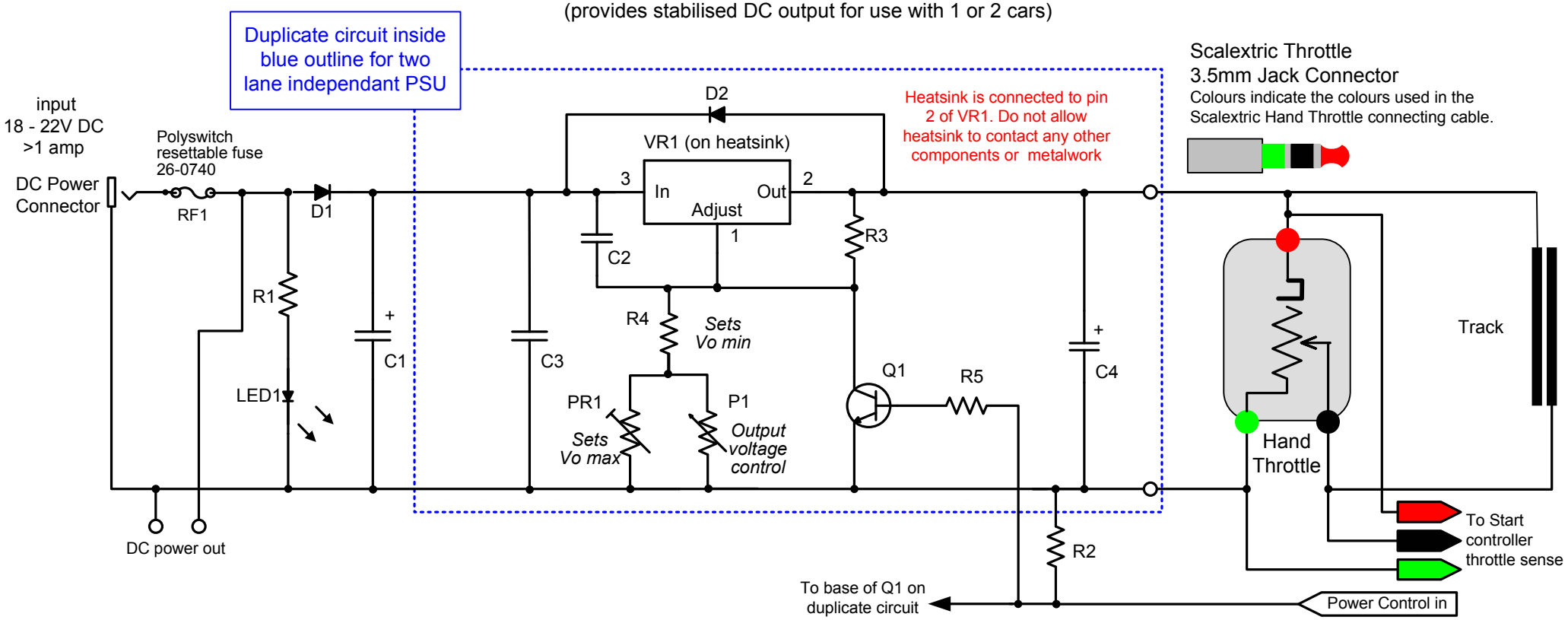
Variable voltage DC power supply with track power shutdown for Scalextric 1/32 slot car track.

(provides stabilised DC output for use with 1 or 2 cars)



Power Supply Notes

Do not use the original Scalextric PSU as this outputs AC not DC. The Powerbase rectifies the AC to DC but does not smooth the supply so should also not be used.

Suitable PSU for input to this circuit should deliver 18-22V DC at 1 Amp or greater. Any PSU meeting this requirement can be used.
For example 18V/1.1A supply from Rapid Electronics P/N PW00752.

This circuit is for use with standard Scalextric cars using stock electric motors.

Component List

Resistors

	0.25watt 5%
R1	1.5KΩ
R2	47KΩ
R3	220Ω
R4	1KΩ
R5	3.3KΩ
PR1	2KΩ enclosed preset (Rapid Electronics P/ N 68-0045)
P1	4.7KΩ linear potentiometer (Rapid Electronics P/ N 65-0710)

Capactiors

C1	2200µF / 35volt electrolytic
C2, C3	100nF ceramic
C4	10µF / 25volt Tantalum

Semiconductor

VR1	LM317T 3-terminal adjustable regulator 1.5 amp
D1	1N5401
D2	1N4001
LED1	Green 5mm
Q1	BC548 npn transistor
RF1	1.1A Polyswitch resettable fuse (Rapid Electronics P/N 26-0740)

Hardware

Heatsink for IC1 3.9ºC/W (Rapid Electronics P/N 36-0316 or similar)
M3 6mm screw and M3 nut to fix VR1 to heatsink
Knob to fit voltage adjust potentiometer P1
2.1mm or 2.5mm DC Power connector to suit DC power supply

Componet List

For the second track PSU, duplicate all components appended with an ‘a’ on the schematic / component list.

Resistors

	0.25watt 5%
R1	1.5KΩ
R2a	1KΩ
R3a	220Ω
R4,5,6,7,8	270Ω
R9,10	10KΩ
R12a	470Ω 0.5watt

Capactiors

C1a	470µF / 35volt electrolytic
C2a	100nF polyester
C3a	22µF / 35volt electrolytic
C4	100nF polyester
C5	330nF polyester

Potentiometers

P1a	5KΩ enclosed preset
P2a	2.2KΩ linear potentiometer

Semiconductor

IC1a	LM317T 3-terminal adjustable regulator 1.5 amp
IC2	LM7805 5V regulator, 1 amp
IC3	PIC 16F627A (programmed with start controller code)
IC4a	CNY17-4 opto coupler
D1a	1N5401
D2a	1N4001
D3a	1N4148 or 1N914
LED1	Green 5mm
LED2,3,4,5,6	Red 5mm high efficiency LED
Q1, Q2	BC548 npn transistor

Switches

SW1	SPST toggle switch
SW2	momentary on, push button

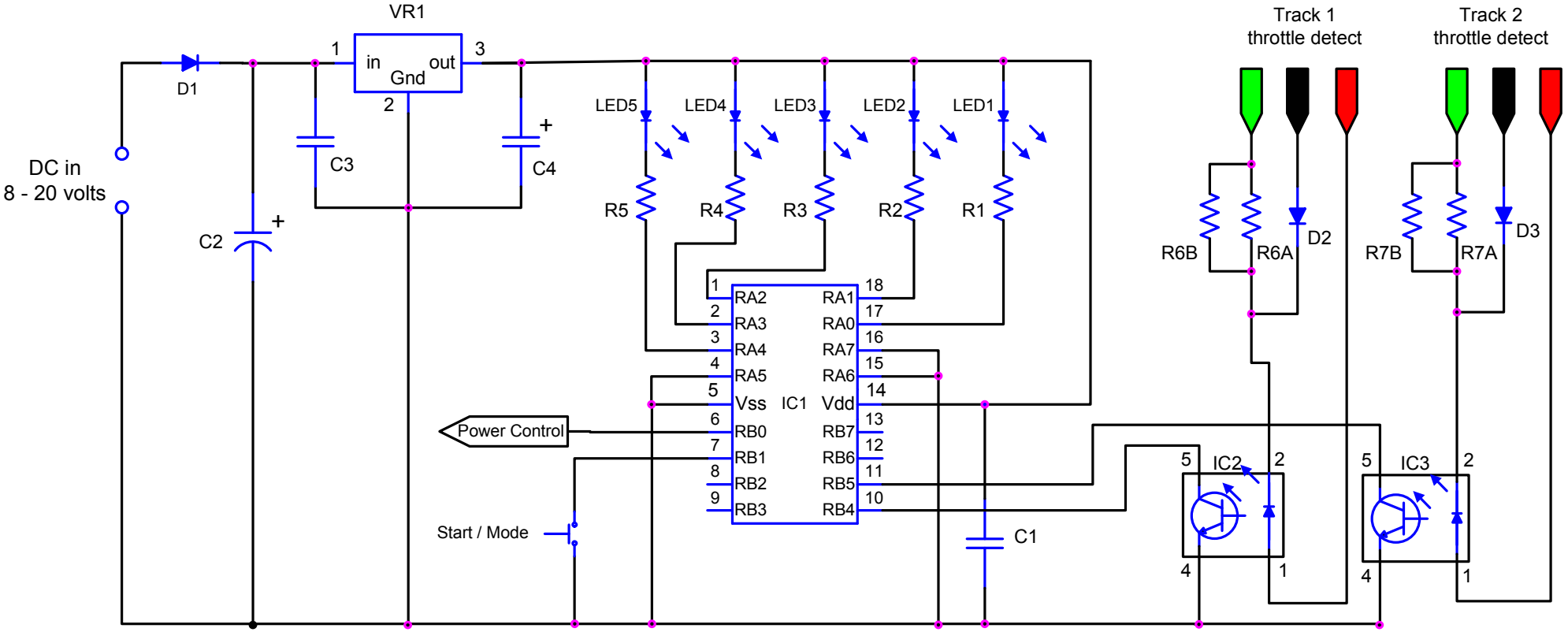
Hardware

Heatsink for IC1a 3.9^{o}C/W (Rapid Electronics P/N 36-0316 or similar)
Knob to fit voltage adjust potentiometer P2a (x 2 if dual output)
2.1mm or 2.5mm DC Power connector to suit DC power supply

Resolution
1024 x 768

Slot Car Race Start Controller

with Jump Start Detection and Track Power Control
(for positive common rail throttles supplied with Scalextric Sport Track)



Componet List

Resistors

	0.25watt 5%
R1-5	220Ω
R6A,B	1.2KΩ
R7A,B	1.2KΩ

See Important Note (right)

Capactiors

C1	47nF ceramic
C2	220µF / 35volt electrolytic
C3	100nF ceramic
C4	10µF / 10 volt tantalum

Semiconductor

VR1	LM7805 5V regulator, 1 amp
IC1	PIC 16F627A (programmed with start controller code)
IC2,3	CNY17-4 opto coupler
D1	1N4001
D2,3	1N4148 or 1N914
LED1,2,3,4,5	Red 5mm high efficiency LED

Switch

SW1	momentary on, push button

Important Note:

When used with the Scalextric Sport Powerbase and original transformer, omit R6B / R7B and use 1.8KΩ 0.25watt resistors for R6A / R7A.