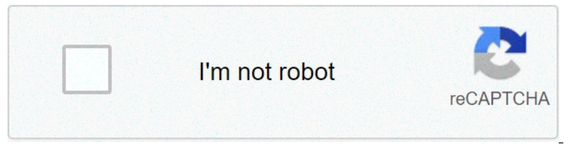

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How to calculate led transformer size

I am looking to purchase some LED light strips, and I have seen these: 7.5 Watt RGB LED Tape They are 7.5w, and have 150 LED lights over a span of 5m and the website states that they are 12V. But I am not sure what transformer/driver to use for these lights. The QA section, below the product description mention: " To work out what transformer you require this is quite simple. You take the amount of LED tape you have in metres and x this by the wattage of the LED tape you have, again per metre. For example 7m of 4.8w LED tape: 7 x 4.8w = 33.6w Therefore you would require a 60w transformer. " So for 5 meter of 7.5watts the calculation is 5 x 7.5 = 37.5W The website has power transformers, but at 100W and 150W, and when I rang them they were out of stock and the prices for the transformers were about 3 times what I can see on ebay. Firstly, can I use a transformer that is producing 40W which is just above the 37.5W that I need, instead of a 150W transformer that they sell and claim is compatible for this LED strip? Here is one transformer, that looks equivalent to the one they sell, at a relatively affordable price: This gives me 12v x 12.5A = 150W, but I can see a 15V x 10A, which also gives 150W. Which of these is suitable for me (as they both produce the same wattage, but have different Volts/Amps), and what do the different Amps and Volts mean? As a professional landscape lighting designer looking to install and operate a new low voltage lighting system, you need to consider what transformer will be required to convert your standard line voltage outlets using 110-120V into your outdoor low voltage 12V-15V lighting design. This consideration as an outdoor lighting installer allows your landscape lights to function properly for many years ahead and will reduce issues with lights failing or ending up with weak outputs further down the line of wire connections around the property landscapes, keeping your clients happy and referring customers for many years ahead. So, to answer the question about How Many Landscape Lights Can I Connect to which Transformer Wattage, we must first look at some of the basic lighting design specs and considerations. 1) How many lights will I be installing? 2) What is the total Watts and Voltage Amp draw of the landscape lights being installed in an area? 3) What wire gauge size will I be using, 18/2, 16/2, 14/2, 12/2 or 10/2? If you want the super duper shortcut to finding the minimum wire gauge or the minimum transformer you can get away with, or the maximum load or the maximum distance of a run… then grab your mobile device, open the app store and download Landscape Lighting Calculator. The app calculators take into consideration VA loss over length of wire by gauge, tap voltage and more. Learn more at . (note: Landscape Lighting Calculator is not a product of Garden Light LED.) Back to our article… Critical considerations before starting out: If you connect low voltage lights directly to line voltage power, the higher 120 voltage will cause them to burn out immediately. Therefore, a low voltage transformer power source must be used, which can then plug into your main power source to properly run your landscape lights each night. If you don’t have a GFI outlet available, seek a professional electrician to install one for your new low voltage lighting system prior to installation where the transformer is desired to be placed out of sight. If using the more powerful magnetic landscape lighting transformers, it’s always best to not go over 80% of its maximum wattage rating. Now, to figure out how many 12V lights you can power outside with a single low voltage transformer, look to the wattage and VA ratings for the fixtures being installed. Once that has been considered and calculated with the number of lights on the systems run, you can look for a low voltage transformer that has a higher minimum wattage rating. How Many Landscape Lights Can You Install on a Low Voltage Transformer Transformer power spec considerations: Calculating Voltage Amps as opposed to Watts, will show you the true power draw on your line, and this is why it is advisable to use this number to ensure you don’t purchase a landscape lighting transformer that isn’t adequate to power your lighting design installation, since it will only cause issues for you down the road eating into your profit and your customers happiness. Small Landscape Lighting Design Plan Power Calculations So, if you want to connect ten landscape spotlights to a small transformer, and the lights utilize 2W / 4VA / 20 watts halogen equivalent light output power each, you would want a 100-watt transformer. (Example of calculations: 10 lights X 4 VA = 40 voltage amps). Large Landscape Lighting Design System Power Draw Formula Again, if you want to connect twenty landscape lights to a low volt transformer, and the lights are pulling 4W / 7VA / 35 Watts of halogen power draw on the system, you would need a 300 watt transformer. (20 lights X 7 VA = 140 voltage Amps, so it’s best to use a 300 Watt) since 150W transformer will not give you enough buffer of the recommended 20-25% below maximum watts rating, for your new landscape lighting system to stay properly lit for many years ahead. Wire Plays an Important Role in Your Lighting Design Considerations for Power Additionally, when considering what wire gauge to use for your landscape lighting design installation, its best to understand that different gauges have their own pros and cons. Note: smaller wire sizes are often more economical and larger wire sizes are stronger, however the smaller ones will also reduce the distance of power being provided to your lights in the ground, and may require conduit to stay safe from dreaded landscaper cuts to your lighting connections. In this example of installing your landscape lights with specific wire gauges as another consideration for which transformer wattage to buy, we can benchmark some calculations knowing that typically, a 300-watt transformer can power 100 feet run using 16 gauge, or 150 feet using 14 gauge, or 200 feet when using the most popular 12 gauge cables. It’s always advisable to check with the lighting manufacturers territory managers and sales teams prior to purchase, to discuss any other factors and considerations to best determine the proper transformer and wire gauge to use for your specific landscape lighting design system. It’s Always Best to Double Check Landscape Lights and Low Voltage Transformer Calculations Since there are so many factors to consider to create a professional lighting design project, it’s always best to consult your experienced lighting design specialist, as they can advise you on the best type of wire (ie: standard copper, vs anti-corrosive wire) along with the proper transformer and landscape lighting models / finishes to buy for your specific applications. Since often, they have handled and managed a very similar installation using the design techniques desired in your area, to ensure your new installation stays working great years later, and worry free. Need to figure out which power supply you need?This is where some math is going to be needed, but this math is even easier than figuring out the fifteen percent tip at restaurants, I promise! So let's say you've picked out a strip already. each strip also lists its power consumption in watts per foot. In our little hypothetical shopping scenario here, you'll be picking out the 5050 regular density strip, and you've decided that for your project you'll need thirty feet of lights. The 5050 regular density LED light strip is listed at two watts per foot, so for thirty feet of light, you'll be drawing sixty watts of power, and as it just so happens, we've got sixty watt power supplies!That formula again : (Strips Wattage per Foot) x (Total Feet of Strip) = Total power required (Watts) What if I want to use a wall dimmer with my LED lights? Well that's certainly possible, there are a few things you'll need to know. First off, you'll need to use a dimmable LED driver instead of a standard power adapter. Another thing to note is that using a wall dimmer and the dimmable LED driver will require you to hard wire the lights directly into the switch. That, or you'd need to wire your dimmer switch into a wall outlet and attach and AC power cable to your strips and dimmable LED driver and use that outlet. The last thing you'll need to know about wall dimmers and the dimmable LED driver is that RGB LED strip lights just don't have a good way to work with the wall dimmer. No cause for alarm though, as all of our RGB LED light strip controllers can dim our RGB LED strip lights, so you'll still be able to dim your lights! What if I want to use a battery pack for portable power? Please do! Our 12V rechargeable battery packs for LED light strips are great for any mobile project, like Light Bikes or outdoor lighting that's not near any convenient power sources. So if you were planning a romantic picnic dinner in a field and candles aren't your thing? Then you should pick up a 12V rechargeable battery pack and a nice RGB LED light strip! 12V rechargeable battery packs are also great for boat lighting, assuming that the battery pack stays dry and your strips are rated for some to a lot of water! How can I know how long the battery pack will last with my lights? The 12V rechargeable battery packs we offer are rated in milli-amp hours, either 3800 or 6000 milli-amp hours. To determine how many amps your strips are drawing, you'll need to find their wattage, so let's use a really easy example. A regular density 3528 LED light strip draws twenty-four watts, now take the wattage and divide it by twelve, that's your amp draw, or two amps. Now multiple your amp draw by one thousand, that's your milli-amp draw, so for the 3500 mAh rechargeable battery pack and a 3528 regular density LED light strip your battery pack will last 3500/2000=1.75 hours, or 104 minutes. Here's the general formula: (watt draw) / 12=A, A x 1000=M, Battery Pack Milli-amps / M= hours of battery life. I hope this helps you plan your battery pack outings! (Need a power supply or battery? Check out our selection here) ---Choosing the right power supply is all part of choosing the right products for your project. Even more important is choosing the right LED light strip, and our free eBook, titled 'How to Choose LED Strip Lights' is an ideal guide in the next stage of your LED lighting journey. Thanks for reading this installment of our troubleshooting series, we truly hope it has been helpful. Have a question we haven’t answered yet? contact us at cole@hitlights.com and we’ll do our best to answer it in the next installment. Please remember that our customer service staff customerservice@hitlights.com) is happy to assist you with any and all of your concerns, questions, and suggestions. If you want to call and talk with us, well that’s just fine too – (225)-304-0408! Landscape lighting adds safety, security and aesthetic appeal. Once your landscape lighting design is complete, you can figure out what size of low-voltage transformer you need. Transformers generally range from 150- to 900-watt capacity. Matching the size of the transformer to the lighting design is important for efficient operation and function of the system. House current, 120 volts, is reduced by a transformer to 12 to 20 volts, the current needed to operate low-voltage landscaping lights. Many transformers come with connections for lights of different wattage for versatility. Other low-voltage transformer features include motion detectors for turning lights on and off, photo cells to turn lights on at specific light levels and programmable timers. Add up the wattage of each light in your landscape lighting design. For example, if you plan to use 20 12-watt lights, multiply 12 times 20 for the total wattage. In this example, the total wattage is 240. Multiply the total wattage by 1.25 to adjust for loss due to cable distance. For the example, 240 x 1.25 = 300. The final number determines how large a transformer you need for your system. Choose a transformer that supplies no less than the required wattage and no more than 33 percent more. Choosing a transformer with slightly more wattage will allow you to add a few more lights in the future. Low-voltage transformers are mounted outside and plugged into your household current through an outside electrical outlet. Fifteen-amp 120-volt circuits can carry 1440 watts. Check other appliances or systems already in use by a circuit before adding your transformer to a particular outlet. Wondering how many lights you can fit on your in-lite transformer? It involves a little bit of math (don’t panic!) and it’s a lot simpler than you think. Follow these few simple steps to manually calculate how many light fixtures fit on your transformer. Or, shoot us an email at info@in-sider.com or message us on the website and we can send you our watt calculator that will do all the math for you (we told you we’ve always got your back). To watch the full video on how to determine how many lights fit on your low-voltage transformer, click here: 1. Determine Your Transformer’s Current Capacity First, you have to determine how many watts your transformer can hold. With low-voltage lighting, we recommend only using 90% of the available watts. This will ensure you don’t run into any issues by overloading your transformer and tripping the system. The number of watts a transformer can hold will be listed on the website or on the box of the product. (Note: W = Watts) For this example, we are using the in-lite 108 W transformer. Of the 108 W, we only want to use 90% so we have about 97 W to work with. 2. Determine the Wattage of Your Low-Voltage Light Fixtures Next, determine how many watts each fixture consumes. This information can be found on the back of product boxes, on our website (scroll down on the product page until you see ‘More Information’), in our brochures, or in our spec sheets. If you still can’t find what you’re looking for, shoot us a message and we can help you out. But trust us, you should be able to find the watts your fixture consumes (we put it everywhere to make it easier for you!). When you find the wattage for your fixture, write it on a piece of paper. Do this for every different fixture in your project. 3. Multiply the Watts by the Total Number of Fixtures Once you’ve done that, write down how many of each fixture you need. Then multiply the watts by the number of fixtures you will be using in your project. Do this for each fixture type individually. This is the amount of wattage that each type of fixture will consume. Finally, add all the wattage totals together. If your total is less than 90% of your transformer capacity, all of your lights fit one transformer! For this example, our transformer holds 97 W (90% of 108 W) and our fixtures only consume 44.5 W. So, we only need one transformer and we have room to add more lights at a later date. It may seem tricky at first, but don’t worry, you’ll get the hang of it. Find a Transformer for Your Landscape Lighting Project We want to help you make your outdoor space unique. Low-voltage landscape lighting adds security, safety, and beauty to any outdoor space. The above steps can help you determine what size transformer you need once your lighting design plan is complete. For landscape lighting pros, in-lite offers two professional-grade transformer options compatible with our entire suite of landscape lighting solutions: the HUB-100 and SMART HUB-150. The HUB-100 Transformer is a sleek, modern landscape lighting transformer that plugs directly into any standard GFCI outlet to power in-lite’s 12-volt lighting fixtures. Built with a high-impact plastic casing, the HUB-100 Transformer can be mounted just about anywhere indoors or out – on an exterior wall, under a deck, inside a shed, you name it! The SMART HUB-150 is a smart lighting transformer that lets your clients control their landscape lighting from any smartphone or tablet via Bluetooth. Three individual outlets allow for control of up to three lighting zones independently (for example the backyard, patio, and driveway.) And just like the HUB-100, the SMART HUB-150 works with in-lite’s entire landscape lighting catalog! in-lite's outdoor lighting products are designed with sustainable materials and the best quality components, and this is no different with our low voltage transformers. These patented products that are constructed with the professional installer in mind: saving time on installation and reducing installation costs.

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