

User manual

DC-Car Booster



**Digital control for
autonomous and computer
controlled Car-Systems**

Congratulations on your purchase of the DC-Car Booster.

This product has been produced and tested for you with the utmost care.

The DC-Car Booster provides you with reliable wireless infrared control over long distances without any intervention on your model railway. This form of management is therefore ideally suited for existing layouts.

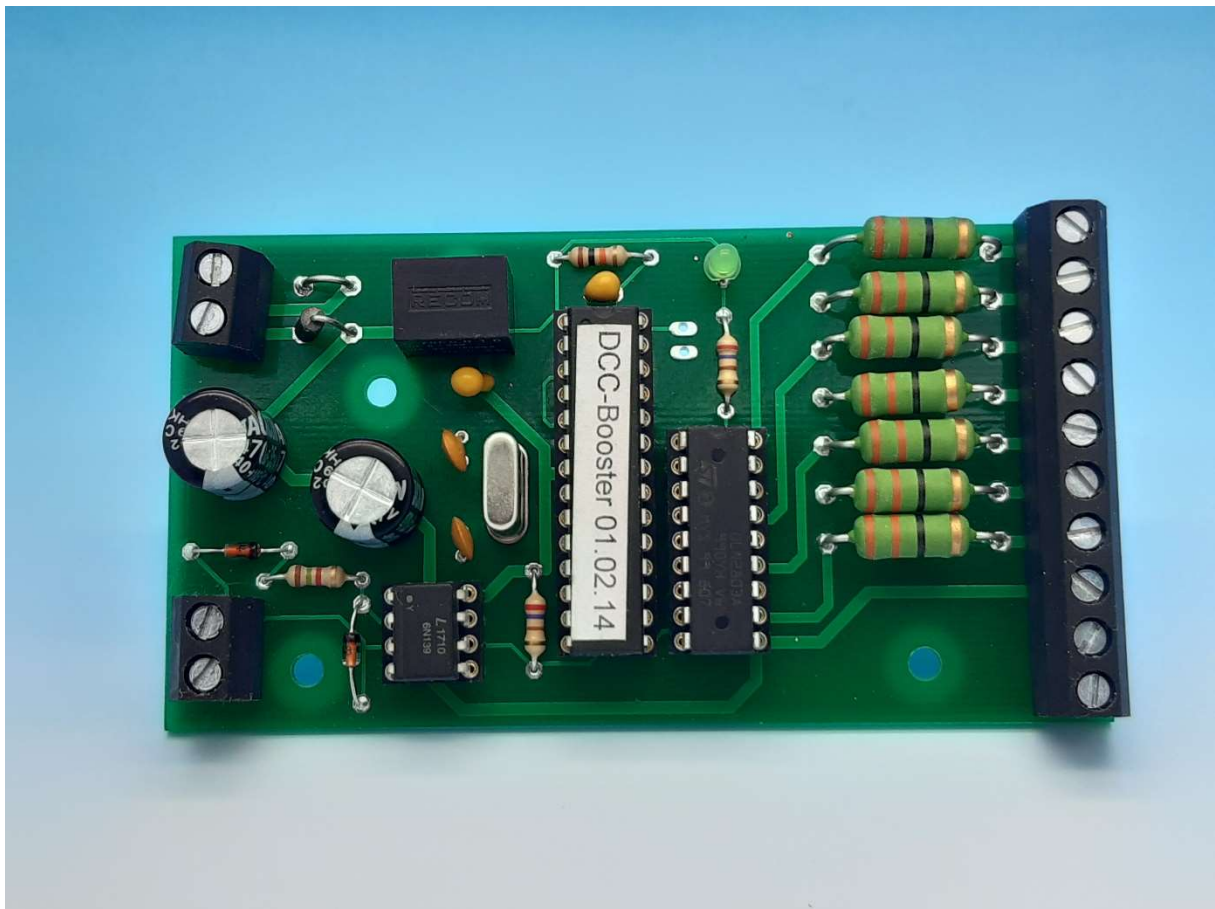
Advantages of infrared transmission compared to radio control:

Double reception does not cause interference. With WLAN, Wifi, etc., the chance of interference is greater because the airwaves are generally already overcrowded by all kinds of other equipment that works on these frequencies.

Delivery includes:

1x DC Car Booster print

5x IR radiator LEDs 40°



Operation

The Booster's task is to transmit the DCC signals over a longer distance. to send infrared technology to the cars. At DC-Car we call this simply: "Long distance IR control".

This requires an additional receiver (LCIR) in the vehicle. The LCIR makes it possible to achieve a range of 7 meters under ideal conditions.

Since infrared light is easily reflected, the infrared radiators can be placed on the left, right or above the model railway.

The best range generally provides ceiling mounting. The visibility range is most optimal from this location. One IR emitter LED covers approximately 1 square meter of track. This of course depends on the height. The range of the LEDs should overlap.

The beam angle of the IR emitter LEDs is 40 degrees, depending on the version (supplied as standard) or 20 degrees (optionally available), the latter has a greater range but a smaller coverage area.

Please note that the range may be affected by bright lights (halogen) or sunlight.

The Booster is supplied with 12-18 Volt alternating or direct voltage. The digital input is connected to the rail connection of the DCC central unit, the protocol is DCC28. All outputs together may be loaded up to 1 ampere. A chain of IR LEDs is connected in series to each output.

The number of LEDs in the chain depends on the supply voltage:

At 12V: 4 pieces per output

At 16V: 5 pieces per output

At 18V: 6 pieces per output

In total, between 28 and 42 IR emitter LEDs can be connected. If this is not sufficient, optional booster amplifiers are available.

The cars are controlled by: the IR signals from the DC-Car Booster via the LCIR receiver in the car. The DC-Car Booster works with all DC-Car decoders with software from April 2008.

This long-distance IR communication eliminates the need for the many IR LEDs along the edge of the street (short-distance IR control). The construction of the infrastructure has become super simple with the DC-Car Booster and without any adjustments or demolition work on your model railway.

To bridge the range where long-distance reception may be insufficient or disturbed, an extra long-distance IR LED can be installed. During long-distance reception, the cars also respond to the LEDs that are directly connected to the central unit (shorter distance IR control). These local IR LEDs are controlled by a diode and a series resistor which are connected to the rail terminal of the command station (you can read more about this in the DC-Car WIKI.). It is therefore possible to drive with a mix of signal transfers provided they come from the same DCC command station.

The number of transmitting LEDs depends on the size of the model railway and the reception range of the cars. The range may differ per car. The LCIR receiver is usually placed at the co-driver's seat. However, this can also be done in the roof or even internally, as some plastics allow IR light to pass through. However, the co-driver's seat is recommended. The reception range and placement of the IR radiators must be determined experimentally. The easiest way to do this is to let the car drive and keep pressing F1 on the control panel. The direction indicators turn ON and OFF.

IR emitter LED

The long leg is the plus and the short is the minus.

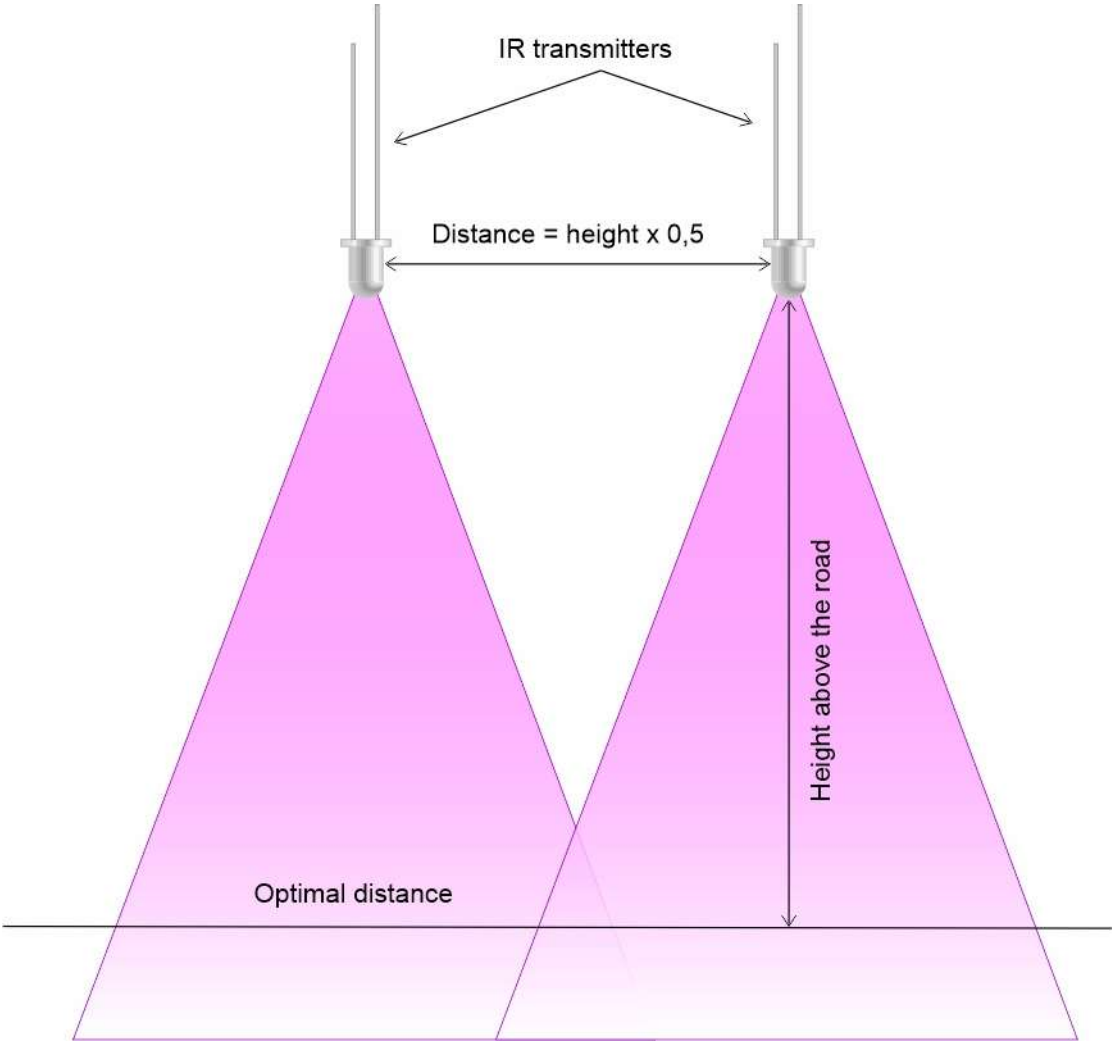
There are 3 terminals with a positive connection, these are: interconnected, so it doesn't matter clamp the positive connection.



Placing the IR LEDs

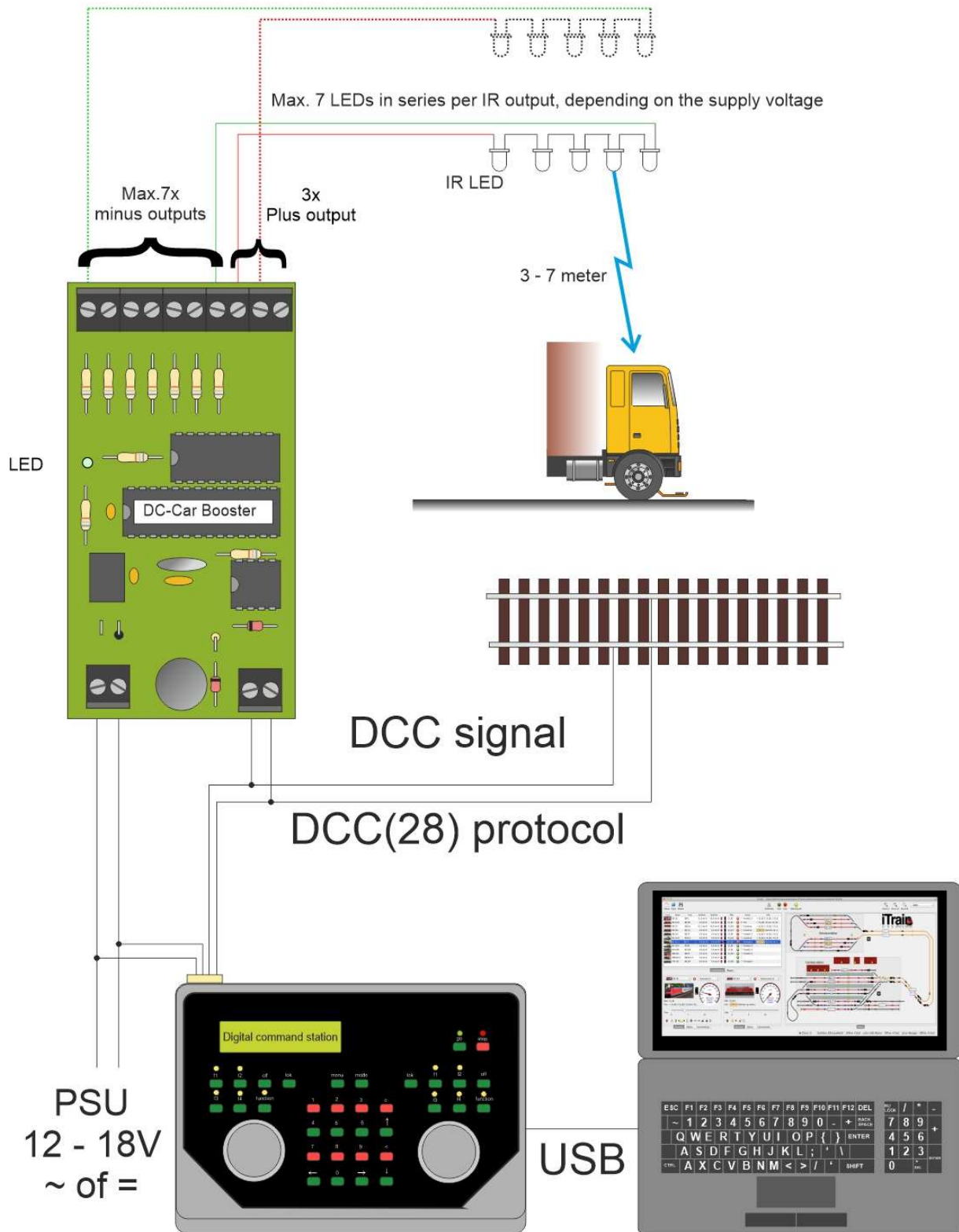
To reach the entire model railway, it is best to mount the LEDs above the railway. The distances depend on the beam angle, the height of the system and the position of the LCIR in the vehicle. Distances of 50 cm to 2 meters are conceivable.

As a guide, you can use the following formula:
Distance between the LEDs = height above the model railway x 0.5



Connections

Long range infrared control DC-Car Booster - Digital central unit



Check the function of the Booster

The Booster has a green LED, which lights up when a DCC28 signal is detected.

Check the operation of the IR emitter LEDs

Infrared light is not visible to the human eye, how can you check its operation? This can be done in various ways:

1. By including a red or green LED in series with the IR LEDs, when the LED lights up the chain works unless any IR LEDs are shorted
2. With a digital camera, a working IR LED lights up violet, some cameras have an IR filter, then this does not work.
3. With a DC-Car remote control and the optional measuring set

If no IR light is detected, it may be that an IR LED has been connected incorrectly. If 1 or more LEDs in the chain are not seated properly, the entire chain will not work.

Check the function of the Booster

Connect a red or green LED with a 2K2 series resistor to one of the outputs of the Booster. When the LED lights up, the output in question is working.

CV settings in the car decoder

When the LCIR is built in, it is activated if CV24 = 4, this is the factory default setting
Please note: any trailer decoder must also be set to CV24 = 4

Program CVs via the Booster

This option is deactivated at the factory.

However, if you want to use this, pin 28 of the processor must be connected to ground.
Please note: When you reset the decoder, all vehicles in the reception range of the Booster will be reset!!

We wish you a lot of fun with this DC-Car product.



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Wherever you find a English version.