Programming Track and Isolating sections with LEDs

The advice and diagrams in this general advice article follow principals of switching and LED use that will be very useful in various situations, so it is worth thinking them through to understand how they work.

Isolating track indicators.

Modellers often want to have LED indicators to show the state of a particular track section - sometimes its just because it makes the control panel look interesting… and sometimes because it is quite helpful to be able to do so because it could be in a hidden section or perhaps be a dead section ahead of a point set against direction of travel to stop trains derailing by passing over points set against them. Either way, it is easy to do.

We have included 5 diagrams in this article.

(1)   Page 2, diagram 1:   This is for an isolating section.

It is usable with DC or DCC layouts, but BEST for DCC layouts. We used a bridge rectifier for TWO reasons.

(a)   It ensures that the power provided output to the LEDS will be always the same polarity if linked to a DC or AC powered analog layout.

(b)   The bridge rectifier is an easy / tidy way to rectify DCC's waveform to DC and the diodes themselves will protect the LEDs from reverse voltage spikes.

GOOD thing about this for both DC or DCC: Uses DCC track power so there's less wiring to connect. BAD thing about this choice for DC layouts: The LEDs will NOT turn on until there is about 5V at the rails.

(2)   Page 2, diagram 2:

This is for an isolating section too. It is usable for either DC or DCC layouts, and equally good for both
This time we use a wall=plug type power supply. Anywhere 3~15v DC is OK, but we think 6~9v is ideal.

(a)   The use of a regulated DCC wall-plug supply is easy and cheap. You may have one in the bottom drawer so there's no need to buy one. DC is the preferred power for LEDs.

(b)   This is also a dead simple circuit. You probably have all of the bits in a box somewhere.

GOOD thing about this for both DC or DCC: NO special parts needed, simple to make and understand.

(3)   Page 3, diagram 3:

This is for program track switching using a DCC system that has separate program and main track outputs. It uses an NCE Power Pro 5amp system image, but it works with EVERY brand that has this configuration.

(a)   It allows the programming track to be a siding that is part of the normal layout.

(b)   It shows GREEN when it is connected as a siding, RED when linked to program track outputs.

(4)   Page 3, diagram 4:

For program track switching using a DCC system that has only ONE track output but is usable in both the program track & run mode, or for older systems that need separation from other locos for decoder set-up. It uses an NCE PowerCab image, but it works with EVERY brand that has this configuration.

(a)   It also allows the programming track to be a siding that is part of the normal layout.

(b)   It shows GREEN when it is connected as a siding, RED when linked to program track outputs.

(5)   Page 4, diagram 5:

This Shows how to fully automate use of the circuits shown by linking them to a point motor / turnout. With 2 changeover switches built in such as Cobalt. This lets you use "automated safety interlock gaps" ahead of points/turnouts using diagram 1, or have the program track switch on when you set the siding turnout/point motor to main line. (using this principal opens up many interesting but simple possibilities)

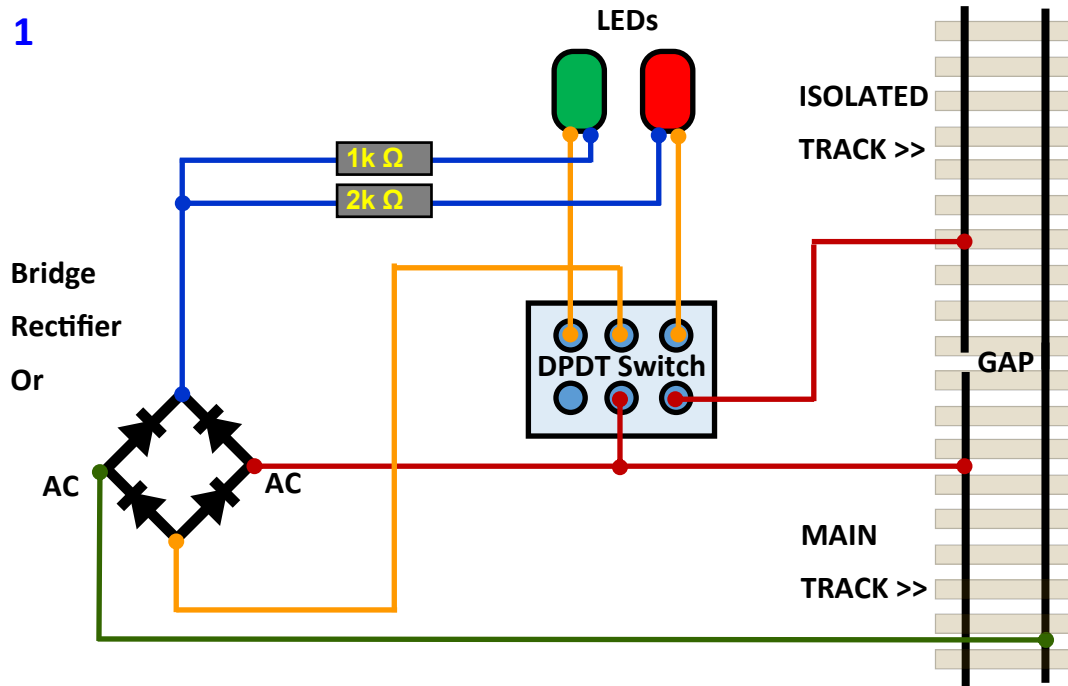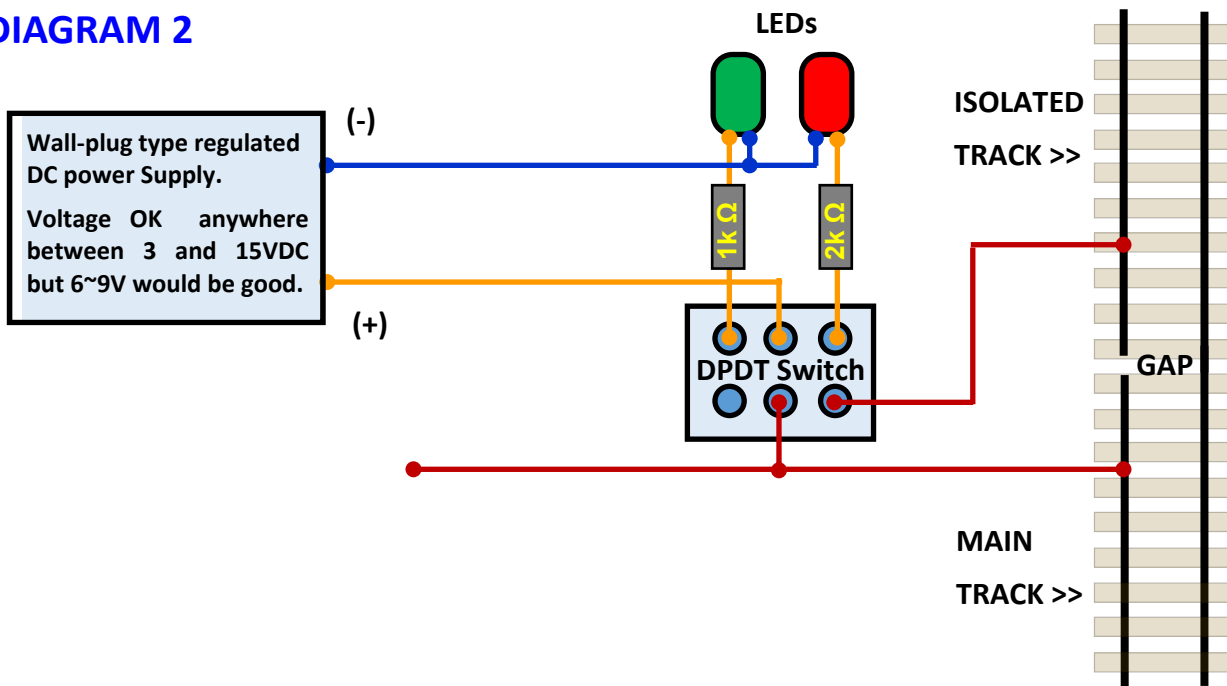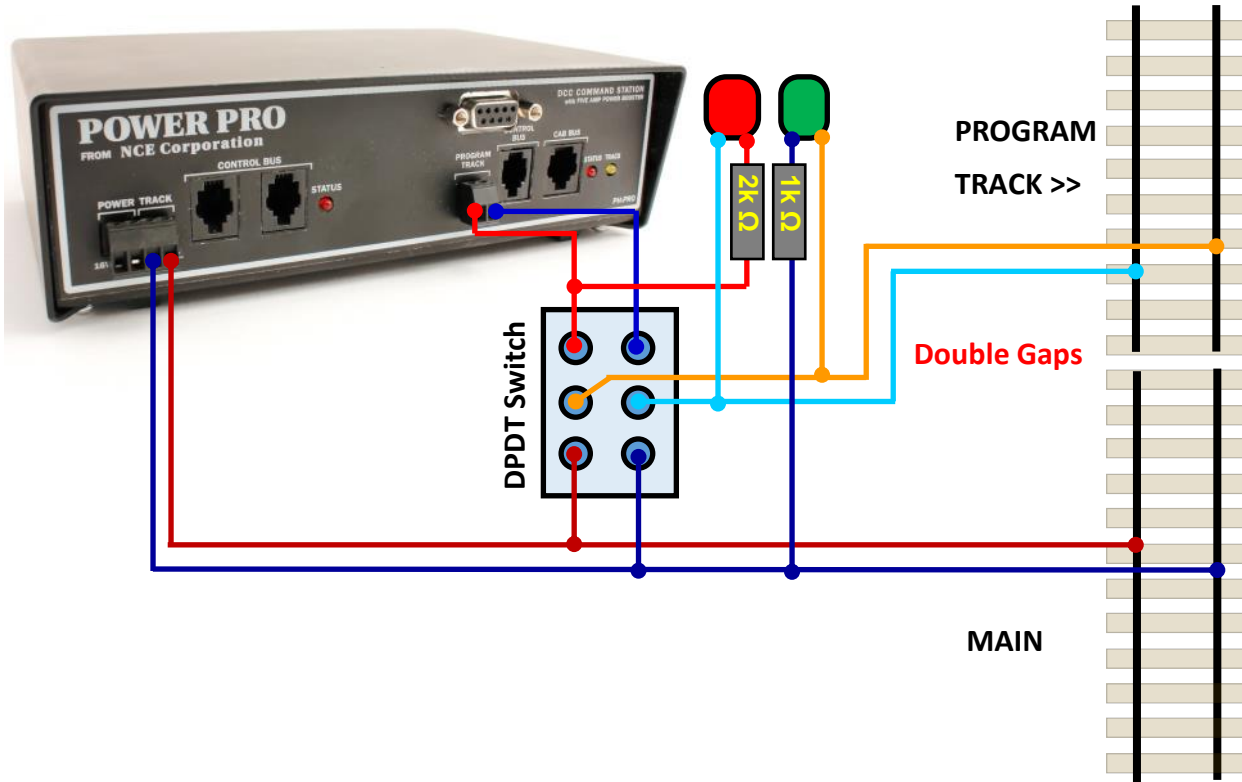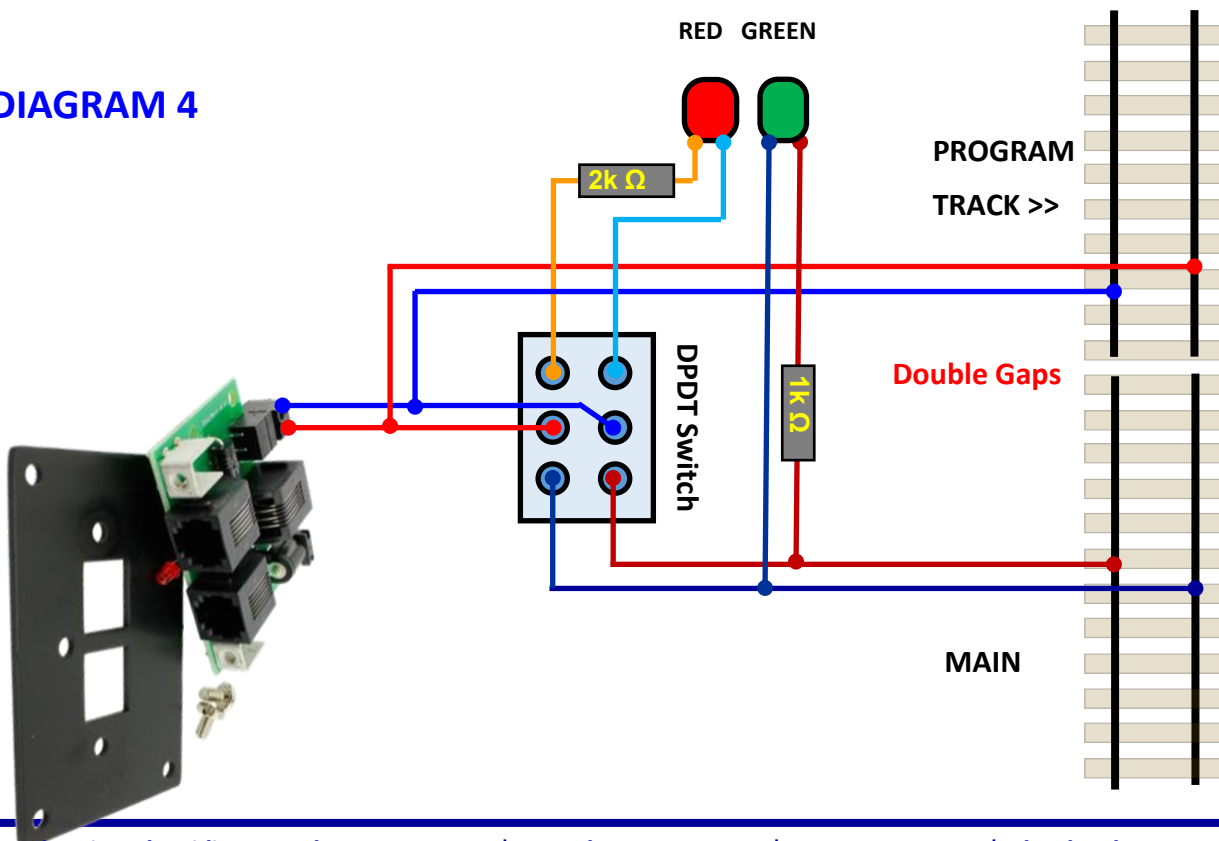# Programming track and Isolating sections with LEDs

DIAGRAM 1

LEDs

1k Ω

2k Ω

Bridge

Rectifier

Or

AC   AC

DPDT Switch

ISOLATED

TRACK >>

GAP

MAIN

TRACK >>

DIAGRAM 2

LEDs

Wall-plug type regulated DC power Supply.

Voltage OK anywhere between 3 and 15VDC but 6~9V would be good.

(-)

(+)

1k Ω

2k Ω

DPDT Switch

ISOLATED

TRACK >>

GAP

MAIN

TRACK >>

Programming track and Isolat- RED GREEN ing sections with

DIAGRAM 3

POWER PRO
FROM NCE Corporation

RED GREEN

2kΩ 1kΩ

DPDT Switch

PROGRAM
TRACK >>

Double Gaps

MAIN

DIAGRAM 4

RED GREEN

2k Ω

1kΩ

DPDT Switch

PROGRAM
TRACK >>

Double Gaps

MAIN

Programming track and Isolating sections with LEDs

RED Pgm   GREEN Main

2kΩ   1kΩ

PROGRAM

TRACK >>

Double Gaps

L1   L2
C1   C2
R1   R2

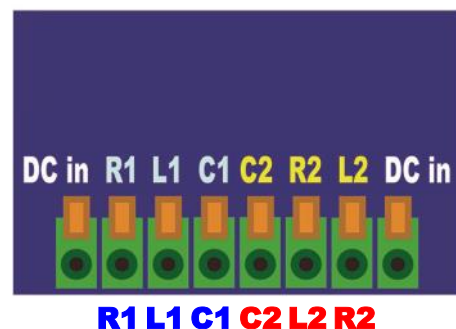MAIN

TRACK >>
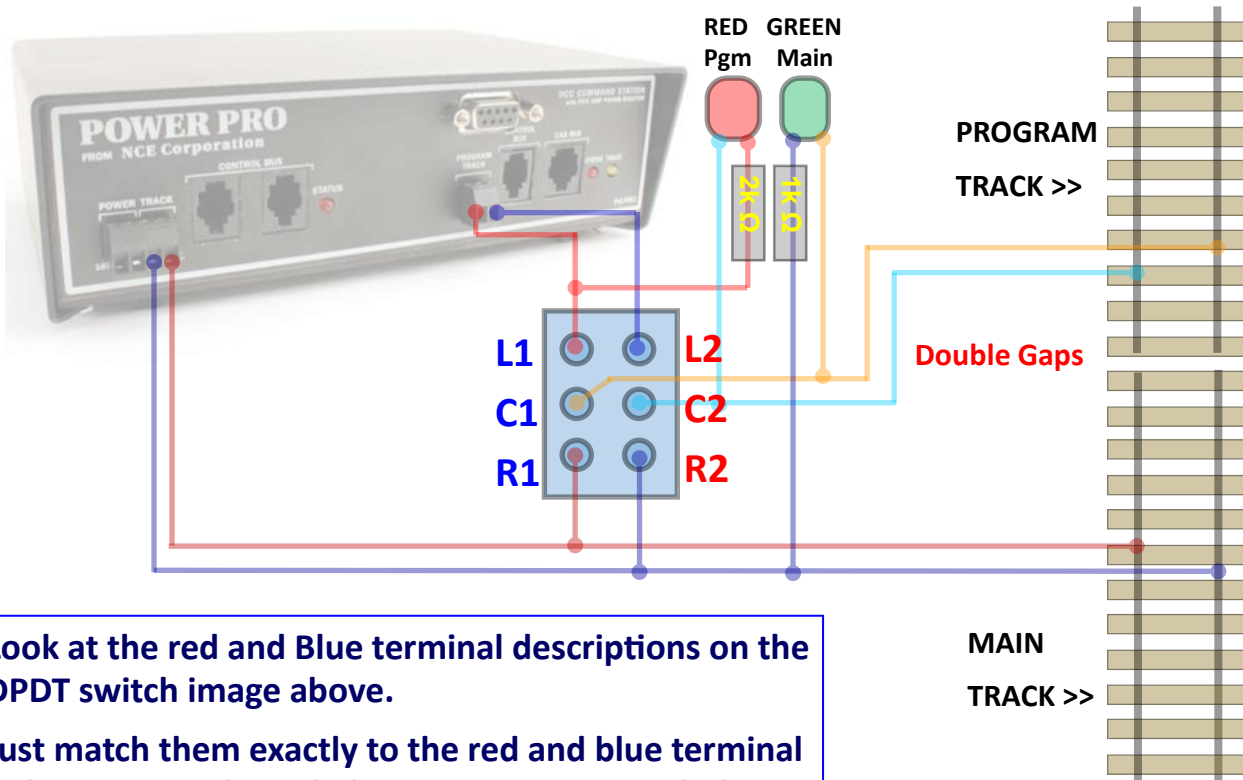
Look at the red and Blue terminal descriptions on the DPDT switch image above.

Just match them exactly to the red and blue terminal indications on the Cobalt motor connections below.

Automating with...
Cobalt Ω Omega or Cobalt iP Analog
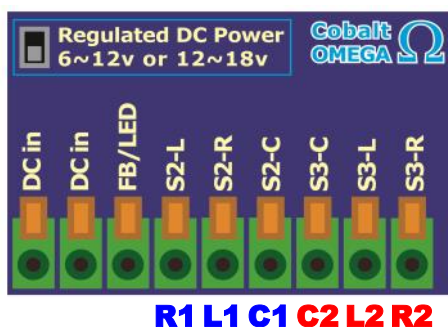
Automating with...
The original Cobalt Classic

Regulated DC Power
6~12v or 12~18v
Cobalt Ω OMEGA

DC in | DC in | FB/LED | S2-L | S2-R | S2-C | S3-C | S3-L | S3-R

R1 L1 C1 C2 L2 R2

DC in R1 L1 C1 C2 R2 L2 DC in

R1 L1 C1 C2 L2 R2

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We will do our best to give you a quick, honest, simple answer!