

# LocoMotive DCC with App - Assembly Instructions for PCB with on board L6203 IC v7

For more details, go to <https://www.locomotivedcc.co.uk/downloads/>

To obtain the free App 'LocoMotive DCC 2' with 4 digit loco address go to Play Store : [https://play.google.com/store/apps/details?id=appinventor.ai\\_bill\\_falkland.LocoMotive\\_DCC\\_2](https://play.google.com/store/apps/details?id=appinventor.ai_bill_falkland.LocoMotive_DCC_2)

The schematic and PCB layout diagrams are included in the included images below.  
Other components required (all available on ebay):

- 1 x F1 resettable fuse 4 amp
- 1 x 0.1Ω Resistor tolerance ±5%; pin spacing 400 mil; package THT; power 2W;
- 1 x 10kΩ Resistor, tolerance ±5%; pin spacing 400 mil; package THT; power 0.25;
- 1 x 10kΩ Resistor or 2kΩ Resistor,
- 1 x 4.7kΩ Resistor, or 1kΩ Resistor
- 1 x 470Ω Resistor, tolerance ±5%; pin spacing 400 mil; package THT; power 0.25;
- 2 x 180Ω Resistor, tolerance ±5%; pin spacing 400 mil; package THT; power 0.25;
- 2 x 15nf Ceramic Capacitor, package 100 mil [THT, multilayer]; voltage 35V
- 1 x 220 nf 35v Ceramic Capacitor
- 5 x Ceramic Capacitor 0.1 uf 35v
- 1 x 220 uf Electrolytic Capacitor, 16v
- 1 x 10 uf Electrolytic Capacitor, 25v
- 1 x 470 uf 35v Electrolytic Capacitor
- 1 x Voltage Regulator, variant sink; chip 78005; package to220-igo; voltage 5V
- 2 x female header - 12 pins, row single; hole size 1.0mm,0.508mm; pin spacing 0.1in (2.54mm);
- 1 x female header - 4 pins, row single; hole size 1.0mm,0.508mm; pin spacing 0.1in (2.54mm);
- 2 x Rectifier Diode, UF4007, type Fast Rectifier; package 300 mil [THT];
- 2 x Screw terminal - pins 2; hole size 1.1mm,0.508mm; pin spacing 0.197in (5.0mm)
- 1 x L6203 package to-220-11 lead
- 1 x Heatsink TO220 Cooler 23\*16\*40MM With 2 Pins
- 1 x Zener Diode, breakdown voltage 3.6V or 3.3 or 4.2; package 300 mil [THT]; 0.5W;
- 1 x Arduino Pro Mini 5v 16 MHz ATmega328
- 1 x HC-06 Bluetooth module set at 9600 baud rate

## Wire

Power supply: voltage of 14 to 18 volts DC

Do NOT use a DC train controller as these do not provide a true DC voltage.

Ensure correct polarity of output plug before connecting.

Connect a 15v 2 amp power supply with a 2.1mm/2.5mm x 5.5 mm plug , for example search for eBay item # 401871382681

or, Connect a 15v 3 amp power supply similar to PowerPax item SW4323B with a 2.1mm/2.5mm x 5.5 mm plug, available from [cpc.farnell.com](http://cpc.farnell.com)

or, Connect a Multibao 15v 3A adapter with a 2.1mm/2.5mm x 5.5 mm plug, search for in Amazon

or, Connect a Photonic Universe 16v 3A adapter with a 2.1mm x 5.5 mm plug, search for in Amazon



## Assembled controller:

Controller is shown mounted in a 3D printed enclosure.

The centre pin of the DC panel mount connector is positive.

Note: the Bluetooth module is tie wrapped to the Arduino pins to prevent any movement in use.



