

LocoMotive DCC with App - Assembly Instructions for PCB with on board L6203 IC v2

To download the FREE Arduino code, refer to my Instructable at :
www.instructables.com/id/Bluetooth-DCC-Command-Station/
Or, go to website: <https://www.locomotivedcc.co.uk/downloads/>

To obtain the 'LocoMotive Cab' App go to Play Store :
https://play.google.com/store/apps/details?id=appinventor.ai_bill_falkland.LocoMotive_Cab

To obtain the full App at £5.99 'LocoMotive DCC' with loco address 1-127
go to Play Store : https://play.google.com/store/apps/details?id=appinventor.ai_bill_falkland.LocoMotive_DCC

To obtain the full App at £8.49 '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

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

- 1 x 0.1Ω Resistor tolerance ±5%; pin spacing 400 mil; package THT; power 2W;
- 2 x 10kΩ Resistor, tolerance ±5%; pin spacing 400 mil; package THT; power 0.25;
- 1 x 4.7kΩ Resistor, tolerance ±5%; pin spacing 400 mil; package THT; power 0.25;
- 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 3.2 or 4.2; package 300 mil [THT]; 0.5W;
- 1 x Arduino Pro Mini 5v 16 MHz ATmega328

NB: Be careful in selecting a good quality L6203 - some suppliers sell faulty ICs

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

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.

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



