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### How To Common LED Connections

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## Show Me ...

### ...How To Common LED Connections

#### Summary

The SIM-board Output Modules provide enough pin node connections to allow upto 128 LEDs to be individually connected to the module, using 2 wires per LED. This is useful for beginner cockpit builders or where the application requires simple, individual connections (for example, allowing the instant replacement of broken LEDs in the future without having to perform any soldering or desoldering to make the replacement).

However, utilizing common connections throughout your LED wiring will reduce the amount of wiring required. This tutorial will show you how to wire up LEDs to your Output Module using the common-connection method.

This tutorial assumes you have read the tutorial entitled "[Show Me...How to Wire Up LEDs to an Output Module](#)".

#### You will need...

- a [SIM-board USB Output Module](#) (any type except 16-digit output module)
- a number of LEDs
- wire
- [crimping tool](#), some [crimps and crimp houses](#)
- wire strippers
- soldering iron

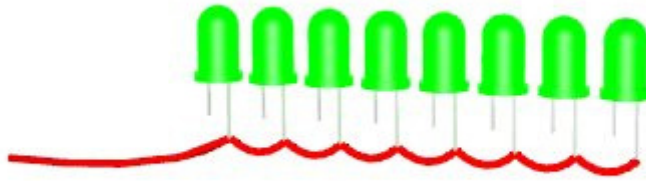


#### Step 1: Make your common connections

The common connections required for LEDs on the Output Module differ slightly from those required for the commoning of switches on an Input Module. Instead of commoning upto 128 LEDs in one go, you must common up your LEDs in groups of 8 at a time.

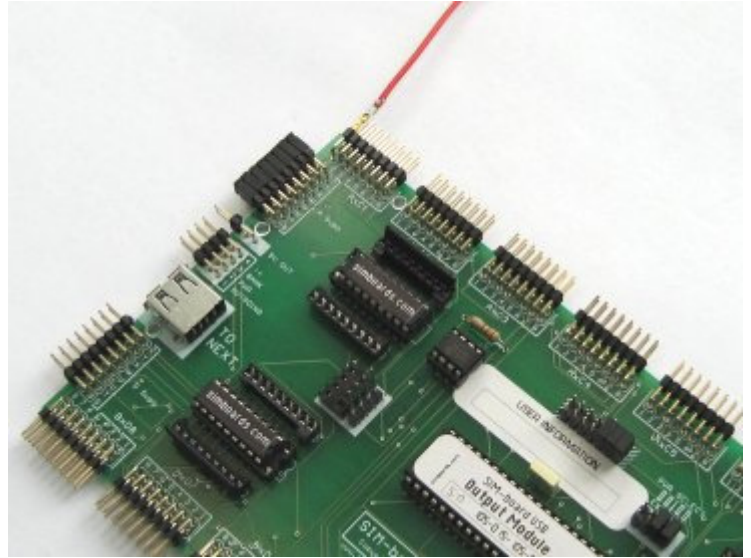
This tutorial assumes you are wiring to the recommended common-anode polarity.

To form your commoned group of 8 LEDs, connect the positive legs of your 8 LEDs to each other using lengths of wire.



### Step 2: Connect the common wire

Connect this common wire to the top pin marked "1" of the block marked "AxC1" on the Output Module.

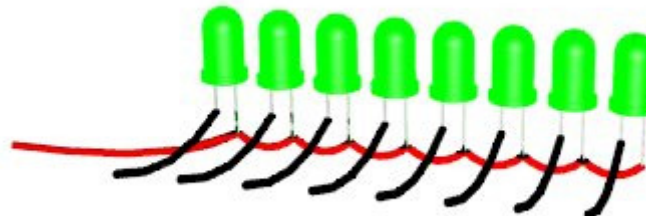


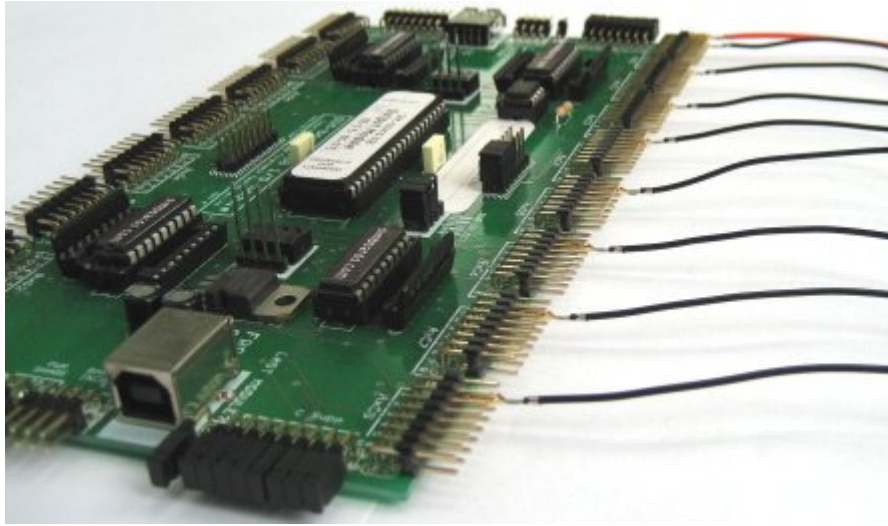
### Step 3: Connect the negative LED legs

Now connect each individual leg of the group of 8 LEDs to the bottom pin marked "1" of each of the AxC1 to AxC8 blocks, one leg per block.

This means that the first LED negative leg connects to the bottom pin marked "1" of the AxC1 block, the second LED negative leg connects to the bottom pin marked "1" of the AxC2 block ... etc ... and the 8th LED negative leg connects to the bottom pin marked "1" of the AxC8 block.

*Please refer to the Step 4 reference table below for a full connection list.*





#### Step 4: Quick reference table

Group	LED numbers	Common +ve connection	Individual -ve connections
<b>1</b>	1	A1C1 top pin	A1C1 bottom pin
	2		A1C2 bottom pin
	3		A1C3 bottom pin
	4		A1C4 bottom pin
	5		A1C5 bottom pin
	6		A1C6 bottom pin
	7		A1C7 bottom pin
	8		A1C8 bottom pin
<b>2</b>	9	A2C1 top pin	A2C1 bottom pin
	10		A2C2 bottom pin
	11		A2C3 bottom pin
	12		A2C4 bottom pin
	13		A2C5 bottom pin
	14		A2C6 bottom pin
	15		A2C7 bottom pin
	16		A2C8 bottom pin
<b>3</b>	17	A3C1 top pin	A3C1 bottom pin
	18		A3C2 bottom pin
	19		A3C3 bottom pin
	20		A3C4 bottom pin
	21		A3C5 bottom pin
	22		A3C6 bottom pin
	23		A3C7 bottom pin
	24		A3C8 bottom pin
<b>4</b>	25	A4C1 top pin	A4C1 bottom pin
	26		A4C2 bottom pin
	27		A4C3 bottom pin
	28		A4C4 bottom pin
	29		A4C5 bottom pin
	30		A4C6 bottom pin
	31		A4C7 bottom pin
	32		A4C8 bottom pin
<b>5</b>	33	A5C1 top pin	A5C1 bottom pin
	34		A5C2 bottom pin
	35		A5C3 bottom pin
	36		A5C4 bottom pin
	37		A5C5 bottom pin
	38		A5C6 bottom pin
	39		A5C7 bottom pin
	40		A5C8 bottom pin

<b>6</b>	41	<b>A6C1</b> top pin	<b>A6C1</b> bottom pin
	42		<b>A6C2</b> bottom pin
	43		<b>A6C3</b> bottom pin
	44		<b>A6C4</b> bottom pin
	45		<b>A6C5</b> bottom pin
	46		<b>A6C6</b> bottom pin
	47		<b>A6C7</b> bottom pin
	48		<b>A6C8</b> bottom pin
<b>7</b>	49	<b>A7C1</b> top pin	<b>A7C1</b> bottom pin
	50		<b>A7C2</b> bottom pin
	51		<b>A7C3</b> bottom pin
	52		<b>A7C4</b> bottom pin
	53		<b>A7C5</b> bottom pin
	54		<b>A7C6</b> bottom pin
	55		<b>A7C7</b> bottom pin
	56		<b>A7C8</b> bottom pin
<b>8</b>	57	<b>A8C1</b> top pin	<b>A8C1</b> bottom pin
	58		<b>A8C2</b> bottom pin
	59		<b>A8C3</b> bottom pin
	60		<b>A8C4</b> bottom pin
	61		<b>A8C5</b> bottom pin
	62		<b>A8C6</b> bottom pin
	63		<b>A8C7</b> bottom pin
	64		<b>A8C8</b> bottom pin

LEDs 65 to 128 are connected in the same manner but using the BxD1 to BxD8 pin blocks instead.



### Step 5: Further connections...

Using the above steps 1 to 4, you can connect 8 groups of 8 commoned LEDs each (64 LEDs in total).

If your Output Module is capable of driving more than 64 LEDs, you can use the same procedure to group the next 8 groups of 8 LEDs each but instead making connections to the pin banks marked "BxD1" to "BxD8".

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