Reverse Engineered Notes

Transmitter Serial Port

There is a ⅛" (3.5 mm) stereo input jack on the remote transmitter. The three inputs are +9Vdc, Data In, and Ground. It appears that this will allow the device to be powered externally, and a signal injected into the transmitter circuit from an external source. This should allow the transmitter to be hooked up to an external data and power source. It has been reported that the jack disconnects the signal from the transmitter's controller board, as well as bypasses the power down "Sleep" mode so the transmitter will stay active while on external power.

Interfacing to the Receiver Port

The receiver module is connected to the main board by a 3 pin connector with 0.100" (2.54mm) spacing for the pin. The connector is a locking connector, but a JST connector will work for the female end without modification. The male end may need to have the locking tab removed from the JST connector.

The Pins are VSW (+5VDC), Data Out, and GRD. The output of the receiver is 5 Volt logic level and it goes directly into the CPU without external buffering.

Command Format

Commands are sent via On-Off Keying the transmitted signal at specific intervals. While the button is pressed, it transmits the same packet continuously every 29 milliseconds. When the button is released, the packet is altered in a specific place to denote the termination of the signal.

The Power/Stop button is an exception. It repeats the same code every 21 milliseconds until it is released. There is no difference between the Repeat and Terminate packets.

The format is not currently decoded, so we will represent the outgoing signal as a binary code where each bit represents approximately 1.55 milliseconds and 1 is the presence of a transmitted signal, and 0 is the absence with the bits being read out from left to right.

Transmitter Tokens

There are 25 buttons on the remote. 24 of them are in a 4 x 6 matrixed keyboard. The last button, Power/Stop, is tied directly to the interrupt input, and will wake the remote after it has gone to sleep.

Name	Row	Column	Repeat	Terminate
0	1	1	0b10101000101	0b11010000101
1	1	2	0b10101000110	0b11010000110
2	1	3	0b11001000111	0b11110000111
3	1	4	0b10101001000	0b11010001000
4	2	1	0b11001001001	0b11110001001
5	2	2	0b11001001010	0b11110001010
6	2	3	0b11101001011	0b10010001011
7	2	4	0b10101010100	0b11010010100
8	3	1	0b11001010101	0b11110010101
9	3	2	0b11001010110	0b11110010110
LAMP	3	3	0b11101010111	0b10010010111
HOME	3	4	0b11001011000	0b11110011000
NOTE REST	4	1	0b11101011001	0b10010011001
SHIFT OCTAVE	4	2	0b11101011010	0b10010011010
CLEAR	4	3	0b10001011011	0b10110011011
ENTER	4	4	0b10101100100	0b11010100100
NOTES	5	1	0b11001100101	0b11110100101
STATUS	5	2	0b11001100110	0b11110100110
SPEECH	5	3	0b11101100111	0b10010100111
MOTION	5	4	0b11001101000	0b11110101000
GAME	6	1	0b11101101001	0b10010101001
PROGRAM	6	2	0b11101101010	0b10010101010
LEARN	6	3	0b10001101011	0b10110101011
EXECUTE	6	4	0b11001110100	0b11110110100
Power/Stop	N/A	N/A	0b1110111010100	N/A