

## NCS-C250 Parallel Operation

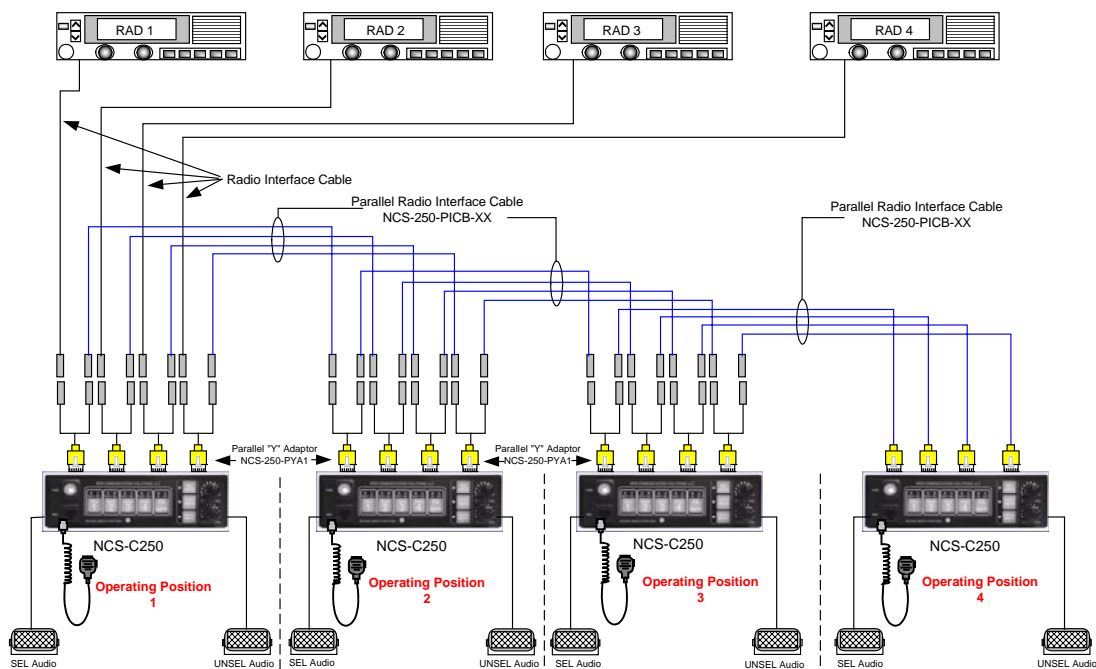
### Introduction

Multiple NCS-C250 Mobile Multi-Switchers can be connected in a parallel configuration to share radios among multiple operating positions reducing the number of radios required in a multi-operator dispatch operation. Examples are given for various radio sharing configurations for addressing different dispatch requirements.

### Examples of Parallel Operation

There are a myriad of possible parallel and parallel plus Expansion Unit configurations. The configurations presented are simply representative of the many configurations that are possible.

#### *Four Dispatch Positions Sharing Four Radios*



**Figure 1 – Four Radios Shared with Four Dispatch Positions**

The configuration shown in Figure 1 provides four dispatch operating positions that share four common radios. Each dispatcher has access to any of the four radios and is provided with Selected and Unselected receive audio. Of course, this configuration can be used for two or three operating positions as well.

Required Interface Cables

The chart below shows the cable complement required for the configuration in Figure 1. Contact NCS for the cable requirements for your specific configuration.

Cable Description	NCS Model No.	Qty Req'd
Radio Interface Cable	Depends on Radio Model	4
Parallel Radio Interface Cable	NCS-250-PICB-XX	12
Parallel "Y" Adaptor	NCS-250-PYA	12

Operation

*Simultaneous Use of a Single Radio by Multiple Operators*

In this configuration each operator can select any of the 4 radios via the pushbuttons on the front panel of the NCS-C250. This means that more than one operator can select and transmit on the same radio. If this is problematic in your specific operation, NCS can provide a Lock-out Box that will inhibit the PTT circuit to prevent other operators from transmitting if another operator is transmitting on the *Selected* radio.

*Cross-band Repeating*

Each operator also has the ability to independently activate the cross-band repeat function, connecting any of the 4 radios for cross-band repeating. The operating position that is cross-banding is limited to simulcasting on the radios selected for cross-band operation. All other operating positions will operate normally. In this configuration up to two independent **Talk Groups** can be established. For more information on Talk Groups see application note APN-250-107.

*Multi-Cast Operation*

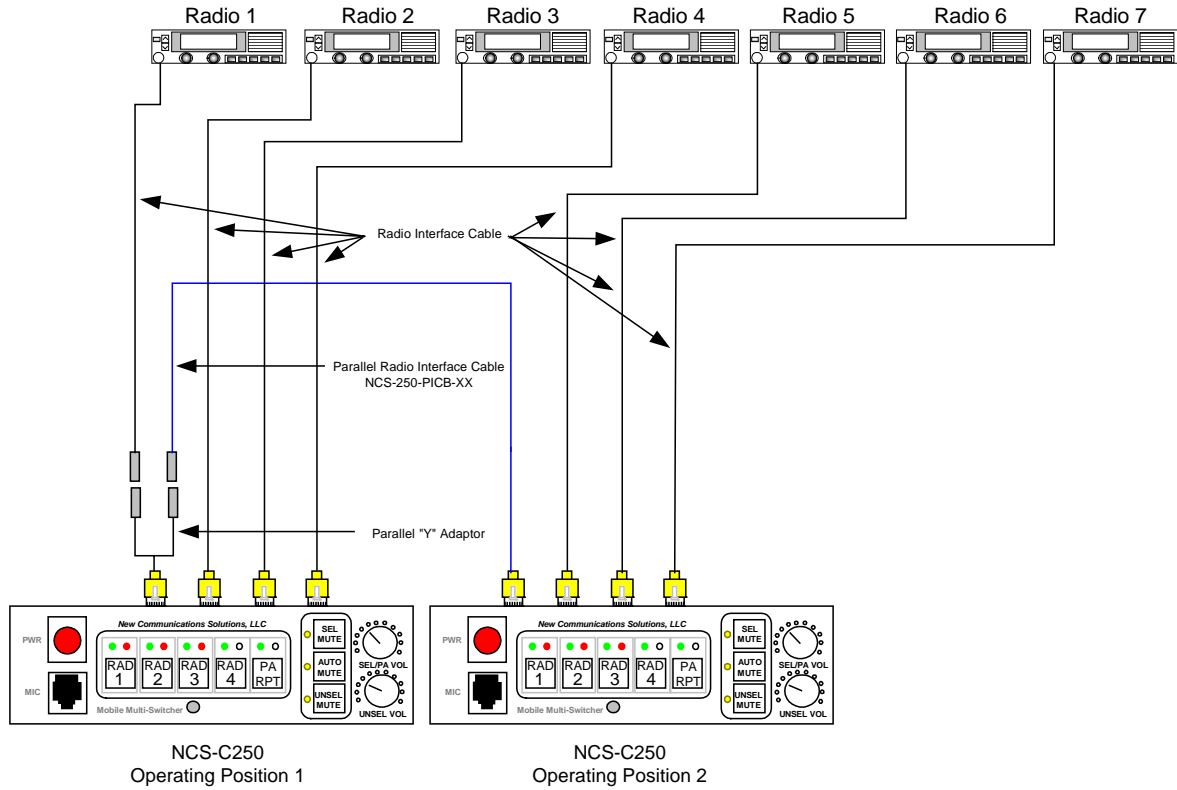
Any or all of the NCS-C250s can independently operate in the Multi-Cast mode (Multi-Cast option required). This allows the operator to select up to 4 radios for simultaneous transmission.

*Controls*

NCS-C250 controls, such as SEL VOLUME, UNSEL VOLUME, SEL MUTE, UNSEL MUTE, AUTO MUTE and RPT/PA operate independently for each operating position.

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### Sharing of Specific Radios Between Dispatch Positions



**Figure 2 – Sharing of Specific Radios Between Multiple Operating Positions**

The configuration in Figure 2 utilizes two operating positions with three independent radios connected to each of the two NCS-C250s and a single radio shared between the two operating positions.

#### Operation

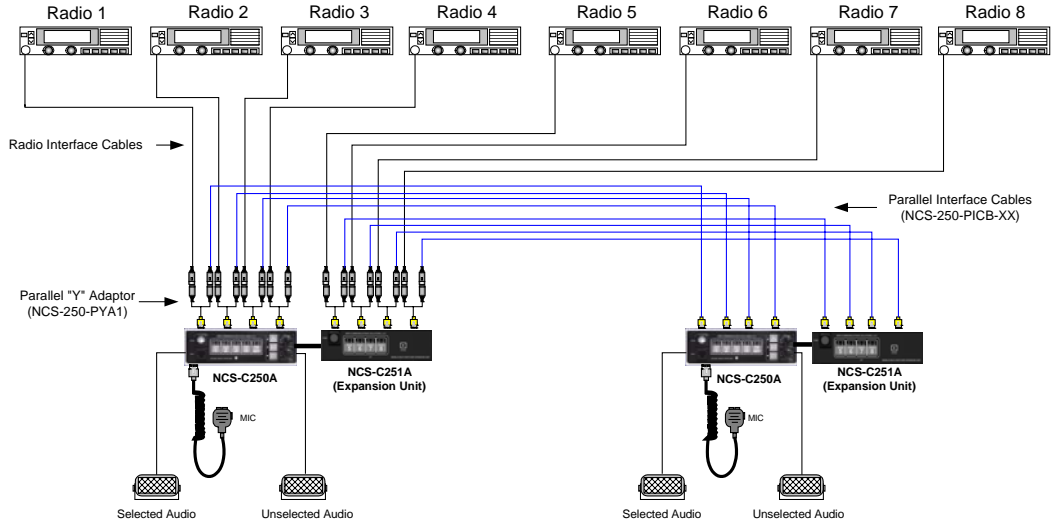
Operation of this configuration is the same as that described above for the configuration shown in Figure 1.

### Two Dispatch Positions Sharing Eight Radios

For applications requiring each operating position to control more than four radios and up to eight radios, the NCS-C251 Expansion Unit connected to the NCS-C250 can provide connectivity for an additional four radios. The NCS-C251 is easily interfaced to the NCS-C250 via their respective Expansion Ports. The NCS-C250/NCS-C251

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combination is then connected in a parallel configuration with other operating positions. Figure 4 shows two operating positions using the NCS-C250 and the NCS-C251 Expansion Unit. Additional dispatch positions can be added in a similar manner.



**Figure 4 – Using the NCS-C251 Expansion Unit for Controlling Up to 8 Radios**

### Operation

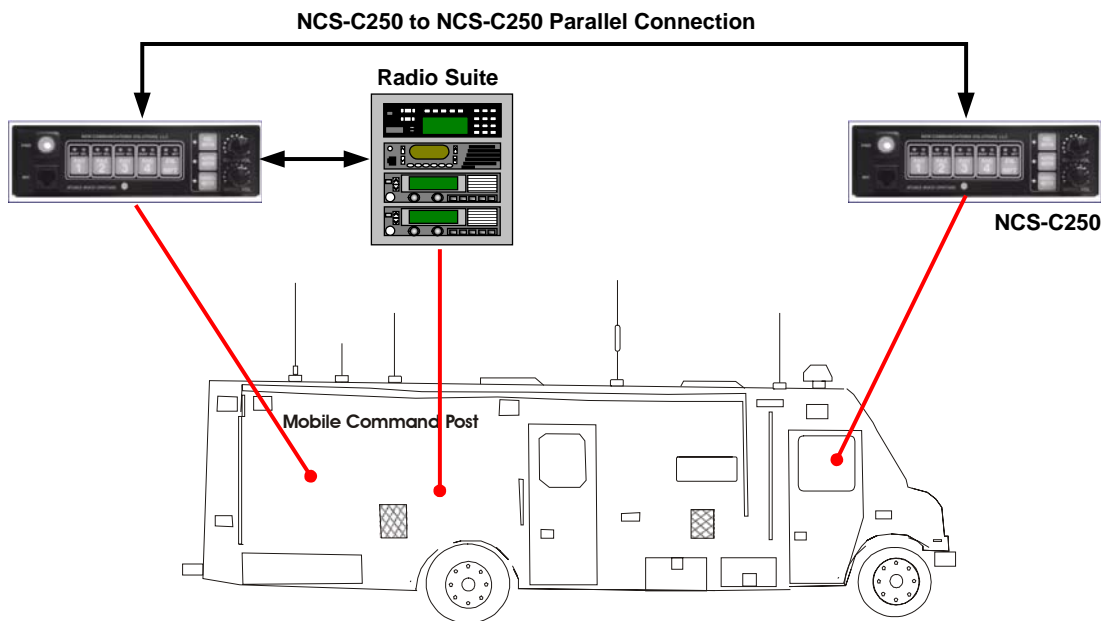
Each dispatch position, operating independently, can access any of the eight connected radios. The NCS-C250 and NCS-C251 communicate with each other using an RS-232 interface, allowing the two units to operate in the same manner as a single NCS-C250. The controls on the NCS-C250 (SEL VOLUME, UNSEL VOLUME, SEL MUTE, UNSEL MUTE, AUTO MUTE and RPT/PA) control both units except for radio selection. Radios 1-4 are selected on the NCS-C250 while radios 5-8 are selected via the front panel of the NCS-C251.

All other operations are the same as described above for the configuration in Figure 1.

### Using Parallel NCS-C250s for Dual Head Functionality in Mobile Applications

In numerous mobile applications, it may be desirable to have access to the on-board radio suite from more than one location within the vehicle. The NCS-C250s in a parallel configuration can be placed at multiple locations within the vehicle. Figure 5 shows one possible configuration of two NCS-C250s in parallel, allowing personnel in the cab of the truck and those in the back of the truck to have simultaneous access to the radio suite. For larger radio suites, the NCS-C251 can be added to accommodate up to eight radios.

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**Figure 5 - In-vehicle Multiple Access to Radio Suite**

### **Contact Us**

There are many variations of the examples given in this application note. If you have specific dispatch requirements let us configure your requirements into a working dispatch solution.

If you have questions regarding your specific requirements contact NCS at:

TEL/Fax: 888-883-5788

Email: [support@ncsradio.com](mailto:support@ncsradio.com)

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