Insert button to insert a new channel then reorder all rows by ID number. Select the Delete button or press the F3 key to delete the currently selected channel, or select the Repeat button to duplicate the current channels settings, except for the Channel ID and Name.

**NOTE:** You can also [Copy and Paste](#) data between the Channels form and a spreadsheet or text editor.

The number of channels permitted depends on the [Model](#) as follows:

- [Orca Elan](#): up to 16 channels
- [Orca 5010](#): up to 75 channels can be added, 16 of which can be assigned to the 16-way selector and accessed on the radio
- [Orca Excel/Orca 5015](#): up to 100 channels
- [Orca Eclipse/Orca 5020](#): up to 510 channels

The maximum number of channels possible is affected by the number of [Selcall systems](#) programmed.

For more information on channels, see:

- [“Squelch and Signalling: Filtering Out Unwanted Noise and Traffic” on page 145](#)

## channel

*A channel is a pair of radio frequencies, one used for transmitting and one used for receiving.*

## Channel ID

The Chan ID field sets the channel number, which must be unique. Because channels and [scan groups](#) are both accessed the same way, no channel or group can share the same identity number. Set a Channel ID between 1 and 510.

For [Orca Elan](#), [Orca Excel](#), [Orca 5010](#) and [Orca 5020](#) radios, channels numbered from 1 to 16 are accessible from the [16-way selector](#).

## Channel Name

This field sets the channel name, which appears on the display for [Orca Excel](#), [Orca Eclipse](#) and [Orca 5020](#) radios, when the radio is in channel entry mode.

Enter a name of up to 8 characters from:

A to Z 0 to 9 ! # \$ % ^ & \* + - = { } ( ) [ ] < > : ; ? | , . \_  
" ' space

Ensure that you do not allocate the same name for different channels or scan groups since both are accessed in the same way. A default name is generated from the channel ID. For example, the first channel defaults to CHAN1.

### channel entry mode

*In channel entry mode, or channel selection mode, the user can change to a different channel or scan group. Channel entry mode is automatically available on all radios.*

## Rx and Tx Frequencies

The Rx Freq (MHz) field sets the receive frequency for the channel, and the Tx Freq (MHz) field sets the transmit frequency.

For each [channel](#), enter a frequency within the radio's frequency band that is a multiple of either 5 kHz or 6.25 kHz. The letter in the fourth position (first after the hyphen) in the product code (see the [Specifications](#) form or the back of the radio) indicates the radio's frequency band as outlined in the table below.

Note that the range of frequencies permitted for bands J and K are different for Rx Freq (MHz) and Tx Freq (MHz).

## Rx and Tx Signalling

The CTCSS/DCS Rx field sets the [subaudible signalling](#) the radio must receive before the activity is regarded as valid and the mute opened. The CTCSS/DCS Tx field sets the subaudible signalling that accompanies each transmission made on the channel.

For both fields, select the required CTCSS frequency or DCS code from the drop-down list. Note that when you select a signal from the list for CTCSS/DCS Rx, the CTCSS/DCS Tx field is changed to match CTCSS/DCS Rx. If you wish to use different transmit signalling, select the signal from the list.

Band	Receive Frequency (MHz)	Transmit Frequency (MHz)
A	66-88	66-88
B	136-174	136-174
C	174-225	174-225
D	220-270	220-270
E	270-310	270-310
F	290-340	290-340
G	336-400	336-400
H	400-470	400-470
I	450-530	450-530
J	851-870	806-870
K	935-941	896-941

Leave these fields set to NONE if no subaudible signalling is used on the channel.

If once subaudible signalling has been assigned for a channel you wish to change the signalling type, first set either Rx or Tx Signalling to NONE, then selected the required type of signalling.

The tables on [page 147](#) show the CTCSS frequencies and DCS codes Tait Orca radios support.

## Transmit Deviation

The Tx Deviation field sets the transmitter deviation. It can be set to:

- Wide: maximum deviation 5 kHz
- Medium: maximum deviation 4 kHz
- Narrow: maximum deviation 2.5 kHz. This option is only available if the channel spacing has been set to Universal Band (see below).

Set Tx Deviation according to the system [channel spacing](#). Channel spacing is indicated in the number in the fifth position (second after the hyphen) in the product code (see the [Specifications](#) form or the back of the radio).

- 1 (Wide Band): The radio can be programmed for operation on 20 and 25 kHz channels only (select a Tx Deviation of Wide or Medium).
- 2 (Universal Band): The radio can be programmed for operation on 12.5, 20 and 25 kHz channels (select a Tx Deviation of Wide, Medium or Narrow).

## Power Level

The Power Level field sets the transmit power level. Select a power level setting within the limits permitted for the region in which the radio operates.

- Off (O): When set to off, the radio cannot transmit on that channel.
- Low (L): 1 watt VHF, UHF, 800/900 MHz
- Medium (M): 2.5 watts VHF, UHF, 2 watts 800/900 MHz
- High (H): 5 watts VHF, 4 watts UHF, 3 watts 800/900 MHz

The transmit power can be temporarily reduced by use of the low power transmit feature, which is a way of conserving battery life. When low power transmit is active, all transmissions are made at the low power level rather than at the programmed power level. When low power transmit is deactivated, transmissions are made at the programmed power level.

See “[Function Key Option: Low Power](#)” on page 126 for more information.

## Squelch Level

The Squelch Level field sets the [squelch threshold](#). There are two options:

- [Country](#): 12 dB SINAD
- [City](#): 16 dB SINAD

## Selcall System

The Selcall System field sets the [Selcall system](#) the channel uses. Selcall systems are set up in the [Selcall Identity and Setup](#) form and the number of a particular system is indicated by the field in the bottom lefthand corner of the Selcall Identity and Setup form. See “[Selcall Identity and Setup Form](#)” on page 63 for more information.

Setting Selcall ID to NONE disables Selcall for this channel.

## DTMF ID

The DTMF ID field sets the DTMF preset associated with a particular channel. DTMF presets are defined in the [DTMF](#) form. Enter the [DTMF ID](#) from the [DTMF Presets](#) tab for the preset call string you wish to be associated with this channel. Enter NONE if you do not wish to associate any DTMF call string with this channel.

If a channel has a DTMF preset assigned to it, the preset can be transmitted by pressing an assigned function key (on all

### squelch threshold

*The squelch threshold is the level the signal must reach before it is regarded as intelligible and the radio's mute is opened. Tait Orca radios can operate at two different squelch thresholds: city and country squelch.*

### Selcall system

*A Selcall system is the call sequence formats and tone options the radios on that system must use to communicate with one another.*

### DTMF preset

*A DTMF preset is a string of DTMF tone pairs defined for a radio at programming time.*

radios) or by pressing the DTMF key ([Orca Excel](#) and [Orca Eclipse](#) radios).

# Channel Selection form

The Channel Selection form determines [16-way selector](#) options, such as what mode the 16-way selector will operate in. This form is available for [Orca 5010](#), [Orca 5015](#) and [Orca 5020](#) radios only. The Channel Selection form is shown below.

Selector Position	Channel ID
1	
2	1
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

## 16-way Selector Mode

The 16-way Selector Mode field determines what action is assigned to the [16-way selector](#). There are five options.

- Normal: Channel ID 1 is assigned to position 1 on the 16-way selector, Channel ID 2 to position 2 and so on.
- Disabled (Orca 5015/5020 only): The radio user cannot select channels using the 16-way selector.
- Reassign: The [Selector Position and Channel ID](#) fields are enabled, allowing any channel to be assigned to any position on the 16-way selector.
- Banking - Channel Selection (Orca 5020 only): the 16-way selector is assigned to the [channel banking](#) feature. Position 1 will correspond to the first channel in the currently selected bank, position 2 to the second channel and so on. If this option is selected, you must also enable the [SELECT BANK](#) user defined menu option.
- Banking - Bank Selection (Orca 5020 only): the 16-way selector is assigned to the [channel banking](#) feature. Position 1 will correspond to bank 1, position 2 to bank 2 and

### channel banking

*Channel banking is a feature in Orca 5020 radios, that enables a large number of channels to be managed by dividing them into banks. How channels are assigned to banks is dependant on the 16-way Selector Mode setting.*



so on. Channels within a bank can be selected using the keypad.

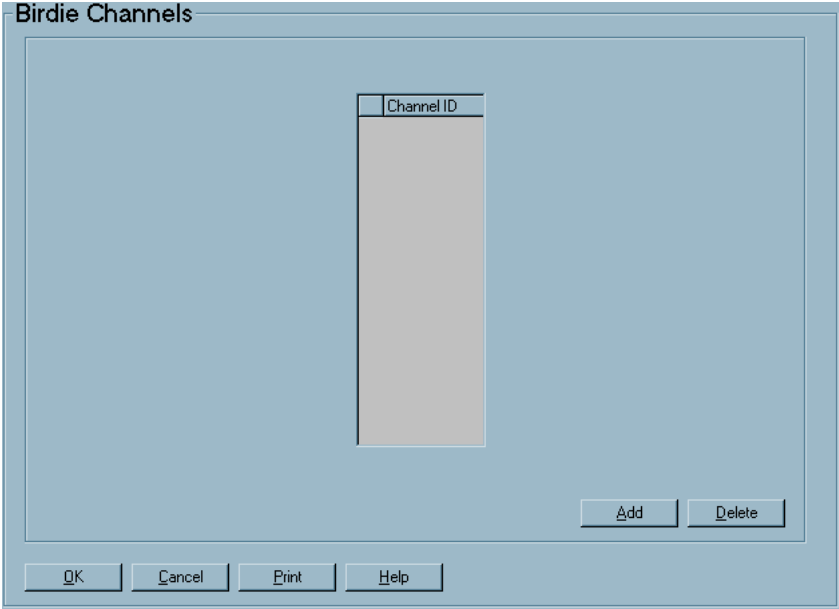
## **Selector Position and Channel ID**

This array is only available when the [16-way Selector Mode](#) field is set to Reassign. The Selector Position field is a fixed list of each position on the 16-way selector (1 to 16). The Channel ID field lists all the channels defined in the Channels form. To assign a channel to a position on the 16-way selector, select a different channel next to that position from the Channel ID combo box.

# Birdie Channels Form

---

Birdies are identified in the Birdie Channels form. The Birdie Channels form is shown below.



The screenshot shows a software window titled "Birdie Channels". Inside the window, there is a large, empty list box with a header "Channel ID". Below the list box, there are two buttons: "Add" and "Delete". At the bottom of the window, there are four buttons: "OK", "Cancel", "Print", and "Help".

A birdie channel is a channel on which the receiver sensitivity is degraded by internal interference. This interference usually manifests itself as a hum or whistle (a birdie). A birdie killer is the internal circuitry that when enabled eliminates the birdie.

To set a birdie killer for a channel:

1. Select the Add button or press the F2 key.
2. Enter the afflicted channel's channel ID in the Channel ID box.

To delete a birdie, select the Delete button or press the F3 key.

If a channel the radio software identifies as having a birdie is added to the birdie channels list, the birdie killer is disabled for that channel.

# Scan Groups Form

Scanning and voting groups are set up in the Scan Groups form. The Scan Groups form is divided into three tabs:

- Set general scanning and voting rules in the [Scan Groups](#) tab.
- Set up scanning and voting groups in the [Scan Group Members](#) tab.
- Set a Flexiscan scan group in the [Flexiscan](#) tab (Orca 5010/5015/5020 radios only).

For more information on scanning and voting groups, see:

- [“Introduction to Scan Groups” on page 148](#)

## flexiscan

*When Flexiscan scanning is turned on, a group of channels in a preprogrammed Flexiscan scan group is scanned for valid activity, while the radio user is able to communicate on an unrelated channel.*

## Scan Groups Tab

Set general scanning and voting rules in the Scan Groups tab. The Scan Groups tab is shown below.

The screenshot shows the 'Scan Groups' form with the 'Scan Groups' tab selected. The form contains the following settings:

- Hidden Channels:
- PTT Release Voting:
- Fast CTCSS Decode Override:
- Group Hold Time: 5000 ms
- Voting Lead In Delay: 60 ms
- Voting Polling Interval: 60 sec

Priority Sample Timers:

- Captured: 3000 ms
- Non-Captured: 1500 ms

Buttons: OK, Cancel, Print, Help

## Hidden Channels

Scan groups contain anywhere from 2 to 16 channels, and normally these channels can also be accessed individually.

When the Hidden Channels field is enabled, channels that are assigned to a scan group are hidden from the user and so cannot be selected individually. This setting has the effect of making a group of channels appear as one channel. If you wish to access channels via groups and individually, disable the Hidden Channels field.

## Fast CTCSS Decode Override

When this field is enabled, the radio overrides fast CTCSS decoding. Fast CTCSS decode override should only be enabled when a channel containing an incorrect subaudible frequency is being captured by the radio.

## PTT Release Voting Request

When the PTT Release Voting Request field is enabled, the voting sequence is initiated whenever the PTT key is released.

## Group Hold Time

The Group Hold Time field specifies the pause before scanning resumes once valid channel activity has ceased.

Enter a time between 0 and 25,000 ms in steps of 100 ms. If set to 0, the hold timer is disabled regardless of channel activity and scanning resumes immediately after a channel becomes invalid, which would not allow for any pauses in a conversation.

## Voting Lead In Delay

The Voting Lead In Delay field sets the delay between the radio detecting activity on a channel in a voting group and voting taking place. The voting lead in delay gives the repeaters in the system time to come to full power.

Enter a value between 0 and 2550 ms in steps of 10 ms.

## Voting Polling Interval

The Voting Polling Interval field sets the time between votes when channels are carrying invalid activity. Enter a value between 1 and 250 seconds in steps of 1 second.

## Priority Sample Timers

The priority sample timers determine how often a priority channel is scanned in preference to other channels in a scan group.

- Non-Captured Priority Sample Timer: Applies when no channel has been captured.
- Captured Priority Sample Timer: Applies when a channel has been captured.

For both timers, set a value from 500 to 5000 ms in steps of 100 ms.

In some systems, setting the priority sample timers too low interferes with Selcall decoding and in such cases you should not set these timers lower than the default values of 3000 ms (Captured) and 1500 ms (Non-Captured).

### voting

*Voting is the systematic sampling of a group of channels (a scan group) for the channel with the greatest signal strength. There are three variations of normal voting: voting with signalling, double voting and double voting with signalling.*

## Scan Group Members Tab

Scanning and voting groups are set up in the Scan Group Members tab. The Scan Group Members tab is shown below.

Scan Groups

Scan Groups | Scan Group Members | Flexiscan

There must be at least two group members.

ID	Name	Type	User	1	2	3	4	5	6	7
2	GROUP2	S	No	NONE	NONE					

Add Repeat Delete

OK Cancel Print Help

Select the Add button or press the F2 key to add a scan group, select the Delete button or press the F3 key to delete the currently selected scan group, or select the Repeat button to duplicate the current scan group's [Group Type](#) and [User](#) fields and the [Group Membership List](#).

- On [Orca Elan](#) and [Orca 5010](#) radios, up to 16 scan groups can be defined.
- On [Orca Excel](#), [Orca Eclipse](#), [Orca 5015](#) and [Orca 5020](#) radios, up to 20 scan groups can be defined.

When a scan group is added, group members 1 and 2 are set to NONE.

### Group ID

The ID field sets the group number, which must be unique. Because channels and scan groups are both accessed the same way, no channel or group can share the same identity number. Set an ID between 1 and 510.

For [Orca Elan](#), [Orca Excel](#), [Orca 5010](#), [Orca 5015](#) and [Orca 5020](#) radios, groups numbered from 1 to 16 are accessible from the [16-way selector](#).

### Group Name

The Name field cannot be edited for [Orca Elan](#) and [Orca 5010](#) radios.

This field sets the group name, which is displayed when the radio is in [channel entry mode](#). Enter a name of up to 8 characters from:

A to Z 0 to 9 ! # \$ % ^ & \* + - = { } ( ) [ ] < > : ; ? | , . \_  
" ' space

Ensure that you do not allocate the same name for different channels or scan groups since both are accessed in the same way. A default name is generated from the group ID. For example, if three channels are defined, then the first scan group defaults to GROUP4.

## Group Type

The Type field sets the type of scanning/voting used for the group. The options available are:

- [Scanning \(S\)](#)
- [Priority Scanning \(PS\)](#)
- [Dual Priority Scanning \(DPS\)](#)
- [Voting \(V\)](#)
- [Voting With Signalling \(VS\)](#)
- [Double Voting \(DV\)](#)
- [Double Voting With Signalling \(DVS\)](#).

See pages 149 and 151 for descriptions of the different group types.

## User

The User field applies only to [Orca Eclipse](#) and [Orca 5020](#) radios and determines whether the scan group can be reprogrammed by the radio user.

- Yes: The radio user can reprogram the group.
- No: The scan group can only be changed by reprogramming the radio.

## Group Membership List

Member channels are added to scan groups in the group membership list.

Enter a valid channel ID. There must be at least two and no more than 16 entries for each scan group, and a channel can appear in a particular scan group only once. There can be no gaps in the list of member channels.

If you have used the DOS-based Programming System for Tait Orca Radios, note that it is not necessary to press the F4 key to add a new member channel; simply enter the channel's channel ID.

For scanning groups (Group Type S, PS or DPS), the first channel in the group membership list is the home channel. For priority scanning (PS), the first channel is the priority

channel. For dual priority scanning (DPS), the first and second channels are the priority channels, and the first channel listed has higher priority than the second.

For voting groups (V, VS, DV and DVS), the first channel in the group membership list is the home channel if no other channel has been voted as the home channel.

## Flexiscan Tab

Set Flexiscan options in the Flexiscan tab (Orca 5010/5015/5020 radios only). The Flexiscan tab is shown below.

The screenshot shows the 'Flexiscan' tab within a 'Scan Groups' dialog box. The 'Type' dropdown is set to 'Non-Priority Scan'. The 'Tx Channel Select' dropdown is set to 'Selected'. The 'Scan After PTT' checkbox is checked, while 'User Programmable' is unchecked. The 'Scan with Subaudible Signaling' and 'Scan Priority Channels with Subaudible Signaling' checkboxes are also unchecked. The 'Priority Scan Count' is set to 1.00. Below these options is a 'Member Channels' section with 15 input fields for channels 1 through 15. At the bottom are 'OK', 'Cancel', 'Print', and 'Help' buttons.

## Flexiscan Type

The Type field sets the type of scanning used for the Flexiscan group. The options available are:

- Non-Priority Scan: There is no priority scan channel.
- Priority Scan: The first member channel is designated the priority channel, which is scanned more often than the other member channels.
- Dual Priority Scan: The first member channel is designated the first priority channel and the second member channel is designated the secondary priority channel. These priority channels are scanned more frequently than the other member channels.

## Flexiscan Tx Channel Select

The Flexiscan Tx Channel Select field determines the transmission channel.

- Selected: The radio transmits on the channel that was selected prior to Flexiscan being activated.

- Scanned: The radio transmits on the channel that it last received on, prior to valid activity being detected on a Flexiscan member channel and before the [Group Hold Time](#) has expired.

## Scan After PTT

Orca 5015/5020 radios only.

The Scan After PTT field determines the behaviour of the radio when Flexiscan is active and the PTT key is pressed.

- Checked: Scanning stops when the PTT key is pressed but resumes once the PTT key is released and the [Group Hold Time](#) expires.
- Unchecked: A press of the PTT disables Flexiscan.

## User Programmable Flexiscan

Orca 5015/5020 radios only.

When User Programmable is checked, the scan group can be reprogrammed by the radio user. Flexiscan programming mode is activated by one of the radio function keys, assigned in the [Key Settings](#) form.

## Scan With Subaudible signalling

The Scan With Subaudible signalling field determines the behaviour of the radio when activity is detected on a member channel.

- Checked: Scanning only halts on a channel if there is valid subaudible signaling present on the channel. Once this field is enabled, the [Scan Priority Channels With Subaudible signalling](#) field becomes accessible.
- Unchecked: Scanning halts on any member channel, whether valid subaudible signalling is present or not.

## Scan Priority Channels With Subaudible signalling

The Scan Priority Channels With Subaudible signalling field determines the behaviour of the radio when activity is detected on a priority channel.

- Checked: Scanning only halts on the priority channel if there is valid subaudible signaling present. If the subaudible signalling is invalid, scanning resumes.
- Unchecked: Scanning halts on a priority channel when there is activity, but the radio remains muted unless there is valid subaudible signalling present.

This field is only available if the [Scan With Subaudible signalling](#) field is checked.



## Priority Scan Count

The Priority Scan Count field determines the priority channel sample time intervals. The priority scan count is used to modify the times set in the [Priority Sample Timers](#) fields.

Enter a number between 1.00 and 4.00 in steps of 0.25.

This field is only available if the [Scan Priority Channels With Subaudible signalling](#) field is checked.

## Flexiscan Member Channels

Member channels are added to the Flexiscan scan group in the Member Channels fields. Enter at least two valid channel identities in these fields. A channel can only be entered once and there can be no gaps in the member channels list.

If the [Flexiscan Type](#) field is set to Priority Scan or Dual Priority Scan, then the first member channel is the highest priority channel (P1). If Dual Priority Scan is selected, then the second member channel is the next highest priority channel (P2).

# Channel Signalling Presets Form

The Channel Signalling Presets form defines the signalling pairs the radio user selects from when using the [programmable channel signalling](#) feature. Programmable channel signalling is available only on [Orca Eclipse](#) and [Orca 5020](#) radios. The Channel Signalling Presets form is shown below.

Preset Labels	Rx Signalling	Tx Signalling
C71.9	C71.9	C71.9

Select the Add button or press the F2 key to add a new signalling pair, select the Delete button or press the F3 key to delete the currently selected signalling pair, or select the Repeat button to duplicate the current signalling pair's [receive and transmit signalling](#).

Up to 20 signalling pairs can be defined.

## Preset Label

The Preset Label field sets an alphanumeric name to label each pair of Tx/Rx signalling codes. Each label must be unique. Enter a name of up to 8 characters from:

A to Z 0 to 9 ! # \$ % ^ & \* + - = { } ( ) [ ] < > : ; ? | , . \_  
" ' space

## Rx/Tx Signalling

The Rx and Tx Signalling fields set the subaudible signalling that is associated with a channel when the signal pair is selected.

The Rx Signalling field sets the [subaudible signalling](#) the radio must receive before the activity is regarded as valid and

the mute opened. The Tx Signalling field sets the subaudible signalling that accompanies each transmission made on this channel.

For both fields, select the required CTCSS frequency or DCS code from the drop-down list. Note that when you select a signal from the list for Rx Signalling, the Tx Signalling field is changed to match Rx Signalling. If you wish to use different transmit signalling, select the signal from the list. However, you cannot mix CTCSS and DCS on a channel.

Leave these fields set to NONE if no subaudible signalling is used.

If once subaudible signalling has been assigned for a signalling pair you wish to change the signalling type, first set either Rx or Tx Signalling to NONE, then selected the required type of signalling.

The tables on [page 147](#) show the CTCSS frequencies and DCS codes Tait Orca radios support.



# Part 4: Setting Up Selcall

This part contains detailed information on setting up Selcall.

## Forms

- [Selcall Identity and Setup Form](#)
- [Selcall Features Form](#)
- [Selcall Emergency Setup Form](#)
- [Selcall Rx Decode Setup Form](#)
- [Selcall Control Status Definitions Form](#)
- [Custom Selcall Tone Set Form](#)



# Selcall Identity and Setup Form

Selcall systems are set up in the Selcall Identity and Setup form, which is divided into three tabs:

- [Selcall Identity \(Rx\)](#) tab
- [Selcall Sequences \(Tx\)](#) tab
- [Selcall Tone Options](#) tab

The Selcall Identity and Setup form is shown below, with the Selcall Identity (Rx) tab selected.

The screenshot shows the 'Selcall Identity and Setup' window with three tabs: 'Selcall Identity (Rx)', 'Selcall Sequences (Tx)', and 'Selcall Tone Options'. The 'Selcall Identity (Rx)' tab is active. It contains the following elements:

- 'Enable Selcall' checkbox: checked.
- 'Selcall Sequence Formats' section:
  - Tx Format: RRRRR-S
  - Rx Format: RRRRR-S
- 'Radio Unit Identity Sequences' section:
  - Rx Decode Sequence 1: 12345
  - Rx Decode Sequence 2: NONE
  - RMR Sequence: NONE
- 'Selcall Muting' checkbox: unchecked.
- Navigation buttons: '<<', '<', '1 of 1', '>', '>>'.
- Action buttons: 'Add', 'Repeat', 'Delete'.
- Standard buttons: 'OK', 'Cancel', 'Print', 'Help'.

In addition to the standard set of buttons at the bottom of each form, there is an additional row of buttons. The functions of these buttons are as follows:

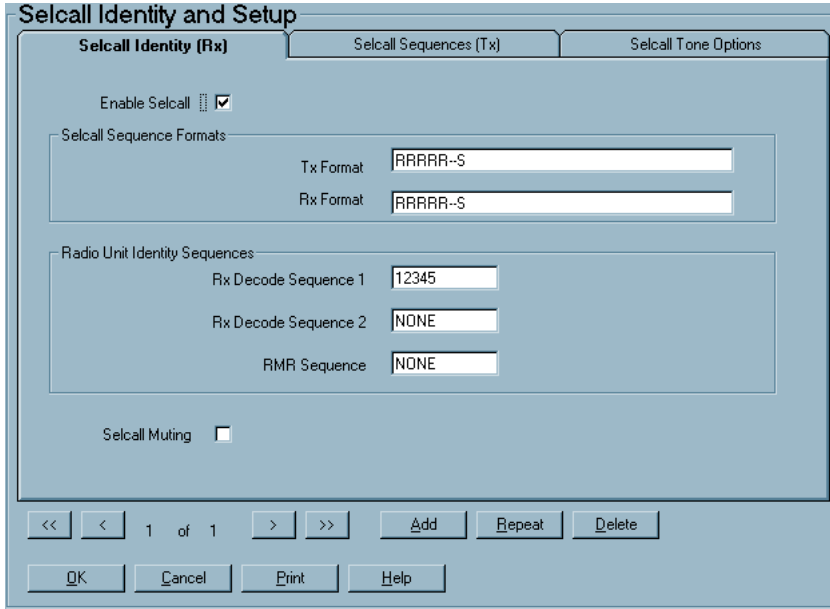
- <<: Switches to the first Selcall system
- <: Switches to the previous Selcall system  
(Number of current Selcall system)
- >: Switches to the next Selcall system
- >>: Switches to the last Selcall system
- Add: Adds a new Selcall system with default values
- Repeat: Duplicates the settings of the current Selcall system (all Selcall Identity and Setup form fields)
- Delete: Deletes the current Selcall system

For more information on Selcall, see:

- [“Selcall Systems: Transmit and Receive Formats”](#) on page 154
- [“Selcall Tone Transmission”](#) on page 157

# Selcall Identity (Rx) Tab

The transmit and receive formats are defined in the Selcall Identity (Rx) tab, together with sequences the radio responds to. The Selcall Identity (Rx) tab is shown below.



## Enable Selcall

The Enable Selcall field must be enabled before any Selcall systems can be defined. Until this field is enabled, only one form is listed under Selcall and Status in the forms tree.

## Tx Format

The Tx Format field defines the [transmit format](#). Five characters are used to define the transmit format.

- B: [repeater identity](#) (optional)
- R: [receiver identity](#) (required)
- C: [caller identity](#) (optional)
- S: [status](#) (optional)
- -: [gap](#) (optional)

Each [burst](#) can consist of up to eight tones and tone bursts should be separated by a gap burst. There can be no more than eight gaps in any one gap burst, and the sequence cannot start or end with a gap burst. If defined, each element (e.g. receiver identity) should be defined sequentially.

If the repeater identity is defined, it must come first in the sequence. If status is defined, it must be last in the sequence and can only contain one or two characters. Some systems require at least two gaps before status if a single status digit is used.

### transmit (Tx) format

*The transmit format defines the format all outgoing Selcall sequences must follow in order to be correctly decoded by other radios using the same Selcall system. The transmit format should be the same for all radios using a particular Selcall system.*

### burst

*A burst is a series of tones (a tone burst) or gaps (a gap burst) in a Selcall sequence.*



See “[The Transmit Format](#)” on page 154 for more information on defining a transmit format.

## Rx Format

The Rx Format field defines the [receive format](#). Four characters are used to define the receive format.

- R: [receiver identity](#) (required)
- C: [caller identity](#) (optional)
- S: [status](#) (optional)
- -: [gap](#) (optional)

Each [burst](#) can consist of up to eight tones and tone bursts should be separated by a gap burst. There can be no more than eight gaps in any one gap burst, and the sequence cannot start or end with a gap burst. If defined, each element (e.g. receiver identity) should be defined sequentially.

If status is defined, it must match the status burst in the transmit format (see “[Tx Format](#)” on page 64).

See “[The Receive Format](#)” on page 155 for more information on defining a receive format.

## Rx Decode Sequences

Two [Rx decode sequences](#) can be defined for each Selcall system the radio operates on. At least one of the Rx Decode Sequence fields must be set, and the sequence entered must match the R burst ([receiver identity](#)) in the Selcall system’s [receive format](#) (Rx Format field).

Use characters 0 to 9, A to D, F and V. V acts as a wildcard tone and so is equivalent to all other tones. If the second Rx decode sequence is not required, set it to NONE.

See “[Defining the Radio’s Identity](#)” on page 157 for more information.

## RMR Sequence

The RMR Sequence field sets the Selcall sequence that, when received, deactivates [monitor](#) and squelch override, and clears down emergency cycling.

If defined, the sequence entered must match the R burst ([receiver identity](#)) in the Selcall system’s [receive format](#) (Rx Format field). Use characters 0 to 9, A to D, F and V or set the sequence to NONE. V acts as a wildcard tone and so is equivalent to all other tones.

Normally the [remote monitor reset](#) sequence’s R burst should not match either of the Rx decode sequences.

## Selcall Muting

The Selcall Muting field enables the Selcall signalling mute.

### receive (Rx) format

*The receive format defines the format all incoming Selcall sequences must follow in order to be correctly decoded by the receiving radio. The receive format should be the same for all radios using a particular Selcall system.*

### Rx decode sequence

*The Rx decode sequence is the radio’s unique identity on a Selcall system. When the radio’s Rx decode sequence is decoded as the receiver identity in an incoming Selcall sequence, the radio recognises the sequence as intended for it and responds appropriately.*

### monitor

*Monitor allows the radio user to override a channel’s signalling and so hear all traffic on a channel.*

- Enabled: The radio remains quiet until a valid Selcall sequence is received and the radio user cannot initiate calls using the PTT without first disabling the Selcall mute by activating **monitor**. The radio user can still make Selcall calls via a function key or the call key.
- Disabled: The radio user hears all Selcall activity on the channel regardless of whether monitor is active or inactive.

If Selcall muting is enabled, presses of the PTT do not result in the radio transmitting unless monitor has been activated and the Selcall mute disabled. For this reason, if Selcall muting is enabled, it is important to also enable the **Monitor with Call Setup** field (**Receive Monitoring** form). When Monitor with Call Setup is enabled, the radio user is able to initiate a call via a function key or the call key and monitor is automatically activated.

## Selcall Sequences (Tx) Tab

Common transmitted Selcall sequences are set in the Selcall Sequences (Tx) tab. The Selcall Identity (Tx) tab is shown below.

**Selcall Identity and Setup**

Selcall Identity (Rx) | **Selcall Sequences (Tx)** | Selcall Tone Options

Tx Format: RRRRR--S  
Rx Format: RRRRR--S

Formatted Sequences

	Tx Call	Status	Repeater	CallerID	Copy Rx Decode ID	1	2
Fixed Call Sequence	NONE	NONE	NONE	NONE		<input type="checkbox"/>	<input type="checkbox"/>
Variable Call Sequence	NONE	NONE	NONE	NONE		<input type="checkbox"/>	<input type="checkbox"/>

Freeform Sequences

Function Key Preset Call 1:

Function Key Preset Call 2:

Auto Acknowledge Sequence:

A.N.I. Sequence:

B Burst?

<< < 1 of 1 > >> Add Repeat Delete

OK Cancel Print Help

### Fixed Call Sequence

If the **fixed call sequence** is defined, an **R burst** (TxCall field) must be set and the **S**, **B** and **C** bursts are optional. The fixed call sequence must match the Selcall system's **Tx Format**.

The following rules apply.

- R (receiver) burst: The TxCall field sets the receiver identity and must be the same length as the R burst in **Tx**

**Format.** Use characters 0 to 9, A to D and F. Settings TxCall to NONE disables the fixed call sequence feature.

- S (status) burst: The Status field sets the status and is set according to the S burst in Tx Format. If Tx Format has one S, set Status to any [status digit](#) from 0 to 15. If Tx Format has two Ss, then set Status to any status digit from 0 to 99. On [Orca Eclipse](#) and [Orca 5020](#) radios a [variable status](#) can be sent as part of the fixed call sequence, and so Status can also be set to V.
- B (repeater) burst: The Repeater field sets the repeater identity and must be the same length as the B burst in Tx Format. Use characters 0 to 9 and A to F.
- C (caller identity) burst: The CallerID field sets the caller identity and must be the same length as the C burst in Tx Format. Use characters 0 to 9, A to D and F, or, if you wish to use one of the radio's [Rx decode sequences](#) as the caller identity, select one of the Copy Rx Decode ID buttons.

If any of characters entered for the R, B and C bursts corresponds to the group tone ([Group Tone 'G'](#) in the [Selcall Tone Options](#) tab), a G is automatically substituted for that character.

## Variable Call Sequence

The Variable Call Sequence fields apply to [Orca Excel](#), [Orca Eclipse](#), [Orca 5015](#) and [Orca 5020](#) radios.

If the [variable call sequence](#) is defined, an [R burst](#) (TxCall field) must be set and the S, B and C bursts are optional. The variable call sequence must match the Selcall system's [Tx Format](#). Up to three tones can be set to V for Orca Excel radios, and up to eight tones can be set to V for Orca Eclipse and Orca 5020 radios, plus status.

The following rules apply.

- R (receiver) burst: The TxCall field sets the receiver identity and must be the same length as the R burst in [Tx Format](#). Use characters 0 to 9, A to D, F and V. Settings TxCall to NONE disables the variable call sequence feature.
- S (status) burst: The Status field sets the status and is set according to the S burst in Tx Format. If Tx Format has one S, set Status to any [status digit](#) from 0 to 15. If Tx Format has two Ss, then set Status to any status digit from 0 to 99. On Orca Eclipse and Orca 5020 radios a [variable status](#) can be sent as part of the variable call sequence, and so Status can also be set to V. Note that the V is not a number the radio user dials.
- B (repeater) burst: The Repeater field sets the repeater identity and must be the same length as the B burst in Tx Format. Use characters 0 to 9, A to F and V.

### fixed call sequence

*The fixed call sequence is a Selcall sequence that is defined at radio programming time and that can be transmitted by a long press of the call key on Orca 5015, Orca Excel and Eclipse radios. The fixed call sequence is also used when an alpha symbol that is a Selcall call is executed. If the signalling sequence defined for the alpha symbol is fewer tones than the fixed call sequence, the missing tones are substituted from the fixed call sequence.*

### variable status

*The S burst of a Selcall sequence can be programmed with a V. When the sequence is transmitted, the status digit included is the one the user last selected in status entry mode.*

### variable call sequence

*The variable call sequence is a Selcall sequence that is defined as part of the Selcall dialling feature. In the variable call sequence, one or more tones are set to V. The V tones represent the tones the radio user keys in. When the variable call sequence is transmitted, the tones the user has keyed in are substituted for the Vs in the variable call sequence.*

### Selcall dialling

*Using Selcall dialling, the user can dial Selcall sequences using the keypad.*

- C (caller identity) burst: The CallerID field sets the caller identity and must be the same length as the C burst in Tx Format. Use characters 0 to 9, A to D, F and V, or, if you wish to use one of the radio's [Rx decode sequences](#) as the caller identity, select one of the Copy Rx Decode ID buttons.

If any of the characters entered for the R, B and C bursts corresponds to the group tone ([Group Tone 'G'](#) in the [Selcall Tone Options](#) tab), a G is automatically substituted for that character.

## Function Key Preset Calls

Tait Orca radios can have two function key preset Selcall calls defined at radio programming time. See "[Programming Per Channel Selcall Calls](#)" on page 158 for more information.

The function key preset calls are [free-form sequences](#). Each burst can consist of up to eight tones and should be separated by a gap burst of up to eight gaps.

- R (receiver) burst: If the sequence is defined, the receiver identity must be set. Use characters 0 to 9, A to D and F.
- B (repeater) burst: The repeater identity is optional. Use characters 0 to 9 and A to F. If the repeater burst is set, it must come first in the sequence.
- C (caller identity) burst: The caller identity is optional. Use characters 0 to 9, A to D and F.
- S (status) burst: The status burst is optional. The status burst can be any valid [status digit](#) and must come last in the sequence. For [Orca Eclipse](#) and [Orca 5020](#) radios it can be set to V, in which case the current status is transmitted.

If any of the characters entered for the R, B and C bursts corresponds to the group tone ([Group Tone 'G'](#) in the [Selcall Tone Options](#) tab), a G is automatically substituted for that character.

If either of the function key presets calls contain a repeater burst, enable the B Burst? field for that call. See "[First Tone-Period Multiplier](#)" on page 74 for more information.

## Auto Acknowledge Sequence

The auto acknowledge sequence is the sequence transmitted whenever an [auto acknowledge](#) is required.

There are three options for the auto acknowledge sequence:

- NONE: No auto acknowledge is sent.
- BEEP: The auto acknowledge is in the form of a single beep, which is tone 6 of the Selcall system's tone set, transmitted for 500 ms.

### free-form sequence

*A free-form sequence is a Selcall sequence that does not have to conform to the Selcall system's transmit (Tx) format.*

- Define the sequence: See “[Defining the Auto Acknowledge Sequence](#)” below.

The amount of time between when a radio receives a Selcall sequence that matches its [radio identity](#) and when it transmits an auto acknowledge is set in the [Auto Acknowledge Delay Time](#) field ([Selcall Features](#) form).

The number of times a radio resends a Selcall sequence when no auto acknowledge is received is set in the [Number of 'No Acknowledge' Retries](#) field ([Selcall Features](#) form). How long a radio waits before resending a Selcall sequence for which no auto acknowledge has been received is set in the [Wait For Acknowledgement](#) field ([Selcall Features](#) form), which only applies if the [Number of 'No Acknowledge' Retries](#) field is set to a value other than zero. When a calling radio is waiting for an auto acknowledge (the Wait For Acknowledgement time has not expired), the radio assumes any incoming Selcall sequence that does not match one of its [Rx decode sequences](#) is the auto acknowledge it is waiting for.

### ***Defining the Auto Acknowledge Sequence***

The auto acknowledge sequence is a [free-form sequence](#). Each burst can consist of up to eight tones and should be separated by a gap burst of up to eight gaps. The following rules apply.

- R (receiver) burst: If the sequence is defined, the receiver identity must be set. Use characters 0 to 9, A to D and F.
- B (repeater) burst: The repeater identity is optional. Use characters 0 to 9 and A to F. If the repeater burst is set, it must come first in the sequence.
- C (caller identity) burst: The caller identity is optional. Use characters 0 to 9, A to D and F.
- S (status) burst: The status burst is optional. The status burst can be any valid [status digit](#) and must come last in the sequence. For [Orca Eclipse](#) and [Orca 5020](#) radios it can be set to V, in which case the current status is transmitted.

If any of the characters entered for the R, B and C bursts corresponds to the group tone ([Group Tone 'G'](#) in the [Selcall Tone Options](#) tab), a G is automatically substituted for that character.

If the auto acknowledge sequence contains a repeater burst, enable the B Burst? field. See “[First Tone-Period Multiplier](#)” on [page 74](#) for more information.

### **ANI Sequence**

The ANI sequence is the sequence transmitted whenever the PTT is pressed, according to the ANI encoding properties set in the [Selcall Features](#) form.

There are four options for the ANI sequence.

- **NONE:** No ANI sequence is sent, even if ANI encoding is enabled for that Selcall system.
- **BEEP:** The ANI sequence is in the form of a single beep, which is tone 6 of the Selcall system's tone set, transmitted for 500 ms.
- **REPEATER ACCESS TONE:** The ANI sequence is the repeater access tone set for that Selcall system ([Selcall Tone Options](#) tab).
- **Define the sequence:** See "[Defining the ANI Sequence](#)" below.

Four fields in the [Selcall Features](#) form set ANI encoding properties for all Selcall systems. The [ANI Suppression Time](#) field determines the amount of time between successive transmissions of the ANI sequence, and the [Leading ANI](#), [Random ANI](#) and [Trailing ANI](#) fields determine at what point after the PTT has been pressed the ANI sequence is transmitted.

In all instances, the ANI sequence is only transmitted if the ANI suppression time has expired.

At least one of [Leading ANI](#), [Random ANI](#) and [Trailing ANI](#) must be enabled if ANI transmission is to be enabled. If the ANI sequence is the repeater access tone, only [Leading ANI](#) should be enabled.

### ***Defining the ANI Sequence***

Each burst can consist of up to eight tones and should be separated by a gap burst of up to eight gaps.

- **R (receiver) burst:** If the sequence is defined, the receiver identity must be set. Use characters 0 to 9, A to D and F. On [Orca Eclipse](#) and [Orca 5020](#) radios set up to decode ANI, the ANI sequence is not displayed unless it matches the R burst in the transmit format.
- **B (repeater) burst:** The repeater identity is optional. Use characters 0 to 9 and A to F. If the repeater burst is set, it must come first in the sequence.
- **C (caller identity) burst:** The caller identity is optional. Use characters 0 to 9, A to D and F.
- **S (status) burst:** The status burst is optional. The status burst can be any valid [status digit](#) and must come last in the sequence. For [Orca Eclipse](#) and [Orca 5020](#) radios it can be set to V, in which case the current status is transmitted.

If any of the characters entered for the R, B and C bursts corresponds to the group tone ([Group Tone 'G'](#) in the [Selcall Tone Options](#) tab), a G is automatically substituted for that character.

If the ANI sequence contains a repeater burst, enable the B Burst? field. See “[First Tone-Period Multiplier](#)” on page 74 for more information.

## Selcall Tone Options Tab

How Selcall sequences are transmitted is set in the Selcall Tone Options tab. The Selcall Tone Options tab is shown below.

**Selcall Identity and Setup**

Selcall Identity (Rx) | Selcall Sequences (Tx) | **Selcall Tone Options**

Tone Set: CCIR

Tone Period: 20 ms

Gap Period: 20 ms

Group Tone 'G': A

Group Format: International

Repeater Access Tone: 0

Repeater Access Tone Duration: 500 ms

Lead In Tone: NONE

Lead In Delay: 500 ms

First Tone-Period Multiplier: 1

<< < 1 of 1 > >> Add Repeat Delete

OK Cancel Print Help

### Tone Set

The Tone Set field specifies the tone set a [Selcall system](#) operates on.

The radio can operate with any of the tone sets supported by the radio software, and a different tone set can be assigned for each Selcall system. The available tone sets are described in [Table 2 on page 72](#). You can create your own tone set or reorder an existing tone set in the [Custom Selcall Tone Set](#) form. You must set the Tone Set field to User Defined to use the custom tone set.

### Tone Period

The Tone Period field sets the duration of each [tone](#) in a [Selcall sequence](#). Set the tone period to 20, 33, 40, 50, 60, 70 or 100 ms.

### Gap Period

The Gap Period field sets the duration of each [gap](#) in a [Selcall sequence](#). Set the gap period from 1 to 150 ms in steps of 1 ms.

#### tone set

The tone set is the set of frequencies represented by the characters 0-9 and A-F used to make up Selcall sequences. There are a number of internationally accepted standard tone sets available. There is a finite number of frequencies available to represent the various characters in a Selcall sequence; it is the frequencies used and their order that distinguishes one tone set from another.

#### gap

A gap is a pause in the transmission of tones in a Selcall sequence. When constructing Selcall sequences, a gap is represented by a hyphen (-). A series of gaps makes up a gap burst.

Table 2: Selcall tone sets and frequencies (Hz). Note: E is the repeat tone.

Tone	CCIR	EIA	EEA	ZVEI-I	ZVEI-II	ZVEI-III	PZVEI	NATEL	DZVEI
0	1981	600	1981	2400	2400	2400	2400	1633	2200
1	1124	741	1124	1060	1060	1060	1060	631	970
2	1197	882	1197	1160	1160	1160	1160	697	1060
3	1275	1023	1275	1270	1270	1270	1270	770	1160
4	1358	1164	1358	1400	1400	1400	1400	852	1270
5	1446	1305	1446	1530	1530	1530	1530	941	1400
6	1540	1446	1540	1670	1670	1670	1670	1040	1530
7	1640	1587	1640	1830	1830	1830	1830	1209	1670
8	1747	1728	1747	2000	2000	2000	2000	1336	1830
9	1860	1869	1860	2200	2200	2200	2200	1477	2000
A	2400	2151	1055	2800	885	885	970	1995	825
B	930	2433	930	810	825	810	810	571	740
C	2247	2010	2400	970	740	2800	2800	2205	2600
D	991	2292	991	885	680	680	885	2437	885
E	2110	459	2110	2600	970	970	2600	1805	2400
F	1055	1091	2247	680	2600	2600	680	2694	680

If a gap is defined in **Rx Format**, (**Selcall Identity (Rx)** tab), ensure that the total gap period is equal to or longer than one **tone period**. Otherwise Selcall sequences will not be decoded properly.

## Group Tone 'G'

The Group Tone 'G' field sets a group tone for each Selcall system. This is the tone that is substituted when G is used in any outgoing Selcall sequences and that identify incoming Selcall sequences as **group calls**. It can be set to any of the tones 0 to 9 and A to F in the current Selcall system, except the repeat tone (E).

The **Group Dialling** field (**Selcall Features** form) must be enabled if the radio user is dialling group calls from the radio's keypad.

### group call

*A Selcall call can be made to a group of radios by including a group tone in the Selcall sequence.*

## Group Format

The Group Format field sets the group format used for **group calling**. The format selected depends on the system in use. There are two options.



- International: The first tone in the sequence defined cannot be a group tone. Any of the subsequent tones can be the group tone.
- Sigtec: The first tone in the sequence defined cannot be a group tone. All following the first group tone must also be a group tone.

All radios operating on the Selcall system should use the same format.

## Repeater Access Tone

The Repeater Access Tone field sets the [repeater access tone](#), which can be sent before a voice or data transmission. Set the repeater access tone to any of the valid tones in the current tone set (0-9, A-F). If no repeater access tone is required, then the value this field is set to has no effect on radio operation.

The repeater access tone is transmitted for the [Repeater Access Tone Duration](#) when a function key is pressed to which the [Repeater Access Tone](#) option has been assigned. See “[Function Key Option: Repeater Access Tone](#)” on page 129 for more information.

## Repeater Access Tone Duration

The Repeater Access Tone Duration field sets the length of time the repeater access tone is transmitted, when required.

Select a value from 0 to 5100 ms in steps of 20 ms.

The repeater access tone is transmitted when a function key is pressed to which the [Repeater Access Tone](#) option has been assigned.

## Lead In Tone

The Lead In Tone field sets the lead-in tone, which is sent during the lead-in delay before any Selcall sequences. It can be used to halt scanning on a called radio before critical tones are sent or to allow the called radio time to come out of economy mode. Set this tone to any of the valid tones in the current tone set (0-9, A-F) or NONE.

If a lead in tone is specified (set to a value other than NONE), the lead in tone is transmitted for the duration of the [Lead In Delay](#) for all outgoing [Selcall sequences](#) except for random and trailing [ANI](#). A two-tone period gap follows a lead in tone transmission.

An alternative to using a lead-in tone is to extend the amount of time the first tone in the Selcall sequence is transmitted. See “[First Tone-Period Multiplier](#)” on page 74 for more information.

### repeater access tone

*A repeater access tone is a single tone that is transmitted before a voice or data transmission. The repeater access tone is used to key up the repeater before a transmission is sent so that no information is lost at the beginning of the transmission.*

## Lead In Delay

The Lead In Delay field sets duration of the lead-in tone before all Selcall sequence transmissions, except random and trailing ANI. Set the lead in delay to 0 to 5100 ms in steps of 20 ms.

If both Selcall and economy mode are enabled ([Selcall Identity \(Rx\)](#) tab and [Power Save Features](#) form) for other radios in the fleet, the lead in delay needs to be set to at least 100 ms longer than the economy duty cycle ([Power Save Features](#) form). For example, for a duty cycle setting of Medium, the Lead In Delay should be set to no less than 600 ms. Otherwise the incoming Selcall sequence may not be detected reliably.

If Selcall is being used with scanning, then the lead-in delay should be set to a value equivalent to the time it takes for a scan group to do one complete scan of all channels. See [“Scanning” on page 148](#) for more information.

If Selcall is being used on a repeater system, add an additional 200 ms to the lead-in delay.

## First Tone-Period Multiplier

An alternative to having a [lead in delay](#) is to extend the duration of the first tone in a Selcall sequence. The tone-period multiplier is applied to the first burst of the transmitted sequence, unless the first burst is a repeater burst. In this case, the tone-period multiplier is applied to the first tone of the second burst.

If the tone-period multiplier option is enabled, it is important to specify whether [free-form sequences](#) have a [repeater \(B\) burst](#). Note that when using the tone-period multiplier for free-format sequences, ensure that any repeater burst is separated from the second burst by a gap, as the tone-period multiplier is applied to the first burst after a gap burst.

The First Tone-Period Multiplier field determines the length of time the first tone in a [Selcall sequence](#) is transmitted and can be set as an alternative to having a lead-in tone.

Set a value from 1 to 70, where the tone period for the first tone is multiplied by this number. For example, if the tone period is 20 ms and the tone-period multiplier is 10, the first tone of a Selcall sequence is transmitted for 200 ms.

If any of the sequences [Function Key Preset Calls](#), [ANI Sequence](#), [Auto Acknowledge Sequence](#) ([Selcall Sequences \(Tx\)](#) tab) and [Selcall Sequence](#) ([Selcall Emergency Setup](#) form) contain a repeater burst and you specify a first tone-period multiplier greater than one, you must also specify whether these sequences have a repeater burst (B Burst? fields, [Selcall Identity \(Rx\)](#) tab).

# Selcall Features Form

Various advanced Selcall features are enabled and disabled in the Selcall Features form. Once a feature in this form is enabled, it is enabled for all Selcall systems. The Selcall Features form is shown below.

## Deferred Calling

The Deferred Calling field enables the [deferred calling](#) option for all Selcall systems. The [Tx Inhibit](#) field in the [Transmitter Setup](#) form must be set to Busy or Mute before deferred calling can be enabled.

If Tx Inhibit is set to Busy or Mute and deferred calling is disabled, the radio gives an invalid keypress whenever a call is attempted on a busy channel.

### deferred calling

*When the transmit inhibit conditions are Busy or Mute, a Selcall call cannot be transmitted on a busy channel. When the deferred calling feature is enabled, the call is stored and sent at a random time between 1 and 10 seconds after the channel becomes free.*

## Third Tone Monitor Reset

The Third Tone Monitor Reset field enables the [third tone monitor reset](#) option for all Selcall systems.

The third tone monitor reset option is only valid for a particular Selcall system if there are more than three Rs in the [Rx Format](#) ([Selcall Identity \(Rx\)](#) tab).

### third tone monitor reset

*The monitor and squelch override are deactivated when the first three tones of the receiver identity for an incoming Selcall sequence match the first three tones of one of the radio's Rx decode sequences.*

## Appended C Tone Monitor Reset

The Appended C Tone Monitor Reset field enables the [appended C tone monitor reset](#) option for all Selcall systems.

### appended C tone monitor reset

*The monitor is deactivated when an incoming Selcall sequence that contains the radio's identity has a C tone appended to the end of a burst. Emergency cycling (see Emergency mode) is also deactivated.*

## Selcall Sidetones

The Selcall Sidetones field enables the generation of sidetones for all outgoing Selcall sequences except for the auto acknowledge sequence and the emergency sequence. The radio user is able to hear the Selcall tones in an outgoing sequence as they are transmitted. If Selcall sidetones are disabled, the only indicator the radio user has for an outgoing Selcall call is the valid keypress indicator.

## ANI Decoding

The ANI Decoding field applies only to [Orca Eclipse](#) and [Orca 5020](#) radios.

The ANI Decoding field enables ANI decoding for all Selcall systems. When ANI decoding is enabled, a radio can display the ANI sequence transmitted by radios using the channel the listening radio is currently tuned to. The ANI sequence must match the decoding radio's receive format ([Selcall Identity \(Rx\)](#) tab) in order for the [caller identity](#) burst of that sequence to be displayed.

## Group Dialling

The Group Dialling field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

The Group Dialling field enables the group dialling option for all Selcall systems. When enabled, the radio user can dial group calls.

The group tone used for group calling is assigned in the [Selcall Tone Options](#) tab. Each Selcall system can be assigned a different group tone.

## Automatic Caller Identification

The Automatic Caller Identification field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

When an incoming call is received, the caller identity is displayed so the radio user can identify the caller before responding. The caller identity is displayed as a number or as a label, depending on the radio type and how it was programmed.

The Automatic Caller Identification field sets the [automatic caller identification](#) option for all Selcall systems. Automatic caller identification only operates on Selcall systems that have a [caller identity](#) burst in the [receive \(Rx\)](#) format. Automatic caller identification can be enabled in the [Selcall Features](#) form once a C burst has been included in at least one receive format.

How the caller identity is displayed depends on the type of radio. On [Orca Excel](#), [Orca Eclipse](#), [Orca 5015](#) and [Orca](#)

### sidetones

*Sidetones are the tones heard when a DTMF string or Selcall sequence is transmitted and they indicate to the radio user that a call has been transmitted. The radio can be programmed to not generate sidetones when a Selcall sequence is transmitted (Selcall Features form).*

### ANI

*ANI stands for "automatic number identification". A Selcall or DTMF system can be set up so that each radio automatically transmits its identity at regular intervals throughout the duration of a call. Each radio's identity is transmitted on each exchange of transmissions (each press of the PTT) unless the ANI suppression time has not expired. ANI makes it possible to set up a log of a radio's channel activity.*

### group call

*A Selcall call can be made to a group of radios by including a group tone in the Selcall sequence.*

### automatic caller identification

*When an incoming call is received, the caller identity is displayed so the radio user can identify the caller before responding.*

5020 radios, the caller identity is displayed as a number, which is the C burst in the received Selcall sequence.

On Orca Eclipse and Orca 5020 radios, the caller identity can be displayed as a label if the incoming C burst (the caller's identity) matches one of the [Signalling Numbers](#) (receiver identities) in the radio's Selcall [alpha symbols](#) (Alpha Symbols form). The label displayed is that for the matching alpha symbol.

The received call sequence only displays properly if it matches the receive format. Free-form sequences may not display properly.

## Received Call Queuing

The Received Call Queuing field does not apply to [Orca Elan](#), [Orca Excel](#), [Orca 5010](#) and [Orca 5015](#) radios.

The Received Call Queuing field enables [call queuing](#) on all Selcall systems.

When enabled, this field sets a queue for holding unanswered Selcall calls for all Selcall systems. Call queuing can only be enabled when [Automatic Caller Identification](#) (Selcall Features form) is enabled.

### call queuing

*If the radio user is unable to answer calls immediately, they can be stored in the call queue so that the user can call back later. Up to 15 calls can be stored.*

## Rx Call Sub-sequence Decoding

The Rx Call Sub-sequence Decoding field applies to all Selcall systems.

When Rx Call Sub-sequence Decoding is enabled, the detection and validation of incoming Selcall sequences depends only on the [receiver identity](#), and so if the [caller identity](#) and [status](#) are absent from the incoming sequence, the call is still detected as valid. This feature is useful in areas of marginal signal strength where some of the bursts may be missing or corrupted.

## Number of 'No Acknowledge' Retries

The Number of 'No Acknowledge' Retries field sets the number of times the radio automatically resends a call when no [auto acknowledge](#) response is received from the called radio. How long the radio waits for an auto acknowledge to be returned is set in the [Wait For Acknowledgement](#) field (Selcall Features form).

Set a value from 0 to 15.

### auto acknowledge

*When a radio receives a Selcall sequence that contains its identity, it can be programmed to transmit an auto acknowledge sequence.*

## Wait For Acknowledgement

The Wait For Acknowledgement field sets the delay between when the radio first sends a call and when it resends the call when no [auto acknowledge](#) is received.

Set a value from 1 to 20 seconds in steps of 1 second.

## Selcall Tx Tolerance Factor

The Selcall Tx Tolerance Factor field determines how long the radio continues transmitting once the last tone in a Selcall sequence has been transmitted. This extra tail time ensures that the called radio is able to decode the Selcall sequence and should be set to at least one tone period in length.

Set a value from 0 to 2550 in steps of 10.

## Called Unit Status Display

The Called Unit Status Display field does not apply to [Orca Elan](#), [Orca Excel](#), [Orca 5010](#) and [Orca 5015](#) radios.

The Called Unit Status Display field sets the [called unit status display](#) option for all Selcall systems. Called unit status display only operates on Selcall systems that have a [status](#) burst assigned in the [receive \(Rx\) format \(Selcall Identity \(Rx\) tab\)](#).

### called unit status display

*When a called radio responds with an auto acknowledge that contains status digit, the auto acknowledge sequence is displayed on the calling radio, together with any attached status message.*

## Auto Acknowledge Delay Time

The Auto Acknowledge Delay Time field sets the delay between when an incoming Selcall sequence is received and when an [auto acknowledge](#) is sent. Set a value from 100 to 12,000 ms in steps of 100 ms.

## Remote Monitor Reset Acknowledge

When the Remote Monitor Reset Acknowledge field is enabled, an auto acknowledge is sent when a valid remote monitor reset sequence is received.

The Remote Monitor Reset Acknowledge field applies to all Selcall systems. If no auto acknowledge sequence is defined for a particular Selcall system ([Selcall Sequences \(Tx\) tab](#)), then no auto acknowledge is sent when a valid remote monitor reset sequence is received.

### remote monitor reset

*A remote monitor reset sequence can be assigned for each Selcall system a radio operates on. When the radio receives this sequence and the remote monitor reset function has been enabled, the radio deactivates monitor, squelch override and/or emergency cycling, if they are active.*

## Remote Monitor Reset Alert

When the Remote Monitor Reset Alert field is enabled, the radio activates an audible alert when a valid remote monitor reset sequence is received. If the radio is in [emergency mode](#), it does not give an alert.

## Remote Monitor Reset Call Clear

When the Remote Monitor Reset Call Clear field is enabled, the radio clears any active incoming call when a valid remote monitor reset sequence is received.

## ANI Suppression Time

The ANI Suppression Time field sets the amount of time between the end of the transmission of the ANI sequence and when it is next transmitted, if the PTT has been pressed. Set this field to between 0 and 120 seconds in steps of 1 second.

## Leading ANI

The Leading ANI field determines if the ANI sequence is sent whenever the PTT is pressed. There are three options.

- **Enabled:** The ANI sequence is sent when the PTT is pressed, if the ANI suppression time has expired.
- **Suppress on Busy:** The ANI sequence is sent at the start of a transmission initiated by the PTT key if the ANI suppression time has expired.
- **Disabled:** The ANI sequence is not sent when the PTT is pressed.

The ANI sequence is set in the [Selcall Sequences \(Tx\)](#) tab. If the ANI sequence is the repeater access tone, then Leading ANI should be the only ANI transmit option enabled.

## Random ANI

If the Random ANI field is enabled, the ANI sequence is sent during the transmission at some random time (0 to 15 seconds) after the PTT is pressed. There is no lead-in delay for random ANI transmissions.

If the transmission is terminated (PTT released or transmit timeout) before the first random ANI has been sent and trailing ANI is disabled, then the ANI sequence is sent in the trailing position, subject to the expiry of the ANI suppression time.

The ANI sequence is set in the [Selcall Sequences \(Tx\)](#) tab.

## Trailing ANI

If the Trailing ANI field is enabled, the ANI sequence is sent at the end of the transmission, subject to the expiry of the ANI suppression time. The ANI sequence is sent after release of the PTT but before any subaudible signalling termination sequence (i.e. CTCSS reverse tone burst, DCS stop code). There is no lead-in delay for trailing ANI transmissions.

The ANI sequence is set in the [Selcall Sequences \(Tx\)](#) tab.

## Call Diversion

The [call diversion](#) feature is not available on Tait Orca radios, but [Orca Eclipse](#) and [Orca 5020](#) radios recognise and respond to call divert messages. The Call Diversion field enables the recognition of call divert messages.

### call diversion

*Call diversion allows the radio user to divert received calls to another channel, and although it is not available on Tait Orca radios, Orca Eclipse and Orca 5020 radios recognise a call diversion message from another radio and switch to the designated channel.*

## Diversion Channel

The Diversion Channel field sets the channel the radio switches to so that communication can be established when a called radio is in [call diversion](#) mode. Enter a valid channel ID or set the field to NONE. When set to NONE, the radio selects the current channel as the diversion channel.

The call diversion channel should be the same for all radios in a system.

## Diversion Status

The Diversion Status field sets the [status digit](#) that identifies that a radio is in [call diversion](#) mode. Enter the status digit from the [Auto Acknowledge Sequence](#). This will be from 0 to 15 if the Rx Format defines a single status digit, or 0 to 99 the Rx Format defines a double status digit. Enter NONE to disable.

## Tone Blanking

The Tone Blanking field enables [tone blanking](#) for received Selcall sequences on all Selcall systems. Tone blanking blanks out the tones of a received Selcall sequence so that the user does not hear them. The user may, however, hear the first few tones.

The Tone Blanking field has no other effect on Selcall operation.

## Number of Tones to Activate

Orca 5010/5015/5020 radios only.

The Number of Tones to Activate field sets the number of tones that must be received consecutively to start [tone blanking](#). This eliminates the risk of certain speech tones being blanked out during a call. Enter a range from 2 to 5. 2 or 3 tones is recommended.

## Deactivation Timer

Orca 5010/5015/5020 radios only.

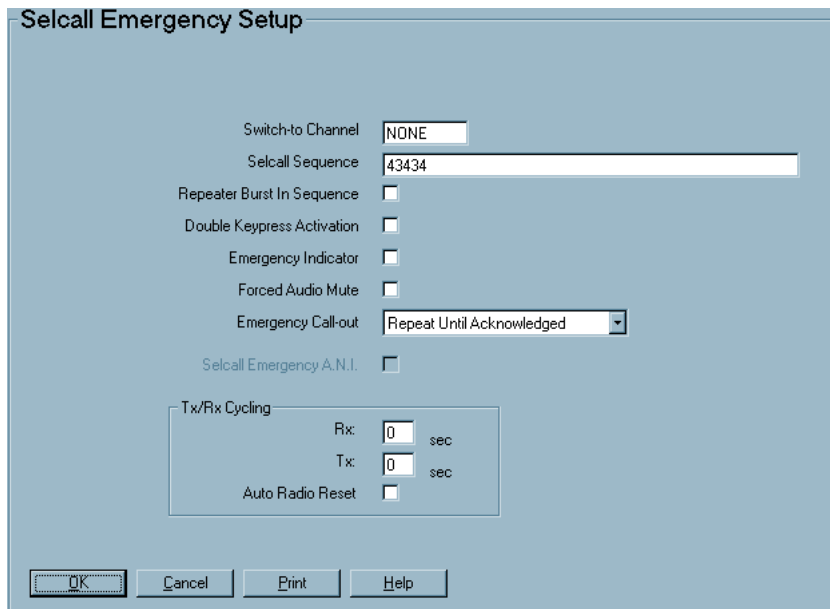
The Deactivation Timer field will turn off [tone blanking](#) after the programmed number of tone periods have elapsed since the carrier was detected. This eliminates the risk of certain speech tones being blanked out during a call. Enter 0 to disable the deactivation timer on tone blanking.

If the deactivation timer is enabled, [Random ANI](#) and [Trailing ANI](#) will not be blanked. If using Random ANI or Trailing ANI, or receiving on a system that uses a repeater, consider using the [Number of Tones to Activate](#) field to eliminate blanking on speech tones.



# Selcall Emergency Setup Form

Each radio can have a Selcall [emergency call](#) programmed, which is assigned to a function key setting. When the emergency call is transmitted, the radio goes into emergency mode. The emergency call is configured in the Selcall Emergency Setup form, which is shown below.



All fields in the Selcall Emergency Setup form are greyed out until the [Selcall Sequence](#) field is set.

## Switch-to Channel

The Switch-to Channel field determines the channel the radio switches to when the Selcall [emergency call](#) is made. The Switch-to Channel field is greyed out until a [Selcall Sequence](#) is defined ([Selcall Emergency Setup](#) form).

Set a valid channel ID or NONE for no channel. If a channel ID is set, it should have a Selcall system assigned. It is highly recommended that a channel be assigned as the emergency call sequence transmitted must match the [receive format](#) of the radio decoding the sequence. If a switch-to channel is not assigned, the radio operates as follows when the emergency call is made:

- If the current channel has a Selcall system assigned, the emergency call is made on that channel.
- If the current channel does not have a Selcall system, assigned, no channel is specified and the emergency call is made while the radio is on a channel that does not have a Selcall system assigned, the radio searches for the first

## emergency mode

*When in emergency mode, the radio cycles between receiving and transmitting so that the called party can hear activity near the radio and so decide how to respond. The radio can be programmed so that all indicators remain unchanged while in emergency mode.*

## receive (Rx) format

*The receive format defines the format all incoming Selcall sequences must follow in order to be correctly decoded by the receiving radio. The receive format should be the same for all radios using a particular Selcall system.*

channel that has a Selcall system and transmit the call on that channel.

Confusion may arise if the emergency Selcall sequence does not match the receive format of the Selcall system assigned to that channel.

## Selcall Sequence

The Selcall Sequence field sets the Selcall sequence that is transmitted when the [emergency call](#) is sent. All other fields in the [Selcall Emergency Setup](#) form are greyed out until the Selcall Sequence is set.

The Selcall sequence is a free-form sequence; however, in most cases it should follow the transmit format of the Selcall system assigned to the switch-to channel.

Each burst can consist of up to eight tones and should be separated by a gap burst of up to eight gaps.

- R (receiver) burst: If the sequence is defined, the receiver identity must be set. Use characters 0 to 9, A to D and F.
- B (repeater) burst: The repeater identity is optional. Use characters 0 to 9 and A to F. If the repeater burst is set, it must come first in the sequence.
- C (caller identity) burst: The caller identity is optional. Use characters 0 to 9, A to D and F.
- S (status) burst: The status burst is optional. The status burst can be any valid [status digit](#) and must come last in the sequence.

For [Orca Eclipse](#) and [Orca 5020](#) radios, status can be set to V, in which case the current status is transmitted. However, it is recommended that a specific emergency status be assigned (in the [Status Labels](#) tab).

If any of the characters entered for the R, B and C bursts corresponds to the group tone ([Group Tone 'G'](#) in the [Selcall Tone Options](#) tab), a G is automatically substituted for that character.

## Repeater Burst In Sequence

The Repeater Burst In Sequence specifies whether there is a repeater burst in the emergency [Selcall Sequence](#). If the emergency [Selcall Sequence](#) contains a repeater burst, enable the Repeater Burst In Sequence field. See [“First Tone-Period Multiplier”](#) on [page 74](#) for more information.

## Double Keypress Activation

When the Double Keypress Activation field is enabled, the radio user must press the function key twice before the radio goes into emergency mode. If the emergency call is assigned to a short keypress, the two keypresses must be made within

3 seconds. If the emergency call is assigned to a long keypress, the two keypresses must come within 5 seconds.

When the Double Keypress Activation field is disabled and the Emergency option is assigned to a long keypress, the radio user must press the function key for 2 seconds or more in order to activate emergency mode. A keypress of less than 2 seconds is regarded as a short keypress.

## Emergency Indicator

When the Emergency Indicator field is enabled, the radio gives an audible alert when the radio enters [emergency mode](#).

## Forced Audio Mute

When the Forced Audio Mute field is enabled, the radio's receive audio remains muted while in emergency mode and so the radio does not broadcast noise that may draw attention in an emergency situation. If disabled, the [mute](#) state in emergency mode obeys the standard muting operation.

## Emergency Call-out

The setting of the Emergency Call-out field determines how the [emergency call](#) is sent. There are two options.

- Repeat Until Acknowledged: The radio resends the emergency Selcall sequence every 8 seconds until a call is received that matches one of the radio's Rx decode sequences and does not contain a control status. When an acknowledgement is received, the radio enters [emergency mode](#), if enabled ([Tx/Rx Cycling](#) fields set to values other than 0). If emergency cycling is not enabled, then upon receiving the acknowledgement the radio exits emergency mode and resumes normal operation.
- Single Call-out Only: The emergency Selcall sequence is sent only once. The radio then enters emergency mode (if enabled) or resumes normal operation.

## Selcall Emergency ANI

The Selcall Emergency ANI field determines whether the [ANI Sequence](#) will be sent while the radio is in [emergency mode](#). If this field is enabled, the ANI sequence will be transmitted at the start of every transmit cycle while in emergency mode. Note that if this field is enabled, the [ANI Suppression Time](#) ([Selcall Features](#) form) will have no effect while the radio is in emergency mode.

## Tx/Rx Cycling

The Tx/Rx Cycling fields set the amount of time the radio transmits and receives while in [emergency mode](#).

For the Tx Cycling field, set a value from 0 to 30 seconds in steps of 1 second. For the Rx Cycling field, set a value from 1 to 30 seconds in steps of 1 second. Setting Rx Cycling to 0 disables emergency cycling, and if Rx Cycling is set to 0, Tx Cycling is automatically set to 0.

If the radio is in receive mode and receives a call that matches the [RMR Sequence](#) or has a C tone appended (see [“Appended C Tone Monitor Reset” on page 75](#)), then emergency cycling will end.

## **Auto Radio Reset**

When the Auto Radio Reset field is enabled, the radio exits [emergency mode](#) after 30 Tx/Rx cycles. The duration of each transmit/receive cycle is set in the [Tx/Rx Cycling](#) fields ([Selcall Emergency Setup](#) form).

# Selcall Rx Decode Setup Form

The Conventional Programming Application provides a default set of options for how the radio responds to incoming calls that match the radio's unique identity. These are the ringing pattern the radio gives, how long the radio rings and whether or not an auto acknowledge is sent. These options can be customised in the Selcall Rx Decode Setup form. The Selcall Rx Decode form is shown below.

Rx Decode Global Settings:		
Alert/Ring Pattern	Sequence 1: 11011000	Sequence 2: 11111000
Internal Alert Duration	30 sec	30 sec
Auto Acknowledge	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Priority Call Decode:	
Alert/Ring Pattern	11111110
Internal Alert Duration	250 sec
Auto Acknowledge	<input checked="" type="checkbox"/>

Group Call Decode:	
Alert/Ring Pattern	10101010
Internal Alert Duration	5 sec
Auto Acknowledge	<input type="checkbox"/>

Buttons: OK, Cancel, Print, Help

For each call type, the following options can be customised:

- the ringing pattern ([Alert/Ring Pattern](#) field)
- how long the radio rings ([Internal Alert Duration](#) field)
- whether an auto acknowledge is sent ([Auto Acknowledge](#) field)

See [page 86](#) for instructions on setting each field.

## Rx Decode Global Settings

The Rx Decode Global Settings fields determine the radio's response to receiving a Selcall call that matches one of the radio's [Rx decode sequences](#), which are defined in the [Selcall Identity \(Rx\)](#) tab.

For each Rx decode sequence, set an [Alert/Ring Pattern](#), an [Internal Alert Duration](#) and enable or disable [Auto Acknowledge](#).

### Rx decode sequence

*The Rx decode sequence is the radio's unique identity on a Selcall system. When the radio's Rx decode sequence is decoded as the receiver identity in an incoming Selcall sequence, the radio recognises the sequence as intended for it and responds appropriately.*

## Priority Call Decode

The Priority Call Decode fields determine the radio's response to receiving a call that has the [priority call control status](#) in the **S** burst.

Set an [Alert/Ring Pattern](#), an [Internal Alert Duration](#) and enable or disable [Auto Acknowledge](#) priority calls.

## Group Call Decode

The Group Call Decode fields determines the radio's response to receiving a group call.

Set an [Alert/Ring Pattern](#), an [Internal Alert Duration](#) and enable or disable [Auto Acknowledge](#) for group calls.

Enabling Auto Acknowledge is not recommended for group calls.

## Alert/Ring Pattern

The Alert/Ring Pattern field determines the pattern of the caller alert the radio gives when the call type is received.

Enter an 8-digit code using 1s and 0s, where a 1 indicates a tone and a 0 indicates a gap. For example, the code 11110000 would sound as one long ring followed by a pause of equal length, and the code 11001100 would sound as a short ring followed by a pause, then another short ring and another pause.

This alert/ring pattern for each type of call should be distinct from the alert/ring pattern for other calls.

## Internal Alert Duration

The Internal Alert Duration field sets the time the call type remains unanswered before the radio enters the unanswered call state. Set a value from 0 to 250 seconds in steps of 1 second. If set to 0, the radio rings until answered.

## Auto Acknowledge

The Auto Acknowledge field determines whether an [auto acknowledge](#) is sent when the call type is received. If this field is enabled, the auto acknowledge sequence defined for the current [Selcall system](#) ([Selcall Sequences \(Tx\)](#) tab) is sent. If no sequence is defined, no auto acknowledge is sent.

### priority call

*A priority call is a Selcall sequence that has a priority control status appended. When the receiving radio decodes the priority status digit, it alerts the user that a priority call has been received and clears down any call in progress that is not a priority call.*

### control status

*A control status is a status digit that when received, initiate a particular radio operation. For example, when a radio receives a quiet interrogation status digit, it transmits its auto acknowledge sequence with its current status appended without activating the call received indicator.*

### group call

*A Selcall call can be made to a group of radios by including a group tone in the Selcall sequence.*

### auto acknowledge

*When a radio receives a Selcall sequence that contains its identity, it can be programmed to transmit an auto acknowledge sequence.*

# Selcall Control Status Definitions Form

---

An additional one or two tones can be added to a Selcall sequence to indicate the caller's present activity, or status. A Selcall sequence can also include a status that initiates a particular radio operation, called a control status. Status messages and control status are set up in the Selcall Control Status Definitions form.

The Selcall Control Status Definitions form has two tabs.

- Set control status in the [Control Status](#) tab.
- Set status messages in the [Status Labels](#) tab.

For more information on control status and status labels, see:

- [“Status Messages and Control Status” on page 160](#)

## Control Status Tab

Control status are set in the Control Status tab. The Control Status tab is shown below.

The screenshot shows a software window titled "Selcall Control Status Definitions". It has two tabs: "Control Status" (selected) and "Status Labels". The "Control Status" tab contains five rows of labels and input fields:

Priority Call Control Status	15
Quiet Interrogation Control Status	14
Activate Stun Control Status	13
Deactivate Stun Control Status	12
Data Control Status	11

At the bottom of the window are four buttons: "OK", "Cancel", "Print", and "Help".

The Control Status tab provides for special [control status](#). Set each control status to a valid [status digit](#). If the receive format has one S, then there are 16 possible status digits, numbered 0 to 15. If the receive format has two Ss, there are 100 possible status digits, numbered from 0 to 99.

If a radio is operating on Selcall systems that have a mix of no status or one-tone (0 to 15) and two-tone (0 to 99) status bursts:

- no status digits are valid on systems that do not include status in the receive format

- status digits 16 to 99 are not valid on systems that have only one status tone.

Each control status should be set to the same value for all radios in a fleet.

### **Priority Call Control Status**

The Priority Call Control Status field sets the [status digit](#) that when received identifies a call as a priority call. The radio activates the alert specified for priority calls in the [Selcall Rx Decode Setup](#) form.

### **Quiet Interrogation Control Status**

The Quiet Interrogation Control Status field sets the [status digit](#) that when received causes the radio to transmit the [auto acknowledge](#) sequence for the current Selcall system without alerting the radio user to the receipt of the Selcall sequence.

### **Activate Stun Control Status**

The Activate Stun Control Status field sets the [status digit](#) that when received causes the radio to cease normal operation. The radio resumes normal operation when the [Deactivate Stun Control Status](#) is received.

### **Deactivate Stun Control Status**

The Deactivate Stun Control Status field sets the [status digit](#) that when received causes a stunned radio to resume normal operation.

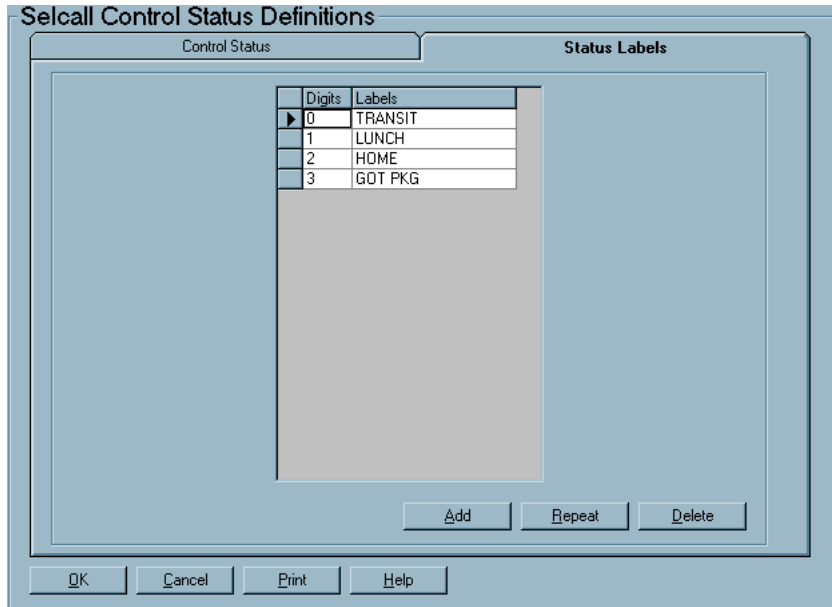
### **Data Control Status**

The Data Control Status field sets the [status digit](#) that when received causes the radio to deactivate Selcall decoding and activate data decoding. This allows data to be received over the air on Selcall channels.



## Status Labels Tab

Status messages are available on [Orca Eclipse](#) and [Orca 5020](#) radios and are set in the Status Labels tab. The Status Labels tab is shown below.



Select the Add button or press the F2 key to add a status message, select the Delete button or press the F3 key to delete the currently selected status message, or select the Repeat button to duplicate the current status message's label. Up to 100 status messages can be defined.

### Digit

The Digit field sets the [status digit](#) that is transmitted. Enter a value from 0 to 99.

### Label

The Label field sets the [status label](#) associated with the [status digit](#).

Enter a name of up to 8 characters from:

A to Z 0 to 9 ! # \$ % ^ & \* + - = { } ( ) [ ] < > : ; ? | , . \_  
" ' space

# Custom Selcall Tone Set Form

There are a number of internationally accepted standard [tone sets](#) available that determine the frequencies used for each of the 16 tones used to make up Selcall sequences. The Conventional Programming Application offers nine of these standard tone sets. If, however, you wish to create your own tone set or reorder an existing tone set, that custom tone set can be configured in the Custom Selcall Tone Set form. The Custom Selcall Tone Set form is shown below.

## tone set

*The tone set is the set of frequencies represented by the characters 0-9 and A-F used to make up Selcall sequences.*

Tone Set to Define	Frequency in Hz	Tone
CCIR	1981	0
	1124	1
	1197	2
	1275	3
	1358	4
	1446	5
	1540	6
	1640	7
	1747	8
	1860	9
	2400	A
	930	B
	2247	C
	991	D
	2110	E
	1055	F

For more information on tone sets, see:

- [“Selcall Tone Transmission” on page 157](#)

There are two ways you can define your own tone set, and the option chosen affects how you use this form. You can:

- [reorder the frequency values of an existing tone set](#) or
- [enter your own values.](#)

You must set the [Tone Set](#) field ([Selcall Tone Options](#) tab) to User Defined to make use of the custom tone set. Only one custom tone set is available on each radio.

## Reordering a Tone Set

If you wish to reorder an existing tone set, choose the name of that tone set from the Tone Set to Define field. In the right-hand column, enter the tone (0 to 9, A to F) you wish to correspond to the frequency displayed. Use each tone only once. You cannot change the values in the left-hand column.

## Defining a Custom Tone Set

If you wish to define your own tone set, choose Non Standard from the Tone Set to Define field. The values in the left-hand column are set to default values, and you cannot change the values in the right-hand column.

In the left-hand column, enter the frequency you wish to correspond to the tone displayed. Each tone should be a different frequency, chosen from the Tone column of the [Custom Selcall Tone Set Tone Frequencies and Their Tolerance Ranges](#) table.

The frequencies available for the custom tone set are limited, so if you wish to use a frequency that is not available (e.g. 1500 to 1700 Hz), consider reordering an existing tone set as described in “[Reordering a Tone Set](#)” on page 90.

In the [Tone Set](#) field of the [Selcall Tone Options](#) tab, you need to select Custom Selcall Tone Set in order to use the tone set defined in this form.

## Custom Selcall Tone Set Tone Frequencies and Their Tolerance Ranges

In the table below, Tone is the frequency used when the radio transmits a Selcall sequence. Tolerance is the lower and upper limit of the range of frequencies that Tait Orca radios decode as the stated tone in received Selcall sequences. For this reason, the Tolerance for defined tones cannot overlap.

Tone	Tolerance	Tone	Tolerance	Tone	Tolerance	Tone	Tolerance
571	540-589	941	922-960	1275	1257-1298	1995	1950-2036
600	570-618	970	951-989	1305	1287-1328	2000	1955-2041
631	603-649	991	973-1010	1336	1318-1360	2010	1965-2052
680	654-698	1023	1005-1043	1358	1339-1382	2110	2057-2155
697	671-715	1040	1022-1060	1400	1381-1425	2151	2095-2198
740	716-758	1055	1037-1075	1446	1426-1472	2200	2140-2249
741	717-759	1060	1042-1080	1477	1456-1504	2205	2145-2254
770	747-788	1091	1074-1111	1728	1698-1761	2247	2183-2298
810	788-828	1124	1107-1145	1747	1716-1780	2292	2224-2345
825	803-843	1160	1143-1181	1805	1772-1840	2400	2322-2457
852	831-870	1164	1147-1185	1830	1795-1866	2433	2352-2492
882	862-901	1197	1180-1219	1860	1824-1897	2437	2356-2496
885	865-904	1209	1192-1231	1869	1832-1906	2600	2501-2667
930	911-949	1270	1252-1293	1981	1937-2022		



# Part 5: Special Features

This part contains detailed information on setting up special features such as economy mode, DTMF, alpha symbols and data operation.

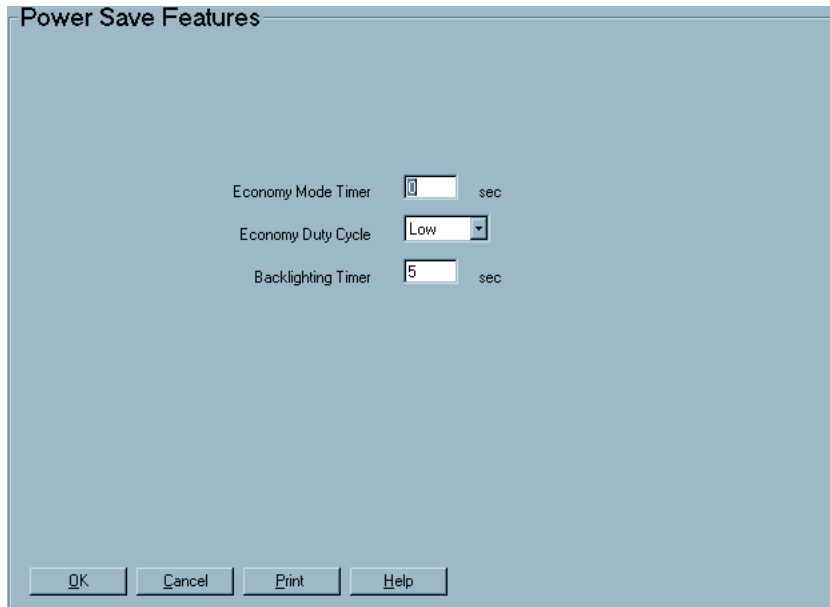
## Forms

- [Power Save Features Form](#)
- [DTMF Form](#)
- [Alpha Symbols Form](#)
- [Data Parameters Form](#)



# Power Save Features Form

[Economy mode](#) is set up in the Power Save Features form. The Power Save Features form is shown below.



For more information, see:

- [“Reducing Power Consumption on Tait Orca Radios” on page 166](#)
- [“Economy Mode” on page 166](#)
- [“Backlighting” on page 168](#)

## economy mode

*Economy mode reduces the radio’s power consumption when it is idle. When economy mode is active, and there has been no valid activity on a channel for the duration of the economy mode timer, the radio begins economy cycling.*

## Economy Mode Timer

The Economy Mode Timer field sets the duration of the [economy mode timer](#). Enter a value between 1 and 240 seconds in steps of 1 second. Setting this field to 0 disables economy mode.

If economy mode is enabled and the radio has not been programmed to turn economy mode on and off (function key setting, or through [user function menu entry mode](#) on [Orca Eclipse](#) and [Orca 5020](#) radios), then it is recommended to set [Economy Mode Control](#) (in the [User Selectable Parameters](#) form) to On.

## Economy Duty Cycle

The Economy Duty Cycle field sets the amount of time the radio is in standby mode before sampling activity on a channel.

- Low: 200 ms standby

■ Medium: 500 ms standby

■ High: 800 ms standby.

If both [Selcall](#) and [economy mode](#) are enabled, the [Lead In Delay](#) field ([Selcall Tone Options](#) tab) for other radios in the fleet needs to be set to at least 100 ms longer than that of the duty cycle, e.g. for a duty cycle setting of Medium, the Lead In Delay on other radios should be set to no less than 600 ms. Otherwise the incoming [Selcall sequence](#) may not be detected reliably.

If Selcall is being used on a [repeater](#) system, Economy Duty Cycle should not be set to High. See [“Using Economy Mode with Selcall” on page 167](#) for more information.

## Backlighting Timer

The Backlighting Timer field sets the duration of the [backlighting timer](#). Enter a value between 1 and 10 seconds in steps of 1 second.

See [“Backlighting” on page 168](#) for more information.

### repeater

*A repeater receives a radio signal and retransmits it. Use of a repeater increases the coverage area of a two-way radio system and ensures more reliable performance in areas where signals are reflected or attenuated by buildings or terrain.*

### backlighting

*The radio's LCD lights up when there is activity on the radio, such as when a key is pressed or when a call is received.*

### backlighting timer

*The backlighting timer determines how long backlighting remains on once it is activated. There are two ways backlighting can be activated, and how it was activated affects how the backlighting timer operates.*



# DTMF Form

DTMF options are set in the DTMF form. The DTMF form has three tabs.

- DTMF features, including how DTMF tones are encoded, are set in the [DTMF Dialling](#) tab.
- DTMF ANI and emergency options are set in the [DTMF ANI](#) tab (Orca 5010/5015/5020 radios only).
- DTMF preset calls are defined in the [DTMF Presets](#) tab.

For more information on DTMF, see:

- [“Introduction to DTMF” on page 162](#)
- [“DTMF Presets” on page 163](#)
- [“DTMF Dialling” on page 164](#)

## DTMF

*DTMF (dual tone multiple frequency) is the tone-based system used for the world’s telephone networks. A DTMF “tone” actually consists of a pair of tones. DTMF tones are sometimes referred to as “touch tones”.*

## DTMF Dialling Tab

How DTMF tones are encoded and DTMF dialling features are set in the DTMF Dialling tab. The DTMF Dialling tab is shown below.

The screenshot shows a configuration window titled "DTMF" with three tabs: "DTMF Dialling" (selected), "DTMF ANI", and "DTMF Presets". The "DTMF Dialling" tab contains the following settings:

Manual DTMF Dialling	<input type="checkbox"/>
DTMF Dialling Type Buffered	<input type="checkbox"/>
PTT as Shift Key	<input type="checkbox"/>
DTMF Redial Transmission	<input type="checkbox"/>
DTMF Mode Selcall A.N.I. Transmission	<input checked="" type="checkbox"/>
Transmit Key Up Delay	<input type="text" value="500"/> ms
Interdigit Tx Hold Time	<input type="text" value="1000"/> ms
Minimum Tone Duration (0 - 9, A - D)	<input type="text" value="60"/> ms
Minimum Tone Duration (*, #)	<input type="text" value="60"/> ms
Minimum Intertone Gap	<input type="text" value="10"/> ms

At the bottom of the window are buttons for "OK", "Cancel", "Print", and "Help".

## Manual DTMF Dialling

The Manual DTMF Dialling field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

- Enabled: DTMF calls can be made from the numeric keypad.
- Disabled: The radio can only send preset DTMF numbers, if programmed to do so.

## DTMF Dialling Type Buffered

The DTMF Dialling Type Buffered field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

The DTMF Dialling Type Buffered field determines whether the dialling type is [normal dialling](#) or [buffered dialling](#). If this field is ticked, then the dialling type is buffered.

## PTT as Shift Key

The PTT as Shift Key field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

If the user wishes to dial tones A to D or a pause, the PTT can be used as a shift key in conjunction with the numeric keypad. For example, on the [Orca Excel](#):

PTT + **2** = A

PTT + **5** = B

PTT + **8** = C

PTT + **0** = D

PTT + **1** = pause

So pressing the PTT key, holding it, then pressing the **2** key enters tone A in the DTMF string. Pressing the PTT, holding it, and then pressing the **1** key enters a pause in the string. A hyphen is entered in the display to indicate the pause.

Enable PTT as Shift Key if the user will need to dial tones A to D and pauses.

## DTMF Redial Transmission

The DTMF Redial Transmission field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

When DTMF Redial Transmission is enabled, the user can retransmit the last DTMF call by pressing the enter/accept key when in DTMF dialling mode.

When the radio enters DTMF dialling mode and this function is enabled, the DTMF string transmitted when the radio was last in DTMF dialling mode is displayed. If this is the string the user wishes to transmit, they only have to press the enter/accept key to transmit the string again.

## DTMF Mode Selcall ANI Transmission

The DTMF Mode Selcall ANI Transmission field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

If DTMF Mode Selcall ANI Transmission is enabled, the Selcall ANI sequence for the current channel can still be sent when a DTMF call is made. Some systems may experience interference if an ANI sequence is sent during a DTMF transmission, and in this case this field should be disabled.

## Transmit Key Up Delay

The Transmit Key Up Delay field sets a delay for the start of tone transmissions so that a repeater has time to stabilise.

Enter a value from 10 to 2550 ms in steps of 10 ms.

## Interdigit Tx Hold Time

The Interdigit Tx Hold Time field does not apply to [Orca Elan](#) and [Orca 5010](#) radios.

The Interdigit Tx Hold Time field determines how long the radio keeps transmitting between the encoding of each tone. This provides a delay for the user to dial the next digit without transmission stopping and restarting again. Some systems require continuous transmission between DTMF tones and therefore a long hold time.

Enter a value between 10 and 2550 ms, in steps of 10 ms.

## Minimum Tone Duration (0-9, A-D)

The Minimum Tone Duration (0-9, A-D) field sets the minimum amount of time tones 0 to 9 and A to D are encoded.

Enter a value from 10 to 1020 ms in steps of 10 ms.

## Minimum Tone Duration (\*, #)

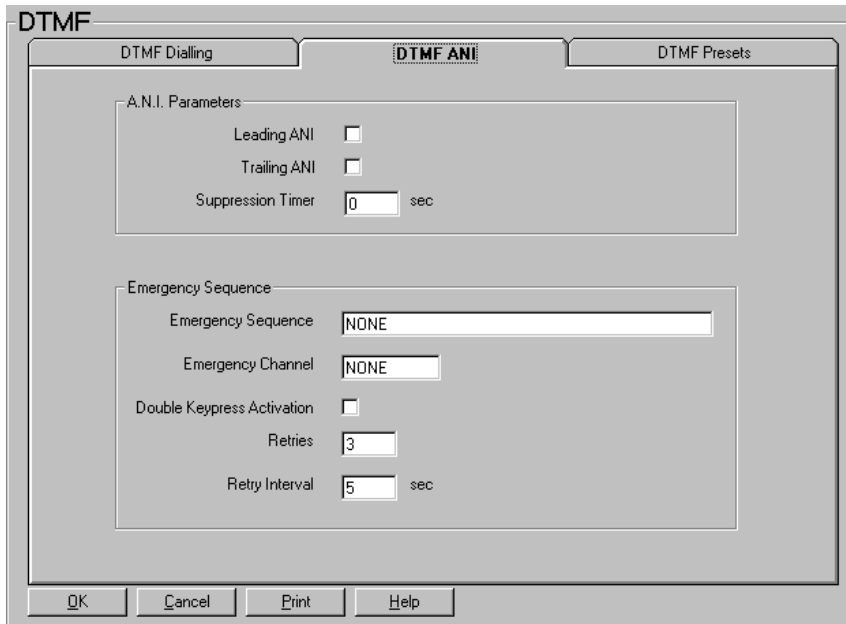
The Minimum Tone Duration (\*, #) field sets the minimum amount of time tones \* and # are encoded. Enter a value from 10 to 1020 ms in steps of 10 ms.

## Minimum Intertone Gap

The Minimum Intertone Gap field sets the minimum amount of time between encoded tones. Enter a value from 10 to 500 ms in steps of 10 ms.

## DTMF ANI Tab

DTMF ANI options and emergency options are set in the DTMF ANI tab (Orca 5010/5015/5020 radios only). The DTMF ANI tab is shown below.



The image shows a software window titled "DTMF" with three tabs: "DTMF Dialling", "DTMF ANI", and "DTMF Presets". The "DTMF ANI" tab is active. It contains two main sections: "A.N.I. Parameters" and "Emergency Sequence".

**A.N.I. Parameters:**

- Leading ANI:
- Trailing ANI:
- Suppression Timer:  sec

**Emergency Sequence:**

- Emergency Sequence:
- Emergency Channel:
- Double Keypress Activation:
- Retries:
- Retry Interval:  sec

At the bottom of the window are four buttons: "OK", "Cancel", "Print", and "Help".

### Leading ANI

The Leading ANI field determines if the corresponding DTMF preset is sent whenever the PTT is pressed. If checked, the ANI sequence is sent when the PTT is pressed, if the [Suppression Timer](#) has expired. If unchecked, the ANI sequence is not sent when the PTT is pressed.

The preset will only be sent if the current channel has a [DTMF ID](#) and does not have a [Selcall System](#) associated with it.

### Trailing ANI

The Trailing ANI field determines if the corresponding DTMF preset is sent whenever the PTT is released. If checked, the ANI sequence is sent when the PTT is released, if the [Suppression Timer](#) has expired. If unchecked, the ANI sequence is not sent when the PTT is released.

The preset will only be sent if the current channel has a [DTMF ID](#) and does not have a [Selcall System](#) associated with it.

### Suppression Timer

The Suppression Timer field sets the amount of time between the end of the transmission of the ANI sequence and when it is next transmitted, if the PTT has been pressed.

Set this field to between 0 and 120 seconds in steps of 1 second.

## Emergency Sequence

Emergency Sequence defines the DTMF sequence that will be sent when an emergency call is requested (either automatically or via a function key). The sequence must be between 2 and 32 digits.

## Emergency Channel

Emergency Channel sets the channel that the DTMF Emergency Sequence will be sent on. If no channel is selected then the sequence will be sent on the current channel if DTMF is enabled on it, otherwise the radio will change to the first channel that it is able to transmit DTMF.

## Double Keypress Activation

When the Double Keypress Activation field is enabled, the radio user must press the function key twice before the radio goes into emergency mode. If the emergency call is assigned to a short keypress, the two keypresses must be made within 3 seconds. If the emergency call is assigned to a long keypress, the two keypresses must come within 5 seconds. When the Double Keypress Activation field is disabled and the Emergency option is assigned to a long keypress, the radio user must press the function key for 2 seconds or more in order to activate emergency mode. A keypress of less than 2 seconds is regarded as a short keypress.

## Retries

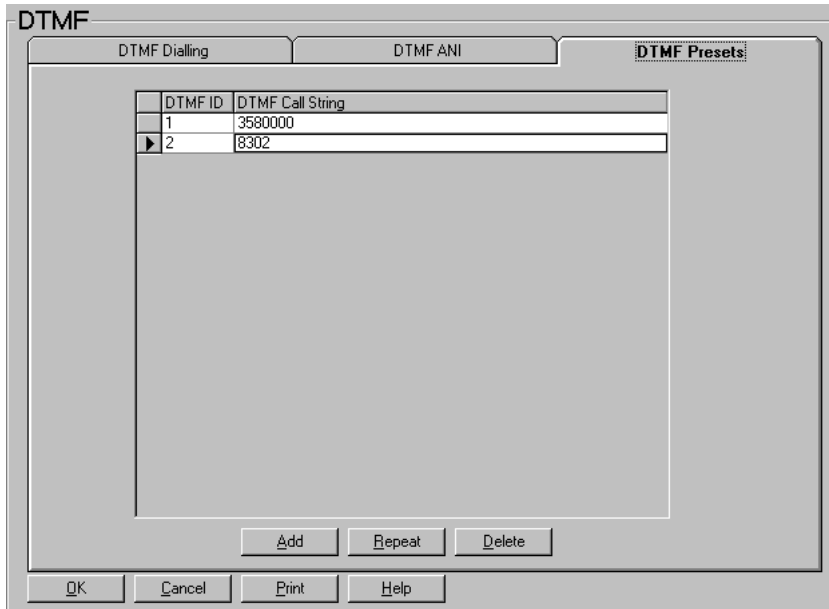
The Retries field sets how many times the DTMF [Emergency Sequence](#) is sent. Select a number of retries between 1 and 25. Enter 0 for the radio to continue to send the emergency sequence until it is reset. The delay between each emergency sequence transmission is set in the [Retry Interval](#) field.

## Retry Interval

The Retry Interval sets the time between each DTMF emergency sequence transmission. Enter a time between 5 and 255 seconds, in steps of 5 seconds. The number of times the emergency sequence is sent is set in the [Retries](#) field.

## DTMF Presets Tab

DTMF presets are defined in the DTMF Presets tab. The DTMF Presets tab is shown below.



Select the Add button or press the F2 key to add a new preset, select the Delete button or press the F3 key to delete the currently selected preset, or select the Repeat button to duplicate the current preset's call string.

Up to 20 presets can be defined. These calls can be made by pressing an assigned function key (on all radios) or by pressing the DTMF key (on [Orca 5015](#), [Orca Excel](#) and [Orca Eclipse](#) radios).

If DTMF ANI is enabled and the DTMF ID is associated with the current channel, then the Preset Call String will be sent each time the PTT is pressed or released.

Each preset must have a:

- [DTMF ID](#)
- [Preset Call String](#)

### DTMF ID

The DTMF ID field sets the preset ID number a DTMF call string is associated with. Enter a number from 1 to 20. To assign a DTMF preset to a particular channel, enter this DTMF ID in the DTMF ID field in the [Channels](#) form.

### Preset Call String

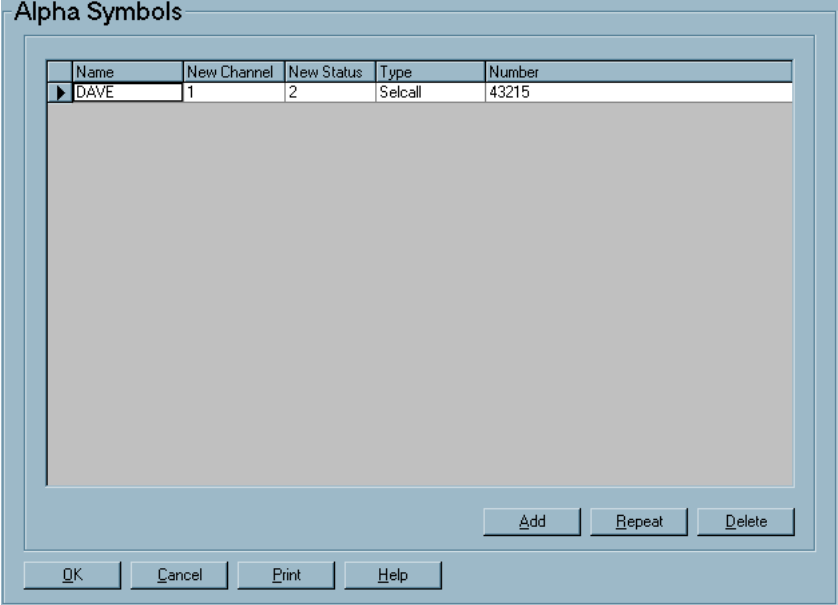
The Preset Call String field sets the preset's [DTMF string](#). A valid string consists of between 1 and 32 characters from 0 to 9, A to D, # or \*. You can also enter a space, which is transmitted as a pause.



# Alpha Symbols Form

---

Alpha symbols are defined in the Alpha Symbols form. The Alpha Symbols form is shown below.



Name	New Channel	New Status	Type	Number
▶ DAVE	1	2	Selcall	43215

Buttons: Add, Repeat, Delete, OK, Cancel, Print, Help

For [Orca Elan](#), [Orca Excel](#), [Orca 5010](#) and [Orca 5015](#) radios, only one alpha symbol can be defined. This alpha symbol can be assigned as a function key call by selecting [One Touch](#) for one of the function key settings ([Key Settings I](#) tab). For [Orca Eclipse](#) and [Orca 5020](#) radios, up to 20 alpha symbols can be defined.

Select the Add button or press the F2 key to add a new alpha symbol, select the Delete button or press the F3 key to delete the currently selected alpha symbol, or select the Repeat button to duplicate the current alpha symbol's [New Channel](#), [New Status](#), [Signalling Type](#), and [Signalling Number](#).

## Symbol Name

The Symbol Name field can only be set for [Orca Eclipse](#) and [Orca 5020](#) radios and sets the symbol's name, which can be up to 8 characters from:

A to Z 0 to 9 -

Because the user must be able to spell out the symbol name using the radio keypad, the characters allowed for Symbol Name are different than for other labels. The symbol name must be unique.

The radio user selects alpha symbols in one of two ways.






- Selecting the required alpha symbol from the list of those available: The user scrolls through the list of sequences



until the required sequence is shown. Alpha symbols appear in the list in the order in which they are programmed in the Alpha Symbols form and so it may be useful to add alpha symbols to the list in alphabetical order. Consider, however, that only the first symbol in the list can be assigned to a function key setting as the [one touch call](#).

- Searching for a specific alpha symbol by entering its label via the keypad: The user spells out the required alpha symbol's label. An example of the searching process is shown below.

Table 3: Searching for a specific alpha symbol (BASE) in alphanumeric entry mode

Press Key	Display Reads	Explanation
	CHARLIE	Enter alphanumeric entry mode. The last symbol invoked (CHARLIE) is displayed.
	?	2 represents 2, A, B and C. The radio cannot yet determine a unique label so displays ?
	??	The radio cannot yet determine a unique label.
	BASE	The unique label has been identified upon a press of the key corresponding to the letter S.
	BASE	The command sequence associated with the alpha symbol BASE is carried out.

If the radio cannot uniquely identify a label, it displays a question mark for each character entered. Once the user has entered enough characters to uniquely identify the label, the radio displays that label. If the label cannot be identified, the display shows a series of question marks. Because each alphanumeric key corresponds to more than one character, care should be taken in selecting the names of alpha symbols. Characters are grouped together as follows.

1 -	2 A B C	3 D E F
4 G H I	5 J K L	6 M N O
7 P Q R S	8 T U V	9 W X Y Z
*	0	#

## New Channel

The New Channel field sets the channel or group number ([Channels](#) and [Scan Groups](#) forms) to be selected when the alpha symbol is selected. Enter a valid channel or group ID or NONE if the channel is not to be changed when the alpha symbol is selected. On [Orca Elan](#) and [Orca 5010](#) radios, this field must be set to NONE.

## New Status

The New Status field applies only to [Orca Eclipse](#) and [Orca 5020](#) radios.

The New Status field sets the status to be selected when the alpha symbol is selected. Enter NONE for no new status, or the [status digit](#) of an existing [status message](#).

If no [New Channel](#) is set (the field is set to NONE), New Status can be set to NONE or the digit of any existing status label; however, the new status is not necessarily valid on all channels. For example, if New Status is set to 78 and the channel selected when the symbol key is pressed is permitted only 16 status messages, the status is changed but it is not transmitted.

## Signalling Type

The Signalling Type field sets a call signalling type for the alpha symbol, which determines the signalling sequence used when the symbol is activated. Enter Selcall, DTMF or NONE.

If the [New Channel](#) field is set to NONE and Signalling Type is set to Selcall, then Selcall must be enabled ([Selcall Identity \(Rx\)](#) tab) or the Selcall call assigned to the symbol is not transmitted. If [New Channel](#) is set to a specific channel, then a [Selcall system](#) must be assigned to that channel or the Selcall call assigned to the symbol will not be transmitted.

Note that for alpha symbols set as Selcall calls, the label for that symbol can be displayed when a call from that party is received. [Automatic Caller Identification](#) must be enabled ([Selcall Features](#) form) for this feature to operate correctly. When the C burst ([caller identity](#)) for an incoming call matches the C burst for the call string set as [Signalling Number](#) for an alpha symbol, that symbol's label is displayed for the caller identity.

## Signalling Number

The Signalling Number field sets the [Selcall sequence](#) or [DTMF string](#) that is transmitted when the alpha symbol is selected. The [Signalling Type](#) field must be set to Selcall or DTMF before the Signalling Number can be set.

If [Signalling Type](#) is Selcall, enter a valid Selcall sequence from 1 to 8 tones long using characters 0 to 9, A to D and F. This sequence should be the receiver identity. The repeater identity, caller identity and status should not be included as they are read from the [fixed call sequence](#) for the [Selcall system](#) associated with the channel the radio is on when the alpha symbol is selected or the channel the radio switches to as part of the alpha symbol command sequence. For this reason, the [Fixed Call Sequence](#) field in the [Selcall Identity \(Rx\)](#) tab should be set for the Selcall system the call is made on. If the sequence entered for Signalling Number is fewer digits than the fixed call sequence, the remaining digits are substituted from the fixed call sequence when the alpha symbol is executed.

If Signalling Type is DTMF, enter a valid [DTMF string](#). See [“Introduction to DTMF” on page 162](#) for more information.

# Data Parameters Form

The computer controlled data interface (CCDI) provides a means of controlling Tait Orca radios from some form of computer equipment. The CCDI allows for the implementation of semi- and fully-automatic communications systems such as computerised despatch terminals, remote outstations and data radio terminals. The Data Parameters form is shown below.

**Data Parameters**

Computer Controlled Data Interface

Data Option

Transparent Mode Auto Start

Transparent Mode Baud Rate 9600

Disable Transparent Mode Escape Sequence

XON Character NONE

XOFF Character NONE

Short Data Messaging

SDM Option

SDM Auto Acknowledge

SDM Auto Acknowledge Delay 500 ms

SDM Wait For Acknowledgement 6 sec

Data

Data Identity NONE

Data Lead In Delay 500 ms

Ignore Subaudible Signalling

OK Cancel Print Help

## Data Option

The Data Option field enables data operation via the [computer controlled data interface](#).

## Transparent Mode Auto Start

The Transparent Mode Auto Start field applies to [Orca 5010](#) and [Orca 5020](#) radios.

When the Transparent Mode Auto Start field is enabled, the radio will power up in transparent mode. In transparent mode, the radio acts as a modem, automatically retransmitting data it receives.

## Transparent Mode Baud Rate

The Transparent Mode Baud Rate field applies to [Orca 5010](#) and [Orca 5020](#) radios.

The Transparent Mode Baud Rate field determines the data transfer rate while the radio is in transparent mode.

### computer controlled data interface

*The computer controlled data interface (CCDI) provides a means of controlling Tait Orca conventional radios from some form of computer equipment. The CCDI allows for the implementation of semi- and fully-automatic communications systems such as short data messaging (SDMs), computerised despatch terminals, remote outstations and data radio terminals.*

## Disable Transparent Mode Auto Escape Sequence

The Disable Transparent Mode Escape Sequence field applies to [Orca 5010](#) and [Orca 5020](#) radios.

When the Disable Transparent Mode Escape Sequence field is selected, the radio will ignore any incoming escape sequence instructing it to exit transparent mode.

## XON/OFF Character

Handshaking allows control over the flow of data being sent and prevents data from being lost between the radio and the computer equipment communicating with it in [CCDI mode](#). Two fields must be set, XON Character and XOFF Character.

XON Character sets the character that indicates the start of a flow of data, and XOFF Character sets the character that indicates the end of a flow of data.

Set both fields to a hexadecimal number between 0 and FF.

## Inhibit RTS Signal

The Inhibit RTS Signal field applies to the [Tait Radio Modem](#) only.

Request to Send (RTS) and Clear to Send (CTS) are serial communication handshaking signals and are only operational when the radio operates in transparent mode. In transparent mode, the radio acts as a modem, automatically retransmitting data it receives. RTS (high at PC end) is an input signal to the [Tait Radio Modem](#) for manual activation of transmission.

The data modem can be used with or without the RTS signal. RTS is used to give greater control of when the radio transmits by reducing the data delay. When RTS is not used, the radio only starts to transmit when it has received at least one serial input data byte.

If RTS is detected (high at PC end), the radio starts transmitting.

If RTS is detected and input buffer is empty, the radio will keep transmitting (carrier + signalling only).

If RTS is detected and input buffer is not empty, the radio sends the received data in a block format.

If RTS is off (low at PC end) and input buffer is not empty, the radio will send data until the input buffer becomes empty. Once empty, the radio will stop transmitting after approximately 20ms.

**NOTE:** If the option "Inhibit RTS Signal" is ticked, then when RTS is on without any input serial data, the radio does not start transmitting.

## Inhibit CTS Signal

The Inhibit CTS Signal field applies to the [Tait Radio Modem](#) only.

Clear to Send (CTS) and Request to Send (RTS) are serial communication handshaking signals and are only operational when the radio operates in transparent mode. In transparent mode, the radio acts as a modem, automatically retransmitting data it receives. CTS is an output signal from the [Tait Radio Modem](#), indicating that no further serial data should be sent to the radio.

When the Tait Radio Modem cannot receive any more serial data, the CTS signal from the Tait Radio Modem switches off (low at PC end).

CTS switches off (low at PC end) if the channel becomes BUSY, during the [Data Lead In Delay](#), or if the input buffer exceeds 40 bytes from a total 60 byte buffer.

If the PC application software continues to send data while the CTS line is off, the data will continue to be stored until the 60 byte maximum. After that time incoming data will be ignored until there is room in the input buffer. CTS will turn on again when the buffer gets back to below 40 bytes.

At all other times the CTS is on (high at PC end).

**NOTE:** If the option "Inhibit CTS Signal" is ticked, then CTS will always be on, regardless of the above conditions for CTS-OFF.

## SDM Option

When the SDM Option field is enabled, the radio can send and receive short data messages (SDMs).

All radios can send and receive SDMs while connected to some form of computer equipment. [Orca Excel](#), [Orca Eclipse](#) and [Orca 5020](#) radios can display received SDMs on the radio display. On Orca Eclipse and Orca 5020 radios, SDMs can also be entered via the radio keypad.

## SDM Auto Acknowledge

When the SDM Auto Acknowledge field is enabled, the radio sends an auto acknowledge when it receives a short data message (SDM).

## SDM Auto Acknowledge Delay

The SDM Auto Acknowledge Delay field sets the delay between receiving a short data message (SDM) and sending an auto acknowledge.

Set a value from 100 to 12,000 ms in steps of 100 ms.

### auto acknowledge

*When a radio receives a Selcall sequence that contains its identity, it can be programmed to transmit an auto acknowledge sequence.*

## SDM Wait For Acknowledgement

The SDM Wait For Acknowledgement field sets the delay before the radio indicates that transmission of the short data message (SDM) has failed, if no auto acknowledge response is received.

Set a value from 1 to 20 seconds in steps of 1 second.

## Data Identity

The Data Identity field sets the radio's identity for operation in [CCDI mode](#).

The data identity must be 8 characters in length. Enter an identity using characters from A to Z, 0 to 9 and \*

## Data Lead In Delay

The Data Lead In Delay field sets duration of the lead-in delay for all [CCDI mode](#) transmissions.

Set a value from 40 to 5100 ms in steps of 20 ms.

## Ignore Subaudible Signalling

The Ignore Subaudible Signalling field determines whether the radio requires valid subaudible signalling before processing a data transmission.

- Enabled: All incoming data transmissions are processed regardless of subaudible signalling.
- Disabled: The radio only processes incoming data transmissions for which the subaudible signalling is valid.

### subaudible signalling

*Subaudible signalling is signalling that is at the bottom end of the range of audible frequencies. Tait Orca radios support CTCSS and DCS subaudible signalling.*





# Part 6: Radio Interface Options

This part contains detailed information setting radio interface options, such as function key settings and user menu options.

## Forms

- [User Defined Menu Form](#)
- [Key Settings Form](#)
- [User Selectable Parameters Form](#)
- [General Options form](#)



# User Defined Menu Form

Items that appear in the user menu of Orca 5020 radios are set in the User Defined Menu form. The User Defined Menu form is shown below. The information displayed is the

The screenshot shows the 'User Defined Menu' window. At the top, there is a title bar and a password input field with the text 'To edit Menu Labels please enter password'. Below this is a tree view of menu items. The items are: QUEUED CALLS (checked), SELECT CHANNEL (unchecked), SELECT BANK (unchecked), SEND SELCALL (checked), DIAL SELCALL (checked), SELECT STATUS (unchecked), SEND DTMF (unchecked), ALPHA SYMBOLS (unchecked), SEND SDM (unchecked), USER SETTINGS (checked), HANDSET (unchecked), LOW PWR (unchecked), KEYLOCK (unchecked), DTMF (checked and highlighted), ECONOMY (unchecked), SQUELCH (checked), MONITOR (checked), SQ OVRD (unchecked), ALERT SETTINGS (checked), TONES (unchecked), LEVEL (checked), and KEYTONE (unchecked). On the right side of the window, there are five buttons: 'Enable All', 'Disable All', 'Restore Default Text', 'Save as Default Text', and 'Restore Factory Settings'. At the bottom of the window, there are four buttons: 'OK', 'Cancel', 'Print', and 'Help'.

information that will appear in the radio's [user function menu](#). Ticking a top-level menu (for example, USER SETTINGS) will enable all of that menu's submenu functions, and unticking a top-level menu will disable all submenu functions.

## Enable All/Disable All

Click the Enable All button to enable all menu items, or the Disable All button to disable all menu items.

## Menu Labels

You can edit the menu labels by entering a password in the box at the top of the form. If you do not have a password, contact your local Tait office.

## Restore Default Text

If menu labels have been changed and you wish to use the default text, click the Restore Default Text menu button.

## Save as Default Text

If you wish to save a different set of menu labels as the default, click the Save as Default Text button.

## Restore Factory Settings

To restore the radio's factory settings, click the Restore Factory Settings button.

## Menu Options

The availability of some items depends on the value of fields in other forms. The functions available are outlined below:

---

### Menu Option: QUEUED CALLS

#### Description:

The QUEUED CALLS: menu option accesses the call queue. The radio only displays this option when at least one call has been queued.

This menu option is available when the field [Received Call Queuing](#) (Selcall Features form) is enabled.

---

### Menu Option: SELECT CHANNEL

#### Description:

The SELECT CHANNEL menu option allows the user to view and select from the list of channels.

#### Alternatives:

Channels numbered 1 to 16 are automatically accessible from the [16-way selector](#).

---

### Menu Option: SELECT BANK

#### Description:

The SELECT BANK menu option allows the user to select a new [channel bank](#). Channels can be accessed within the bank using the scroll keys, or the 16-way selector. This option must be enabled when the [16-way Selector Mode](#) is set to Channel Selection.

---

### Menu Option: DIAL SELCALL

#### Description:

The DIAL SELCALL menu option accesses [Selcall dialling](#) in which the user can dial a [Selcall sequence](#). The [Variable Call Sequence](#) (Selcall Sequences (Tx) tab) must be defined before Selcall dialling is enabled.

---

**Menu Option: SELECT STATUS****Description:**

The SELECT STATUS menu option allows the user to view and select from a list of [status labels](#). The selected status label's [status digit](#) will be transmitted the next time a Selcall call is made that includes variable status.

---

**Menu Option: SEND DTMF****Description:**

The SEND DTMF menu option accesses [DTMF dialling mode](#) where the user can make DTMF calls.

---

**Menu Option: ALPHA SYMBOLS****Description:**

The ALPHA SYMBOLS menu option allows the user to select from the list of [alpha symbols](#) programmed for the radio. To select this option, an alpha symbol must first be defined in the [Alpha Symbols](#) form.

---

**Menu Option: SEND SDM****Description:**

The SEND SDM menu option accesses [SDM entry mode](#) in which the user can enter and send a short data message (SDM). To select this option, short data messaging must be enabled in the [Data Parameters](#) form.

---

**Menu Option: HANDSET****Description:**

The HANDSET menu option turns [handset operation](#) on and off.

Handset mode automatically turns off after the handset inactivity timer expires. The handset inactivity timer is set in the [Key Settings II](#) tab.

---

**Menu Option: LOW PWR****Description:**

The LOW PWR menu option allows the user to turn the [low power transmit](#) feature on and off. Low power transmit overrides the power level setting programmed for the chan-

**handset operation**

*Tait Orca radios can be operated as a normal radio where the user holds the radio with the microphone about 15 cm away from the mouth or it can be operated like a telephone handset.*

*Handset mode is useful in noisy environments, when privacy is required or in quiet environments when the lowest volume setting seems too loud.*

nel in the [Channels](#) form so that the radio transmits at low power.

**Alternatives:**

Channels can be programmed to always transmit at low power ([Power Level](#) field, [Channels](#) form).

---

**Menu Option: KEYLOCK**

**Description:**

The KEYLOCK menu option allows the user to lock the keypad so the keys cannot be activated accidentally. Which keys are locked depends on how the radio was programmed ([Keypad Lock Disables](#), [Key Settings II](#) tab).

A long press of the clear key (✕) turns off keypad lock.

---

**Menu Option: DTMF**

**Description:**

The DTMF menu option allows the user to change the DTMF dialling type, which can be [normal dialling](#) or [buffered dialling](#).

---

**Menu Option: ECONOMY**

**Description:**

The ECONOMY menu option allows the user to turn [economy mode](#) on and off.

---

**Menu Option: SQUELCH**

**Description:**

The SQUELCH menu option allows the user to change the [squelch threshold](#), which can be city squelch or country squelch.

---

**Menu Option: MONITOR**

**Description:**

The MONITOR menu option allows the user to turn monitor on and off.

---

**Menu Option: SQ OVRD**

**Description:**

The SQ OVRD menu option allows the user to turn squelch override on and off.

**monitor**

*Monitor allows the radio user to override a channel's signalling and so hear all traffic on a channel.*

*The squelch feature ensures that the radio's speaker only unmutes when an intelligible signal is received. A signal is considered intelligible when it is strong enough to exceed a predetermined squelch threshold.*

---

**Menu Option: TONES****Description:**

The TONES menu option allows the user to turn [audible indicators](#) on and off.

---

**Menu Option: LEVEL****Description:**

The LEVEL menu option allows the user to change the level of [audible indicators](#). There are two options: HIGH and LOW.

---

**Menu Option: KEYTONE****Description:**

The KEYTONE menu option allows the user to turn [key-press confidence tones](#) on and off.

---

**Menu Option: NIGHT****Description:**

The NIGHT menu option allows the user to turn [night use](#) on and off.

---

**Menu Option: RSSI****Description:**

The RSSI menu option allows the user to turn the display of the [RSSI indicator](#) on and off.

---

**Menu Option: ADJUST CONTRAST****Description:**

The ADJUST CONTRAST menu option allows the user to adjust the contrast of the [LCD display](#).

---

**Menu Option: PROGRAM GROUP****Description:**

The PROGRAM GROUP menu option allows the user to access the [programmable scanning and voting groups](#) feature.

**keypress confidence tones**

*Keypress confidence tones are a confidence indicator that tells the radio user whether or not an action is permitted whenever a keypad key or function key is pressed.*

**night use**

*When the night use feature is on, the radio's backlighting activates whenever valid activity is detected, a key on the radio is pressed or when the radio receives a call. Backlighting remains on for the duration of the backlighting timer unless further activity is detected.*

---

**Menu Option: PROGRAM SIGNAL****Description:**

The PROGRAM SIGNAL menu option allows the user to access the [programmable channel signalling](#) feature.

---

**Menu Option: FW VER****Description:**

The FW VER menu option allows the user to view the radio firmware version number.

---

**Menu Option: HW VER****Description:**

The HW VER menu option allows the user to view the radio hardware version number.

---

**Menu Option: MAIN DB****Description:**

The MAIN DB menu option allows the user to view the programming software database version number.

---

**Menu Option: CAL DB****Description:**

The CAL DB menu option allows the user to view the calibration database version number.



# Key Settings Form

Function key, handset mode and keypad lock options are set in the Key Settings form.

The Key Settings form is divided into two tabs.

- Set function key options, including external function keys, in the [Key Settings I](#) tab.
- Set handset mode and keypad lock options in the [Key Settings II](#) tab.

## Key Settings I Tab

Set function key options, including handset mode options, in the Key Settings I tab. The Key Settings I tab is shown below.

The screenshot shows the 'Key Settings' dialog box with the 'Key Settings I' tab selected. The dialog is divided into two sections: 'Function Key Settings' and 'Function Key 3 / Short Menu Key'.  
In the 'Function Key Settings' section, there are two columns: 'Short Press' and 'Long Press'.  
- Function Key 1: Short Press is 'Audible Indicators', Long Press is 'Channel's DTMF Preset'.  
- Function Key 2: Short Press is 'Fixed Selcall Sequence', Long Press is 'Fixed Selcall Sequence'.  
- External Function Key 1: Both Short Press and Long Press are 'Disabled'.  
- External Function Key 2: Both Short Press and Long Press are 'Disabled'.  
In the 'Function Key 3 / Short Menu Key' section, there are two radio buttons: 'Function Key 3' (selected) and 'Short Menu Key'.  
- For 'Function Key 3': Short Press is 'Backlighting On/Off', Long Press is 'Night Use'.  
At the bottom of the dialog are buttons for 'OK', 'Cancel', 'Print', and 'Help'.

## Function Key Settings

Each radio has two function keys above the [PTT key](#). [Orca 5020](#) radios have a third function key, which is the leftmost key in the row of four keys underneath the [LCD display](#).

These radio function keys can have functions assigned to both short and long keypresses. A short keypress is less than one second. The radio user may need to experiment to become familiar with the duration of short and long keypresses.

The third function key on [Orca 5020](#) radios can also be operated as a “shortcut” to up to three [user function menu](#) options. The shortcut menu is a wrap around menu, with one press of the third function key accessing the option that

was last selected, and each subsequent press selecting the next option in a continuous loop. The user function menu options that will appear in the drop-down lists are those that are ticked in the [User Defined Menu](#) form.

Some radio accessories also have function keys, and most of the options available for the radio function keys are also available for external function keys.

---

### Function Key Option: Audible Indicators

#### Description:

Pressing the function key turns audible indicators on and off. Whether audible indicators are on or off when the radio powers up is determined by the Initial Setting for the Audible Indicators field ([User Selectable Parameters](#) form).

#### Applies To:

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

#### Alternatives:

On Orca Eclipse and Orca 5020 radios, audible indicators can be turned on and off from the [user function menu](#).

---

### Function Key Option: Backlighting On/Off

#### Description:

Pressing the function key activates display backlighting. Backlighting deactivates when the [backlighting timer](#) expires.

#### Applies To:

- ✗ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✗ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

#### Alternatives:

When the [night use](#) feature is on, the radio's backlighting is activated whenever [valid activity](#) is detected, a key on the radio is pressed or when the radio receives a call.

---

### Function Key Option: Channel's DTMF Preset

**Description:**

Pressing the function key transmits the DTMF preset call assigned to the current channel.

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

On Orca Excel and Eclipse radios, a long press of the DTMF key transmits the DTMF preset call assigned to the channel the radio is currently on.

---

### Function Key Option: Contrast

**Description:**

Pressing the function key allows the radio user to adjust the display contrast using the scroll key(s). The radio automatically returns to its previous mode of operation after a few seconds of inactivity. The contrast can be reset to the default by pressing and holding Function Key 2 while turning the radio on.

**Applies To:**

- ✗ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✗ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

On Orca Eclipse and Orca 5020 radios, the contrast adjust feature is available from the [user function menu](#). For the Orca Eclipse, to allow the radio user to adjust contrast via the user function menu, tick the In User Menu? box for the [Contrast Adjustment](#) field ([User Selectable Parameters](#) form). For the Orca 5020, select the [ADJUST CONTRAST](#) option from the [User Defined Menu Form](#).

---

## Function Key Option: Disable Monitor

### Description:

Pressing the function key deactivates monitor, if it is active.

### Applies To:

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

### Alternatives:

On Orca Excel and Eclipse radios, a short press of the monitor key (Orca Excel: ✕, Orca Eclipse: 🔊) disables monitor. On Orca 5020 radios, monitor can be disabled via the [user function menu](#).

The radio can be programmed so that monitor is deactivated upon the receipt of some Selcall sequences.

### monitor

*Monitor allows the radio user to override a channel's signalling and so hear all traffic on a channel.*

---

## Function Key Option: Economy Mode Control

### Description:

Pressing the function key turns economy mode on and off. Whether economy mode is on or off when the radio powers up is determined by the Initial Setting for the [Economy Mode Control](#) field ([User Selectable Parameters](#) form).

### Applies To:

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

### Alternatives:

On Orca Eclipse and Orca 5020 radios, economy mode can be turned on and off via the [user function menu](#).

### emergency mode

*When in emergency mode, the radio cycles between receiving and transmitting so that the called party can hear activity near the radio and so decide how to respond. The radio can be programmed so that all indicators remain unchanged while in emergency mode.*

---

## Function Key Option: Emergency - Selcall

### Description:

Pressing the function key transmits the Selcall emergency call sequence defined in the [Selcall Emergency Setup](#) form and puts the radio into [emergency mode](#).

The duration of keypresses for the Emergency option is different than for other function key options and depends on the setting of the [Double Keypress Activation \(Selcall Emergency Setup\)](#) form). See “[Double Keypress Activation](#)” on [page 80](#) for more information.

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

---

**Function Key Option: Emergency - DTMF**

**Description:**

Pressing the function key transmits the DTMF emergency call sequence defined in the [DTMF ANI](#) tab.

**Applies To:**

- ✗ Orca Elan
- ✗ Orca Excel
- ✗ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

---

**Function Key Option: Fixed Selcall Sequence**

**Description:**

Pressing the function key transmits the [fixed call sequence](#) defined in the [Selcall Sequences \(Tx\)](#) tab.

**Applies To:**

- ✗ Orca Elan
- ✗ Orca Excel
- ✗ Orca Eclipse
- ✓ Orca 5010
- ✗ Orca 5015
- ✓ Orca 5020

---

**Function Key Option: Handset Mode**

**Description:**

Pressing the function key turns [handset operation](#) on and off.

**handset operation**

*Tait Orca radios can be operated as a normal radio where the user holds the radio with the microphone about 15 cm away from the mouth or it can be operated like a telephone handset.*

*Handset mode is useful in noisy environments, when privacy is required or in quiet environments when the lowest volume setting seems too loud.*

Handset mode automatically turns off after the handset inactivity timer expires. The handset inactivity timer is set in the [Key Settings II](#) tab.

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

On Orca Eclipse and Orca 5020 radios, handset mode can be turned on and off via the [user function menu](#).

---

**Function Key Option: Keypad Lock**

**Description:**

Pressing the function key locks the keypad so the keys cannot be activated accidentally. Which keys are locked depends on how the radio was programmed ([Keypad Lock Disables](#), [Key Settings II](#) tab).

On Orca Excel and Orca 5020 radios, a long press of the clear key (✕) turns off keypad lock. On Orca Eclipse radios, a short press of the on/off/clear key (⓪/✕) turns off keypad lock.

**Applies To:**

- ✕ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✕ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

On Orca Eclipse and Orca 5020 radios, keypad lock can be activated via the [user function menu](#).

---

**Function Key Option: Low Power**

**Description:**

Pressing the function key overrides the power level setting programmed for the channel in the [Channels](#) form so that the radio transmits at low power. Pressing the function key again returns the transmit power to the preprogrammed level.

Whether low power transmit is on or off when the radio powers up is determined by the initial setting for the [Set Low](#)

Power On All Channels field (User Selectable Parameters form).

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

Channels can be programmed to always transmit at low power (Power Level field, Channels form). On Orca Eclipse and Orca 5020 radios, low power transmit can be activated via the [user function menu](#).

---

**Function Key Option: Night Use**

**Description:**

Pressing the function key turns the [night use](#) feature on and off. Whether night use is on or off when the radio first powers up is determined by the Initial Setting for the [Night Operation Backlighting Level](#) field (User Selectable Parameters form).

**Applies To:**

- ✗ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✗ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

On Orca Eclipse and Orca 5020 radios, night use can be turned on and off via the [user function menu](#).

**night use**

*When the night use feature is on, the radio's backlighting activates whenever valid activity is detected, a key on the radio is pressed or when the radio receives a call. Backlighting remains on for the duration of the backlighting timer unless further activity is detected.*

---

**Function Key Option: Nuisance Delete**

**Description:**

When the radio is [scanning](#) and a channel has been captured, pressing the function key temporarily deletes the [captured channel](#) from the scanning regime. When the scan group is selected again, the deleted channel is again a member of the scan group.

Nuisance delete does not work for [voting](#) groups. If no scan group is selected when the nuisance delete function key is pressed, the radio gives an invalid keypress beep.

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

---

**Function Key Option: One Touch****Description:**

Pressing the function key carries out the set of commands specified by the first [alpha symbol](#) defined in the [Alpha Symbols](#) form.

A one touch call can be useful when, for example, Radio A regularly calls Radio B via a preset Selcall call, which is assigned to a short press of function key 1. Radio A must first be switched to the correct channel in order for the call to be made. If the call is assigned as the one touch call, the radio automatically switches the radio to the correct channel and transmits the call after a single keypress. The advantage of using the one touch call is that the user does not need to remember which channel has the correct [Selcall system](#) assigned. However, for that function key setting, the one touch call is the only call available, whereas if the preset call function key option were used, a different call could be assigned to different channels.

**alpha symbol**

*An alpha symbol is a sequence of commands that, depending on the radio type, can change to a specific channel, dial a Selcall or DTMF call, change the radio's status or any combination of these three tasks.*

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

On Orca Eclipse and Orca 5020 radios, an alpha symbol can be selected via [alphanumeric entry mode](#).

---

**Function Key Option: Preset Call****Description:**

Pressing the function key transmits the preset Selcall call assigned to the current channel. The [Selcall sequence](#) transmitted is that defined for the selected [Function Key Preset Call \(Selcall Sequences \(Tx\)\)](#) tab).

There are two function key preset calls available on each channel.



**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

On Orca Excel and Eclipse radios, per channel Selcall calls can also be transmitted by a long press of the call key. The call transmitted is the [Fixed Call Sequence \(Selcall Sequences \(Tx\) tab\)](#) for the [Selcall system](#) assigned to the current channel.

---

**Function Key Option: Repeater Access Tone****Description:**

Pressing the function key transmits the repeater access tone for the current [Selcall system](#) to key up the repeater. If the [Repeater Access Tone Duration](#) for the current Selcall system is set to 0, then pressing the function key has no effect.

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

Selcall systems can be programmed so that the repeater access tone is transmitted whenever the PTT is pressed during a Selcall call.

---

**Function Key Option: Repeater Talk Around****Description:**

Pressing the function key allows the radio user to bypass normal repeater operation and communicate directly with another radio. Pressing the function key again or changing to another channel turns off repeater talk around. The [Repeater Talk Around](#) field ([Transmitter Setup](#) form) must be enabled before the repeater talk around option can be assigned to a function key.

**repeater talkaround**

*Repeater talk around allows the radio user to bypass repeater operation and so communicate directly with other radios. While repeater talk around is active, all transmissions are made on the receive frequency programmed for the channel.*

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

Orca Excel and Eclipse radios can be preprogrammed so that a long press of the channel key turns repeater talk around on and off.

---

**Function Key Option: Squelch Override****Description:**

Pressing the function key turns squelch override on and off so the user can hear all activity on a channel, including noise.

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

Orca Excel and Eclipse radios can be programmed so that a long press of the monitor key (Orca Excel: ✕, Orca Eclipse: 🔊) turns squelch override on and off ([MON] Key Long Press field, [Receive Monitoring](#) form) On Orca 5020 radios, squelch override can be turned on and off via the [user function menu](#).

**squelch**

*The squelch feature ensures that the radio's speaker only unmutes when an intelligible signal is received. A signal is considered intelligible when it is strong enough to exceed a predetermined squelch threshold.*

---

**Function Key Option: Toggle Monitor****Description:**

Pressing the function key turns [monitor](#) on and off.

**Applies To:**

- ✓ Orca Elan
- ✓ Orca Excel
- ✓ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**Alternatives:**

Orca Excel and Eclipse radios can be programmed so that a short press of the monitor key (Orca Excel: **⌘**, Orca Eclipse: **Ⓜ**) turns monitor on and off ([\[MON\] Key Short Press](#) field, [Receive Monitoring](#) form). On Orca 5020 radios, monitor can be turned on and off via the [user function menu](#).

---

**Function Key Option: Increase Volume/Decrease Volume****Description:**

Allows the volume to be adjusted using the external function keys.

**Applies To:**

- ✓ External Function Key 1 and 2
- ✗ Orca Elan
- ✗ Orca Excel
- ✓ Orca Eclipse
- ✗ Orca 5010
- ✗ Orca 5015
- ✗ Orca 5020

---

**Function Key Option: Program Flexiscan****Description:**

Pressing the function key allows the user to enter Flexiscan programming mode. In Flexiscan programming mode, group membership can be changed. Flexiscan group members are defined in the [Scan Groups](#) form ([Flexiscan](#) tab).

**Applies To:**

- ✗ Orca Elan
- ✗ Orca Excel
- ✗ Orca Eclipse
- ✓ Orca 5010
- ✓ Orca 5015
- ✓ Orca 5020

**flexiscan**

*When Flexiscan scanning is turned on, a group of channels in a preprogrammed Flexiscan scan group is scanned for valid activity, while the radio user is able to communicate on an unrelated channel.*

---

**Function Key Option: Toggle Flexiscan****Description:**

Pressing the function key turns Flexiscan on and off.

**Applies To:**

- ✘ Orca Elan
- ✘ Orca Excel
- ✘ Orca Eclipse
- ✔ Orca 5010
- ✔ Orca 5015
- ✔ Orca 5020

**Alternatives:**

Orca 5020 radios can be programmed so that Flexiscan is turned off when the PTT key is released (the [Scan After PTT](#) field is checked, [Flexiscan](#) tab).

---

**Function Key Option: Lone Worker****Description:**

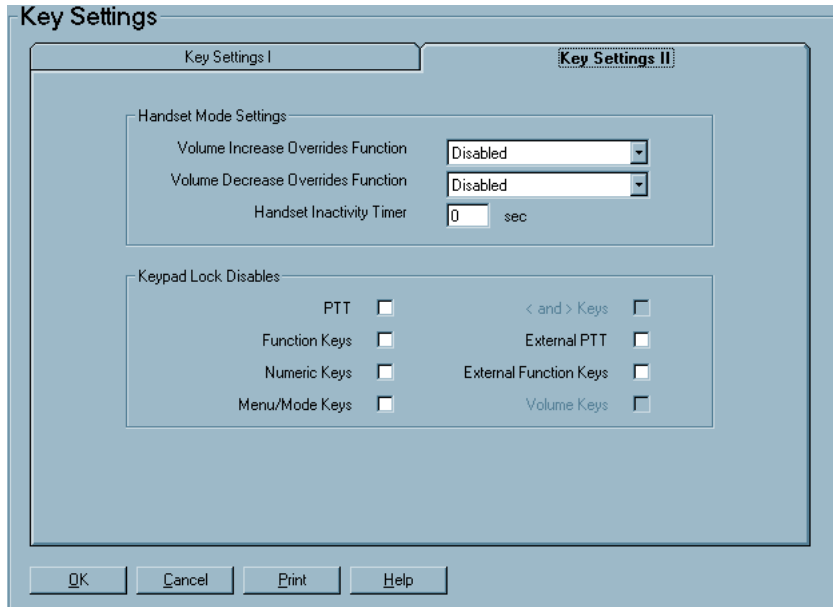
Pressing the function key activates the [lone worker](#) feature and begins the Inactivity Timer.

**Applies To:**

- ✘ Orca Elan
- ✘ Orca Excel
- ✘ Orca Eclipse
- ✔ Orca 5010
- ✔ Orca 5015
- ✔ Orca 5020

## Key Settings II Tab

Set function key options, including handset mode options, in the Key Settings II tab. The Key Settings II tab is shown below.



The screenshot shows a software window titled "Key Settings" with two tabs: "Key Settings I" and "Key Settings II". The "Key Settings II" tab is active. It contains two main sections:

- Handset Mode Settings:**
  - Volume Increase Overrides Function: Disabled (dropdown menu)
  - Volume Decrease Overrides Function: Disabled (dropdown menu)
  - Handset Inactivity Timer: 0 sec (text input field)
- Keypad Lock Disables:**
  - PTT:
  - Function Keys:
  - Numeric Keys:
  - Menu/Mode Keys:
  - < and > Keys:
  - External PTT:
  - External Function Keys:
  - Volume Keys:

At the bottom of the window are four buttons: OK, Cancel, Print, and Help.

### Handset Volume Override

The radio can be programmed to use the function keys as volume keys while the radio is in handset mode. The volume increase and volume decrease settings can be assigned to short or long presses of function key 1 and function key 2. The programmed settings for the selected keypresses are overridden for use as volume keys while handset mode is active. Note that if a function key is set to turn handset mode on and off, the application does not allow you to select that function key setting for controlling volume in handset mode.

For Orca Eclipse radios, the volume keys used during normal operation can also be used while operating the radio in handset mode.

### Handset Inactivity Timer

The field Handset Inactivity Timer sets the amount of time the radio remains in handset mode if no transmissions are made.

Set a value from 0 to 240 seconds in steps of 1 second. If set to 0, the timer is disabled and the radio remains in handset mode until the user disables it.

Note that when a call is received and handset mode is active, the ringing volume is also reduced. While handset mode is active, the user may not hear received calls due to the low ringing volume. You may wish to set Handset Inactivity

Timer to a value other than 0 in order to minimise the chances of missing calls because handset mode is active.

## Keypad Lock Disables

Keypad lock is available on [Orca 5015](#), [Orca Excel](#), [Orca Eclipse](#) and [Orca 5020](#) radios.

The Keypad Lock Disables fields determine what keys the [keypad lock](#) disables when it is activated. Keys that can be disabled are:

- [PTT key](#)
- [function keys](#)
- numeric and alphanumeric keys
- < and > keys (Orca Eclipse only)  
NOTE: < and > keys for the Orca 5020 are locked using the menu/mode keys option.
- an external PTT key, e.g. on a lapel microphone
- external function keys
- menu/mode keys
- volume keys (Orca Eclipse only)

Tick the box for each of the keys you wish to be disabled when the keypad lock is activated.

The power on/off and monitor keys can never be locked.

### keypad lock

*The keypad lock prevents accidental operation of the radio by locking the keypad so that only a certain set of keys can be used.*

# User Selectable Parameters Form

Initial settings for various radio features and options for the [Orca Eclipse's user function menu](#) are set in the User Selectable Parameters form. The User Selectable Parameters form is shown below:

Parameter	Initial Setting	In User Menu?
Keypress Confidence Tones	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Audible Indicators	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Audible Indicators Level	High	<input type="checkbox"/>
DTMF Dialling Type		<input type="checkbox"/>
Economy Mode Control	<input type="checkbox"/>	<input type="checkbox"/>
Squelch Setting Control		<input type="checkbox"/>
RSSI Indicator	<input type="checkbox"/>	<input type="checkbox"/>
Handset Mode Switch		<input type="checkbox"/>
Night Operation Backlighting	<input type="checkbox"/>	<input type="checkbox"/>
Contrast Adjust		<input type="checkbox"/>
Low Power Transmit Control	<input type="checkbox"/>	<input type="checkbox"/>
Keypad Lock Control		<input type="checkbox"/>
Flexiscan	<input type="checkbox"/>	<input type="checkbox"/>

**NOTE:** For each parameter, the Initial Setting field is the value the field is set to when the radio is programmed.

On Orca Eclipse radios, the value of all parameters in the User Selectable Parameters form can be changed via the [user function menu](#). To place a feature in the user function menu, tick the In User Menu? box for the required feature.

The options available and how to add them to the user menu are outlined in the table below.

Table 4: Adding options to the user menu of Orca Eclipse radios

Display	Settings	Description	To Add Option to User Menu:
KEYTONE	ON/OFF	Turns keypress confidence tones on and off.	User Selectable Parameters form: Tick the In User Menu? box for Keypress Confidence Tones.
SOUND	ON/OFF	Turns audible indicators, including keypress confidence tones, on and off.	User Selectable Parameters form: Tick the In User Menu? box for Audible Indicators.
SOUND	HIGH/LOW	Changes the level of audible indicators, including keypress confidence tones.	User Selectable Parameters form: Tick the In User Menu? box for Audible Indicators Level.

Table 4: Adding options to the user menu of Orca Eclipse radios

Display	Settings	Description	To Add Option to User Menu:
DTMF	NORMAL/ BUFFERED	Switches the DTMF dialling type between NORMAL and BUFFERED.	User Selectable Parameters form: Tick the In User Menu? box for DTMF Dialling Type.
ECONOMY	ON/OFF	Turns economy mode on and off (requires Power Save Features to be enabled by setting an <a href="#">Economy Mode Timer</a> ).	User Selectable Parameters form: Tick the In User Menu? box for Economy Mode Control.
SQUELCH	COUNTRY/ CITY	Switches the squelch settings for all channels between COUNTRY and CITY. Note that the use of this option switches all channels to the setting selected, regardless of the programmed squelch level.	User Selectable Parameters form: Tick the In User Menu? box for Squelch Setting Control.
RSSI	ON/OFF	Turns the RSSI indicator on and off.	User Selectable Parameters form: Tick the In User Menu? box for RSSI Indicator.
HANDSET	ON/OFF	Turns handset mode on and off.	User Selectable Parameters form: Tick the In User Menu? box for Handset Mode Switch.
LIGHT	ON/OFF	Turns night use on and off.	User Selectable Parameters form: Tick the In User Menu? box for Night Operation Backlighting Level.
LOW PWR	ON/OFF	Turns low power transmit on and off.	User Selectable Parameters form: Tick the In User Menu? box for Low Power Transmit Control.
KEYPAD	LOCKED/ UNLOCKED	Turns keypad lock on and off.	User Selectable Parameters form: Tick the In User Menu? box for Keypad Lock Control.
CALL QUEUE	Accesses sub-menu	Accesses the call queue. This option is only available when at least one call has been queued.	Selcall Features form: Enable Automatic Caller Identification and Received Call Queuing.
PROGRAM GROUP	Accesses sub-menu	Accesses the programmable scanning and voting groups feature.	Scan Group Members tab: Specify at least one scan group as User Yes.
PROGRAM SIGNAL	Accesses sub-menu	Accesses the programmable channel signalling feature.	Channel Signalling Presets form: Define at least one programmable channel signalling preset pair.
CONTRST ADJUST	Access mode	Access the contrast adjustment feature.	User Selectable Parameters form: Tick In User Menu? box for Contrast Adjust.

#### Keypress confidence tones

## Keypress Confidence Tones

The Keypress Confidence Tones field enables and disables [keypress confidence tones](#). Tick the Initial Setting box to enable keypress confidence tones.

*Keypress confidence tones are a confidence indicator that tells the radio user whether or not an action is permitted whenever a keypad key or function key is pressed.*



Note that if the [Audible Indicators](#) Initial Setting field is not ticked, keypress confidence tones are disabled, regardless of the setting of Keypress Confidence Tones.

The volume of keypress confidence tones is set in the Audible Indicator Level field.

## Audible Indicators

The Audible Indicators field enables and disables [audible indicators](#) such as [keypress confidence tones](#) and other warnings. This field does not affect DTMF and Selcall sidetones. Tick the Initial Setting box to enable audible indicators.

The setting of this field overrides that of the Keypress Confidence Tones field.

### audible indicators

*Audible indicators include keypress confidence tones, received call signals, low battery and high temperature warnings, transmit timer and unanswered call signals.*

## Audible Indicator Level

The Audible Indicator Level field sets the volume of the radio's [audible indicators](#). Select High or Low. If the field [Audible Indicators](#) is disabled, then the setting of this field has no effect.

## DTMF Dialling Type

If for Orca Eclipse radios you wish the radio user to be able to change the DTMF dialling type, tick the In User Menu? box for DTMF Dialling Type. The default DTMF dialling type is set in the [DTMF](#) form.

### DTMF dialling type

*When a DTMF string is dialled, the string is either transmitted as each individual key is pressed (normal dialling) or in its entirety once the enter key is pressed (buffered dialling).*

## Economy Mode Control

The Economy Mode Control field determines whether or not [economy mode](#) is enabled when the radio first powers up. Economy mode is set up in the [Power Save Features](#) form. Tick the Initial Setting box to enable economy mode when the radio powers up.

### economy mode

*Economy mode reduces the radio's power consumption when it is idle. When economy mode is active, and there has been no valid activity on a channel for the duration of the economy mode timer, the radio begins economy cycling.*

## Squelch Setting Control

If for Orca Eclipse radios you wish the radio user to be able to change the [squelch](#) setting, tick the In User Menu? box for Squelch Setting Control. The initial squelch setting for each channel is set in the [Channels](#) form.

## RSSI Indicator

The RSSI Indicator field applies only to Orca Excel, Orca Eclipse, Orca 5015 and Orca 5020 radios and enables and disables the [RSSI indicator](#). Tick the Initial Setting box to enable the RSSI indicator.

## Handset Mode Switch

If for Orca Eclipse radios you wish the radio user to be able to enable and disable [handset operation](#) via the user function menu, tick the In User Menu? box.

## Night Operation Backlighting Level

The Night Operation Backlighting Level field enables the [night use](#) feature. Tick the Initial Setting box to enable night use.

For more information, see:

- “Reducing Power Consumption on Tait Orca Radios” on page 164
- “Economy Mode” on page 164
- “Backlighting” on page 166

## Contrast Adjustment

If for Orca Eclipse radios you wish the radio user to be able to [adjust contrast](#) via the user function menu, tick the In User Menu? box.

A function key can also be programmed to access the contrast adjustment function.

## Set Low Power On All Channels

The Set Low Power On All Channels field determines whether all transmissions are made at low power or at the power level programmed for a channel. Tick the Set Low Power On All Channels box if all transmissions are to be made at low power by default when the radio first powers up.

For [Orca Eclipse](#) radios, select the In User Menu? box to add LOW PWR to the [user function menu](#). [Orca 5020](#) radios can enable or disable low power transmit via the user function menu on the [User Defined Menu Form](#), by ticking the LOW PWR box.

All radios can enable or disable low power via a function key. This is defined by using the [Low Power](#) option on the [Key Settings I Tab](#).

## Keypad Lock Control

If for Orca Eclipse radios you wish the radio user to be able to enable and disable the [keypad lock](#) via the user menu, tick the in User Menu? box.

Which keys are disabled when keypad lock is on is set in the [Key Settings II](#) tab.

### handset operation

*Tait Orca radios can be operated as a normal radio where the user holds the radio with the microphone about 15 cm away from the mouth or it can be operated like a telephone handset. Handset mode is useful in noisy environments, when privacy is required or in quiet environments when the lowest volume setting seems too loud.*

### contrast adjustment

*The contrast adjustment feature allows the radio user to adjust the display contrast. Once activated, the radio user adjusts contrast using the scroll keys. The radio returns to its previous mode of operation after a few seconds of inactivity.*

### keypad lock

*The keypad lock prevents accidental operation of the radio by locking the keypad so that only a certain set of keys can be used.*

## Flexiscan

Orca 5010/5015/5020 radios only.

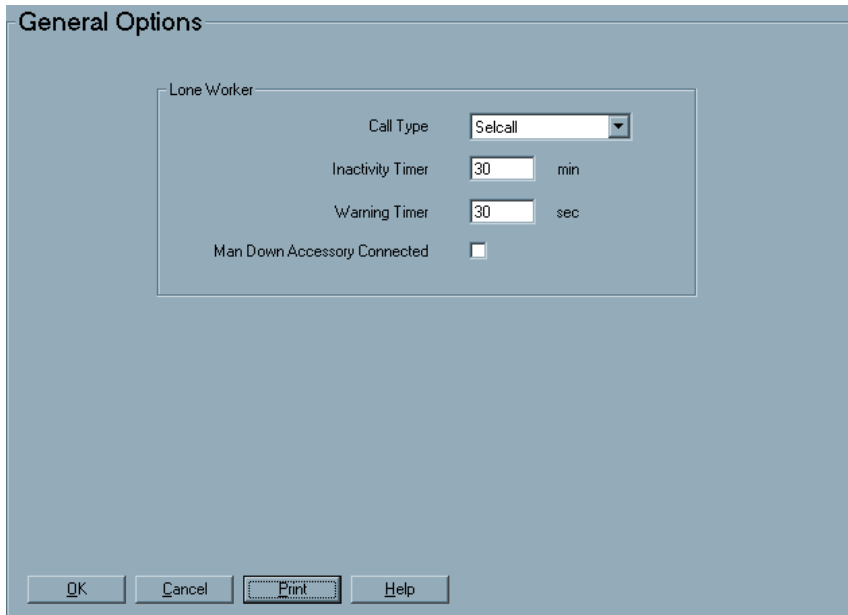
The Flexiscan field determines whether Flexiscan is enabled when the radio is first switched on.

### **flexiscan**

*When Flexiscan scanning is turned on, a group of channels in a pre-programmed Flexiscan scan group is scanned for valid activity, while the radio user is able to communicate on an unrelated channel.*

# General Options form

Set options that apply to both Selcall and DTMF, as well as other radio options, in the General Options form (Orca 5010/5015/5020 radios only). The General Options form is shown below.



The screenshot shows a software window titled "General Options". Inside, there is a sub-section titled "Lone Worker". It contains the following controls:

- Call Type:** A dropdown menu currently set to "Selcall".
- Inactivity Timer:** A text input field containing "30" followed by the unit "min".
- Warning Timer:** A text input field containing "30" followed by the unit "sec".
- Man Down Accessory Connected:** A checkbox that is currently unchecked.

At the bottom of the window, there are four buttons: "OK", "Cancel", "Print", and "Help".

## Call Type

Call Type is part of the [lone worker](#) feature, and sets the type of emergency action that will be initiated after both the inactivity and warning timers have expired. Select DTMF to initiate a DTMF emergency call defined in the [DTMF ANI Tab](#), or Selcall to initiate a Selcall emergency call defined in the [Selcall Emergency Setup Form](#).

## Inactivity Timer

The Inactivity Timer is part of the [lone worker](#) feature, and sets the time from when the radio user presses the function key, to when the [Warning Timer](#) starts. Pressing any key during this time will restart the timer. Enter a time from 1 to 60 minutes.

## Warning Timer

The Warning Timer is part of the [lone worker](#) feature, and sets the time from when the [Inactivity Timer](#) has timed out, to when the radio calls the sequence indicated by the [Call Type](#) field. An audible alert will sound for the duration of the warning timer. Pressing any key during this time will cancel

### **lone worker**

*Lone worker is a feature in Orca 5010, Orca 5015 and Orca 5020 radios. When activated, the radio begins a pre-programmed inactivity timer. Once this time has counted down with no keypress (or motion detected if programmed), an audible alert will sound for the length of the warning timer. If no key is pressed in this time (or motion detected), then either a Selcall or DTMF emergency call is made.*

the Warning Timer and restart the Inactivity Timer. Enter a time between 15 and 240 seconds.

## Man Down Accessory Connected

The Man Down Accessory Connected field determines how user activity is monitored by the radio after [lone worker](#) has been activated. User activity resets the [Inactivity Timer](#) or [Warning Timer](#). If the box is ticked, the inactivity or warning timers will be reset if motion is detected or a key is pressed.

**NOTE:** A man down motion sensor accessory must be fitted to the radio for this option to be valid.



# Part 7: Reference

This part outlines basic concepts related to the Conventional Programming Application.

## Appendices

- [Appendix A: Introduction to Channels and Scan Groups](#)
- [Appendix B: Introduction to Selcall](#)
- [Appendix C: Introduction to DTMF](#)
- [Appendix D: Reducing Power Consumption on Tait Orca Radios](#)
- [Appendix E: What's New - Orca 5000 Series](#)





# Appendix A: Introduction to Channels and Scan Groups

---

This section contains basic concepts related to channels and scan groups.

## Squelch and Signalling: Filtering Out Unwanted Noise and Traffic

Without some mechanism for filtering what the radio broadcasts to the user, the radio's speaker would operate continuously and the user would hear not only any speech on a channel, but also all noise. This would be annoying for the radio user and so the radio filters out unwanted signals using various methods.

### Squelch

At the most basic level, the squelch feature ensures that the speaker only unmutes when an intelligible signal is received. A signal is considered intelligible when it is strong enough to exceed a predetermined squelch threshold.

Tait Orca radios can operate at two different squelch thresholds, city squelch and country squelch. The specific values of city and country squelch are set at radio [calibration](#) time, but are generally:

- country: 12 dB SINAD
- city: 16 dB SINAD

The squelch threshold for city squelch is higher than that for country squelch so that the radio is effectively less sensitive on channels programmed with city squelch than on channels programmed with country squelch. City squelch is intended for use in environments where signal strength is likely to be strong throughout the area where the radio is operating and where a high level of background noise could cause the speaker to unmute for unintelligible signals were it set to a lower squelch threshold. Country squelch is intended for use in lower signal strength areas.

### Programming Squelch Thresholds

At radio programming time, channels are programmed for either city or country squelch in the [Channels](#) form. A radio can have a mix of city and country squelch channels, which can be useful if a radio is going to be used in both high and low signal strength areas.

For example, two channels could be set up with the same transmit and receive frequencies and subaudible signalling but with different squelch levels. Both channels would have the same traffic and the radio operator could tune in to the

city channel while they were close to the repeater. If the signal started to become less intelligible as the user started to move away from the repeater, they could switch to the country channel. If the signal became too weak to be intelligible on the country channel, they could then use squelch override. See “[Squelch Override](#)” below for more information.

## Squelch Override

Squelch override allows the user to disable the radio’s squelch and so hear all traffic on a channel, including noise.

Squelch override is useful in areas where signal strength is too weak to continually exceed the preprogrammed squelch threshold and so activate the speaker. If radio users are regularly operating in environments where the signal received at the country squelch level regularly cuts out, consider programming the radio for squelch override.

## Mutes

A mute, or squelch, controls the circumstances under which a received signal is passed to the radio’s speaker. When a mute is active, the radio’s speaker only unmutes under certain conditions, determined by the type of signalling operating on a channel. On Tait Orca radios, there are two types of mute.

- Subaudible signalling mute/squelch: The radio unmutes when a signal is received that has subaudible (CTCSS and DCS) signalling the radio recognises. See “[CTCSS and DCS](#)” below for more information.
- Selcall signalling mute/squelch: The radio unmutes when a signal is received that matches the radio’s Selcall identity. See “[Selcall](#)” on page 148 for more information.

## Signalling

Squelch ensures that the radio user only hears intelligible signals, but the user hears all traffic on a channel. This could become a nuisance, particularly if several companies are using the same channel. Signalling provides a way of isolating groups of users so they only hear traffic intended for that group. It does not provide privacy since anyone tuning to a channel can hear its traffic if they wish, but it does minimise the possibility of radio users hearing nuisance traffic.

Signalling is non-voice coding on a channel for the purpose of identifying parties and/or segregating user groups. If a radio receives signalling that matches that programmed for the radio, the signalling is said to be valid and the radio’s mute opens. Otherwise, the transmission is ignored and the radio remains silent, although the radio’s channel busy indicator is activated.

The types of signalling available for Tait Orca radios are CTCSS, DCS and Selcall. Each channel can be programmed with different types of signalling, and subaudible signalling and Selcall signalling can be used on the same channel.

## CTCSS and DCS

CTCSS and DCS use subaudible signalling to segregate groups of users by transmitting additional information with normal speech.

For CTCSS the additional information is transmitted in the form of subaudible tones in the frequency band 67 to 250.3 Hz. For DCS the additional information is transmitted as digital data using frequencies between 10 and 134 Hz.

Subaudible signalling is assigned on a per channel basis (in the [Channels](#) form), and each channel can have different receive and transmit signalling.

Tables 5, 6 and 7 show the CTCSS frequencies and DCS codes Tait Orca radios support.

### CTCSS

*continuous tone controlled squelch system*

### DCS

*digitally coded squelch*

Table 5: CTCSS Tone Frequencies Supported by Tait Orca Radios

67.0	77.0	88.5	100.0	114.8	131.8	151.4	173.8	203.5	233.6
69.3	79.7	91.5	103.5	118.8	136.5	156.7	179.9	210.7	241.8
71.9	82.5	94.8	107.2	123.0	141.3	162.2	186.2	218.1	250.3
74.4	85.4	97.4	110.9	127.3	146.2	167.9	192.8	225.7	

Table 6: Standard DCS Codes and Their Inverses

Code : Inv	Code : Inv	Code : Inv	Code : Inv	Code : Inv	Code : Inv	Code : Inv
023 : 047	073 : 506	156 : 265	261 : 732	365 : 125	503 : 162	654 : 743
025 : 244	074 : 174	162 : 503	263 : 205	371 : 734	506 : 073	662 : 466
026 : 464	114 : 712	165 : 251	265 : 156	411 : 226	516 : 432	664 : 311
031 : 627	115 : 152	172 : 036	271 : 065	412 : 143	532 : 343	703 : 565
032 : 051	116 : 754	174 : 074	306 : 071	413 : 054	546 : 132	712 : 114
043 : 445	125 : 365	205 : 263	311 : 664	423 : 315	565 : 703	723 : 431
047 : 023	131 : 364	223 : 134	315 : 423	431 : 723	606 : 631	731 : 155
051 : 032	132 : 546	226 : 411	331 : 654	432 : 516	612 : 346	732 : 261
054 : 413	134 : 223	243 : 351	343 : 532	445 : 043	624 : 632	734 : 371
065 : 271	143 : 412	244 : 025	346 : 612	464 : 026	627 : 031	743 : 654
071 : 306	152 : 115	245 : 072	351 : 243	465 : 331	631 : 606	754 : 116
072 : 245	155 : 731	251 : 165	364 : 131	466 : 662	632 : 624	

Table 7: Commonly Used DCS Codes and Their Inverses

Code : Inv	Code : Inv	Code : Inv	Code : Inv	Code : Inv	Code : Inv
017 : 050	122 : 225	246 : 523	274 : 145	446 : 255	462 : 252
036 : 172	145 : 274	252 : 462	325 : 526	452 : 053	523 : 246
050 : 017	212 : 356	255 : 446	332 : 455	454 : 266	526 : 325
053 : 452	225 : 122	266 : 454	356 : 212	455 : 332	

## Selcall

Selcall (selective calling) uses sequences of audible tones to isolate calls in a manner similar to CTCSS and DCS. However, Selcall also allows individual radios to have a unique identity and so calls can be directed to specific individuals within a group of radio users.

[Selcall systems](#) are assigned on a per channel basis (in the [Channels](#) form). Selcall systems are set up in the Selcall Identity and Setup form, and various Selcall functions are set up in the [Selcall Features](#), [Selcall Emergency Setup](#), [Selcall Rx Decode Setup](#), [Selcall Control Status Definitions](#) and [Custom Selcall Tone Set](#) forms. More detailed information on Selcall starts on [page 153](#).

### Selcall system

*A Selcall system is the call sequence formats and tone options the radios on that system must use to communicate with one another.*

## Monitor: Listening In On Channel Traffic

Monitor allows the radio user to override a channel's signalling mutes and so hear all traffic on a channel.

When monitor is active, the mute is said to be open, or unmuted. When monitor is inactive, the radio is said to be in the quiet state, or muted.

Which mutes (subaudible signalling mute, Selcall signalling mute) monitor disables is set in the [Monitor Function Disables](#) field ([Receive Monitoring](#) form).

## Introduction to Scan Groups

A scan group is a group of two to 16 channels. Each channel that belongs to a scan group is called a member channel. Each member channel in a scan group is routinely sampled for valid activity ([scanning](#)) or greatest signal strength ([voting](#)).

There are three types of scanning and four types of voting available on Tait Orca radios. See "[Scanning](#)" below and "[Voting](#)" on [page 150](#) for more information.

### valid activity

*Valid activity is traffic on a channel that carries signalling that matches that programmed for the receiving radio. The radio's mute opens upon detecting valid activity.*

## Scanning

In scanning, a group of channels is systematically sampled for activity. The member channels are scanned in the order in

which they are assigned to the scan group ([Scan Group Members](#) tab).

The main benefit of scanning is that all channels of interest can be sampled for activity in a regular sequence. However, scanning takes a finite time (120 ms per channel, plus up to 350 ms for channels with subaudible signalling) to sample each member channel and so a short call could be missed within a large multi-member group.

Each scan group has a limited number of channels. Coverage of a large number of channels can be accomplished using several scan groups.

### **Types of Scanning**

There are three types of scanning available, and the type of scanning for a particular group is set in the [Group Type](#) field of the [Scan Group Members](#) tab. The three types of scanning are:

- [Scanning \(S\)](#)
- [Priority Scanning \(PS\)](#)
- [Dual Priority Scanning \(DPS\)](#)

#### *Scanning (S)*

When Group Type is S (scanning), the radio scans all member channels to find a channel that is busy and has valid signalling. When valid activity is found, that channel is made the captured channel. No further scanning takes place until there is no longer activity on the captured channel.

#### *Priority Scanning (PS)*

When Group Type is PS (priority scanning), the group's priority channel is scanned more frequently than other channels. If another channel is captured, the radio continues to scan the priority channel at regular intervals.

The first member channel assigned to a priority scanning group is the highest priority, or P1, channel that is scanned in preference to all other channels.

#### *Dual Priority Scanning (DPS)*

When Group Type is DPS (dual priority scanning), the radio behaves as for [Priority Scanning \(PS\)](#), but there are two channels that are given higher priority. If the first priority channel is captured, no further scanning takes place. If the second priority channel is captured, the first channel continues to be scanned at regular intervals. If a non-priority channel is captured, the two priority channels are scanned periodically (when the captured sample timer expires).

The first member channel assigned to a dual priority scanning group is the highest priority, or P1, channel that is scanned in preference to all other channels. The second member

#### **captured channel**

*When the radio is scanning a group of channels and valid activity is found on one of those channels, the radio remains on that channel until the activity is no longer valid and the group hold time has expired or until valid activity is found on a higher priority channel. While the radio is stopped on that channel, the channel is said to be captured, and transmissions are on the captured channel rather than on the home channel.*

#### **group hold time**

*The group hold time is the pause between when valid activity on a scan group member channel ceases and when scanning resumes.*

assigned to the group is the next highest priority, or P2, channel.

### **Scanning Regime**

The amount of time each channel is sampled depends on whether there is signalling on the channel, and on what type of signalling it is. When valid activity is found on a channel in the scan group, the channel is said to be captured and the radio stays on that channel until the activity ceases or is no longer valid. When activity is no longer valid, the radio stays on the last captured channel for the period of time specified by the [Group Hold Time](#) field ([Scan Groups](#) tab). Scanning then resumes.

If one or two priority channels have been assigned (see [“Types of Scanning” on page 149](#)) and the captured channel is not a priority channel (P1 or P2), the radio periodically leaves the captured channel to sample the priority channel(s) for activity. The user may notice the signal blanking out while the priority channel is sampled. If activity is found on a higher priority channel, the radio switches to that channel.

If for [dual priority scanning](#) the P2 channel is captured, the P1 channel continues to be scanned. If the P1 channel is captured, no further scanning takes place until the activity on the P1 channel is no longer valid.

How often priority channels are scanned is determined by two fields in the [Scan Groups](#) form.

- **Non-Captured Priority Sample Timer:** This timer applies when no channel has been captured. Whenever this timer expires, the radio finishes sampling the channel it is currently on and then samples the priority channel(s). If there is no activity on the priority channel(s), the scanning regime resumes from the point at which it was interrupted.
- **Captured Priority Sample Timer:** This timer applies when a channel has been captured. Whenever this timer expires, the radio samples any channels of a higher priority than the captured channel. If activity is found on a priority channel, the radio will switch to that channel.

### **Transmitting While Scanning**

While a scanning group is selected, all transmissions are made on the home channel, unless a channel is captured. While a channel is captured, all transmissions are made on that channel.

The home channel is the first channel defined as a group member in the [Scan Groups Members](#) tab.

### **Voting**

In voting, a group of channels all carrying the same traffic (e.g. via linked repeaters) is systematically sampled (“polled”)

for greatest signal strength. Voting provides wide area coverage and ensures that the strongest channel is always available for a call.

The member channels are polled in the order in which they are assigned to the scan group ([Scan Group Members](#) tab) until valid activity is found on one of the channels. After a delay specified by the [Voting Lead In Delay](#) field ([Scan Groups](#) tab), the received signal strength is measured for each channel. The strongest channel is then “voted” as the home channel on which all transmissions are made.

### ***Initiating Polling***

Voting polling is initiated whenever:

- valid activity is detected on a channel or
- upon each release of the PTT (enable the [PTT Release Voting Request](#) field in the [Scan Groups](#) tab) or
- at a regular interval (the [Voting Polling Interval](#), [Scan Groups](#) tab).

### ***Types of Voting***

There are four types of voting available, and the type of voting for a particular group is set in the [Group Type](#) field of the [Scan Group Members](#) tab. The four types of voting are:

- [Voting \(V\)](#)
- [Voting With Signalling \(VS\)](#)
- [Double Voting \(DV\)](#)
- [Double Voting With Signalling \(DVS\)](#)

#### *Voting (V)*

When [Group Type](#) is V (voting), the radio polls all member channels to find a busy channel. The radio then measures the signal strength of all channels and makes the channel with the strongest signal the home channel on which transmissions are made.

#### *Voting With Signalling (VS)*

When [Group Type](#) is VS (voting with signalling), the radio behaves as for [Voting \(V\)](#), but a channel must have valid signalling if it is to be made the home channel.

#### *Double Voting (DV)*

When [Group Type](#) is DV (double voting), the radio behaves as for [Voting \(V\)](#) but the signal strength of each channel is measured twice.

#### *Double Voting With Signalling (DVS)*

When [Group Type](#) is DVS (double voting with signalling), the radio behaves as for [Voting With Signalling \(VS\)](#), but the signal strength of each channel is measured twice.

### ***Transmitting While Voting***

While a voting group is selected, all transmissions are made on the home channel. The home channel is the channel determined to have the strongest signal. If no channel has been selected as the strongest channel, the home channel is the first channel defined as a group member in the [Scan Groups Members](#) tab.

### **Per Channel DTMF and Selcall Calls**

Each channel can have different Selcall sequences and DTMF strings associated with it (e.g. different function key preset calls for different Selcall systems).

For scanning groups, the sequence or string transmitted for such calls depends on whether or not a channel has been captured. If no channel has been captured, then the sequence or string transmitted is that for the home channel. If a channel has been captured, then the sequence or string transmitted is that for the captured channel. See [“Transmitting While Scanning” on page 150](#).

For voting groups, the sequence or string transmitted for per channel DTMF or Selcall calls is that of the home channel. See [“Transmitting While Voting” on page 152](#).



# Appendix B: Introduction to Selcall

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Selcall stands for selective calling, a signalling system that uses sequences of audible tones to isolate calls in a manner similar to [CTCSS](#) and [DCS](#). Unlike CTCSS and DCS, however, Selcall allows individual radios to have a unique identity and so calls can be directed to specific individuals within a group of radio users.

A Selcall sequence is a series of [tones](#) and [gaps](#) that for a simple Selcall system represents the identity of a radio. A Selcall sequence can also contain information such as [repeater identity](#), [caller identity](#) and [status](#).

In order for radios to recognise their identity in received Selcall sequences, all radios operating on a particular Selcall system must use the same set of tones and call sequence formats. The common set of tone options and call sequence formats radios use to communicate with one another is referred to as a Selcall system.

## status

*Status is the current activity of the radio user, which can be represented by a status message. Another type of status is control status, which when received, initiate a particular radio operation.*

## Programming Selcall

The Tait Orca [Selcall](#) feature has been designed to be highly flexible and is set up in the group of forms listed under Selcall and Status. Until Selcall is enabled, only one form is listed, [Selcall Identity and Setup](#). Select this form to begin setting up a Selcall system.

The Selcall Identity and Setup form contains three tabs:

- [Selcall Identity \(Rx\)](#)
- [Selcall Sequences \(Tx\)](#)
- [Selcall Tone Options](#)

If Selcall has not previously been enabled, all fields on these tabs are greyed out except [Enable Selcall](#). When you tick the box for Enable Selcall, additional Selcall fields and forms become visible.

## Setting Up a Basic Selcall System

A basic [Selcall system](#) can be set up using only the fields in the three tabs of the [Selcall Identity and Setup](#) form. The radio can be configured for advanced Selcall features using the other forms.

- Various advanced Selcall features are enabled and disabled in the [Selcall Features](#) form. Once a feature in this form is enabled, it is enabled for all Selcall systems.
- If an [emergency call](#) is required, it is configured in the [Selcall Emergency Setup](#) form and assigned to a function key setting in the [Key Settings I](#) tab. Only one Selcall emergency call can be programmed for a radio.

- The Conventional Programming Application provides a default set of options for how the radio responds to incoming calls that match the radio's unique identity. These are the pattern of the call alert, how long the radio rings and whether or not an [auto acknowledge](#) is sent. These options can be customised in the [Selcall Rx Decode Setup](#) form.
- There are a number of internationally accepted standard [tone sets](#) available that determine the frequencies used for each of the 16 tones used to make up [Selcall sequences](#). The Conventional Programming Application supports nine of these standard tone sets. However, if you wish to create your own tone set or reorder an existing one, that tone set can be configured in the [Custom Selcall Tone Set](#) form.
- An additional one or two tones can be added to a Selcall sequence to indicate the caller's present activity ([status](#)). A Selcall sequence can also include a status that initiates a particular radio operation (a [control status](#)). If you wish to make use of this feature, the call sequence formats must be configured to support status ([Selcall ID \(Rx\)](#) tab). [Status messages](#) and control status are defined in the [Selcall Control Status Definitions](#) form.

#### **auto acknowledge**

*When a radio receives a Selcall sequence that contains its identity, it can be programmed to transmit an auto acknowledge sequence.*

## **Important Considerations**

When setting up a [Selcall system](#) for a group of radios, ensure that all radios in the group:

- use the same [transmit format](#) and [receive format](#) (see “[Selcall Systems: Transmit and Receive Formats](#)” below)
- use the same tone parameters (see “[Selcall Tone Transmission](#)” on page 157)

## **Selcall Systems: Transmit and Receive Formats**

All radios operating on a [Selcall system](#) must use the same call format for most transmitted and received [Selcall sequences](#). Exceptions are the [free-form sequences](#). Free-form sequences may not follow the transmit format if the system is set up to support some special need, but should otherwise follow the transmit format. See “[Free-form Sequences](#)” on [page 156](#) for more information.

The first step in setting up a Selcall system is defining the transmit and receive formats. See “[The Transmit Format](#)” on [page 154](#) and “[The Receive Format](#)” on [page 155](#).

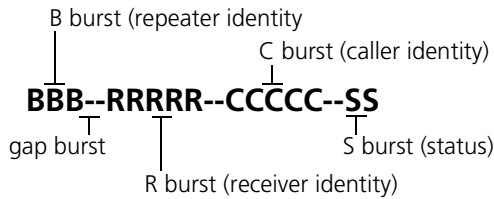
### **The Transmit Format**

For each [Selcall system](#), the transmit format (or Tx format) defines the format all outgoing [Selcall sequences](#) must follow in order to be correctly decoded by other radios using the

#### **gap**

*A gap is a pause in the transmission of tones in a Selcall sequence. When constructing Selcall sequences, a gap is represented by a hyphen (-). A series of gaps makes up a gap burst.*

same Selcall system. A sample transmit format is shown below.



The transmit format consists of a series of **tones** and **gaps**. A series of tones is called a tone burst and a series of gaps is called a gap burst. A tone burst can correspond to one or more pieces of information, such as the **receiver identity** and the **repeater identity**. Tone bursts can be up to eight tones long and can be separated by gaps. Gap bursts can be up to eight gaps long and cannot begin or end a Selcall sequence.

See “[Selcall Tone Transmission](#)” on page 157 for more information on the frequencies used for each tone and how they are transmitted.

In the example above:

- the B burst is the **repeater identity**, and is made up of three tones
- the R burst is the **receiver identity**, and is made up of five tones
- the C burst is the **caller identity**, and is made up of five tones
- the S burst is the **status**, and is made up of two tones, which means status digits 0 to 99 can be transmitted

In the example, the B, R, C and S bursts are separated by gap bursts. This is not compulsory and the transmit format could be **BBBRRRRR--CCCC--SS** and still be valid since the first tone burst is not greater than eight tones long. If a single status tone is included, however, it should be separated from the other tone bursts by at least two gaps.

A simple Selcall system may require that only the receiver identity be transmitted. The other tone bursts are optional for the transmit format.

[Table 8 on page 156](#) shows examples of valid and invalid transmit formats.

The transmit format for each Selcall system is set in the [Selcall Sequences \(Tx\)](#) tab.

## The Receive Format

The receive format defines the format all incoming [Selcall sequences](#) must follow in order to be correctly decoded by the receiving radio. The receive format should be the same

### repeater identity

*In a Selcall sequence, the repeater identity is the part of the sequence that the radio transmits so that the repeater recognises the radio as having access to the repeater. In the transmit (Tx) format, the repeater identity is represented by the character B, and so this part of a sequence is known as the B burst. If the transmit format includes a repeater burst, it must come before all other bursts.*

### receiver identity

*In a Selcall sequence, the receiver identity is the part of the sequence that identifies the radio the sequence is intended for. In the transmit (Tx) format and receive (Rx) format, the receiver identity is represented by the character R, and so this part of a sequence is known as the R burst.*

### caller identity

*In a Selcall sequence, the caller identity is the part of the sequence that identifies the radio transmitting the sequence. In the transmit (Tx) format and receive (Rx) format, the caller identity is represented by the character C, and so this part of a sequence is known as the C burst.*

### status digit

*In a Selcall sequence, the status digit is the part of the sequence that identifies the current activity (status) of the radio transmitting the sequence. In the transmit (Tx) format and receive (Rx) format, the status digit is represented by the character S, and so this part of a sequence is known as the S burst.*



Because the free-form sequences do not have to follow the transmit format, it is necessary to specify whether or not a [repeater burst](#) is included in the sequence if the first tone-period multiplier feature is enabled. If you are going to use the tone-period multiplier feature with a repeater burst, you should ensure that the repeater burst is followed by a gap burst as the tone-period multiplier is applied to the first burst after a gap burst.

## Defining the Radio's Identity

A radio operating on a [Selcall system](#) must have at least one Rx decode sequence defined. The Rx decode sequence is the radio's unique identity on a Selcall system. When the radio's Rx decode sequence is decoded as the receiver identity in an incoming Selcall sequence, the radio recognises the sequence as intended for it and respond appropriately.

Each radio operating on a Selcall system can have one or two Rx decode sequences assigned. The Rx decode sequences must match the [R burst](#) in the [receive format](#). In addition to tones 0 to 9, A to D and F, a V can be used in the Rx decode sequence. If the radio's Rx decode sequence contains one or more Vs, it will respond to a range of receiver identities. For example, a radio that has an Rx decode sequence of 456VV responds to all call sequences with a receiver identity five tones long starting with 456.

The radio's Rx decode sequences are defined in the [Selcall Identity \(Rx\)](#) tab.

## Selcall Tone Transmission

How the tones in a Selcall sequence are transmitted is determined by timing parameters programmed in the [Selcall Tone Options](#) tab.

The actual frequencies used for each of tones 0 to 9 and A to F is defined by the [tone set](#). You can define a custom tone set in the [Custom Selcall Tone Set](#) form by reordering an existing tone set or by defining the frequencies of each individual tone. However, the frequencies available for the custom tone set are limited, so if you wish to use a frequency that is not available (e.g. 1500 to 1700 Hz), consider reordering an existing tone set.

How long each tone is transmitted is determined by the tone period parameter. The length of each pause in a gap burst is determined by the gap period parameter.

There may be a lag between when transmission is initiated and when the first tone in a Selcall sequence is transmitted. During this lag, the radio may transmit a repeater access tone or a lead in tone. This ensures that the receiving equipment has time to prepare to decode the incoming transmission. For example, a lead-in tone gives a repeater time to stabilise,

### tone set

*The tone set is the set of frequencies represented by the characters 0-9 and A-F used to make up Selcall sequences. There are a number of internationally accepted standard tone sets available. There is a finite number of frequencies available to represent the various characters in a Selcall sequence; it is the frequencies used and their order that distinguishes one tone set from another.*

allows a radio time to come out of economy mode, or allows a scanning radio time to lock onto a channel before critical tones in a Selcall sequence are received.

The tone used for both the repeater access tone and the lead-in tone is programmable, as is the duration of each tone.

## Making Selcall Calls

There are two ways to make Selcall calls on Tait Orca radios:

- make a preset call (see “Selcall Presets” below)
- dial a call (see “Selcall Dialling” on page 159).

Preset calls are available on all Tait Orca radios, and are the only type of Selcall call that can be made on [Orca Elan](#) and [Orca 5010](#) radios. [Orca Excel](#), [Orca Eclipse](#) and [Orca 5020](#) radios support Selcall dialled calls.

## Selcall Presets

There are three ways to make preset Selcall calls.

- **Function key:** On all radios, a preset Selcall call can be assigned to one of the function key settings. To send the call, the user selects the channel the Selcall call is assigned to and presses the assigned function key. Different preset calls can be programmed for different channels. See “[Programming Per Channel Selcall Calls](#)” below.
- **Call key:** On [Orca Excel](#) and [Eclipse](#) radios, a preset Selcall call can be assigned to a long press of the call key. To send the call, the user selects the channel the Selcall call is assigned to and presses the assigned key. Different preset calls can be programmed for different channels. See “[Programming Per Channel Selcall Calls](#)” below.
- **One touch call:** On all radios, a single one-touch Selcall call can be assigned to one of the function keys. It is not necessary to change channels to send this call; the user simply presses the assigned function key. See “[Programming a One-Touch Selcall Call](#)” on page 159.

## Programming Per Channel Selcall Calls

Per channel calls assigned to the call key are set up in the [Selcall Sequences \(Tx\)](#) tab and the [Channels](#) form. See “[Call Key Per Channel Calls](#)” below.

Per channel calls assigned to function key settings are set up in the [Selcall Sequences \(Tx\)](#) tab, the [Key Settings I](#) tab and the [Channels](#) form. See “[Programming a One-Touch Selcall Call](#)” below.

### Call Key Per Channel Calls

1. In the [Selcall Sequences \(Tx\)](#) tab, define the [Fixed Call Sequence](#) field.

#### fixed call sequence

*The fixed call sequence is a Selcall sequence that is defined at radio programming time and that can be transmitted by a long press of the call key on Orca 5015, Orca Excel and Eclipse radios.*

2. In the [Channels](#) form, assign the call to a channel by entering the number of the Selcall system the call has been defined for into the [Selcall System](#) field for the appropriate channel.

### Function Key Per Channel Selcall Calls

1. In the [Selcall Sequences \(Tx\)](#) tab, define one of the function key preset calls.
2. In the [Channels](#) form, assign the call to a channel by entering the number of the Selcall system the call has been defined for into the [Selcall System](#) field for the appropriate channel.
3. In the [Key Settings I](#) tab, select the required [Preset Call](#) option for one of the function key settings.

### Programming a One-Touch Selcall Call

A one-touch Selcall call is set up in the [Selcall Sequences \(Tx\)](#) tab, the [Alpha Symbols](#) form and the [Key Settings I](#) tab.

1. In the [Selcall Sequences \(Tx\)](#) tab, define the [Fixed Call Sequence](#) fields. If the Selcall system the call is transmitted on requires any of [repeater identity](#), [caller identity](#) and [status](#), they are read from the fixed call sequence.
2. In the [Alpha Symbols](#) form, if no alpha symbols have been defined, press the F2 key or the Add button. If more than one alpha symbol is listed, select the first alpha symbol in the list. The one touch call programmed is the first alpha symbol in the list. For the first symbol in the list, set:
  - a. A [Symbol Name](#), [New Channel](#) and [New Status](#) suitable for the radio being programmed. The New Channel should have assigned to it the Selcall system for which you defined the [Fixed Call Sequence](#).
  - b. [Signalling Type](#) to Selcall.
  - c. [Signalling Number](#) to the Selcall sequence that is transmitted. The Signalling Number should be the receiver identity only since the other bursts, if required, is read from the fixed call sequence.
3. Assign the call to a function key setting by selecting the [One Touch](#) option for one of the function key settings in the [Key Settings I](#) tab.

#### alpha symbol

*An alpha symbol is a sequence of commands that, depending on the radio type, can change to a specific channel, dial a Selcall or DTMF call, change the radio's status or any combination of these three tasks. The first alpha symbol defined can be assigned to a function key setting. This is called a one touch call, and is the only alpha symbol available for Orca Elan, Orca Excel, Orca 5010 and Orca 5015 radios.*

### Selcall Dialling

The Selcall dialling feature allows the radio user to dial [Selcall sequences](#) using the numeric keypad. Selcall dialling is available on [Orca Excel](#), [Orca Eclipse](#) and [Orca 5020](#) radios and is enabled by defining the variable call sequence ([Selcall Identity \(Rx\)](#) tab).

In the variable call sequence, set the tones the user dials to V. For example, if a group of users has been assigned identities

45601 to 45610, you could set the R burst of the variable call sequence to 456VV. The radio user would then dial 10 to call radio 45610.

On Orca Excel radios, up to three of the tones in the B, R and C bursts of the variable call sequence can be set to V. On Orca Eclipse and Orca 5020 radios, up to eight of the tones in the B, R and C bursts can be set to V. On Orca Eclipse and Orca 5020 radios, the status burst can also be set to V. See “[Status Messages and Control Status](#)” on page 160 for more information.

#### **variable status**

*The S burst of a Selcall sequence can be programmed with a V. When the sequence is transmitted, the status digit included is the one the user last selected in status entry mode.*

## **Status Messages and Control Status**

Selcall sequences can include one or two additional tones called status digits. In the [transmit format](#) and [receive format](#), the status digit is represented by the character S, and so this part of a sequence is known as the S burst.

There are two types of status:

- [status messages](#)
- [control status](#).

Status messages are available on Orca Eclipse and Orca 5020 radios. Control status are available on all radios. Status messages and control status are set up in the [Selcall Control Status Definitions](#) form.

The status digit is the information transmitted. If the receive format has one S, then there are 16 possible status digits, numbered 0 to 15. If the receive format has two Ss, there are 100 possible status digits, numbered from 0 to 99.

If a radio is operating on Selcall systems that have a mix of no status or one-tone (0 to 15) and two-tone (0 to 99) status bursts:

- no status digits are valid on systems that do not include status in the receive format
- status digits 16 to 99 are not valid on systems that have only one status tone.

### **Status Messages**

Status messages are used to represent the current activity of a radio user. Status messages are made up of a status digit and a status label.

The status label is up to eight characters long and is displayed when its associated status digit is decoded in an incoming Selcall sequence. The [Automatic Caller Identification](#) feature must be enabled for the radio to display received status. If no status labels are defined or if the received status digit does not match any of the status labels, then status is displayed as a digit rather than a label.

Only one set of status messages can be defined for a radio ([Status Labels](#) tab).



The status messages and control status defined in the [Selcall Control Status Definitions](#) form are shared by all Selcall systems defined for a radio.

### **Control Status**

Control status initiate a particular radio operation when decoded in an incoming Selcall sequence. Unlike [status messages](#), control status do not have to have a corresponding status label. Tait Orca radios support control status for the following functions.

- **Priority calls:** When the priority control status is received, the radio activates the alert specified for priority calls in the [Selcall Rx Decode Setup](#) form and clears down any call in progress that is not a priority call. The priority call control status is set in the [Control Status](#) tab.
- **Quiet interrogation:** When the quiet interrogation control status is received, the radio transmits the [auto acknowledge](#) sequence for the current Selcall system without alerting the radio user to the receipt of the Selcall sequence. The quiet interrogation control status is set in the [Control Status](#) tab.
- **Stun and revive:** Two control status are provided for the [stun and revive](#) feature. When the activate stun control status is received, the radio ceases normal operation. When the deactivate stun control status is received, a stunned radio resumes normal operation. The stun and revive control status are set in the [Control Status](#) tab.
- **Data operation:** When the data control status is received, the radio stops all Selcall decoding and starts up data decoding. The data control status is set in the [Control Status](#) tab.
- **Call diversion:** When the call diversion control status is received in an auto acknowledge, the radio selects the call diversion channel and indicates to the radio user that the called radio is in call diversion mode. The user can then make a new call on that channel if they wish. The call diversion control status is set in the [Selcall Features](#) form.

The status messages and control status defined in the [Selcall Control Status Definitions](#) form are shared by all Selcall systems defined for a radio. The call diversion control status is set in the [Selcall Features](#) form and is also shared by all Selcall systems defined for a radio.

# Appendix C: Introduction to DTMF

DTMF (dual tone multiple frequency) is the tone-based system used for the world's telephone networks. A DTMF tone actually consists of a pair of [tones](#).

Tait Orca radios can encode series of DTMF tones (referred to as [DTMF strings](#)) and so can make DTMF calls, but cannot decode DTMF tones and so cannot receive DTMF calls. If the system a radio is operating on has access to systems that make use of DTMF tones, the radio can make DTMF calls to those systems. Examples of such systems are the public switched telephone network, message retrieval systems and telephone banking facilities.

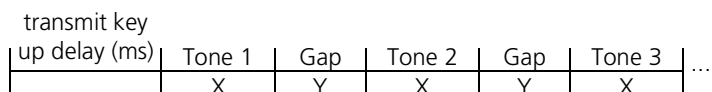
Tait Orca radios can make DTMF calls in three ways:

- DTMF presets
- DTMF dialling
- DTMF [ANI](#).

DTMF dialling is available for [Orca Excel](#), [Orca Eclipse](#) and [Orca 5020](#) radios. How DTMF tones are transmitted is the same for both DTMF presets and DTMF dialling.

## DTMF Tone Transmission

How DTMF strings are transmitted is illustrated in the diagram below.



The different timing parameters are programmable and are defined in the [DTMF Dialling](#) tab.

The transmit key up delay is the time, in milliseconds, between when the transmission has been initiated (by the press of a function key, the DTMF key or the enter key) and the time transmission of the DTMF string actually starts. The transmit key up delay gives the repeater time to stabilise before the first DTMF tone is transmitted, and is set in the [Transmit Key Up Delay](#) field.

**X** is how long each tone in the string is transmitted, or the tone duration, in milliseconds. The minimum tone duration is programmable, as outlined below. The actual duration may be longer if the radio user presses the key for longer than the minimum tone duration.

- The duration of tones 0-9 and A-D is set in the [Minimum Tone Duration \(0-9, A-D\)](#) field.
- The duration of tones \* and # is set in the [Minimum Tone Duration \(\\*, #\)](#) field.

### tone

*A tone is a sound wave of a particular frequency. When defining DTMF strings, the different tones are represented by the characters 0-9, A-D, \* and #. The frequencies used are determined by an internationally accepted standard.*

### DTMF string

*A DTMF string is a series of DTMF tone pairs.*

**Y** is the amount of time between the transmission of each tone in the string, or the gap duration, in milliseconds. The gap duration is set in the [Minimum Intertone Gap](#) field.

## DTMF Presets

There are three ways to make preset DTMF calls.

- **Function key:** On all radios, a preset DTMF call can be assigned to one of the function key settings. To send the call, the user selects the channel the DTMF call is assigned to and presses the assigned function key. Different preset calls can be programmed for different channels. See [“Programming Per Channel DTMF Calls”](#) below.
- **DTMF key:** On [Orca Excel](#) and [Eclipse](#) radios, a preset DTMF call can be assigned to a long press of the DTMF key. To send the call, the user selects the channel the DTMF call is assigned to and presses the assigned key. Different preset calls can be programmed for different channels. See [“Programming Per Channel DTMF Calls”](#) below.
- **One touch call:** On all radios, a single one-touch DTMF call can be assigned to one of the function keys. It is not necessary to change channels to send this call; the user simply presses the assigned function key. See [“Programming a One-Touch DTMF Call”](#) on page 164.

## Programming Per Channel DTMF Calls

Per channel DTMF calls, whether assigned to a function key or to the DTMF key, are programmed in a similar manner.

Per channel calls assigned to the DTMF key are set up in the [DTMF Presets](#) tab and the [Channels](#) form. See [“DTMF Key Per Channel Calls”](#) only.

For per channel calls assigned to a function key, you must also set a field in the [Key Settings I](#) tab. See [“Function Key Per Channel DTMF Calls”](#) below.

### ***DTMF Key Per Channel Calls***

1. In the [DTMF Presets](#) tab, set:
  - a. a [DTMF ID](#), which is a number from 1 to 20; and
  - b. a [Preset Call String](#), which is the sequence of DTMF tones that is transmitted.
2. In the [Channels](#) form, assign the preset call to a channel by entering:
  - a. the preset call’s DTMF ID into the [DTMF ID](#) field for the appropriate channel.

### ***Function Key Per Channel DTMF Calls***

If you wish to assign DTMF preset calls to a press of the function key, follow the steps outlined for [“DTMF Key Per](#)

Channel Calls” on page 163 and then in the **Key Settings I** tab, choose the **Channel’s DTMF Preset** option for one of the function key settings.

## Programming a One-Touch DTMF Call

A one-touch DTMF call is set up in the **Alpha Symbols** form and the **Key Settings I** tab. In the **Alpha Symbols** form, if no alpha symbols have been defined, press the F2 key or the Add button. If more than one alpha symbol is listed, select the first alpha symbol in the list. The one touch call programmed is the first alpha symbol in the list.

1. For the first symbol in the list, set:
  - a. a **Symbol Name**, **New Channel** and **New Status** suitable for the radio being programmed;
  - b. **Signalling Type** to DTMF
  - c. **Signalling Number** to the DTMF string that is transmitted.
2. To assign the call to a function key setting:
  - a. for one of the function key settings (**Key Settings I** tab), choose the **One Touch** option.

## DTMF Dialling

The DTMF dialling feature allows the radio user to dial **DTMF strings** using the numeric keypad. DTMF dialling is available on **Orca Excel**, **Orca Eclipse** and **Orca 5020** radios.

Most DTMF dialling features are set in the **DTMF Dialling** tab. Exceptions are:

- **Default Mode** (**Specifications** form). If you wish to use **DTMF dialling mode** as the **default mode**, then set Default Mode to DTMF.
- **DTMF Dialling Type** (**User Selectable Parameters** form). On Orca Eclipse radios, ticking the In User Menu? box gives the radio user the option to change the dialling type using the **user function menu**.

The relevant fields in the **DTMF Dialling** tab are as follows.

- The **Manual DTMF Dialling** field enables and disables DTMF dialling.
- The **Interdigit Tx Hold Time** field determines how long the radio keeps transmitting between the encoding of each tone. This provides a delay for the user to dial the next digit without transmission stopping and restarting again. Some systems require continuous transmission between DTMF tones and for such systems, this field should be set to a long hold time.
- The **DTMF Redial Transmission** field enables and disables the **DTMF redial** feature.

### alpha symbol

*An alpha symbol is a sequence of commands that, depending on the radio type, can change to a specific channel, dial a Selcall or DTMF call, change the radio’s status or any combination of these three tasks. The first alpha symbol defined can be assigned to a function key setting. This is called a one touch call, and is the only alpha symbol available for Orca Elan, Orca Excel, Orca 5010 and Orca 5015 radios.*

### DTMF dialling mode

*In DTMF dialling mode, the user can dial DTMF strings. DTMF dialling mode is available when the Manual DTMF Dialling field in the DTMF form is enabled.*

- The **PTT as Shift Key** field enables and disables the **PTT as shift key** feature.
- The **DTMF Dialling Type Buffered** field determines whether the dialling type is **normal dialling** or **buffered dialling**.
- The **DTMF Mode Selcall ANI Transmission** field determines whether **ANI** transmission continues while the radio is in DTMF dialling mode. If the **PTT as shift key** feature has been enabled and a DTMF call is being made on a **Selcall system**, the transmission of the ANI sequence when the PTT is pressed could result in interference.

**ANI**

*ANI stands for “automatic number identification”. A Selcall or DTMF system can be set up so that each radio automatically transmits its identity at regular intervals throughout the duration of a call. Each radio’s identity is transmitted on each exchange of transmissions (each press of the PTT) unless the ANI suppression time has not expired. ANI makes it possible to set up a log of a radio’s channel activity.*

# Appendix D: Reducing Power Consumption on Tait Orca Radios

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There are three programmable options for reducing power consumption for Tait Orca radios.

- Use economy mode. See “[Economy Mode](#)” below.
- Reduce the amount of time backlighting remains active. See “[Backlighting](#)” on page 168.
- Reduce the transmit power. See “[Set Low Power On All Channels](#)” on page 138 to reduce the transmit power for all channels, and “[Power Level](#)” on page 46 to reduce the transmit power of individual channels.

## Economy Mode

Economy mode reduces the radio’s power consumption when it is idle. When economy mode is active, and there has been no [valid activity](#) on a [channel](#) for the duration of the [economy mode timer](#), the radio begins economy cycling. The beginning of a transmission may be lost following a period of inactivity.

### economy mode timer

*The economy mode timer sets the time between when valid activity was last detected on a channel and the start of economy cycling.*

## Economy Cycling

Economy cycling is the switching between states that occurs when economy mode is active and after there is no [valid activity](#) on a [channel](#) for the duration of the economy mode timer.

Economy cycling consists of two states:

- Receive state: The radio powers up to determine whether the current channel is carrying [valid traffic](#).
- Standby state: The radio’s circuitry is either switched off or placed in standby mode.

The amount of time the radio spends in each state is determined by the economy duty cycle.

The radio cycles between the receive and standby states until economy cycling is suspended or until economy mode is deactivated. Economy cycling is suspended if:

- valid activity is found on a channel or
- if the radio is switched to a [scan group](#).

Economy cycling recommences when there is no longer valid activity on a channel or when a scan group is no longer selected, although the radio’s indicators continue to show that the radio is in economy mode.

## Economy Duty Cycle

The economy duty cycle determines the amount of time the radio spends in the receive and standby states while economy cycling. There are three options.

- Low: 200 ms standby
- Medium: 500 ms standby
- High: 800 ms standby.

The radio spends between 120 and 500 ms in the receive state, depending on the [signalling](#) on the channel.

## Using Economy Mode with Selcall

Selcall systems can be set up so that a lead-in tone is transmitted for a preprogrammed period of time (the lead-in delay) at the start of Selcall sequences. This allows receiving radios time to halt scanning and lock onto the channel before critical tones are received.

If, however, the receiving radio is in the standby state when another radio sends a Selcall sequence, the receiving radio could switch into the receive state towards the end of the lead-in tone or after it has been transmitted. The receiving radio may not be able to reliably decode the remainder of the Selcall sequence. For this reason, it is important to set the lead-in delay to at least 100 ms longer than the time the radio spends in the standby state. For example, if the economy duty cycle is Medium (standby = 500 ms), the lead-in delay should be set to at least 600 ms, especially if the radio is operating on a repeater.

The economy duty cycle setting of High is not recommended for Selcall systems operating on a repeater as the lead-in delay would need to be set to at least 900 ms.

## Activating Economy Mode

Economy mode can be activated in the following ways.

- Economy mode can be permanently enabled. In the [User Selectable Parameters](#) form, ensure that the Initial Setting box is ticked for the field [Economy Mode Control](#).
- Economy mode can be turned on and off by the press of a function key. Set one of the function key settings for [Economy Mode Control \(Key Settings I tab\)](#).
- On [Orca Eclipse](#) and [Orca 5020](#) radios, economy mode can be turned on and off from the [user function menu entry mode](#). For the [Orca Eclipse](#), ensure that the In User Menu? box is ticked for the field [Economy Mode Control \(User Selectable Parameters form\)](#). For the [Orca 5020](#), tick the ECONOMY box in the [User Defined Menu](#) form.

### Selcall

For more information on Selcall see [“Introduction to Selcall” on page 153](#).

### user function menu entry mode

In user function menu entry mode, the user can customise radio options. For [Orca Eclipse](#) radios, the user defined menu is set up in the [User Selectable Parameters Form](#). For [Orca 5020](#) radios, the user defined menu is set up in the [User Defined Menu Form](#).

## Backlighting

Backlighting is the lighting up of the radio's LCD whenever there is activity on the radio, such as when valid activity is detected on a channel, when a key is pressed or when a call is received.

The [backlighting timer](#) determines how long backlighting remains on, once it is activated. There are two ways backlighting can be activated, and how it was activated affects how the backlighting timer operates.

- **Backlighting activation:** If backlighting is activated by the press of a function key programmed with the Backlighting option, backlighting remains on for the duration of the [backlighting timer](#).
- **Night use activation:** If backlighting is activated as part of the [night use](#) feature, backlighting remains on for the duration of the backlighting timer, which resets to its programmed value and begin counting down again whenever there is activity on the radio.

Battery life can be extended by reducing the amount of time radio backlighting remains active.



## Appendix E: What's New - Orca 5000 Series

This section outlines new features for [Orca 5010](#), [Orca 5015](#) and [Orca 5020](#) radios. Each feature will be available on radios with the corresponding version number or higher.

Feature	Form	Firmware Version	Database Version
Mix DCS and CTCSS on channel	Channels	2.10	3.03
Man Down Accessory Connected	General Options	2.10	3.03
Channel Banking (Orca 5020)	Channel Selection	2.10	3.03
Subaudible Signalling on Rx Gate	Subaudible Signalling	2.07	3.02
Channel Selector and Selector Position	Channel Selection	2.07	3.02
Lone Worker	General Options	2.07	3.02
Short and long press of external function keys	Key Settings	2.07	3.02
DTMF ANI	DTMF	2.07	3.02
Orca 5015 radio model	Specifications	2.06	3.01
Flexiscan (options)	Scan Groups	2.05	3.01
Flexiscan (initial setting)	User Selectable	2.05	3.01
Audio Noise Reduction	Receiver Monitoring	2.05	3.01
Tone Blanking: Number of Tones to Activate and Deactivation Timer	Selcall Features	2.05	3.01

# Glossary

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Terms in *italics* are defined in the glossary.

- 16-way selector** The 16-way selector is the larger of the two switches on the top of *Orca Elan*, *Orca Excel*, *Orca 5010*, *Orca 5015* and *Orca 5020* radios. Each position on the 16-way selector can denote a *channel* or a *scan group*.
- accessory** An accessory is an external device fitted to a radio, such as an external speaker microphone or lapel microphone. Accessories are fitted to the radio via the accessory connector on the back of the radio.
- alpha symbol** An alpha symbol is a sequence of commands that, depending on the radio type, can change to a specific channel, dial a Selcall or DTMF call, change the radio's status or any combination of these three tasks.
- The first alpha symbol defined can be assigned to a function key setting. This is called a *one touch call*, and is the only alpha symbol available for *Orca Elan*, *Orca Excel*, *Orca 5010* and *Orca 5015* radios.
- Orca Eclipse* and *Orca 5020* radios can have up to 20 alpha symbols, which are available through *alphanumeric entry mode*.
- Alpha symbols are defined in the [Alpha Symbols](#) form.
- alphanumeric entry mode** In alphanumeric entry mode, the user can select and execute up to 20 *alpha symbols*.
- Alphanumeric entry mode is available on *Orca Eclipse* and *Orca 5020* radios once an alpha symbol has been defined in the [Alpha Symbols](#) form.
- ANI** ANI is a Selcall and DTMF feature.
- ANI stands for “automatic number identification”. A Selcall or DTMF system can be set up so that each radio automatically transmits its identity at regular intervals throughout the duration of a call. Each radio's identity is transmitted on each exchange of transmissions (each press of the PTT) unless the *ANI suppression time* has not expired. ANI makes it possible to set up a log of a radio's channel activity.
- All Tait Orca radios can be set up to transmit (encode) Selcall ANI. *Orca 5010*, *Orca 5015* and *Orca 5020* radios can transmit (encode) DTMF ANI. *Orca Eclipse* and *Orca 5020* radios can also decode Selcall ANI and so determine what radios are transmitting on the system.
- Selcall ANI encoding and decoding are enabled in the [Selcall Features](#) form. DTMF ANI encoding is set in the [DTMF ANI tab](#). DTMF ANI can only be enabled on a channel that has a DTMF ID, and does not have a Selcall System, associated with it.
- ANI suppression time** The ANI suppression time is the minimum amount of time between subsequent transmissions of the [ANI](#) sequence.

<b>appended C tone monitor reset</b>	<p>Appended C tone monitor reset is a Selcall feature.</p> <p>The <i>monitor</i> is deactivated when an incoming <i>Selcall sequence</i> that contains the <i>radio's identity</i> has a C tone appended to the end of a <i>burst</i>. Emergency cycling (see <i>Emergency mode</i>) is also deactivated.</p> <p>Appended C tone monitor reset is enabled in the <i>Selcall Features</i> form.</p>
<b>audible indicators</b>	<p>Tait Orca radios use combinations of audible indicators and visual displays to indicate the radio's current state and activity.</p> <p>Audible indicators include <i>keypress confidence tones</i>, received call signals, low battery and high temperature warnings, <i>transmit timer</i> and unanswered call signals.</p> <p>Audible indicators are enabled in the <i>User Selectable Parameters</i> form.</p>
<b>auto acknowledge</b>	<p>Auto acknowledge is a Selcall feature.</p> <p>When a radio receives a Selcall sequence that contains its identity, it can be programmed to transmit an auto acknowledge sequence.</p> <p>An auto acknowledge sequence can also include a <i>status digit</i>. If on <i>Orca Eclipse</i> and <i>Orca 5020</i> radios the <i>called unit status display</i> feature is enabled, a <i>status message</i> is displayed upon receipt of the auto acknowledge.</p>
<b>auto quiet timer</b>	<p>The auto quiet timer determines how long <i>monitor</i> remains active. The auto quiet timer is suspended while the radio is transmitting or while there is <i>valid activity</i> on a channel. Once a transmission is complete or when the radio is switched to another channel, the auto quiet timer either begins counting down once again (continuous) or resets to the programmed duration of the auto quiet timer (reset).</p> <p>The duration of the auto quiet timer and whether it counts down continuously or resets are set in the <i>Receive Monitoring</i> form.</p>
<b>automatic caller identification</b>	<p>Automatic caller identification is a Selcall feature available on <i>Orca Excel</i>, <i>Orca 5015</i> and <i>Orca 5020</i> radios.</p> <p>When an incoming call is received, the caller identity is displayed so the radio user can identify the caller before responding.</p> <p>Automatic caller identification is enabled in the <i>Selcall Features</i> form.</p>
<b>backlighting</b>	<p>The radio's LCD lights up when there is activity on the radio, such as when a key is pressed or when a call is received.</p> <p>Battery life can be extended by reducing the amount of time radio backlighting remains active.</p> <p>Backlighting can be activated in two ways.</p> <ul style="list-style-type: none"> <li>■ A function key can be programmed to activate backlighting (<i>Backlighting On/Off</i> option).</li> <li>■ The radio can be programmed for <i>night use</i>, which can be turned on and off by the press of a function key (<i>Night Use</i> option) and on <i>Orca Eclipse</i> and <i>Orca 5020</i> radios via the <i>user function menu</i> option.</li> </ul>

The value of the *backlighting timer* and how backlighting was activated determine how long backlighting remains on.

**backlighting timer**

The backlighting timer determines how long *backlighting* remains on once it is activated. There are two ways backlighting can be activated, and how it was activated affects how the backlighting timer operates.

- If activated via the *Backlighting On/Off* function key setting, backlighting remains on for the duration of the backlighting timer.
- If activated via the *Night Use* function key setting or via the *NIGHT user function menu* option, backlighting remains on for the duration of the backlighting timer, which resets whenever a key is pressed or a call is received.

The duration of the backlighting timer is set in the *Power Save Features form*.

**birdie**

A birdie is a hum or whistle on a channel caused by internal interference. A birdie can be eliminated by activating a *birdie killer* on the channel.

**birdie killer**

A birdie killer is an internal circuitry switch that greatly reduces the effect of a *birdie* on a channel.

Birdie killers are set in the *Birdie Channels form*.

**buffered dialling**

When a *DTMF string* is dialled, the string is either transmitted separately as each individual key is pressed (*normal dialling*) or in its entirety once the enter key is pressed (buffered dialling).

The DTMF dialling type is set in the *DTMF form*.

**burst**

A burst is a series of *tones* (a *tone burst*) or *gaps* (a *gap burst*) in a *Selcall sequence*.

**calibration**

Calibration is the process whereby a radio is electronically tuned. *Orca Elan*, *Orca Excel* and *Orca Eclipse* radios are calibrated using a PC running either the Calibration System for Tait Orca Radios (DOS-based) or the Calibration Application (Windows-based). *Orca 5010*, *Orca 5015* and *Orca 5020* radios are calibrated using the Windows-based Calibration Application.

**call diversion**

Call diversion is a Selcall feature available on *Orca Eclipse* and *Orca 5020* radios.

Call diversion allows the radio user to divert received calls to another channel, and although it is not available on Tait Orca radios, Orca Eclipse and Orca 5020 radios recognise a call diversion message from another radio and switch to the designated channel.

Call diversion is enabled in the *Selcall Features form*.

**call queuing**

Call queuing is a Selcall feature available on *Orca Eclipse* and *Orca 5020* radios.

	<p>If the radio user is unable to answer calls immediately, they can be stored in the call queue so that the user can call back later. Up to 15 calls can be stored.</p> <p>Call queuing is enabled in the <a href="#">Selcall Features</a> form (<a href="#">Received Call Queuing</a> field).</p>
<b>called unit status display</b>	<p>Called unit status display is a Selcall feature available on <a href="#">Orca Eclipse</a> and <a href="#">Orca 5020</a> radios.</p> <p>When a called radio responds with an <a href="#">auto acknowledge</a> that contains <a href="#">status digit</a>, the auto acknowledge sequence is displayed on the calling radio, together with any attached <a href="#">status message</a>.</p> <p>Called unit status display is enabled in the <a href="#">Selcall Features</a> form.</p>
<b>caller identity</b>	<p>In a <a href="#">Selcall sequence</a>, the caller identity is the part of the sequence that identifies the radio transmitting the sequence. In the <a href="#">transmit (Tx) format</a> and <a href="#">receive (Rx) format</a>, the caller identity is represented by the character C, and so this part of a sequence is known as the C burst.</p>
<b>captured channel</b>	<p>When the radio is <a href="#">scanning</a> a <a href="#">group</a> of <a href="#">channels</a> and valid activity is found on one of those channels, the radio remains on that channel until the activity is no longer valid and the <a href="#">group hold time</a> has expired or until valid activity is found on a higher <a href="#">priority channel</a>. While the radio is stopped on that channel, the channel is said to be captured, and transmissions are on the captured channel rather than on the <a href="#">home channel</a>.</p>
<b>captured priority sample timer</b>	<p>The value of the captured priority sample timer determines how often priority channels are scanned when a lower <a href="#">priority channel</a> is <a href="#">captured</a>.</p> <p>The duration of the captured priority sample timer is set in the <a href="#">Scan Groups</a> form.</p>
<b>CCDI</b>	<p>See <a href="#">computer controlled data interface</a></p>
<b>CCIR</b>	<p>CCIR is one of the Selcall <a href="#">tone sets</a> the Conventional Programming Application supports.</p>
<b>channel</b>	<p>A channel is a pair of radio frequencies, one used for transmitting and one used for receiving.</p> <p>Channels are set up in the <a href="#">Channels</a> form.</p>
<b>channel banking</b>	<p>Channel banking is a feature in <a href="#">Orca 5020</a> radios, that enables a large number of channels to be managed by dividing them into banks. How channels are assigned to banks is dependant on the <a href="#">16-way Selector Mode</a> setting.</p> <ul style="list-style-type: none"> <li>■ If set to Bank Selection, the total number of channel banks will be 16, and each bank will have a total of 32 channels (except the last bank with 29 channels). Channel IDs 1 to 32 will be assigned to the first bank,</li> </ul>

channel IDs 33 to 64 to the second and so on. Banks can be selected via the 16-way selector. When a new bank is selected, the radio's channel will change to the first channel within the newly selected bank, with the [Channel Name](#) on the radio display. Channels within a bank can be selected using the keypad.

- If set to Channel Selection, the total banks will be 32, and each bank will have 16 channels (except the last bank with 13 channels). Channel IDs 1 to 16 will be assigned to the first bank, channel IDs 17 to 32 to the second and so on. Banks can be selected via the [SELECT BANK](#) user defined menu option. When a new bank is selected, the radio's channel will change to the channel specified by the 16-way selector position within the newly selected bank, with the [Channel Name](#) on the radio display. Channels within a bank can be selected using the 16-way selector or the keypad.

**channel entry lock**

The channel entry lock feature is available for [Orca Excel](#), [Orca 5015](#) and [Orca 5020](#) radios.

Channel entry lock prevents the user from selecting a new channel from the keypad when a valid channel has already been selected from the [16-way selector](#). When the user tries to enter a new channel, the radio gives a long, low-pitched beep to indicate that the action is invalid.

Channel entry lock is enabled in the [Specifications form](#).

**channel entry keypad lockout**

See [channel entry lock](#)

**channel entry mode**

In channel entry mode, or channel selection mode, the user can change to a different [channel](#) or [scan group](#). Channel entry mode is automatically available on all radios.

**channel reversion timer**

The channel reversion timer applies to [Orca Excel](#), [Orca 5015](#) and [Orca 5020](#) radios.

The channel reversion timer determines how long the radio remains on a channel selected from the keypad after a period of inactivity. When the channel reversion timer expires, the radio reverts to the channel indicated by the position of the [16-way selector](#).

The duration of the channel reversion timer is set in the [Specifications form](#) ([Channel Reversion Timer](#) field).

**channel selector**

See [16-way selector](#).

**channel spacing**

Channel spacing is the interval between [channels](#). For Tait Orca radios, this is 12.5, 20 or 25 kHz. Wide Band radios can be programmed for operation on 20 and 25 kHz channels only. Universal Band radios can be programmed for operation on 12.5, 20 and 25 kHz channels.

Channel spacing is set in the [Channels](#) form.

<b>city squelch</b>	<p>When a radio's <i>squelch threshold</i> is programmed for city squelch, the radio is less sensitive to interference than if programmed for <i>country squelch</i> and so stronger signals are required for the radio's speaker to unmute.</p> <p>The value of city squelch is set at radio <i>calibration</i> time.</p>
<b>computer controlled data interface</b>	<p>The computer controlled data interface (CCDI) provides a means of controlling Tait Orca conventional radios from some form of computer equipment. The CCDI allows for the implementation of semi- and fully-automatic communications systems such as short data messaging (<i>SDMs</i>), computerised despatch terminals, remote outstations and data radio terminals.</p>
<b>confidence indicator</b>	<p>Confidence indicators provide feedback to the radio user on how the current operation is proceeding. For example, <i>keypress confidence tones</i> are the tones heard when a keypad key or a function key is pressed and tell the user whether or not an action is permitted.</p>
<b>contrast adjustment</b>	<p>The contrast adjustment feature allows the radio user to adjust the display contrast. Once activated, the radio user adjusts contrast using the scroll keys. The radio returns to its previous mode of operation after a few seconds of inactivity.</p>
<b>control status</b>	<p>Control status is a Selcall feature.</p> <p>A control status is a <i>status digit</i> that when received, initiate a particular radio operation. For example, when a radio receives a <i>quiet interrogation status</i> digit, it transmits its <i>auto acknowledge</i> sequence with its current <i>status</i> appended without activating the call received indicator.</p>
<b>country squelch</b>	<p>When a radio's <i>squelch threshold</i> is programmed for country squelch, the radio is more sensitive than if programmed for <i>city squelch</i> and so the radio's speaker unmutes more readily. When programmed for country squelch, the radio can be used in areas where the signal may be weak and where maximum range is desirable.</p> <p>The value of country squelch is set at radio <i>calibration</i> time.</p>
<b>CTCSS</b>	<p>CTCSS (continuous tone controlled squelch system) is a type of <i>signalling</i> used for segregating groups of users. CTCSS uses subaudible <i>tones</i> between 67 and 250.3 Hz to identify a group of radio users.</p>
<b>CTCSS invalid confirmation delay</b>	<p>When an incoming <i>CTCSS</i> signal has been found to be <i>valid</i> but then degrades to the point where the radio can no longer accurately decode it, the radio continues to consider it valid for the duration of the CTCSS invalid confirmation delay. If once the delay has expired the signal still cannot be accurately decoded, the signal is treated as <i>invalid</i>.</p> <p>The CTCSS invalid confirmation delay is set in the <i>Subaudible Signalling Setup</i> form.</p>

<b>CTCSS/DCS filter</b>	<p>The CTCSS/DCS filter removes any <i>CTCSS</i> or <i>DCS</i> tones that may be present on the received audio. The filter limits the range of frequencies the radio passes from the incoming signal to the speaker and so in some situations affects signal quality. Filtering can be automatically switched off for channels that do not have CTCSS or DCS.</p> <p>The CTCSS/DCS filter is enabled in the <a href="#">Subaudible Signalling Setup form</a>.</p>
<b>data</b>	See <a href="#">computer controlled data interface</a> .
<b>data identity</b>	<p>The data identity is the identity assigned to the radio for operation in the <a href="#">computer controlled data interface</a>. A data identity must be assigned if the radio is to receive short data messages (<i>SDMs</i>).</p> <p>The data identity is set in the <a href="#">Data Parameters form</a>.</p>
<b>DCS</b>	<p>DCS (digital coded squelch) is a type of <i>signalling</i> used for segregating groups of users. DCS uses subaudible <i>tones</i> between 10 and 134 Hz to transmit digital data to identify a group of radio users.</p> <p>DCS codes take the form of a continuously repeating 23-bit digital codeword that represents a user group. Codewords are identified by a three-digit octal number, which forms part of the codeword. The remainder of the codeword includes a sequence of bits derived mathematically from the three-digit code.</p> <p>When assigning DCS signalling for a channel, it is only necessary to specify the three-digit code. See “<a href="#">Standard DCS Codes and Their Inverses</a>” on <a href="#">page 147</a> and “<a href="#">Commonly Used DCS Codes and Their Inverses</a>” on <a href="#">page 148</a> for the DCS codes Tait Orca radios support.</p>
<b>DCS polarity</b>	<i>DCS</i> signals are susceptible to polarity inversion at various points in the signal path from originator to recipient. On some systems, consistent inversions can be compensated for by forcing the radio to decode the inverse of every codeword.
<b>default mode</b>	<p>The default mode is the mode the radio enters into once the power-up sequence is complete and after 10 seconds of no user activity.</p> <p>Possibilities are:</p> <ul style="list-style-type: none"> <li>■ <a href="#">alphanumeric entry mode</a></li> <li>■ <a href="#">channel entry mode</a></li> <li>■ <a href="#">DTMF dialling mode</a></li> <li>■ <a href="#">Selcall dialling</a></li> <li>■ <a href="#">status entry mode</a></li> <li>■ <a href="#">user function menu entry mode</a></li> </ul> <p>No default mode is also an option.</p> <p>When no default mode has been programmed, the radio powers up in the mode selected when the radio was last on.</p> <p>Default mode is set in the <a href="#">Specifications form</a>.</p>



<b>deferred calling</b>	<p>Deferred calling is a Selcall feature.</p> <p>When the <i>transmit inhibit</i> conditions are Busy or Mute, a Selcall call cannot be transmitted on a busy channel. When the deferred calling feature is enabled, the call is stored and sent at a random time between 1 and 10 seconds after the channel becomes free.</p> <p>When a call has been deferred, <i>scanning</i> is suspended until the call is successfully sent or until the deferred call is cancelled (by pressing any key or switching to another channel).</p> <p>Deferred calling is enabled in the <a href="#">Selcall Features</a> form.</p>
<b>double voting</b>	<p>Double voting is a type of <i>voting</i> in which the signal strength of each channel in the group is measured twice.</p>
<b>double voting with signalling</b>	<p>Double voting with signalling is a type of <i>voting</i> in which a channel must have valid signalling before it is made the <i>home channel</i>. The channel's signal strength is measured twice.</p>
<b>DTMF</b>	<p>DTMF (dual tone multiple frequency) is the tone-based system used for the world's telephone networks. A DTMF "tone" actually consists of a pair of <i>tones</i>. DTMF tones are sometimes referred to as "touch tones".</p> <p>Tait Orca radios can encode DTMF tones and so can make DTMF calls (see <i>DTMF string</i>), but cannot decode DTMF tones and so cannot receive DTMF calls.</p>
<b>DTMF call</b>	<p>See <i>DTMF string</i>.</p>
<b>DTMF dialling</b>	<p>The DTMF dialling feature allows the radio user to dial <i>DTMF strings</i> using the numeric keypad. The alternative to DTMF dialling is <i>DTMF presets</i>.</p>
<b>DTMF dialling mode</b>	<p>DTMF dialling mode is available on <i>Orca Eclipse</i>, <i>Orca Excel</i>, <i>Orca 5015</i> and <i>Orca 5020</i> radios.</p> <p>In DTMF dialling mode, the user can dial <i>DTMF strings</i>. DTMF dialling mode is available when the <a href="#">Manual DTMF Dialling</a> field in the <a href="#">DTMF form</a> is enabled.</p>
<b>DTMF preset</b>	<p>A DTMF preset is a string of DTMF <i>tone</i> pairs defined for a radio at programming time.</p>
<b>DTMF redial</b>	<p>DTMF redial is a feature of <i>DTMF dialling mode</i>. When the radio user enters DTMF dialling mode, the last DTMF string transmitted is displayed. The user can transmit that string by pressing the enter key.</p> <p>DTMF redial is enabled in the <a href="#">DTMF</a> form.</p>
<b>DTMF string</b>	<p>A DTMF string is a series of DTMF <i>tone</i> pairs.</p>

<b>dual priority scanning</b>	Dual priority scanning is a type of <i>scanning</i> in which two of the <i>member channels</i> are designated as <i>priority channels</i> . The priority channels are scanned more often than the other member channels. How often the priority channels are scanned is determined by the <i>priority sample timers</i> .
<b>DZVEI</b>	DZVEI is one of the Selcall <i>tone sets</i> the Conventional Programming Application supports.
<b>economy cycling</b>	<p>Economy cycling is the switching between states that occurs when <i>economy mode</i> is active and after there is no <i>valid activity</i> on a <i>channel</i> for a preprogrammed time (the <i>economy mode timer</i>). Economy cycling consists of two states, the receive state and the standby state. The amount of time the radio spends in each state is determined by the <i>economy duty cycle</i>.</p> <p>The radio cycles between these two states until economy cycling is suspended or until economy mode is deactivated. Economy cycling is suspended if valid activity is found on a channel and while the radio is scanning or voting. Economy cycling recommences when there is no longer valid activity on a channel or when a scan group is no longer selected.</p> <p>Economy cycling is suspended while a <i>scan group</i> is selected.</p>
<b>economy duty cycle</b>	<p>The economy duty cycle is the amount of time the radio spends in the receive and standby states during <i>economy cycling</i>.</p> <p>The economy duty cycle is set in the <b>Power Save Features</b> form.</p>
<b>economy mode</b>	<p>Economy mode reduces the radio's power consumption when it is idle. When economy mode is active, and there has been no <i>valid activity</i> on a channel for the duration of the <i>economy mode timer</i>, the radio begins <i>economy cycling</i>.</p> <p>The beginning of a transmission may be lost if it is received after a period of inactivity.</p>
<b>economy mode timer</b>	<p>The economy mode timer sets the time between when <i>valid activity</i> was last detected on a channel and the start of <i>economy cycling</i>.</p> <p>The duration of the economy mode timer is set the <b>Power Save Features</b> form.</p>
<b>EEA</b>	EEA is one of the Selcall <i>tone sets</i> the Conventional Programming Application supports.
<b>EIA</b>	EIA is one of the Selcall <i>tone sets</i> the Conventional Programming Application supports.
<b>emergency call</b>	<p>The emergency call is a Selcall feature.</p> <p>The emergency call can be assigned to a function key setting and when transmitted, puts the radio into <i>emergency mode</i>.</p> <p>Emergency operation is set up in the <b>Selcall Emergency Setup</b> form.</p>

<b>emergency mode</b>	<p>Emergency mode is a Selcall feature.</p> <p>When in emergency mode, the radio cycles between receiving and transmitting so that the called party can hear activity near the radio and so decide how to respond. The radio can be programmed so that all indicators remain unchanged while in emergency mode.</p> <p>Emergency operation is set up in the <a href="#">Selcall Emergency Setup</a> form.</p>
<b>fixed call sequence</b>	<p>The fixed call sequence is a Selcall feature.</p> <p>The fixed call sequence is a <a href="#">Selcall sequence</a> that is defined at radio programming time and that can be transmitted by a long press of the call key on <a href="#">Orca 5015</a>, <a href="#">Orca Excel</a> and <a href="#">Eclipse</a> radios.</p> <p>The fixed call sequence is also used when an <a href="#">alpha symbol</a> that is a Selcall call is executed. If the signalling sequence defined for the alpha symbol is fewer tones than the fixed call sequence, the missing tones are substituted from the fixed call sequence.</p> <p>The fixed call sequence for each <a href="#">Selcall system</a> is set in the <a href="#">Selcall Identity (Tx)</a> tab.</p>
<b>forced audio mute</b>	<p>Forced audio mute is part of the Selcall <a href="#">emergency mode</a>. When forced audio mute is enabled, the radio's <a href="#">mute</a> remains active while in emergency mode and so the radio does not broadcast noise that may draw attention in an emergency situation.</p> <p>Forced audio mute is enabled in the <a href="#">Selcall Emergency Setup</a> form.</p>
<b>flexiscan</b>	<p>Flexiscan is an Orca 5010/5015/5020 feature.</p> <p>When Flexiscan <a href="#">scanning</a> is turned on, a group of channels in a preprogrammed Flexiscan <a href="#">scan group</a> is scanned for <a href="#">valid activity</a>, while the radio user is able to communicate on an unrelated channel.</p> <p>Flexiscan is set up in the <a href="#">Flexiscan</a> tab (Scan Groups form).</p>
<b>free-form sequence</b>	<p>A free-form sequence is a <a href="#">Selcall sequence</a> that does not have to conform to the <a href="#">Selcall system's transmit (Tx) format</a>.</p>
<b>frequency band</b>	<p>The radio's frequency band is the range of frequencies it is capable of transmitting and receiving on.</p> <p>The frequency band the radio operates on is set in the <a href="#">Specifications</a> form.</p>
<b>function key</b>	<p>Each radio has two function keys above the <a href="#">PTT key</a>. <a href="#">Orca 5020</a> radios have a third function key, which is the leftmost key in the row of four keys underneath the <a href="#">LCD display</a>. These radio function keys can have functions assigned to both short and long keypresses. A short keypress is less than one second. The radio user may need to experiment to become familiar with the duration of short and long keypresses. The third function key on Orca 5020 radios can also be operated as a "shortcut" to up to three <a href="#">user function menu</a> options.</p>

Some radio accessories also have function keys, and most of the options available for the radio function keys are also available for external function keys. However, these external function keys do not have short and long keypresses.

**function key preset call**

Function key preset calls are a Selcall feature.

Tait Orca radios can have two *function key* preset Selcall calls defined for each *Selcall system* at radio programming time.

The function key preset calls are defined in the [Selcall Identity \(Tx\)](#) tab.

**gap**

A gap is a pause in the transmission of *tones* in a *Selcall sequence*. When constructing Selcall sequences, a gap is represented by a hyphen (-).

A series of gaps makes up a *gap burst*.

**gap burst**

A gap burst is a series of *gaps*. The gap burst length is determined by the *gap period* and the number of gaps in the burst.

Gap bursts are used to separate *tone bursts* in a *Selcall sequence*.

**gap period**

The gap period is the duration of each *gap* in a *Selcall sequence*. For example, if the gap period is 10 ms, then a *gap burst* of three gaps lasts for 30 ms.

The gap period is set in the [Selcall Tone Options](#) tab.

**group**

A group can refer to a *scan group* or to a group of radios that is the recipient of a Selcall *group call*.

**group call**

Group calling is a Selcall feature.

A Selcall call can be made to a group of radios by including a *group tone* in the *Selcall sequence*.

**group hold time**

The group hold time is the pause between when *valid activity* on a *scan group member channel* ceases and when *scanning* resumes.

The group hold time is set in the [Scan Groups](#) form.

**group tone**

Group tones are a Selcall feature.

Each *Selcall system* can have a group tone that acts as a wildcard tone and so is equivalent to all of tones 0 to 9 and A to F. For example, if a *Selcall sequence* containing 123GG for the *receiver identity* were transmitted, all radios whose *Rx decode sequence* is five tones long and starts with tones 123 recognises the Selcall sequence and respond to it.

The group tone is set in the [Selcall Tone Options](#) tab.

**group user programmable**

See [programmable scanning and voting groups](#).

<b>handset microphone</b>	The handset microphone is the microphone at the bottom of the radio. When handset mode is active, the handset microphone operates. The radio can also be programmed so that the handset microphone is the default microphone ( <a href="#">Specifications</a> form).
<b>handset operation</b>	Tait Orca radios can be operated as a normal radio where the user holds the radio with the microphone about 15 cm away from the mouth or it can be operated like a telephone handset. Handset mode is useful in noisy environments, when privacy is required or in quiet environments when the lowest volume setting seems too loud.
<b>handshaking</b>	Handshaking refers to the character definitions used to begin and end data flow in <a href="#">CCDI</a> ( <i>computer controlled data interface</i> ) operation. The handshaking characters prevent the loss of data between the radio unit and the computer equipment. Handshaking options are set in the <a href="#">Data Parameters</a> form.
<b>hidden channel</b>	A hidden channel is a <i>scan group member channel</i> that is not accessible as an individual <i>channel</i> . Hidden channels are enabled in the <a href="#">Scan Groups</a> form.
<b>home channel</b>	For <i>scanning</i> , the home channel is the channel in a <i>scan group</i> on which transmissions are made, unless another channel has been <i>captured</i> . The home channel is the first channel included in the group in the Scan Group Members list. For <i>voting</i> , the home channel is the channel that has been determined as having the greatest signal strength. If no channel has been selected, then the home channel is the first channel included in the group in the Scan Group Members list.
<b>immediate callback</b>	When an incoming call is terminated, a radio may be programmed to display the caller's identity. If the radio user wishes to call the party back, they can do so by pressing the enter key.
<b>indicator</b>	Indicators provide feedback to the radio user on how the current operation is proceeding and on the operating state of the radio. Tait Orca radios use combinations of audible and visual indicators.
<b>invalid activity</b>	Invalid activity is traffic on a channel that carries <i>signalling</i> that does not match that of the receiving radio.
<b>keypad lock</b>	The keypad lock prevents accidental operation of the radio by locking the keypad so that only a certain set of keys can be used. What keys are locked depends on how the radio was programmed ( <a href="#">Keypad Lock Disables</a> fields, <a href="#">Key Settings II</a> tab).

<b>keypress confidence tones</b>	<p>Keypress confidence tones are a <i>confidence indicator</i> that tells the radio user whether or not an action is permitted whenever a keypad key or function key is pressed.</p> <p>Keypress confidence tones are enabled in the <a href="#">User Selectable Parameters</a> form.</p>
<b>label</b>	<p>A label is a sequence of up to eight characters that can give the radio user additional information about the radio's current state. For example, a label can be set that indicates which channel is currently selected.</p> <p>In the case where the label stands for a string that is to be transmitted, e.g. for a <i>status message</i>, it is not the <i>status label</i> that is transmitted but rather the <i>status digits</i>. In order for the correct status label to be displayed on the receiving radio, status messages (status digit plus status label) should be set the same for all radios in a fleet.</p>
<b>LCD display</b>	<p><i>Orca Eclipse</i>, <i>Orca Excel</i>, <i>Orca 5015</i> and <i>Orca 5020</i> radios have a 2 x 12 character LCD (liquid crystal) display. In combination with the radio's <i>LED indicator</i> and <i>audible indicators</i>, the display provides the radio user with information on the state of the radio.</p>
<b>lead in delay</b>	<p>A lead in delay is the delay between when the radio starts transmitting and when the first tones in a sequence are sent. A lead in delay gives the receiver time to prepare to decode the incoming transmission (e.g. time to halt <i>scanning</i>, come to full power or come out of <i>economy mode</i>).</p>
<b>LED indicator</b>	<p>The LED (light-emitting diode) at the top of the radio is the main indicator for displaying the state the radio is in. The <i>audible indicators</i> and the <i>LCD display</i> provide information intended to supplement that provided by the LED.</p>
<b>low power transmit</b>	<p>The low power transmit feature can be used to change the transmit power from the programmed level to low.</p>
<b>lone worker</b>	<p>Lone worker is a feature in <i>Orca 5010</i>, <i>Orca 5015</i> and <i>Orca 5020</i> radios. When activated, the radio begins a pre-programmed inactivity timer. Once this time has counted down with no keypress (or motion detected if programmed), an audible alert will sound for the length of the warning timer. If no key is pressed in this time (or motion detected), then either a Selcall or DTMF emergency call is made.</p> <p>The purpose is to get the radio user to press any key every specified period, to restart the inactivity timer. If no key is pressed, then it is an indication that the worker is incapacitated and an emergency call is automatically made.</p> <p>Lone Worker options are set in the <a href="#">General Options</a> form.</p>
<b>member channel</b>	<p>A member channel is a channel that belongs to a <i>scanning</i> or <i>voting group</i>.</p>

<b>monitor</b>	<p>Monitor allows the radio user to override a channel's <i>signalling</i> and so hear all traffic on a channel.</p> <p>Note that monitor is not permitted in some countries.</p>
<b>mute</b>	<p>A mute controls the circumstances under which a received signal is passed to the radio's speaker. When a mute is active, the radio's speaker only unmutes under certain conditions, determined by the type of <i>signalling</i> operating on a <i>channel</i>.</p>
<b>NATEL</b>	<p>NATEL is one of the Selcall <i>tone sets</i> the Conventional Programming Application supports.</p>
<b>night use</b>	<p>When the night use feature is on, the radio's <i>backlighting</i> activates whenever <i>valid activity</i> is detected, a key on the radio is pressed or when the radio receives a call. Backlighting remains on for the duration of the <i>backlighting timer</i> unless further activity is detected.</p>
<b>no acknowledge retry</b>	<p>The no acknowledge retry feature determines how many times the radio will resend a <i>Selcall sequence</i> that requires an <i>auto acknowledge</i> when no auto acknowledge is received.</p>
<b>non-captured priority sample timer</b>	<p>The value of the non-captured priority sample timer determines how often <i>priority channels</i> are scanned when there is no <i>captured channel</i>.</p> <p>The duration of the non-capture priority sample timer is set in the <i>Scan Groups</i> form.</p>
<b>normal dialling</b>	<p>When a <i>DTMF string</i> is dialled, the string is either transmitted as each individual key is pressed (normal dialling) or in its entirety once the enter key is pressed (<i>buffered dialling</i>).</p> <p>The DTMF dialling type is set in the <i>DTMF</i> form.</p>
<b>nuisance delete</b>	<p>The nuisance delete feature allows the radio user to temporarily delete a busy channel from a <i>scan group</i>. When the scan group is next selected, the channel is again part of the group.</p> <p>Nuisance delete does not work for voting groups.</p>
<b>on/off/volume control</b>	<p>The on/off/volume control is the smaller of the two switches on the top of <i>Orca Elan</i>, <i>Orca Excel</i>, <i>Orca 5010</i>, <i>Orca 5015</i> and <i>Orca 5020</i> radios.</p>
<b>one touch call</b>	<p>The first <i>alpha symbol</i> defined in the <i>Alpha Symbols form</i> can be designated a one touch call, which can be made by a press of a function key.</p>

**Orca 5010**



**Orca 5015**





## Orca 5020



## Orca Eclipse



## Orca Elan



**Orca Excel**



**polling**

Polling is the sampling of *member channels* to measure their signal strength when the radio is *voting* a *scan group*.


**polling interval**

The polling interval is how often the *member channels* in a *voting group* are *sampled* (“polled”) for greatest signal strength.

<b>power-up message</b>	<p>The power-up message is the message displayed after the radio is turned on.</p> <p>The power-up message is programmable (<a href="#">Power-up Message</a> fields, <a href="#">Specifications form</a>).</p>
<b>preset call</b>	<p>A preset call is a call sequence defined at radio programming time. Preset calls can be <a href="#">Selcall sequences</a> or <a href="#">DTMF strings</a>.</p>
<b>priority call</b>	<p>Priority calling is a Selcall feature.</p> <p>A priority call is a <a href="#">Selcall sequence</a> that has a priority <a href="#">control status</a> appended. When the receiving radio decodes the priority <a href="#">status digit</a>, it alerts the user that a priority call has been received and clears down any call in progress that is not a priority call.</p> <p>The priority call control status is set in the <a href="#">Selcall Control Status Definitions</a> form.</p>
<b>priority channel</b>	<p>A priority channel is a <a href="#">scan group member channel</a> that is scanned more often than the other member channels. How often a priority channel is scanned is determined by the <a href="#">priority sample timers</a>.</p>
<b>priority sample timer</b>	<p>The <a href="#">non-captured priority sample timer</a> and the <a href="#">captured priority sample timer</a> determine how often <a href="#">priority channels</a> in a <a href="#">scan group</a> are <a href="#">scanned</a>.</p>
<b>priority scanning</b>	<p>Priority scanning is a type of <a href="#">scanning</a> in which one of the <a href="#">member channels</a> is designated the <a href="#">priority channel</a>, which is scanned more often than the other member channels. How often the priority channel is scanned is determined by the <a href="#">priority sample timers</a>.</p>
<b>priority call status</b>	<p>The priority call status is the <a href="#">status digit</a> that a radio must receive before alerting a call as a <a href="#">priority call</a>.</p> <p>The priority call control status is set in the <a href="#">Selcall Control Status Definitions</a> form.</p>
<b>programmable channel signalling</b>	<p>The programmable channel signalling feature allows the radio user to change the <a href="#">subaudible signalling</a> used on a channel.</p>
<b>programmable scanning and voting groups</b>	<p>The programmable <a href="#">scanning</a> and <a href="#">voting</a> groups feature allows the radio user to change the mix of <a href="#">channels</a> that belong to scanning and voting groups.</p>
<b>programming database</b>	<p>The programming database is the information that is altered using the Conventional Programming Application. When the Radio&gt;<a href="#">Read</a> command is selected, the radio's programming database is read and the information in it is loaded into the fields and forms in the programming application. When the Radio&gt;<a href="#">Program</a> command is selected, the radio's programming database is overwritten with the information altered in the programming application.</p>

<b>PTT key</b>	<p>The PTT (press-to-talk) key is the key pressed to transmit. The radio cannot receive while the PTT is pressed.</p> <p>The amount of time the radio is permitted to transmit is limited by the <i>transmit timer</i>. When the transmit timer expires, the radio emits a series of warning tones before returning to the receive state.</p> <p>Once the transmit timer expires, the radio may be prevented from transmitting for the duration of the <i>transmit lockout</i> timer.</p>
<b>PTT as shift key</b>	<p>The PTT as shift key feature is part of the <i>DTMF dialling</i> function. If the user wishes to dial tones A to D or a pause, the PTT can be used as a “shift” key in conjunction with the numeric keypad. For example, on the <i>Orca Excel</i>:</p> <p>PTT + <b>2</b> = A  PTT + <b>5</b> = B  PTT + <b>8</b> = C  PTT + <b>0</b> = D  PTT + <b>1</b> = pause</p> <p>So pressing the PTT key, holding it, then pressing the <b>2</b> key enters tone A in the DTMF string. Pressing the PTT, holding it, and then pressing the <b>1</b> key enters a pause in the string. A hyphen is entered in the display to indicate the pause.</p> <p>PTT as shift key is enabled in the <i>DTMF</i> form.</p>
<b>PZVEI</b>	<p>PZVEI is one of the Selcall <i>tone sets</i> the Conventional Programming Application supports.</p>
<b>quiet state</b>	<p>Quiet state is the state the radio is in when <i>monitor</i> is inactive, and the radio user does not have to listen to traffic that is not intended for them.</p>
<b>quiet status interrogation</b>	<p>The quiet status interrogation feature allows a radio to send a <i>control status</i> to another radio requesting that the radio transmit its current status without alerting the radio user. Upon receiving the control status, the called radio responds by transmitting its <i>auto acknowledge</i> sequence with its current <i>status</i> appended.</p> <p>The quiet interrogation control status is set in the <i>Selcall Control Status Definitions</i> form.</p>
<b>radio identity</b>	<p>When a radio is operating on a <i>Selcall system</i>, it can have a unique identity assigned. This identity is defined by the <i>Rx decode sequence</i>.</p> <p>The radio’s Rx decode sequences are set in the <i>Selcall Identity (Rx)</i> tab.</p>
<b>receive (Rx) format</b>	<p>The receive (Rx) format is a Selcall feature.</p> <p>The receive format defines the format all incoming <i>Selcall sequences</i> must follow in order to be correctly decoded by the receiving radio. The receive format should be the same for all radios using a particular <i>Selcall system</i>.</p>

	<p>If the receive format has an <b>S burst</b>, it must match the S burst for the Selcall system's <i>transmit (Tx) format</i>.</p> <p>The receive format for each <i>Selcall system</i> is set in the <b>Selcall Identity (Rx)</b> tab.</p>
<b>receive (Rx) frequency</b>	<p>The receive frequency is the frequency that a radio is currently tuned to.</p> <p>The receive frequency for each channel is set in the <b>Channels</b> form.</p>
<b>receive signalling</b>	<p>The receive signalling is the <i>signalling</i> that must accompany incoming transmissions in order for the radio to recognise the signal as <b>valid</b> and so open the radio's <i>mute</i>.</p> <p>The receive signalling for each channel is set in the <b>Channels</b> form.</p>
<b>received call queuing</b>	<p>See <i>call queuing</i>.</p>
<b>received signal tracking</b>	<p>Received signal tracking eliminates any frequency offset between the incoming signal and the radio's receiver, making the radio more tolerant of frequency errors in other radios.</p> <p>Received signal tracking is enabled in the <b>Specifications form</b> (<b>Received Signal Tracking</b> field).</p>
<b>receiver identity</b>	<p>In a <i>Selcall sequence</i>, the receiver identity is the part of the sequence that identifies the radio the sequence is intended for. In the <i>transmit (Tx) format</i> and <i>receive (Rx) format</i>, the receiver identity is represented by the character R, and so this part of a sequence is known as the R burst.</p>
<b>remote monitor reset</b>	<p>Remote monitor reset is a Selcall feature.</p> <p>A remote monitor reset sequence can be assigned for each <i>Selcall system</i> a radio operates on. When the radio receives this sequence and the remote monitor reset function has been enabled, the radio deactivates <i>monitor</i>, <i>scquelch override</i> and/or emergency cycling, if they are active.</p>
<b>repeat tone</b>	<p>Repeat tones are a Selcall feature.</p> <p>A repeat tone is used to ensure that <i>Selcall sequences</i> are correctly decoded by a receiving radio. When two adjacent tones in a Selcall sequence are the same tone, the repeat tone is substituted for the second occurrence of the duplicated tone. The repeat tone is always tone E.</p>
<b>repeater</b>	<p>A repeater receives a radio signal and retransmits it. Use of a repeater increases the coverage area of a two-way radio system and ensures more reliable performance in areas where signals are reflected or attenuated by buildings or terrain.</p> <p>In a repeater-based system, the radio's transmit frequency is the frequency the repeater is listening on, and the radio's receive frequency is the frequency the repeater rebroadcasts signals on.</p>

<b>repeater access tone</b>	<p>Repeater access tones are a Selcall feature.</p> <p>A repeater access tone is a single tone that is transmitted before a voice or data transmission. The repeater access tone is used to key up the <i>repeater</i> before a transmission is sent so that no information is lost at the beginning of the transmission.</p> <p>The repeater access tone is set in the <a href="#">Selcall Tone Options</a> tab.</p>
<b>repeater identity</b>	<p>In a Selcall sequence, the repeater identity is the part of the sequence that the radio transmits so that the <i>repeater</i> recognises the radio as having access to the repeater. In the <i>transmit (Tx) format</i>, the repeater identity is represented by the character B, and so this part of a sequence is known as the B burst. If the transmit format includes a repeater burst, it must come before all other bursts.</p>
<b>repeater talk-around</b>	<p>Repeater talk around allows the radio user to bypass <i>repeater</i> operation and so communicate directly with other radios. While repeater talk around is active, all transmissions are made on the receive frequency programmed for the channel.</p> <p>Repeater talk around may be required if the radio is operating outside the range of the repeater. Note that repeater talk around is not permitted in some countries.</p> <p>Repeater talk around is enabled in the <a href="#">Transmitter Setup</a> form.</p>
<b>reverse tone burst</b>	<p>Reverse tone bursts can be used when <i>CTCSS subaudible signalling</i> is used. When reverse tone bursts are enabled, the phase of the generated tones is reversed for a number of cycles just before transmission ceases, which can increase the speed of receiver shutdown in some repeaters and associated equipment.</p> <p>The phase reversal occurs after any <i>ANI</i> transmission.</p> <p>The reverse tone burst duration is set in the <a href="#">Subaudible Signalling Setup</a> form.</p>
<b>revive</b>	<p>See <i>stun and revive</i>.</p>
<b>RSSI indicator</b>	<p><i>Orca Eclipse</i> and <i>Orca 5020</i> radios can be programmed to display bars on the display (  ) that indicate the signal strength (RSSI) whenever the radio is receiving a signal (<a href="#">User Selectable Parameters form</a>, <a href="#">RSSI Indicator</a>). If signal strength is low, calls may not get through.</p>
<b>Rx</b>	<p>Rx is an abbreviation for receive.</p>
<b>Rx decode sequence</b>	<p>The Rx decode sequence is a Selcall feature.</p> <p>The Rx decode sequence is the radio's unique identity on a <i>Selcall system</i>. When the radio's Rx decode sequence is decoded as the <i>receiver identity</i> in an incoming <i>Selcall sequence</i>, the radio recognises the sequence as intended for it and responds appropriately.</p>

Each radio operating on a Selcall system can have one or two Rx decode sequences assigned. In addition to tones 0 to 9, A to D and F, a V can be used in the Rx decode sequence. A radio that has an Rx decode sequence of 456VV responds to all call sequences with a receiver identity five tones long starting with 456.

<b>scan group</b>	A scan group is a group of two to 16 <i>channels</i> . Each scan group <i>member channel</i> is routinely sampled for activity ( <i>scanning</i> ) or greatest signal strength ( <i>voting</i> ). Scan groups are set up in the <a href="#">Scan Groups form</a> .
<b>scanning</b>	Scanning is the systematic sampling of a group of channels (a <i>scan group</i> ) for <i>valid activity</i> . There are two variations of normal scanning: <i>priority scanning</i> and <i>dual priority scanning</i> .
<b>SDM</b>	Short data messages (SDMs) are data messages of up to 32 characters. All Tait Orca radios can send and receive SDMs while connected to some form of computer equipment. <i>Orca Excel</i> , <i>Orca Eclipse</i> , <i>Orca 5015</i> and <i>Orca 5020</i> radios can display received SDMs on the radio display. Orca Eclipse and Orca 5020 radios can also enter SDMs via the radio keypad.
<b>SDM entry mode</b>	SDM entry mode is the mode in which short data messages are received and sent.
<b>security PIN</b>	<p>A security PIN (personal identification number) is a number up to five digits long the user is required to enter when the radio first powers up. When a security PIN is required, the radio displays the message ENTER CODE and then waits for the correct PIN to be entered before displaying the <i>power-up message</i>. The radio cannot be used until the correct PIN has been entered.</p> <p>The security PIN is set in the <a href="#">Specifications form</a>.</p>
<b>Selcall</b>	Selcall stands for “selective calling”, which is a <i>signalling</i> system that uses sequences of audible <i>tones</i> to isolate calls intended for specific radios. Each radio operating on a <i>Selcall system</i> can have a unique identity assigned.
<b>Selcall dialling</b>	<p>Selcall dialling is available on <i>Orca Excel</i>, <i>Orca Eclipse</i> and <i>Orca 5020</i> radios. Using Selcall dialling, the user can dial <i>Selcall sequences</i> using the keypad.</p> <p>Selcall dialling is available once Selcall has been enabled (<a href="#">Enable Selcall</a> in the <a href="#">Selcall Identity (Rx) tab</a>) and a <i>variable call sequence</i> has been defined (<a href="#">Selcall Sequences (Tx) tab</a>).</p>
<b>Selcall muting</b>	<p>When Selcall muting is enabled, the radio only unmutes when a valid <i>Selcall sequence</i> is received. The radio user cannot initiate calls using the PTT unless <i>monitor</i> is active, but can only make Selcall calls.</p> <p>Selcall muting is enabled in the <a href="#">Selcall Identity (Rx) tab</a>.</p>

<b>Selcall sequence</b>	A Selcall sequence is a series of <i>tones</i> and <i>gaps</i> that for a simple <i>Selcall system</i> represents the identity of a radio (the <i>receiver identity</i> ). A Selcall sequence can also contain the identity of the calling radio (the <i>caller identity</i> ), the <i>repeater identity</i> and the caller's current activity ( <i>status</i> ).
<b>Selcall system</b>	A Selcall system is the call sequence formats and tone options the radios on that system must use to communicate with one another.
<b>short data message</b>	See <i>SDM</i> .
<b>sidetones</b>	Sidetones are the tones heard when a <i>DTMF string</i> or <i>Selcall sequence</i> is transmitted and they indicate to the radio user that a call has been transmitted. The radio can be programmed to not generate sidetones when a Selcall sequence is transmitted ( <i>Selcall Features</i> form).
<b>signal programming mode</b>	Signal programming mode is part of the <i>programmable channel signalling</i> feature. In signal programming mode, the radio user can change a channel's subaudible signalling.
<b>signalling</b>	Signalling is non-voice coding on a <i>channel</i> for the purpose of identifying parties and segregating groups of users. If a radio receives signalling that matches that programmed for the radio, the signalling is said to be valid and the radio's <i>mute</i> opens. Otherwise, the transmission is ignored and the radio remains silent, although the radio's channel busy indicator is activated. See <i>CTCSS</i> , <i>DCS</i> and <i>Selcall</i> .
<b>squelch</b>	The squelch feature ensures that the radio's speaker only unmutes when an intelligible signal is received. A signal is considered intelligible when it is strong enough to exceed a predetermined <i>squelch threshold</i> .
<b>squelch override</b>	Squelch override allows the user to disable the radio's <i>squelch</i> and so hear all activity on a channel, including noise.  Squelch override is enabled in the <i>Receive Monitoring</i> form.
<b>squelch threshold</b>	The squelch threshold is the level the signal must reach before it is regarded as intelligible and the radio's <i>mute</i> is opened. Tait Orca radios can operate at two different squelch thresholds: <i>city</i> and <i>country squelch</i> .  The squelch threshold for each channel is set in the <i>Channels</i> form.
<b>status</b>	Status is a Selcall feature.  Status is the current activity of the radio user, which can be represented by a <i>status message</i> .  Another type of status is <i>control status</i> , which when received, initiate a particular radio operation.



<b>status digit</b>	<p>Status digits are a Selcall feature.</p> <p>In a <i>Selcall sequence</i>, the status digit is the part of the sequence that identifies the current activity (<i>status</i>) of the radio transmitting the sequence. In the <i>transmit (Tx) format</i> and <i>receive (Rx) format</i>, the status digit is represented by the character S, and so this part of a sequence is known as the S burst.</p>
<b>status entry mode</b>	<p>Status entry mode is a Selcall feature available on <i>Orca Eclipse</i> and <i>Orca 5020</i> radios.</p> <p>In status entry mode, the radio user can change the <i>status</i> to reflect their current activity. The corresponding <i>status digit</i> is sent with <i>Selcall sequences</i> that include a <i>variable status</i>.</p> <p>Status entry mode is available once Selcall has been enabled and when at least one of the Status fields for the <i>fixed call sequence</i> or the <i>variable call sequence</i> (Selcall Identity (Rx) tab) contains a V.</p>
<b>status label</b>	<p>Status labels are a Selcall feature available on <i>Orca Eclipse</i> and <i>Orca 5020</i> radios.</p> <p>A status label is a <i>label</i> that is associated with a particular <i>status digit</i>.</p> <p>When a <i>Selcall sequence</i> is sent, the <i>status digit</i> is transmitted, but the status label is not. If a receiving radio has been programmed with a status label that corresponds to the status digit transmitted, it displays that label, which is why it is important that all radios using the same <i>Selcall system</i> be programmed with the same <i>status messages</i>.</p>
<b>status message</b>	<p>Status messages are a Selcall feature.</p> <p>A status message represents the current activity of the radio user in the form of a <i>status digit</i> and a <i>status label</i>.</p> <p>When a <i>Selcall sequence</i> is transmitted, it can include a status digit. Because only the status digit is transmitted, all radios using a <i>Selcall system</i> must be programmed with the same status messages in order for <i>status labels</i> to be displayed correctly.</p>
<b>stun and revive</b>	<p>Stun and revive is a Selcall feature.</p> <p>At radio programming time, two <i>control status</i> can be assigned, one to stun the radio, which makes it inoperable, and the other to revive the radio, which returns it to a useable state.</p> <p>The stun and revive control status are set in the <i>Selcall Control Status Definitions</i> form.</p>
<b>subaudible signalling</b>	<p>Subaudible signalling is <i>signalling</i> that is at the bottom end of the range of audible frequencies. Tait Orca radios support <i>CTCSS</i> and <i>DCS</i> subaudible signalling.</p>
<b>Tait Radio Modem</b>	<p>The Tait Radio Modem is a data radio intended primarily for data communications. Operating at 1200 baud, it is suitable for stand-alone use in point-</p>

to-point or point-to-multipoint data communications, as a telemetry unit in Scada Systems, or for system integrators.



**third tone monitor reset**

Third tone monitor reset is a Selcall feature.

The *monitor* and *squelch override* are deactivated when the first three tones of the *receiver identity* for an incoming *Selcall sequence* match the first three tones of one of the radio's *Rx decode sequences*.

Third tone monitor reset is enabled in the [Selcall Features](#) form.

**toggle**

The term toggle is used to describe the switching between two states.

**tone**

A tone is a sound wave of a particular frequency.

For CTCSS and DCS, the tone is transmitted continuously as long as the radio is transmitting. For *Selcall sequences* and *DTMF strings*, the transmit time of each tone is programmable (see *tone duration/period*).

When constructing *Selcall sequences*, different tones are represented by the characters 0-9 and A-F. A series of tones makes up a *tone burst*. The frequencies used for tones 0-9 and A-F are dependent upon the *tone set*.

When defining *DTMF strings*, the different tones are represented by the characters 0-9, A-D, \* and #. The frequencies used are determined by an internationally accepted standard.

**tone blanking**

Tone blanking is a Selcall feature.

Tone blanking blanks out the *tones* of a received *Selcall sequence* so that the user does not hear them. The user may, however, hear the first few tones.

The radio's Rx decode sequences are set in the [Selcall Identity \(Rx\)](#) tab.

Tone blanking is enabled in the [Selcall Features](#) form.

**tone burst**

A tone burst is a series of *tones* in a *Selcall sequence*. A burst can correspond to a particular piece of information, such as:

- *receiver identity* (R burst),
- *caller identity* (C burst),
- *repeater identity* (B burst) and

■ *status* (S burst).

For example, the R burst defines the receiver identity and can be up to eight tones long. An R burst of five tones would be defined in the Tx and Rx Formats as RRRRRR. For a Selcall sequence that places a call to radio 12345, the R burst would be 12345.

How long a tone burst lasts is determined by the *tone duration/period* and the number of tones in the burst. Tone bursts are usually, but not always, separated by a *gap burst*.

**tone duration/  
period**

The tone period, or tone duration in the case of DTMF, is how long a tone is transmitted. For example, if the tone period for a Selcall sequence is 10 ms, then a *tone burst* of three tones lasts for 30 ms.

For *Selcall sequences*, tone period is set in the *Selcall Tone Options* tab. For *DTMF strings*, tone duration is set in the DTMF Dialling tab.

**tone set**

The tone set is the set of frequencies represented by the characters 0–9 and A–F used to make up *Selcall sequences*.

There are a number of internationally accepted standard tone sets available. There is a finite number of frequencies available to represent the various characters in a Selcall sequence; it is the frequencies used and their order that distinguishes one tone set from another.

The Conventional Programming Application supports the following tone sets: CCIR, EIA, EEA, ZVEI-I, ZVEI-II, ZVEI-III, PZVEI, NATEL and DZVEI.

The tone set for each *Selcall system* is set in the *Selcall Tone Options* tab.

**traffic**

Traffic is an intelligible signal on a *channel* that exceeds the radio's *squelch threshold*.

**transmit (Tx)  
format**

The transmit (Tx) format is a Selcall feature.

The transmit format defines the format all outgoing *Selcall sequences* must follow in order to be correctly decoded by other radios using the same *Selcall system*. The transmit format should be the same for all radios using a particular Selcall system.

The transmit format for each *Selcall system* is set in the *Selcall Identity (Rx)* tab.

**transmit (Tx)  
frequency**

The transmit frequency is the frequency that all outgoing transmissions are made on.

The transmit frequency for each *channel* is set in the *Channels* form.

**transmit inhibit**

The transmit inhibit feature determines under what conditions a press of the PTT results in the radio not transmitting.

The radio can be prevented from transmitting whenever there is activity on the *channel*, whether it is *valid* or *invalid* (Busy option), or *invalid* activity only (Mute option). Note that if the Mute option is selected and the radio

user has activated *monitor*, the radio transmits when the PTT is pressed, even if there is valid activity on the channel. The conditions under which transmission is inhibited are set in the [Transmitter Setup form \(Tx Inhibit field\)](#).

<b>transmit lockout</b>	<p>The transmit lockout feature prevents the radio from transmitting once the <i>transmit timer</i> has expired.</p> <p>How long transmitting is locked out is set in the <a href="#">Transmitter Setup form</a>.</p>
<b>transmit signalling</b>	<p>The transmit signalling is the <i>signalling</i> that accompanies all outgoing transmissions made.</p> <p>The transmit signalling for each <i>channel</i> is set in the <a href="#">Channels form</a>.</p>
<b>transmit timer</b>	<p>The transmit timer determines the longest continuous transmission permitted by a radio. When the transmit timer expires, the radio emits a series of warning tones before returning to the receive state.</p> <p>How long the radio can transmit continuously is set in the <a href="#">Transmitter Setup form (Transmit Timer Duration field)</a>.</p>
<b>Tx</b>	<p>Tx is an abbreviation for transmit.</p>
<b>user function menu entry mode</b>	<p>User function menu entry mode is available on <a href="#">Orca Eclipse</a> and <a href="#">Orca 5020</a> radios.</p> <p>In user function menu entry mode, the user can customise radio options. For Orca Eclipse radios, the user defined menu is set up in the <a href="#">User Selectable Parameters Form</a>. For Orca 5020 radios, the user defined menu is set up in the <a href="#">User Defined Menu Form</a>.</p>
<b>valid activity</b>	<p>Valid activity is traffic on a channel that carries <i>signalling</i> that matches that programmed for the receiving radio. The radio's <i>mute</i> opens upon detecting valid activity.</p>
<b>variable call sequence</b>	<p>The variable call sequence is a Selcall feature available on <a href="#">Orca Eclipse</a>, <a href="#">Orca Excel</a>, <a href="#">Orca 5015</a> and <a href="#">Orca 5020</a> radios.</p> <p>The variable call sequence is a <i>Selcall sequence</i> that is defined as part of the <i>Selcall dialling</i> feature. In the variable call sequence, one or more tones are set to V. The V tones represent the tones the radio user keys in. When the variable call sequence is transmitted, the tones the user has keyed in are substituted for the Vs in the variable call sequence.</p> <p>The variable call sequence for each <i>Selcall system</i> is set in the <a href="#">Selcall Identity (Tx) tab</a>.</p>
<b>variable status</b>	<p>Variable status is a Selcall feature.</p> <p>The <i>S burst</i> of a <i>Selcall sequence</i> can be programmed with a V. When the sequence is transmitted, the <i>status digit</i> included is the one the user last selected in <i>status entry mode</i>.</p>

**volume control keys**

On *Orca Eclipse* radios, the volume control keys are the two keys on the side of the radio opposite the *function keys* and the *PTT key*. When the radio user first presses one of the volume keys, the message VOL appears in the upper lefthand corner of the display, as shown below.



The series of bars indicates the volume level.

**voting**

Voting is the systematic sampling of a group of *channels* (a *scan group*) for the channel with the greatest signal strength. There are three variations of normal voting: *voting with signalling*, *double voting* and *double voting with signalling*.

**voting with signalling**

Voting with signalling is a type of *voting* in which a channel must have valid signalling before it is made the *home channel*.

**ZVEI-I, ZVEI-II, ZVEI-III**

ZVEI-I, ZVEI-II and ZVEI-III are among the Selcall *tone sets* the Conventional Programming Application supports.