

Purpose:

The purpose of these additional IR codes is to interface to remote touchpads that communicate via an IR remote protocol. Operation is designed to function better without the visual feedback the user would get from the LCD while standing in front of the XM-3000 using a handheld remote. Commands are zone specific, so that a touchpad in a particular zone can be made to control only that zone and the user cannot accidentally change the settings in another zone. The need for the "SEL" button, as is on the handheld remote, has been eliminated. This eliminates the need for macros, or strings of commands. For example, a single channel up command for zone 1 would take the place 3 button presses on the handheld IR remote: Zone 1, Channel Up, and Select. This will minimize the possibility of collisions from touchpads in 2 different zones being operated at the same time.

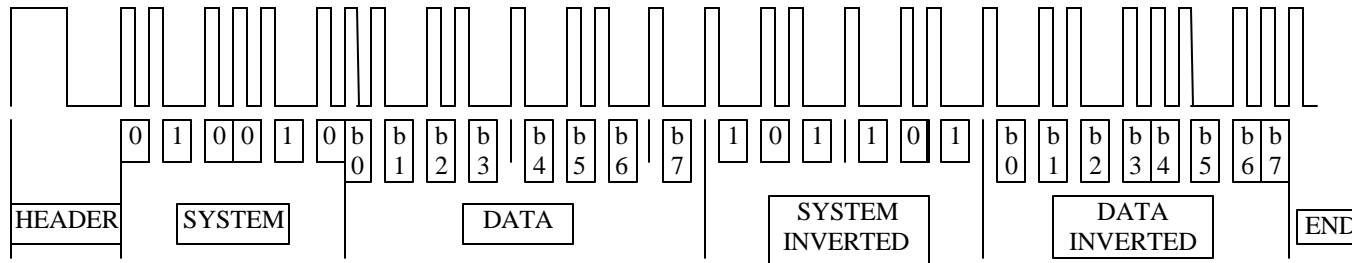
SRX-3 Firmware:

This document applies only to SRX-3 receivers with firmware versions of 1.01.124 or higher.

Pulse Train Format:

The IR protocol consists of 5 parts:

1. Header
2. System code (6 bits) "010010"
3. Command (8 bits)
4. System code inverted (6 bits) "101101"
5. Command inverted (8 bits)



Example of Channel Up, Direct Tuning Mode, Zone 3

- Notes:
1. Carrier frequency is 57KHz.
 2. High going pulses represent carrier on time.
 3. TTL level signals at the IR receiver will look exactly inverted from this.
 4. Logic "0" bit is 840 uS carrier on followed by 840 uS carrier off.
 5. Logic "1" bit is 840 uS carrier on followed by 2540 uS carrier off.
 6. In the above example, the data sent is 01011011. Lsb is first. The data will be converted by microcontroller firmware to 0xDA.

Explanation of Bits in Command Byte:

The bits of the command byte have the following meaning. This makes the command bytes follow a pattern, rather than being random sequential numbers. Not all possible commands are valid. See the table of valid commands in the next section.

Note: The bits are shown in the order they would appear on an oscilloscope, which is backwards from a software convention, which has the most significant bit on the left.

b0 b1 b2 b3 b4 b5 b6 b7

b6, b7 Zone

00 = Zone independent. Used only for Power On and Power Off.

10 = Zone 1

01 = Zone 2

11 = Zone 3

b4, b5 Mode

00 = Mode independent functions

10 = Direct tuning mode

01 = reserved

11 = Preset tuning mode

b0, b1, b2, b3 Function

	Tuning Function (b4, b5 $\neq 00$)	Mode Independent Function (b4, b5 = 00)
0000	Number 0	reserved
1000	Number 1	reserved
0100	Number 2	reserved
1100	Number 3	Program Preset
0010	Number 4	Cancel Program Preset
1010	Number 5	Power On (2)
0110	Number 6	Power Off (2)
1110	Number 7	Select (1)
0001	Number 8	reserved
1001	Number 9	reserved
0101	Channel Up	reserved
1101	Channel Down	reserved
0011	Category Left (3)	reserved
1011	Category Right (3)	reserved
0111	reserved	reserved
1111	reserved	reserved

- (1) Function provided, but no foreseen use.
- (2) Power On/Off only valid for b6, b7 = 00 (Zone independent).
- (3) Category Left and Right expected only for Direct tuning mode, (b4, b5 = 10).

Examples:

To tune Zone 2 to Preset 7, “11101101” would be sent, which decodes “1110”(Number 7) + “11” (Preset tuning mode) + “01” (Zone 2).

To tune Zone 3 to Channel 123, “1000111”, “01000111”, “11000111” would be sent.

Summary of Valid Commands:

Function	ZONE 1			ZONE 2			ZONE 3		
	Tuning mode			Tuning mode			Tuning mode		
	Direct		Preset	Direct		Preset	Direct		Preset
Number 0	00001010		00001110	00001001		00001101	00001011		00001111
Number 1	10001010		10001110	10001001		10001101	10001011		10001111
Number 2	01001010		01001110	01001001		01001101	01001011		01001111
Number 3	11001010		11001110	11001001		11001101	11001011		11001111
Number 4	00101010		00101110	00101001		00101101	00101011		00101111
Number 5	10101010		10101110	10101001		10101101	10101011		10101111
Number 6	01101010		01101110	01101001		01101101	01101011		01101111
Number 7	11101010		11101110	11101001		11101101	11101011		11101111
Number 8	00011010		00011110	00011001		00011101	00011011		00011111
Number 9	10011010		10011110	10011001		10011101	10011011		10011111
Channel Up	01011010		not used	01011001		not used	01011011		not used
Channel Down	11011010		not used	11011001		not used	11011011		not used
Category Left	00111010		not used	00111001		not used	00111011		not used
Category Right	10111010		not used	10111001		not used	10111011		not used
Program Preset	11000010			11000001			11000011		
Cancel Prog. Preset	00100010			00100001			00100011		
Power On	10100000								
Power Off	01100000								