

Instructions

Art-Nr: 7200 LED constant lighting

1. These parts are not suitable for small children. There is a danger of swallowing.
2. The product can be seen in figure 1. These instructions are part of the product. Please retain them well.
3. The component is suited for direct and alternating current from 6 – 16 volt. The current consumption depends on the LED(s) connected, usually it is a couple of milliamperes.
4. At its input side, the component is equipped with slide-on receptacles that fit with the small banana plugs commonly used in the model train world. The usual current supply with a yellow and brown wire is sufficient. The polarity does not matter, as symbolized by the two yellow plugs in figure 2.

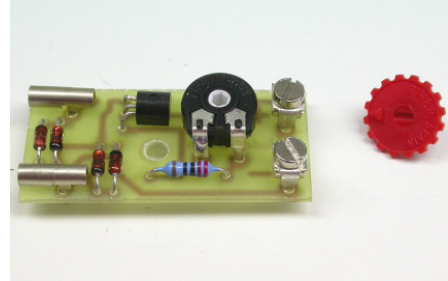


figure 1: The component LED constant lighting

5. At the output side, the component is equipped with screw clamps that accommodate even the smallest wires. Figure 2 shows very well that our smallest LEDs with their 0,1 mm thin wires can be connected without any problems. This has the advantage that for the installation from below your model train facility you do not have to do any soldering – overhead soldering can be quite dangerous due to solder dripping down.

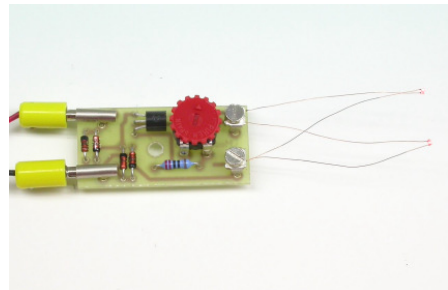


figure 2: How to connect the component

6. The component has a controller with which the brightness is continuously adjustable from almost zero to the maximum. As a protection against an eventual shifting, it is possible to remove the red leveling disc with a little effort – of course it also can be put back on anytime. Besides this feature, the component is working absolutely independent from possible voltage fluctuations on your facility that usually are caused mainly by engaging further consumer loads like a track switch. In this case, the electronics intervenes at once and the brightness of the LED remains unchanged.
7. The component works according to the principle of constant current. So it has no importance which LED in which color or working voltage is connected to it. The voltage is regulated automatically, what you can regulate with the controller is the current running through the LED.
8. It is also possible to connect several LEDs in series. So for example it is possible to connect 3 white LEDs in series to the component. The only thing you have to observe is that the input voltage is about 2 Volt higher than the voltage of all the LEDs together. So in this example the input voltage should be between 12 to max. 16 Volt.
9. Parallel connections of LEDs are possible as well. But for this, the maximum current load has to be observed – in this case about 20 mA. Furthermore with such maximum permissible values you should keep an eye on the temperature of the small black component, the integrated voltage regulator. After about 30 seconds it has reached its “working temperature”. If this one stays below hand temperature, everything is fine. If it gets too hot, you either have to reduce the too high input voltage or the number of the LEDs connected in parallel.
10. For all the series and parallel connections of LEDs the following applies: Only use identical LEDs on one component. Never mix the colors, since each LED with a different color has its own technical data – and if the LEDs are mixed, the chain will only shine as brightly as its weakest element. In extreme cases, strong differences in brightness can also appear when using only LEDs of the same color. This is related to the manufacturing tolerances of the LEDs and in the rare case this problem arises, the only thing that helps is to select the LEDs by hand.

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11. The component is also suitable for midget or micro bulbs. The best way to connect them is in series as described under point 8. The brightness can be regulated as described above. When connecting them in parallel, with two bulbs, if not sooner, if not sooner, the maximum current carrying capacity is reached. Do not forget to keep an eye on the temperature as described under point 9!
12. The component comes with a hole in the middle, so it can be installed with a screw directly below the train facility. Spacers are not necessary, the soldering points then abut directly on the wood.
13. As said before, with this component you can operate any LED, for example also such ones that are already built into lamps or other places. The advantage you get from this is the possibility to regulate the brightness and the constancy of the brightness. You do not need things like a multiplier or a protecting diode. You can connect the LED with its two lead in wires directly and without the need for any further parts to the output of the component, see figure 2 and point 5.
14. Do not connect any of the contacts with each other. Unlike with older components, there is no common mass. All the four contacts carry a different potential.
15. High Tech Modellbahnen manufactures its products with the greatest possible care. We issue a guarantee and warranty according to legal regulation. Should you find any new product you just bought defective, please contact your local dealer.
16. If one of our products has been damaged or breaks, please contact your local dealer as well. He often might be able to save it, while own attempts to repair it might lead to a total economic loss.

Now enjoy your new electronics and always have the lights on your trains shining brightly.

*High Tech Modellbahnen
97456 Hambach
www.z-hightech.de*