TASC

Cross-Zone Interface

Programming Manual

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For additional copies of this publication contact:

TASC Systems Inc.   Tel. (604) 455-2000
9415 – 202 Street   Fax. (604) 888-9712
Langley, BC V1M 4B5   Toll Free: 1-800-663-0070
Canada   Website: www.tascsystems.com

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PREFACE

This document describes the programming menus and options for the TASC Systems Cross-Zone Interface.

Hardware and software described in this document is subject to ongoing development and improvement. Consequently there may be minor discrepancies between the information in this document and the performance and design of the hardware and software.

Periodically throughout this manual, you will find text such as this, which has been shaded and bolded with a pointed finger to catch your attention. These are special notes and tips to assist you.

1. INTRODUCTION

The Cross-Zone Interface (CZI) is cross band radio bridging unit. Its state-of-the-art electronic construction enables it to offer a range of additional facilities. Operational features include Voice Announcement, on-board Dual VOX with full Voice Delay, and extended signaling and programming facilities.

A complete system comprises the Cross-Zone Interface controller and 2 radios. One radio (connected to "Port B") is always a SmartZone radio. The second radio (connected to the AUX port) is usually a Conventional radio (for SmartZone to Conventional applications), which can also be a SmartZone radio (for SmartZone to SmartZone applications).

While extremely flexible, the Cross-Zone Interface system, as supplied ex-factory, comes fully set up and programmed for the application.

Figure 1 – Front Panel

This manual provides an overview of the presets and programming interface options.

# 2. PROGRAMMING (SBOSS OPERATION)

Generally, the SBOSS software will not pose too many problems and issues, as essentially, the programming process is greatly simplified through a range of fixed preset parameters when the software is started up for SmartZone operation.

The Cross-Zone Interface connects to the PC via its DB9/F port marked "RS232", using a simple DB9/F to DB9/M cable provided (all connections straight through).

Note the menu lists "Port A" and "Port B". In SmartZone applications Port B (the DB15/M connector) is always the SmartZone port. Port A (which in fact is the AUX Port), is either the conventional radio port, or the second SmartZone port (for SmartZone to SmartZone applications).

2.1. Configuration Menu
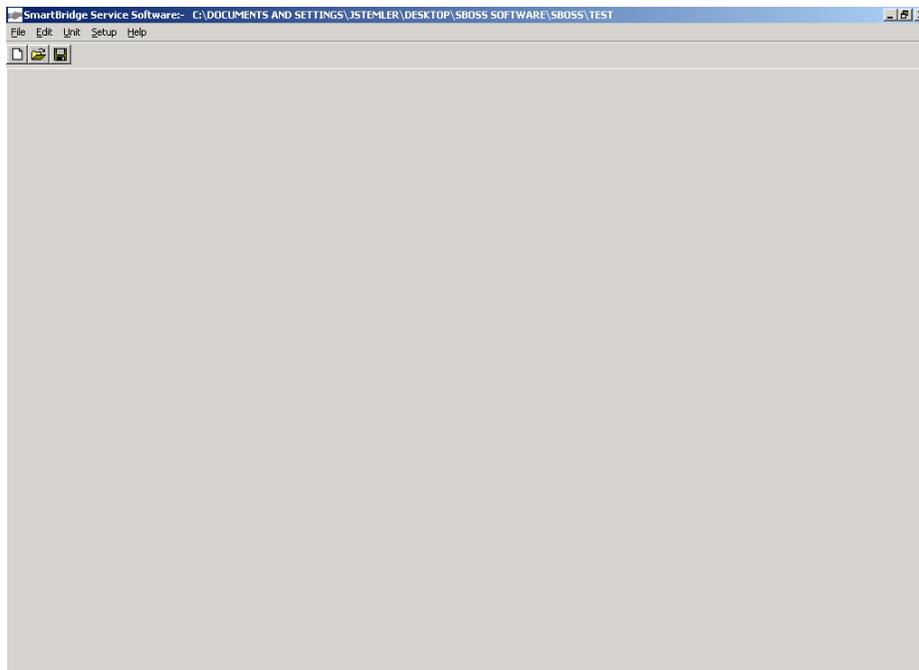
Address Receiving: (DTMF or None): This selects whether the port is to have DTMF remote control access. If DTMF is selected a "Unit Identity" window will pop up. Enter the required identity number (any 4-digit address).

Note that if DTMF is enabled on both ports, the same ID number must be entered twice.

Talk Through Enable: (only available on AUX Port): This function is used when the system is to connect to a Repeater built up from 2 standard simplex mobiles. When enabled, an active Mute (COR) at the AUX port will result in a PTT key up at that port. Obviously, the function must be disabled for applications that use a simplex radio on the AUX port. Two further options are now available:

Tx Tail Time: This selects the repeater tail time. Enter required value.

Important: Always set this parameter to 0 if the T/T Enable function is disabled!
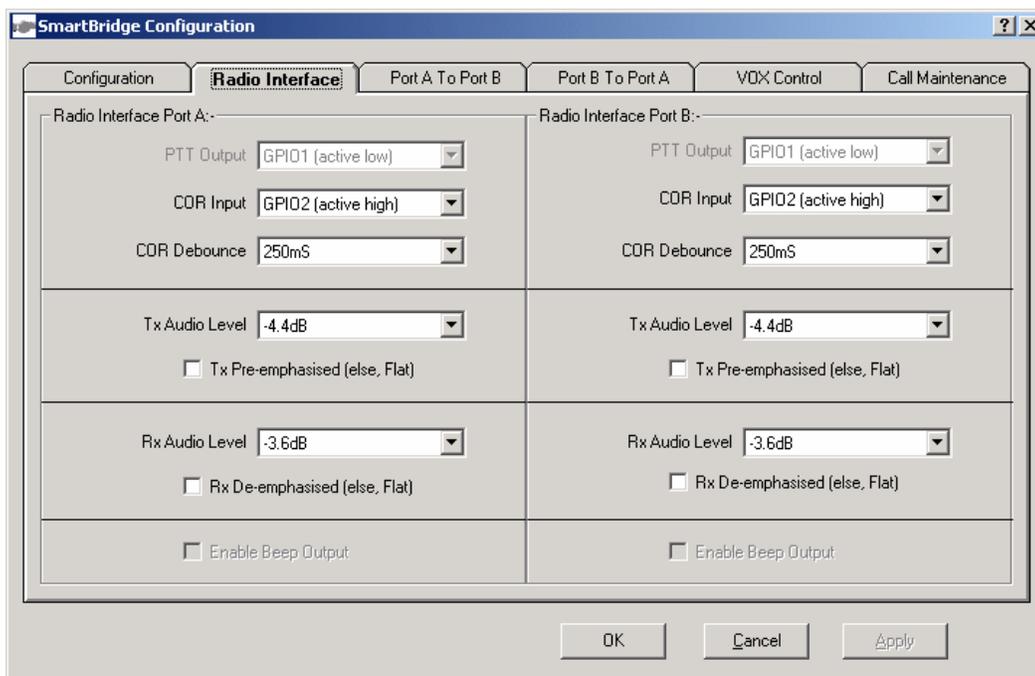
Time Out Time: This sets the maximum time that the repeater transmitter is allowed to be keyed up for. Lower values may have an operational application (a TOT warning tone will sound at the AUX port on expiry of the timer), or may be used as a protection against "stuck mute", and other fault situations.

Radio Busy Ignore Time: (Port B): Not an operational function is set according to radio type used. Set to 1000 milliseconds for the MCS2000 radio.

2.2. Radio Interface Menu

PTT output: This is a preset for an Active Low polarity. The driver is a high current MOSFET output.

COR Input: Select to the required polarity (Active High or Active Low). This input needs to connect to a point in the radio that is active when an on-channel carrier plus qualifier is received OK (e.g. carrier + CTCSS tone). Always set to High for the MCS2000.

COR Debounce: This is sometimes required to counter undesirable Rx start up effects. Select a nominal 10 milliseconds unless required otherwise.

Tx Audio Level: All audio levels are preset ex-factory to suit the respective application. All known Motorola radios require a Tx audio input level of 80 mV RMS into 600 Ohms. All units supplied ex-factory are set to this nominal level. Only minor changes should necessary, to compensate for the small tolerances in radio sensitivity settings. The range as this point is +/- 3 dB from the nominal level.

Tx Pre-emphasized or Flat: Select according to the radio to be connected. For MCS2000 set to Flat (box unchecked).

Rx Audio level: All audio levels are preset ex-factory to suit the respective application. The MCS2000 radio produces a nominal 230 mV RMS. The Rx Audio level has already been preset to suit the current applications and hence, this parameter should not require any further adjustment.

Rx De-emphasized or Flat: Select according to the radio type used. The option is left blank for both the MCS2000 radios.

2.3.   EDIT>>VOX CONTROL Menu

This page is used when VOX operation is required (required on Port B if the AUX port radio is a simplex device, required also on Port A (= AUX port) if the radio connected to the AUX port faces a remote repeater with tail timer. Dual VOX is required for both current Cartel applications.

Voice Delay: This sets the system's voice delay time to avoid any lost syllables as a result of system key up delays and VOX response delays. The option may in fact also be of value in non-VOX subsystems to counteract effects such as LET (Link Establishment times). A typical selection is some 200 to 300 milliseconds. The maximum available delay time is 480 milliseconds. Do not set to a value higher than needed to eliminate possible lost initial syllables (the longer the delay, the more noticeable the effect may become).

VOX Enable: When not enabled, the ports COR will be used to activate the other transmitter. When enabled, COR must still be active but, in addition, there must be a voice signal present as well.

VOX Tail: Sets the VOX tail time (hang time) once voice activity has ceased. This parameter is a very important tool in eliminating transmission interruptions due to pauses in speech (and/or remote radio operators speaking very softly). The longer the tail time, the smoother the VOX keying process. However, a longer tail time also means that the receiving party has to wait for the tail timer to expire after the sending party has ceased transmitting.

Selection of a suitable VOX tail time goes together with selection of the VOX trigger sensitivity. The more sensitive the VOX, the less need for extended tail times. However, if the signal/noise quality is relatively low, the VOX trigger sensitivity may

have to be reduced, to avoid spurious key ups. Hence both parameters are always to be considered in tandem.

Selectivity Factor: The VOX algorithm does not measure actual audio level values. It operates far more intelligently, actually distinguishing between non-voice signals (such as semi constant tones caused for instance by interference) and voice signals. The resultant "selectivity" factor determines the actual sensitivity. The lower the value, the more sensitive the VOX will appear. The nominal setting is 3 to 4. Lower values will make the system even more sensitive, but also make the system more prone to respond to glitches and noise effects. Selecting a value too high will result in loss of key up when needed.

VOX Inhibit Time: In Simplex (especially dual Simplex) systems potential system instabilities may occur by certain undesirable but sometimes unavoidable "glitch" effects. For instance, the Port B receiver may produce a short glitch (a "click" or a "pop") when the other transmitter keys down. The glitch may be strong enough to be picked up by its VOX, which will then result in a key up of that transmitter. After a short time (the VOX Tail time) that transmitter will key down, producing the glitch effect again. The system will now oscillate (motor boating). The VOX inhibit timer will eliminate these potential instabilities by temporarily disabling the VOX. Select a value just long enough to stop any system instabilities. Typical value: approx. 150 milliseconds.
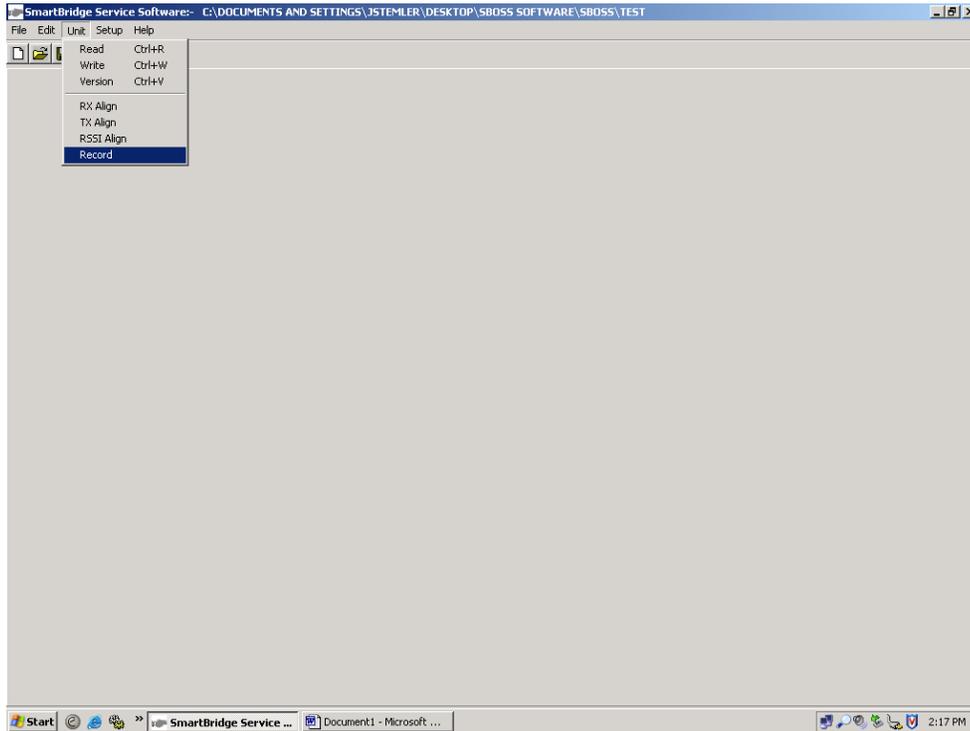
2.4.   Call Maintenance
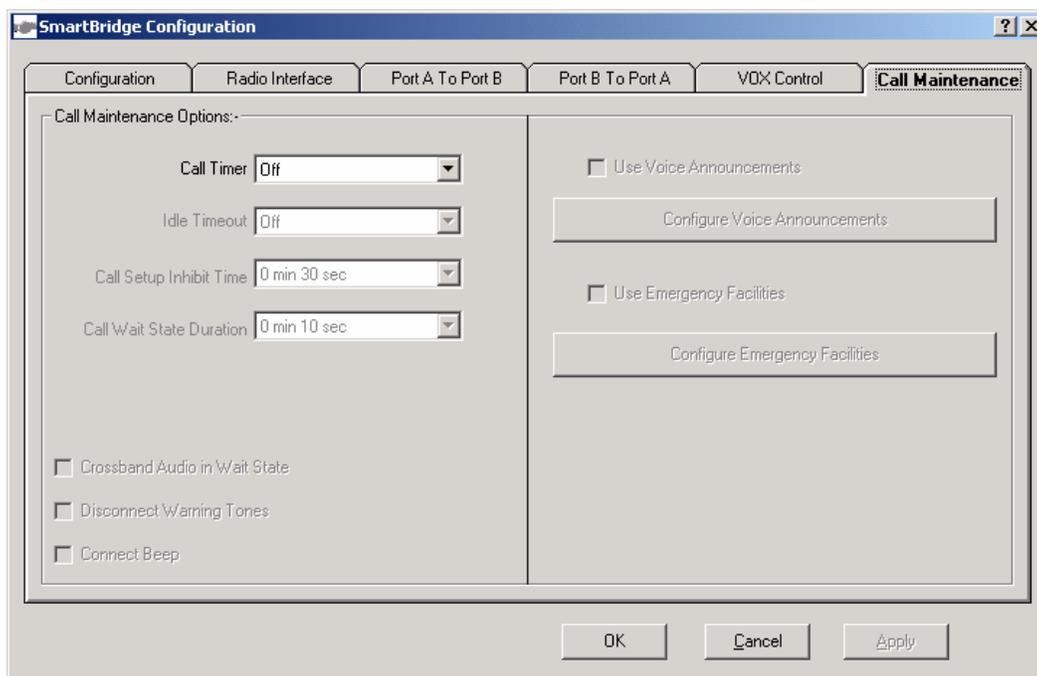
Only one parameter is currently available.

Call Timer: This selects the time that the system will remain in the CALL (Connect) mode used in the Dial Up configuration to disconnect the system after a call. A warning tone will be sounded to both parties on expiry of this timer.

To disable the timer select "off".

2.5. UNIT Menu

This menu provides for unit read and write functions. The firmware version number may be read out as well. There are also 3 alignment facilities, Rx Align, Tx Align, and RSSI Align.
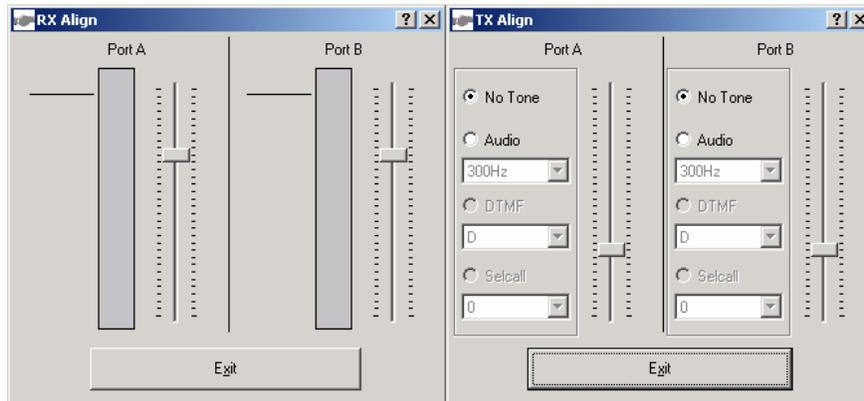
RECORDING THE VOICE ANNOUNCEMENTS

2.6.   **Radio Preparation**

At this stage the system uses 3 different Voice Announcements. They are stored at SBOSS "Storage Selection" 1 through to 3.

The messages are:

    a) "System is On" acknowledgement message (Storage Selection 1)

    b) "System is Off" acknowledgement message (Storage Selection 2)

    c) "System is Busy/System Error" acknowledgement message (Storage Selection 3)

The easiest way to pre-record messages is to use a handheld radio in Conventional mode that connects to one of the radio connected to the Cross-Zone Interface. Select Conventional operation of that radio as well. Then use the SBOSS software to execute the recording process.

Select UNIT>>RECORD. A Voice Play and Record window will now pop up with the following choices:

Mode: Select Record (to record a new message) or Play (to check a recorded message)

Direction: Select to/from port A (AUX port) or Port B.

Storage Selection: Determines where the message is going to be stored (location 1, 2, or 3, for System On, System Off, or Error message respectively).

To begin recording, select the RECORD Mode, the required DIRECTION, and the STORAGE SELECTION. Click on the BEGIN button. A progress bar will now appear, indicating the time available of each message (about 6 seconds is available for each message). Key up the portable and start speaking in the message. When finished, click on the STOP button.

This completes the record cycle. To avoid transmit switching "clicks" etc., the best is to press the PTT on the portable first, then click on the BEGIN button. From here, speak in the voice message, click on the STOP button, then release the PTT switch.

The STORAGE SELECTION will now automatically jump to location 2 and the system is now ready for the second message, and so on (locations 4, 5 and 6 are not used at this stage).

Always record all messages at once, always starting at Location 1 (as recording to a lower location will erase all contents of the higher locations as well). To audit (listen to) the just recorded messages, select the PLAY Mode, the PORT, and the STORAGE SELECTION. Now click on the BEGIN button to start the playback. The transmitter of the selected port will key up, transmitting the selected voice message.