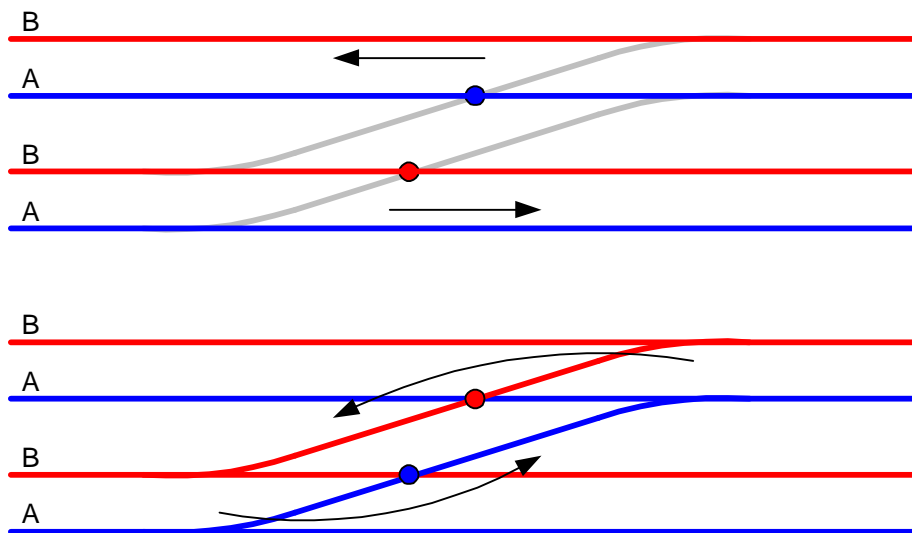


Wiring Rules for South Downs Railway

1 Basic Wiring Rules

- 1.1 The routing of a point shall be “left = thrown, right = closed” when looking into the point (ie looking from the blades to the frog).
- 1.2 Track cuts for signals must be just PAST the signal mast; train is allowed to reach the mast & stop at it.
- 1.3 Where there is a crossing between main line tracks, need isolation between the two halves, and separate block detection on each line. This is so that two trains can pass each other normally when crossing set not to cross; otherwise if there were a single detect zone for the whole crossing region, one train would have to stop for the other even though they are on different lines.
- 1.4 Need separate detection zones on each part out of a diverging junction. This is to ensure that a train occupying one path does not block use of the other.
- 1.5 For parallel “main line” tracks, the track wiring needs to be as shown below to avoid shorts at crossovers. This implies that the four rails, coming in from the baseboard edge, are wired A-B-A-B. Need to be consistent.



2 To be resolved

- 2.1 Detectors for stopping at signals & platforms not yet clear. Need 2 detectors: one for “slow” and one for “stop”. Need to determine distance in front of signal.

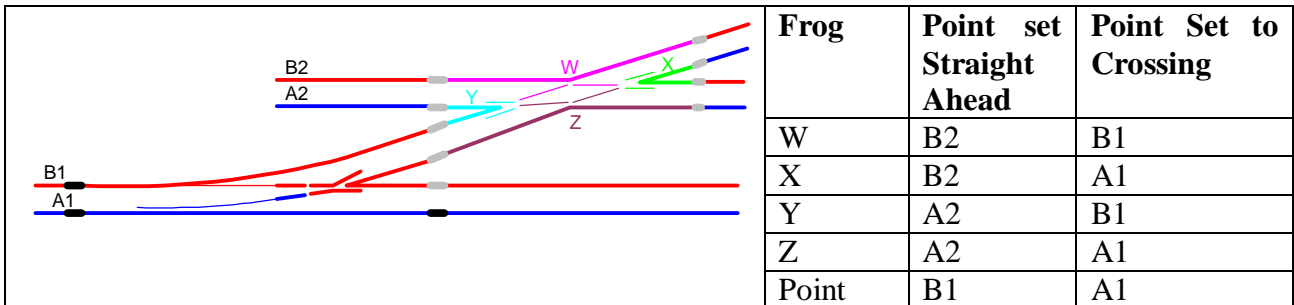
3 Point frogs

- 3.1 A point frog shall be wired via a switch to the point's outer rails. This is necessary to ensure that its frog occupancy is identical to the point occupancy itself.

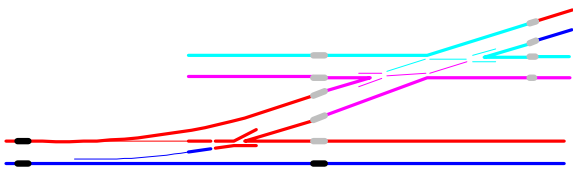
4 Crossover

4.1 A crossover's frogs shall be switched according to the state of the controlling point. This will require a relay.

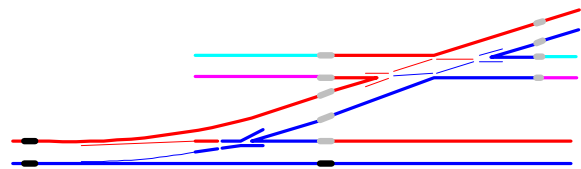
4.2 Principle of Crossover wiring:



When point straight ahead:



When point crossing:



4.3 This needs a 5PDT relay; this needs to be powered when track power is on but not be classed as occupancy. Therefore a further power feed is needed; use the same power as feeds the point bus booster, or use the point bus DCC signal.

5 Rail Allocation

5.1 Rail A "BLUE" shall be the innermost rail of the "opened out" layout.

5.2 Rail B "RED" shall be the outermost rail.

5.3 Rail A shall be commoned across detection sections

5.4 Rail B shall be gapped & separately fed.

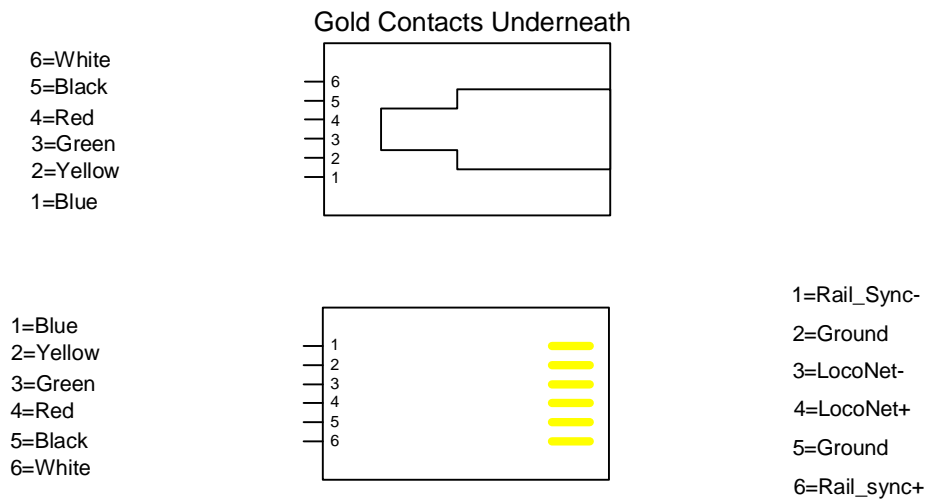
6 Colour Scheme

Colour	Use
Purple	Throttle +12v keepalive
Green	Earth
Brown, Blue	DCC from boosters & PM42: A=BROWN B=BLUE
Red	Power feeds from block detectors
Orange	Block detector feeds to "B" rail
Green	Switched feed to point frogs
Red, black twisted pair	12v DC feed to CML boards
Purple, black twisted pair	24v DC aux power to DAC10
Red/blue/black twisted triple	Point control
Red/blue/green/white quad	Signal wiring

7 LocoNet

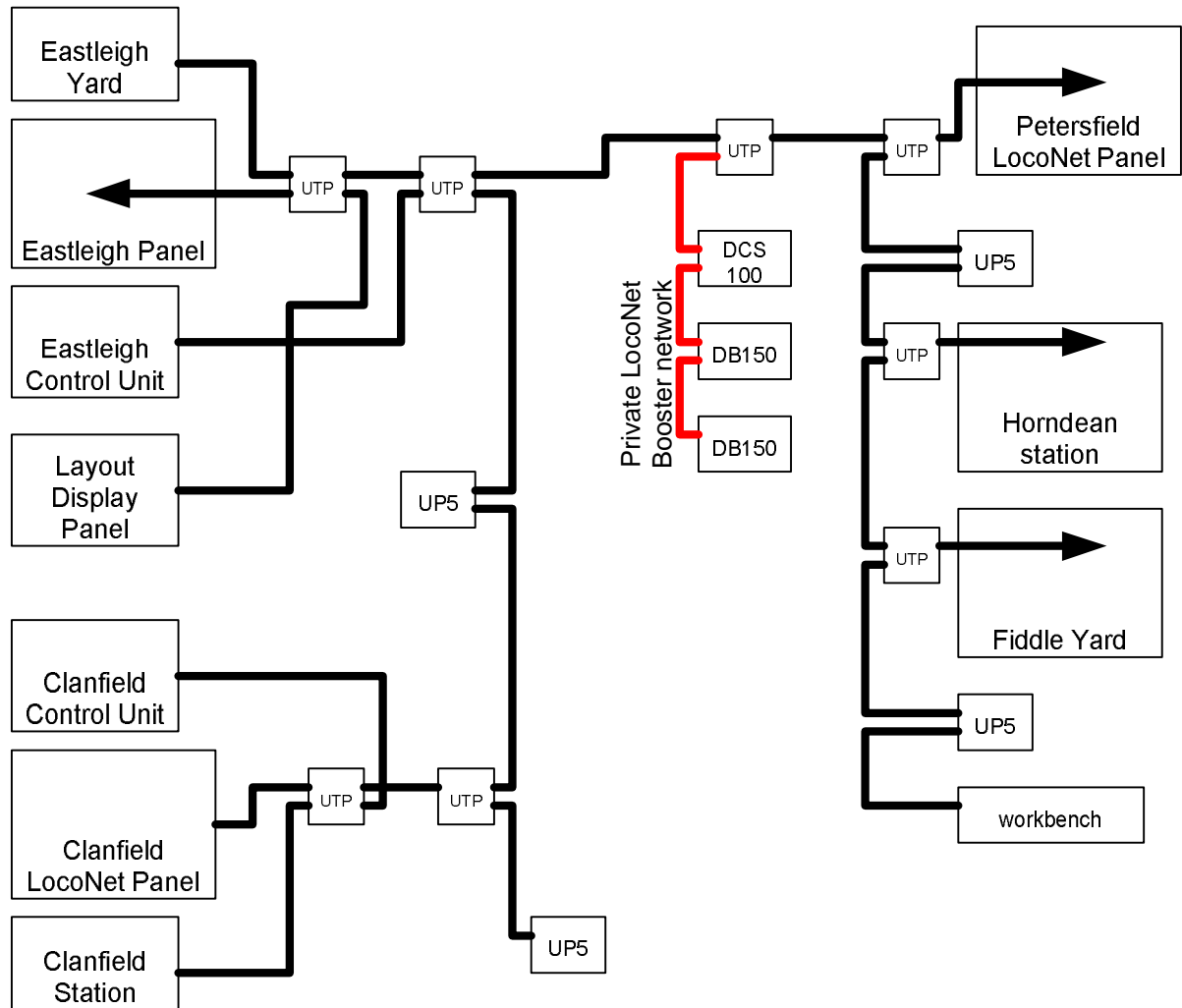
7.1 LocoNet shall be wired using standard 6 connector “telco” cable and crimp connectors.

7.2 The connectors shall be wired according to the diagram below:



7.3 The boosters shall have a “private” LocoNet cable connecting them. (I don’t know the full reason for this: it is advised in the wiringfordcc site that a separate booster network should be used.)

7.4 The LocoNet network shall be broken into different sections, using the “Tony’s Train Exchange” board with 4 sockets. This will allow individual sections to be isolated in the event of LocoNet being pulled down by a fault somewhere.



8 Boosters

- 8.1 A DCS100 command station will provide the DCC packets, and will drive “accessory” devices such as the DAC10s and possible future lighting. The DCS100 will be located under Petersfield station.
- 8.2 The track power will be provided by up to two DB150 boosters. These will be located at either end on the layout:
 - One will be located under Clanfield station;
 - One will be located under Petersfield station.
- 8.3 To cover the circumstance where only one DB150 is available, a cable will be provided from one booster area to the other. This will be carefully marked, so that it can be removed when two boosters are available.
- 8.4 The booster “ground” terminals shall be connected to mains earth.
- 8.5 Each booster will be powered by its own transformer winding.
- 8.6 The programming track will be provided to the workbench.
- 8.7 The DCC accessory bus will be provided to the workbench.

9 Throttles

- 9.1 Throttles will connect using UP-5 panels. Each UP-5 panel will provide connections for up to two throttles.
- 9.2 The UP-5 panels will be connected to the “normal” LocoNet bus, in the same way as other locations. They will not be on a separate LocoNet cable.
- 9.3 The UP-5 panels will provide throttle “keepalive” power as documented in their manual. They will be interconnected using a single wire. A “wallwart” transformer will be connected to one UP-5 closest to Horndean station.
- 9.4 The UP-5 “rail sync” connections will be provided by the “Accessory” DCC bus from the DCS100 command station.