SmartLIGHT face="Times New Roman Special G1"> face="Times New Roman Special G1">? Communications Interface Specification

13 June 1996 version 1.0

1.0 Serial Port Configuration

Baud Rate: 9600

Data Bits 8

Stop Bits: 1

Parity: None

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2.0 Data Definitions

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MSB	?	?	?	?	?	?	LSB
7	6	5	4	3	2	1	0

Bit 7: 0 = Guitar #1 / 1 = Guitar #2

Bit 6: 0 = Data / 1 = Command

Bits 5-0: Data / Command

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3.0 Command Definitions

Commands will be given in Hexadecimal. They are 6 bits long, consisting of data bits 5-0. Bit 6 must be set to 1 for the commands to be recognized by the Guitar and Bit 7 must be set to the Guitar number.

00H	Reset Guitar - set all LEDs to 0, restore default scan rate.
01H	Download new dataset to Guitar, 24 data bytes will follow.
02H	Set refresh rate of LED display, 1 data byte will follow.
03H	Reserved for future use.
04H	Turn off a single LED, 2 data bytes will follow.
05H	Turn on a single LED, 2 data bytes will follow.
06H - 3FH	Reserved for future use.

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4.0 Dataset Command Definition

The Dataset command requires 24 data bytes to follow the command. Bit 6 must be set to 0 for all of the data bytes. Bit 7 must be set to the guitar number. Following is the order of bytes for the data:

Data Byte	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	A6	A5	A4	A3	A2	A1
2	n/a	A11	A10	A9	A8	A7
3	A#6	A#5	A#4	A#3	A#2	A#1
4	n/a	A#11	A#10	A#9	A#8	A#7
5	B6	B5	B4	B3	B2	B1
6	B12	B11	B10	B9	B8	B7
7	C6	C5	C4	C3	C2	C1
8	n/a	C11	C10	C9	C8	C7
9	C#6	C#5	C#4	C#3	C#2	C#1
10	n/a	C#11	C#10	C#9	C#8	C#7
11	D6	D5	D4	D3	D2	D1

12	n/a	n/a	D10	D9	D8	D7
13	D#6	D#5	D#4	D#3	D#2	D#1
14	n/a	n/a	D#10	D#9	D#8	D#7
15	E6	E5	E4	E3	E2	E1
16	E12	E11	E10	E9	E8	E7
17	F6	F5	F4	F3	F2	F1
18	n/a	F11	F10	F9	F8	F7
19	F#6	F#5	F#4	F#3	F#2	F#1
20	n/a	F#11	F#10	F#9	F#8	F#7
21	G6	G5	G4	G3	G2	G1
22	n/a	G11	G10	G9	G8	G7
23	G#6	G#5	G#4	G#3	G#2	G#1
24	n/a	G#11	G#10	G#9	G#8	G#7

To turn a LED on, the bit in the dataset must be set to 1. A 0 will turn off the LED. An n/a indicator in the chart means there is no physical LED present in the Guitar for the bit, it will be ignored by the Guitar.

5.0 Set Refresh Rate Command

The Refresh Rate command requires 1 data byte to follow the command. Bit 6 must be set to 0 for data byte. Bit 7 must be set to the guitar number. The other six bits should be set according to the following formula: The base refresh rate is 60 Hz. This corresponds to a data byte of 0. The maximum refresh rate is 90 Hz. This corresponds to a data byte of 3Fh. Each increment of 1 in the data byte is equal to approximately a 1/2 Hz increment in the refresh rate. So, for a rate of 70 Hz, the data byte should be 14H. This is for testing purposes only and will not be available in the production unit.

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Turn On/Off Single

The Turn On/Off Single LED command requires 1 data byte to follow the command. Bit 6 must be set to 0 for all data bytes. Bit 7 must be set to the guitar number. Following is the order of bytes for the data:

Data Byte	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	n/a	n/a	Y4	Y3	Y2	Y1
2	n/a	n/a	Z4	Z3	Z2	Z1

Y4	Y3	Y2	Y1	Octave
0	0	0	0	1
0	0	0	1	2
0	0	1	0	3
0	0	1	1	4
0	1	0	0	5
0	1	0	1	6
0	1	1	0	7
0	1	1	1	8
1	0	0	0	9
1	0	0	1	10
1	0	1	0	11

1	0	1	1	12

Z4	Z3	Z2	Z1	Note
0	0	0	0	A
0	0	0	1	A#
0	0	1	0	B
0	0	1	1	C

0	1	0	0	C#
0	1	0	1	D
0	1	1	0	D#
0	1	1	1	E
1	0	0	0	F
1	0	0	1	F#
1	0	1	0	G
1	0	1	1	G#

7.0 Special Notes

To update both guitar's displays together, you can interleave the data & command bytes. Send a Dataset Command to Guitar 1 (without sending the data bytes) then send a Dataset Command to Guitar 2 (without sending the data bytes). Now send the first byte of data to guitar 1, then the first byte of data to guitar 2 & continue until done.

Sending a new command to a guitar before completing the sending of all data bytes for a previous command will terminate the previous command.

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