

MX920 Binary Channel Select Application Note

Introduction

The MX920 series radios utilise a BCD push-button switch on the front panel to select channels. A customer has requested a binary channel select mode using the same header as the BCD switch. This application note will cover all aspects of the binary channel select implementation.

Binary Channel Select

The normal BCD channel select allows the digits 0 to 9 to be selected via the push-button switches on the front panel. This allows a selection from 0 to 99 via the front panel.

The binary channel select mode will allow the selection of channels from 0 to 255. However, since the header 'SKC' has been configured for BCD input, it will need to be re-mapped for binary channel selection. The table below shows the required mapping.

Channel Select Bit	SKC Header Pin
CHSEL_0 (LSB)	SKC-4
CHSEL_1	SKC-7
CHSEL_2	SKC_2
CHSEL_3	SKC-5
CHSEL_4	SKC-6
CHSEL_5	SKC-3
CHSEL_6	SKC-9
CHSEL_7 (MSB)	SKC-8

Pins SKC-1 and SKC-10 are tied to ground (earth, 0 volts). Activating a channel select bit as HIGH (1) requires grounding the appropriate

'CHSEL_' bit. Thus for 'Channel 003' bits CHSEL_1 and CHSEL_0 have to be grounded.

Serial terminal parameters

The MX920 radio communicates with the user via a serial terminal program such as Hyper Terminal. Hyper Terminal is usually shipped with most versions of Windows. The required serial communications settings for the serial terminal program are 57600 baud, 8 data bit, 1 stop bit and no parity (57600, 8, 1, n).

All MX920 serial commands and responses are terminated with a carriage return (CR).

Entering the binary channel select mode

The binary channel select mode is entered by sending 'SETBIN' as a serial command through a terminal emulator program. The radio will then respond with a 'MX9' character string.

Upon receiving the 'SETBIN' command the radio will enable the binary channel select mode and read the SKC header inputs. It will then change to the channel selected via SKC. For example if 16 is selected via the front panel channel select switch, it will change to channel 22 $((16 * 1) + 6)$, when the binary channel select command is received.

The binary channel select mode is non-volatile and will still be enabled when the radio is reset or its power supply cycled On-Off-On. The only way to exit the binary channel select mode is to send the 'SETBCD' command.

Exiting the binary channel select mode.

The binary channel select mode can be exited by sending 'SETBCD' as a serial command through a terminal emulator program. The radio will then respond with a 'MX9' character string.

Upon receiving the 'SETBCD' command the radio will enable the BCD channel select mode and read the SKC header inputs. It will then change to the channel selected via SKC. For example if channel 33 (0x21) is selected via the binary mode, the radio will change to channel

21 ((16 * 2) + 1), when the BCD channel select command is received.

The BCD channel select mode is non-volatile and will still be enabled when the radio is reset or its power supply cycled On-Off-On. The only way to exit the BCD channel select mode is to send the 'SETBIN' command.

Querying the channel select mode

The channel select mode query command 'CHSEL?', can be used to determine which channel select mode is currently enabled. The MX920 will respond with 'BINSEL' if the binary channel select mode is enabled. Conversely, the radio will respond with 'BCDSEL' if the BCD channel select mode (the default) is enabled.