How many lights can I run per channel/board.?

This question will vary greatly depending on what kind lights you use. However, there is enough uniformity among products that we can make some general predictions. PLEASE NOTE: THIS SHOULD NOT BE TAKEN AS FACT. DO YOUR OWN HOMEWORK!!!

A 'standard' string of 100 count mini lights is .34amps. If you divide 30amps by .34amps, you get 88.23. This means you could have about 8800 lights on a 16 channel, 30amp controller. If you were to evenly space these out, you would have about 5.5 strings per channel. Throw away that half string per channel, and you can run about 8000 on a standard 16 channel, 30amp controller.

Now, imagine being able to control more than 8000 lights with a single 16 channel, 30 amp controller. The catch, is that you can't turn them all on at once. So long as you don't break two rules, you can have as many lights as you want. (Again, within the rules.) Rule 1 - NEVER exceed 8amps per channel. Rule 2 - NEVER exceed the rating on the board.

Let's say that you have a standard 16 channel, 30 amp controller. You have the option of running 15amps per side, which means on channels 1-8 you can have up to 15 amps on at once, and 9-16 you can have another 15amps on at once. If you were to limit your channels to 7 amps per channel, you could have 2 channels on at once. 7amps works about to about 20 strings of 100 count mini lights. (Again, at .34amps per strand.) Let's continue the math, shall we? 2 channels of 20 strings is 40 strings, which is 4000 lights. Now, add the other side, and you have a total of 8000 lights on at once. 2000 lights (which is our maximum in this example) per channel, times 16 channels equals 32,000 lights. Thus, in this example, you could have up to 32,000 miniature lights on at once, and have a maximum of 8000 'on' at any given time.

There are other things to keep in mind. C7 and C9 lights use a lot more power. A single 25 count string of C9's will run 1.46 amps. 30/1.46 equals only 20 strands, or 500 lights. LED lights use a lot LESS power. A strand of 70 count LED's that I bought from Lowes this year has a rating of .046 per string. 30/.046 equals 652 strings. 652*70 equals 45,000 lights. Evenly spaced this is 1.84 amps per channel, or a total of 29.44 amps. If I were to load the LED's up the same way I did in my 'maximum use' example from above, I would have 152 strings (10640 lights) per channel (6.99amps per channel.) Turning on only 4 channels at once, I could turn on 608 strings at once, for a total of 42,560. I could control a total of 170,240 lights (2432 strings) from a single 30 amp controller.