Getting Started in DCC

by
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Based on an article in
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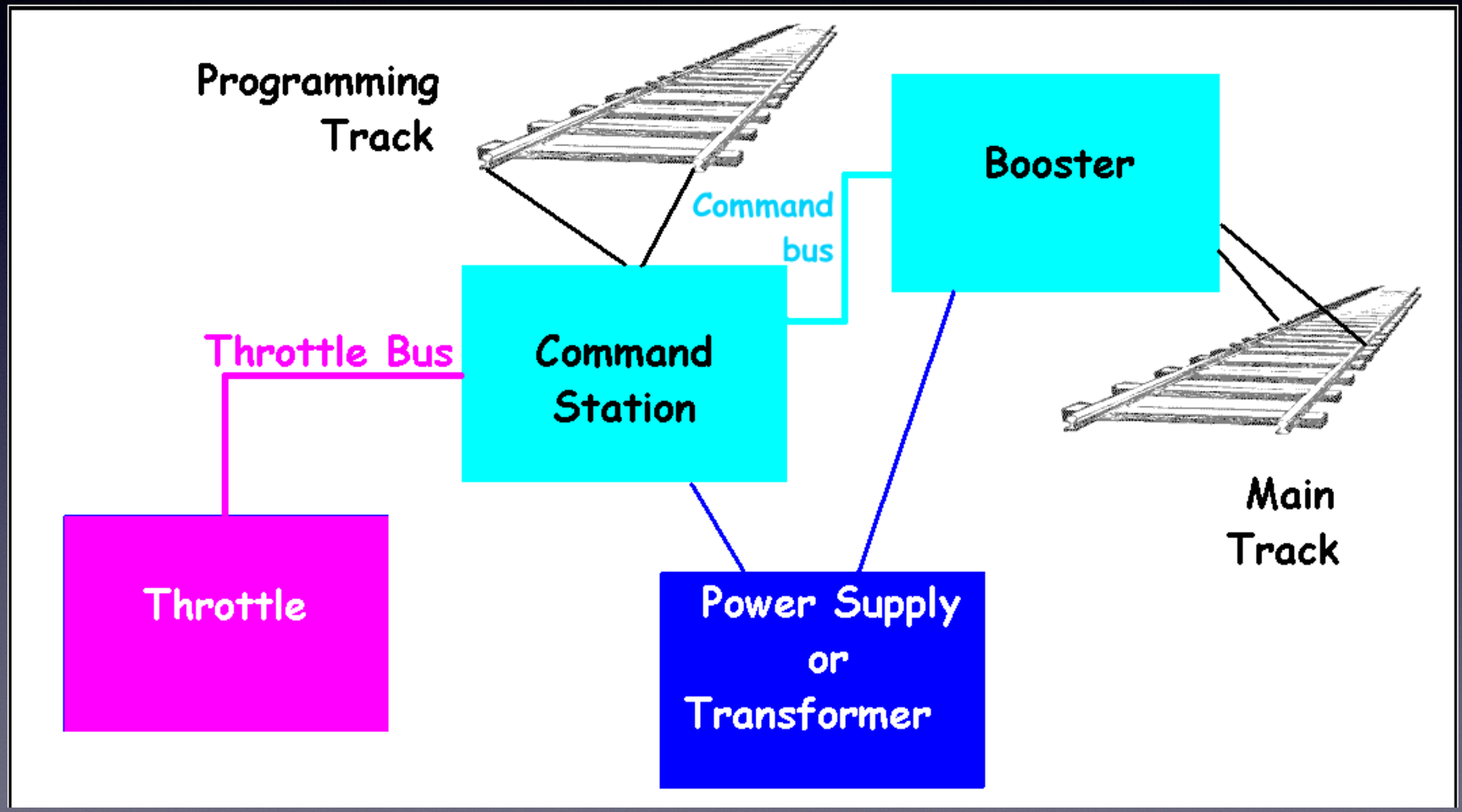
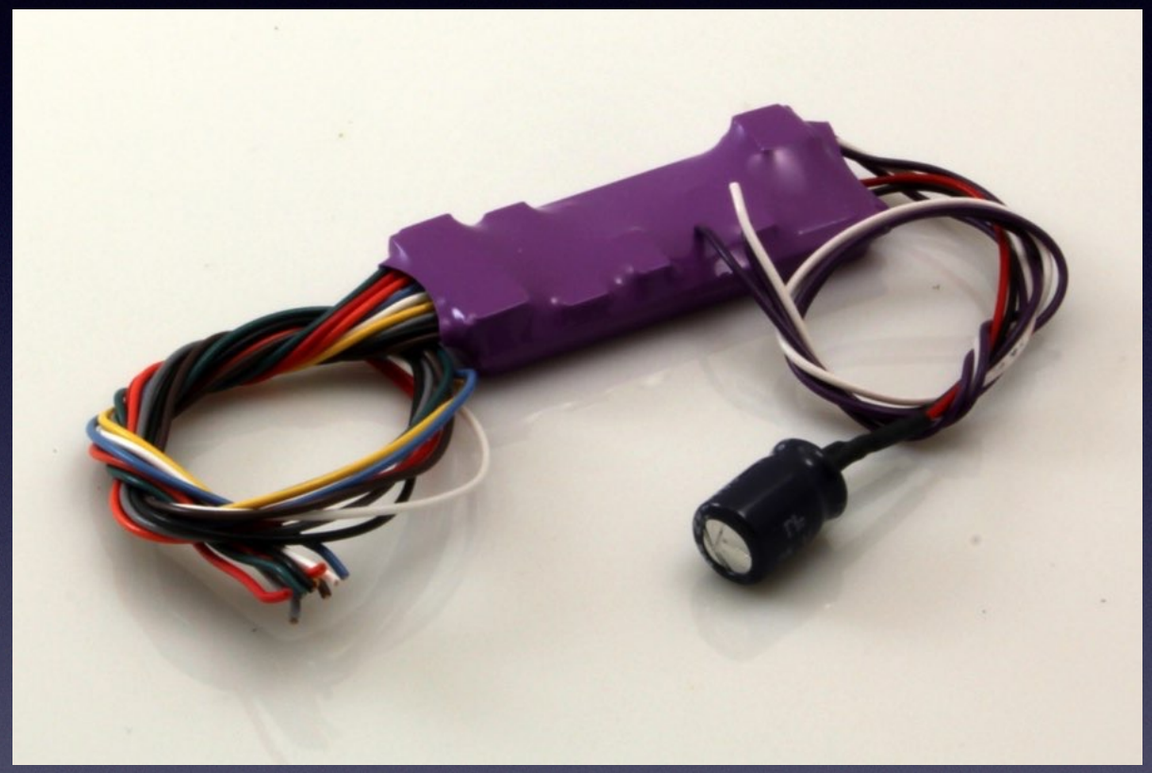
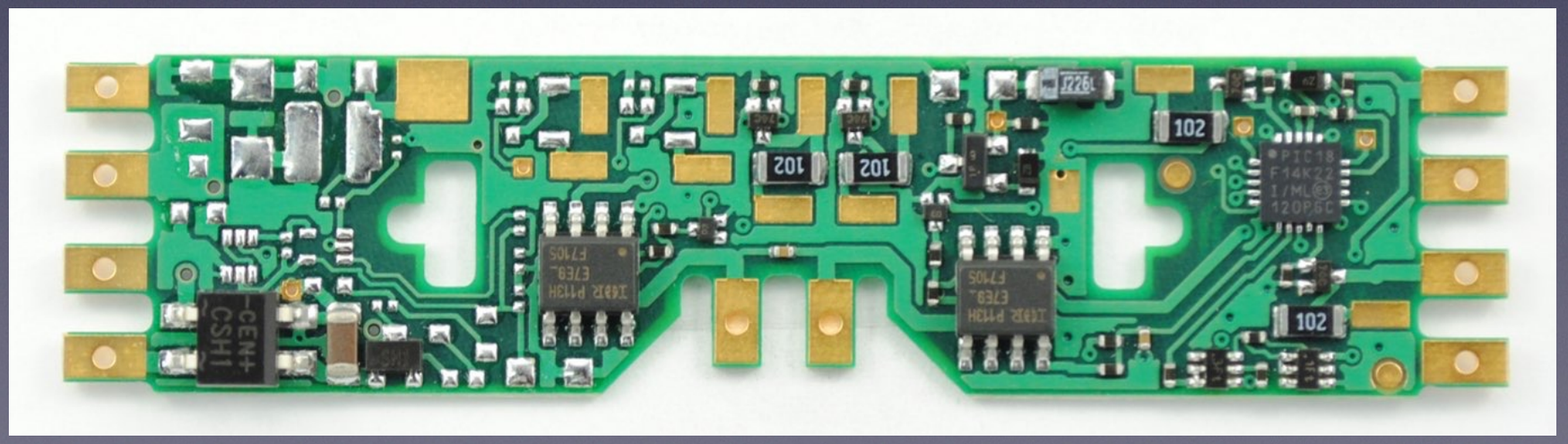
SMVRR in HO
February 2015

Terminology
DCC System

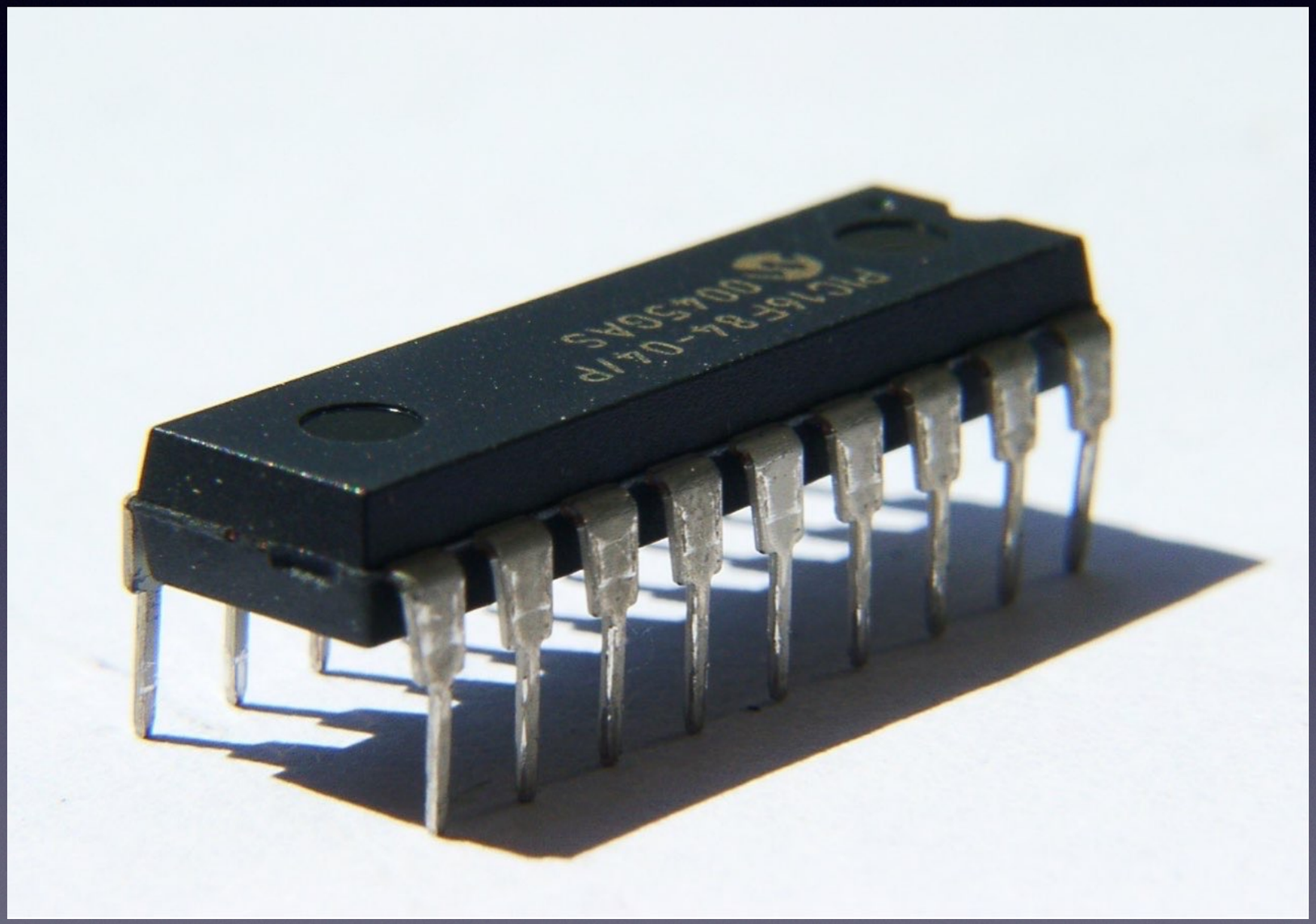


Terminology
DCC Decoder

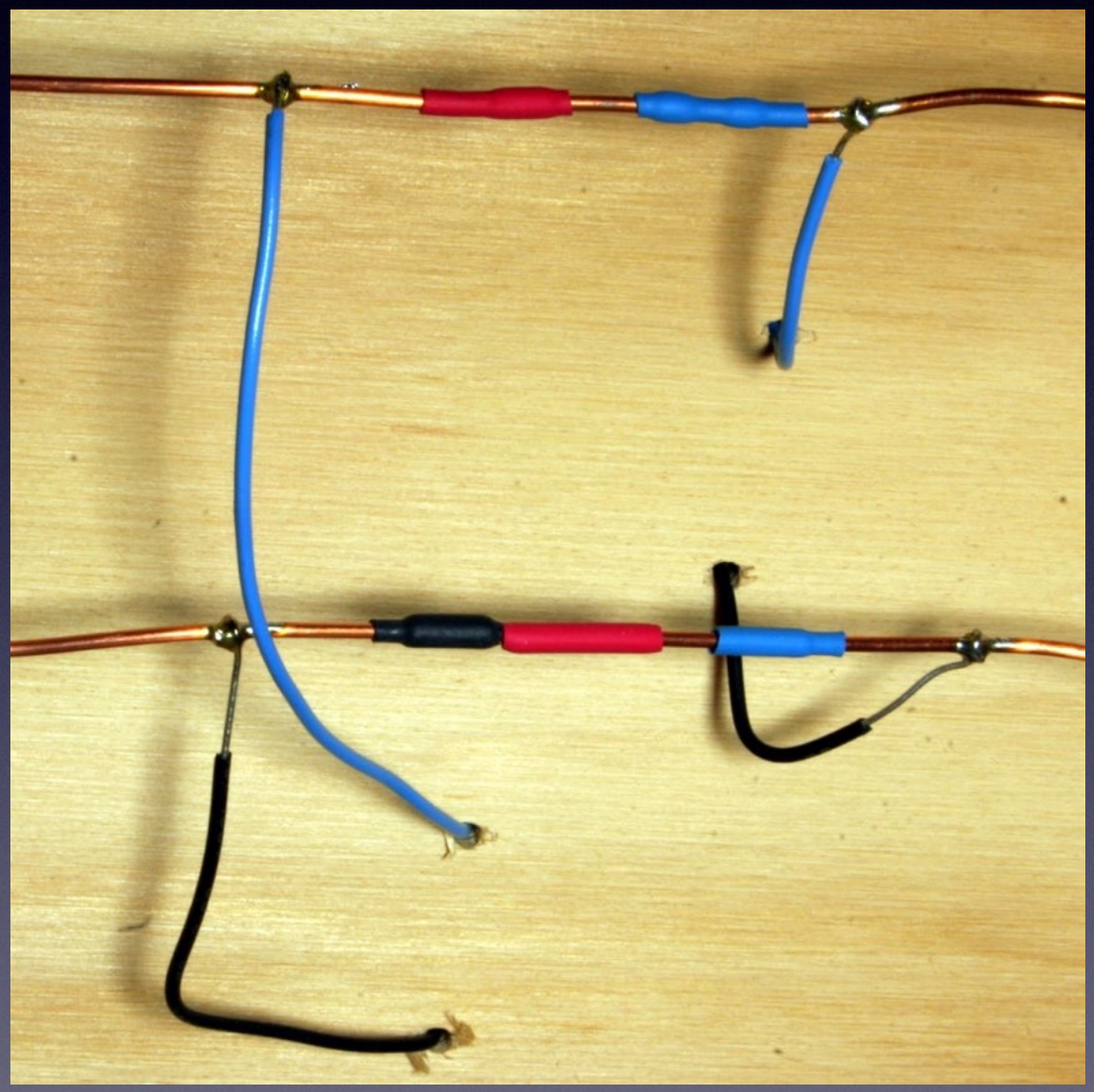




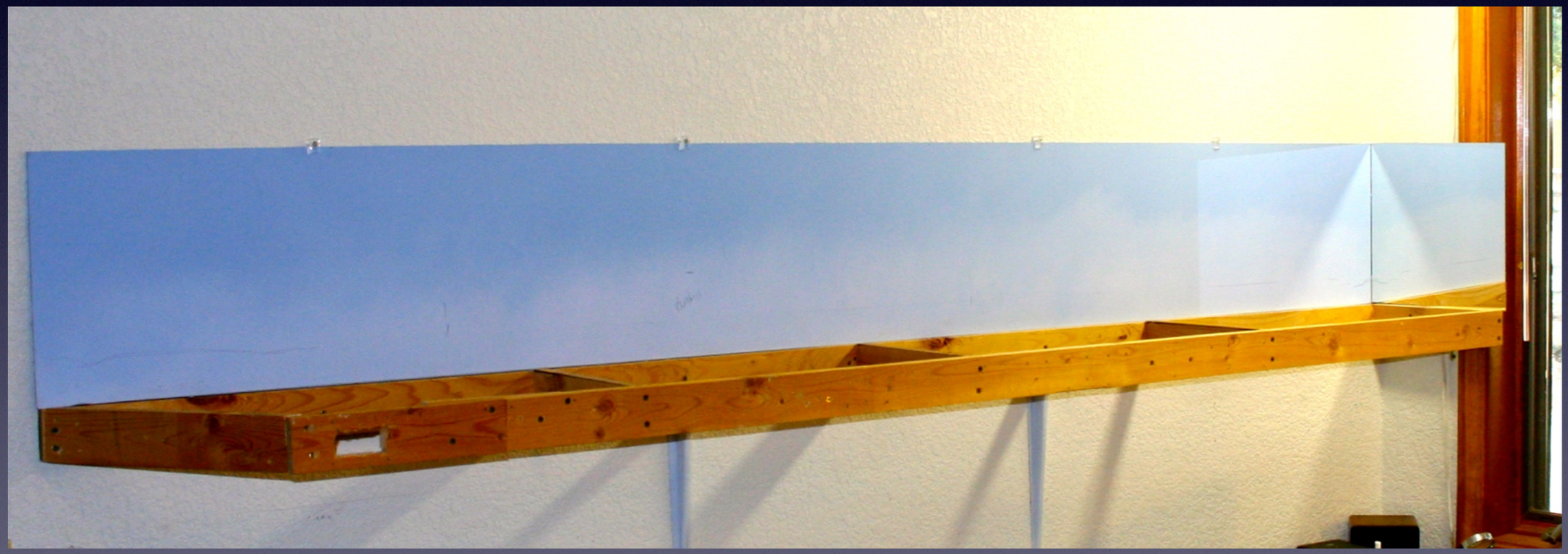
Terminology
“Chip” - I.C.



Terminology
bus vs. buss



Converting
or new build?



Mixing DC and DCC

- NOT on the same layout at the same time
- Once folks have fun with DCC, they drift away from DC
- Solid method to assure that both will not be active at once

Planning for DCC

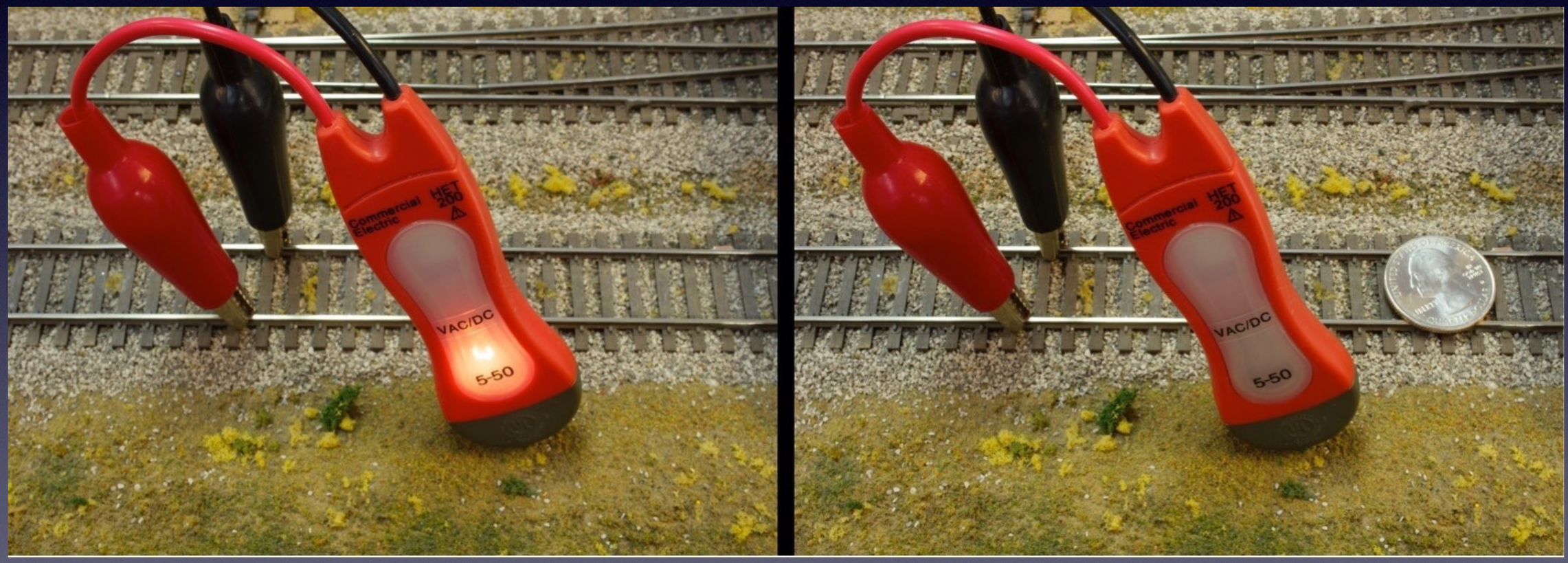
- Layout Scale - track voltage.
- The final size of the layout - wire size & number of boosters
- The number of operators - throttles & power districts.
- What will be drawing power at once - DCC amps
- Advanced features - radio control or a computer interface
- Reverse loops - track plan and DCC plan must fit

Wiring differences
DC vs. DCC

- Power pack can run into a short
- DCC Booster cannot run into a short
- Must be able to tell difference between high draw loco and a short
- Bus wires need to be large - 10 to 12 AWG
- Drop wires can be 20 AWG if kept short

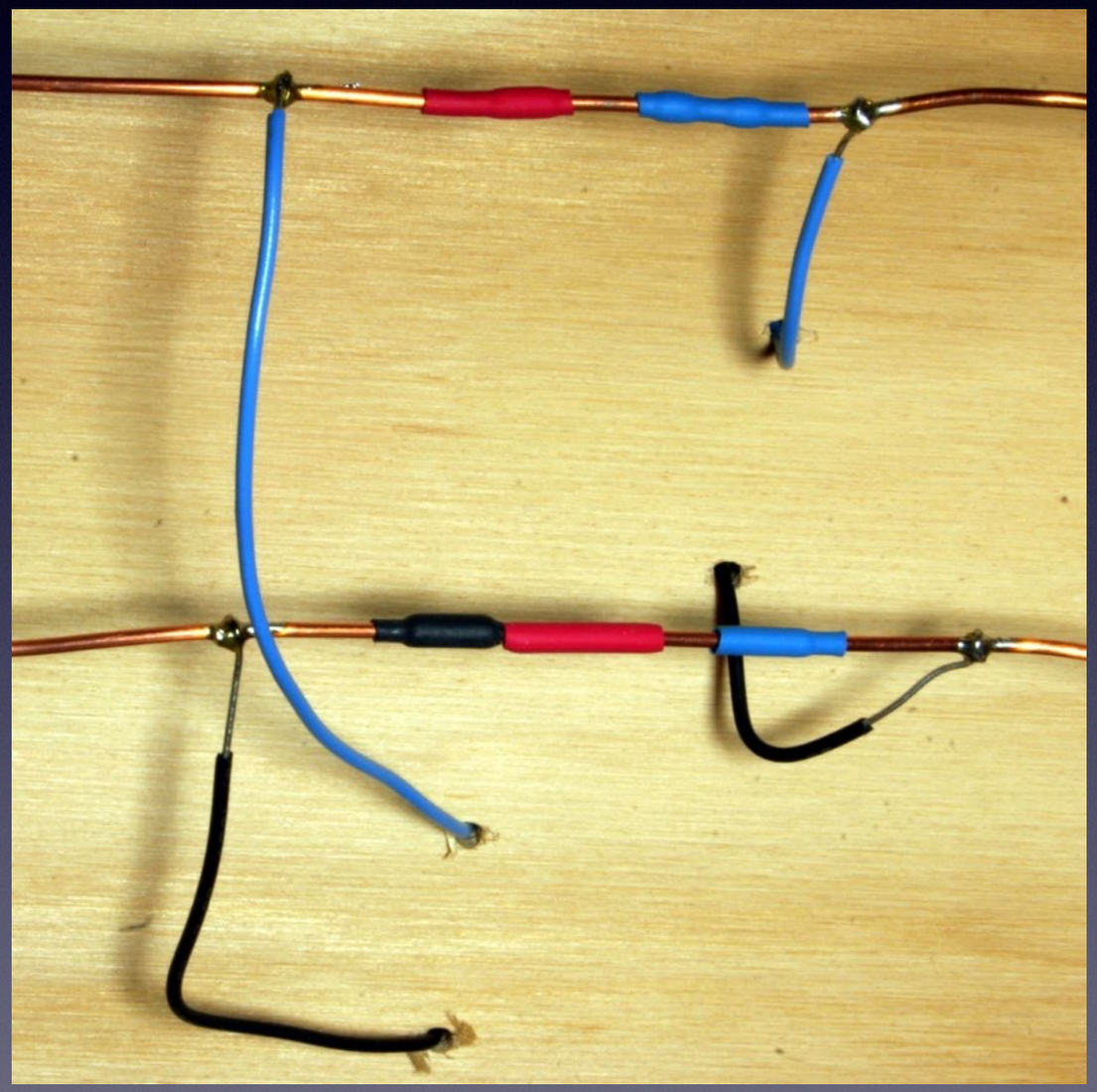
AWG gauge	Maximum Length feet
12	50
14	31.45
16	19.77
18	12.44
20	7.82
22	4.92
24	3.09

The
“quarter test”

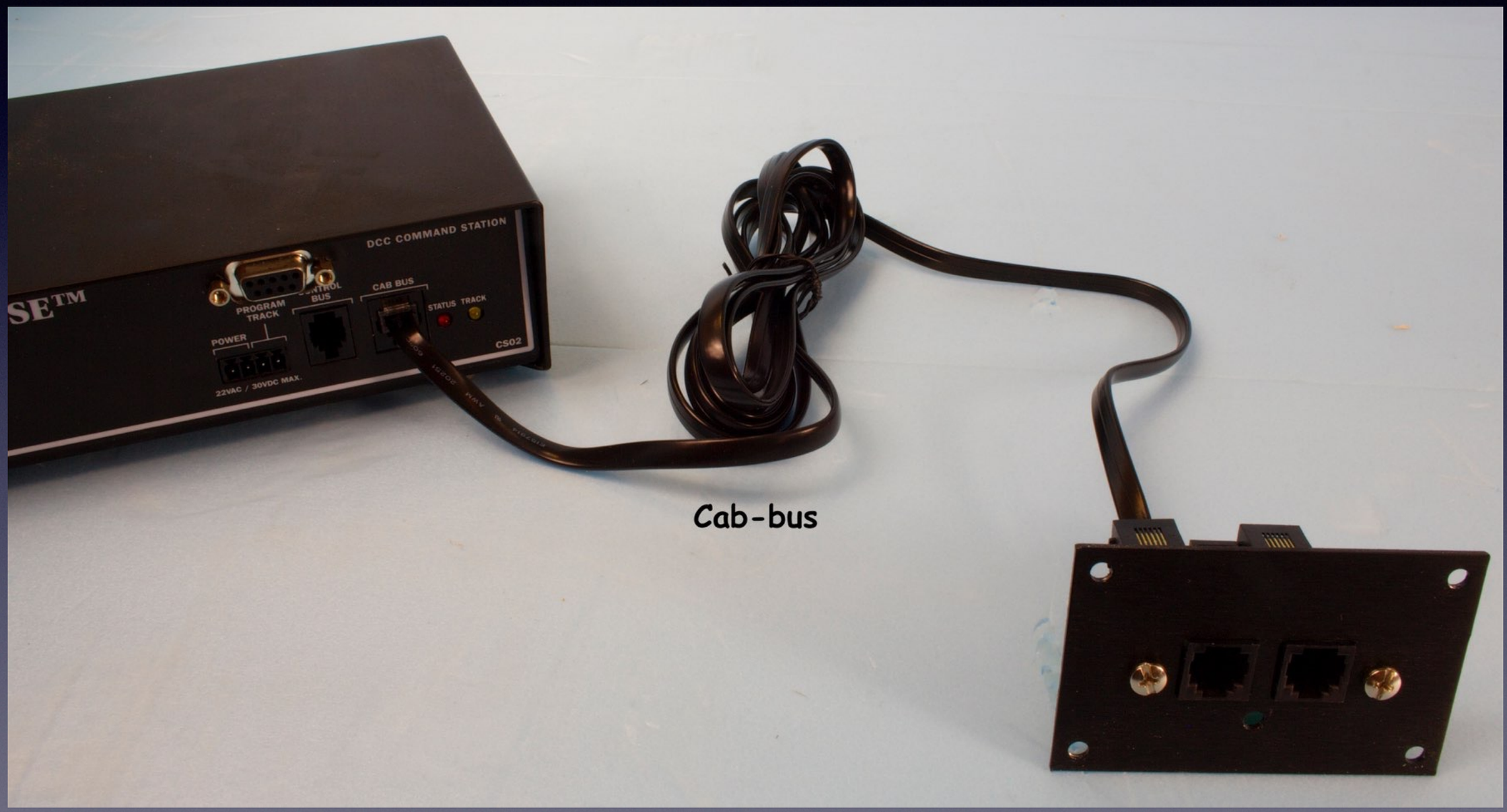


DCC-bus
aka track-bus

- Booster-bus
- District-bus
- Color code:
  - Red booster
  - Blue district
  - Black = common



Cab-bus



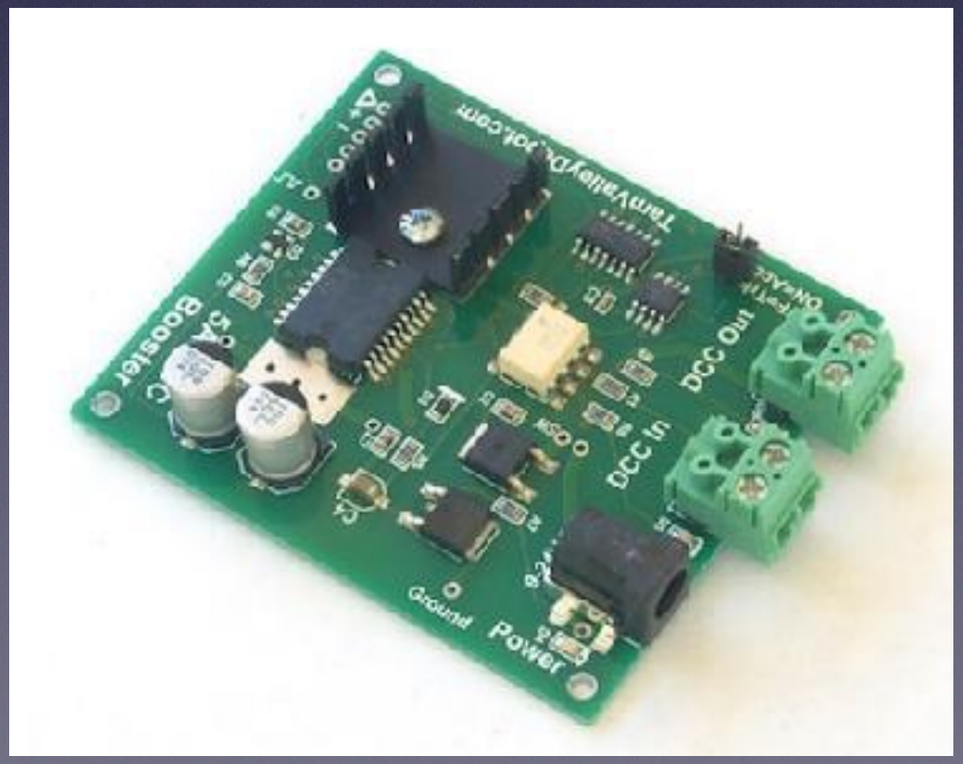
Cab-bus

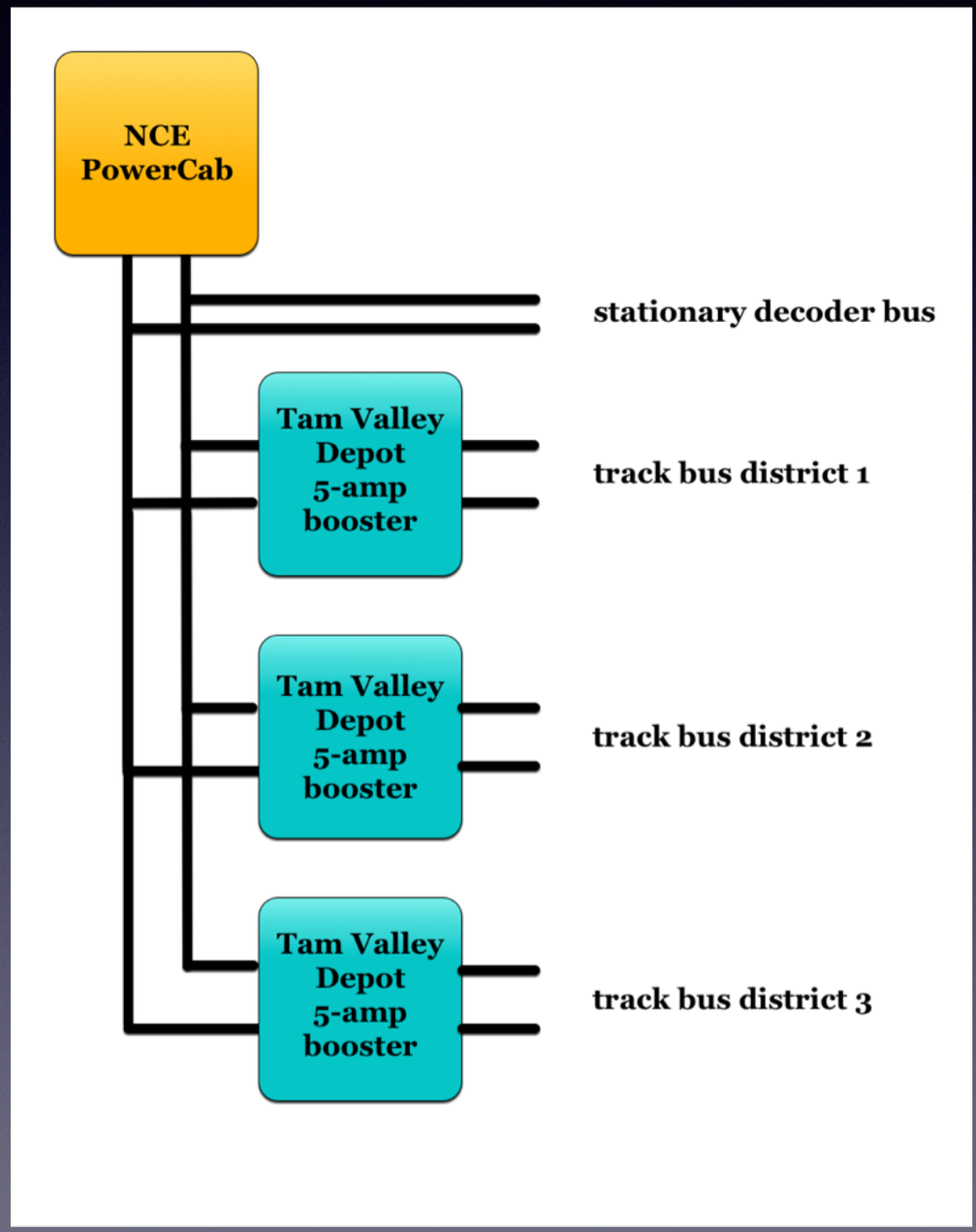
Control-bus

- connects command station to booster(s)

“Track Level” booster input

- Tam Valley Depot boosters
- Used on my HO-SMVRR





Selecting a DCC system

- Upgradability
- Local support
- Hand-held vs. bench-top
- Ergonomics
- Features

Upgradability

- Grow with your pike
  - power
  - throttles
  - radio
  - computer interface

Do you have local support?

- friends
- club
- DCC savvy hobby shop

Hand-held vs. bench-top

Ergonomics

- Fit in hand
- Easy to see
- Easy to adjust speed
- Easy to activate functions

- Select engine or consist
- Start, accelerate, brake and stop
- End your session with the loco
- Build and alter and clear consists
- Reverse direction of your consist
- Program CVs in the loco
- Access a function higher than 6 or 12 or 20

System features

- Display track current?
- Does it read back any decoders?
- Does it need a programming track booster to read back sound decoders?

Find a
DCC savvy dealer

- Support
    - Phone
    - eMail
    - Visit
- Be loyal

How much power volts

- Most systems adjustable 12 to 18 volts
- Some Z at 12 and garden over 20
- Moving locos between home and club - same voltage both places

How much power amps

- 5-amp systems are the backbone
- a dozen or so modern locos
- reasonable booster bus lengths
- short circuit current compatible with N- and HO-scale wiring

How much power 5-amp system

How much power amps

- Don’t buy the biggest, baddest booster around
- Even with circuit breakers, can toast wires in locos
    - Disagreement on this point amongst gurus

How much power measuring power

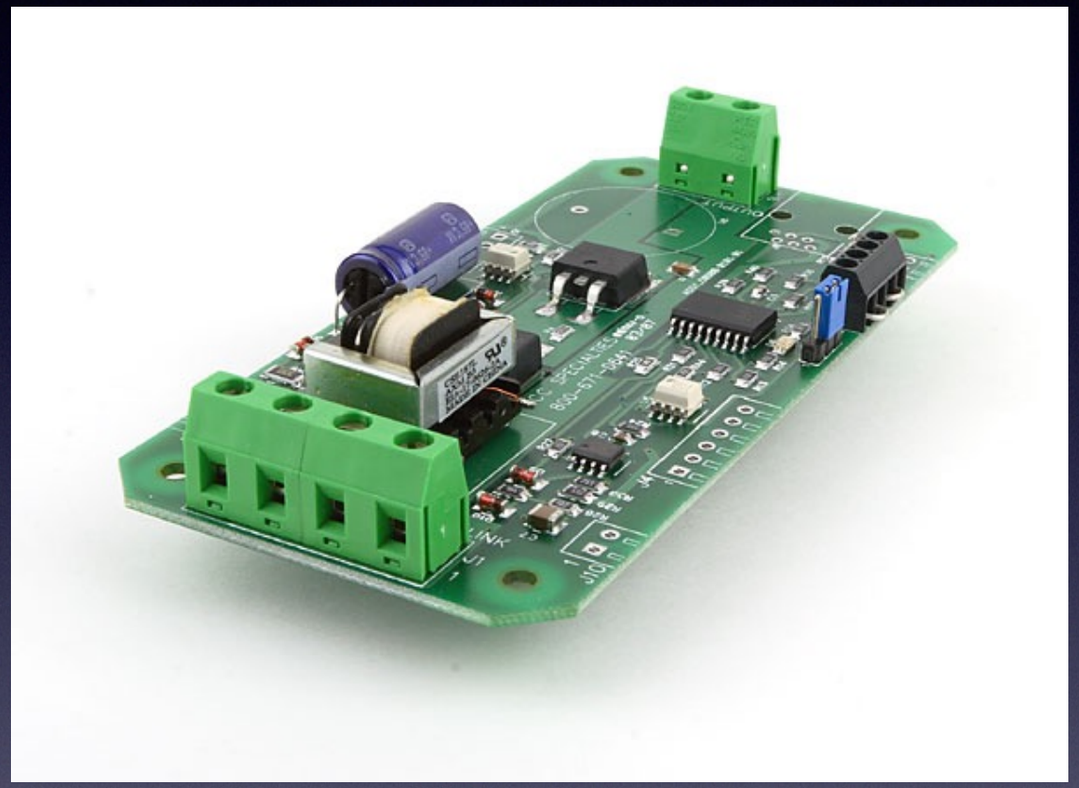
- RRAmpMeter from DCC Specialties
- Available at most DCC dealers
- Specifically designed to analyze the DCC waveform accurately

Power districts why and how

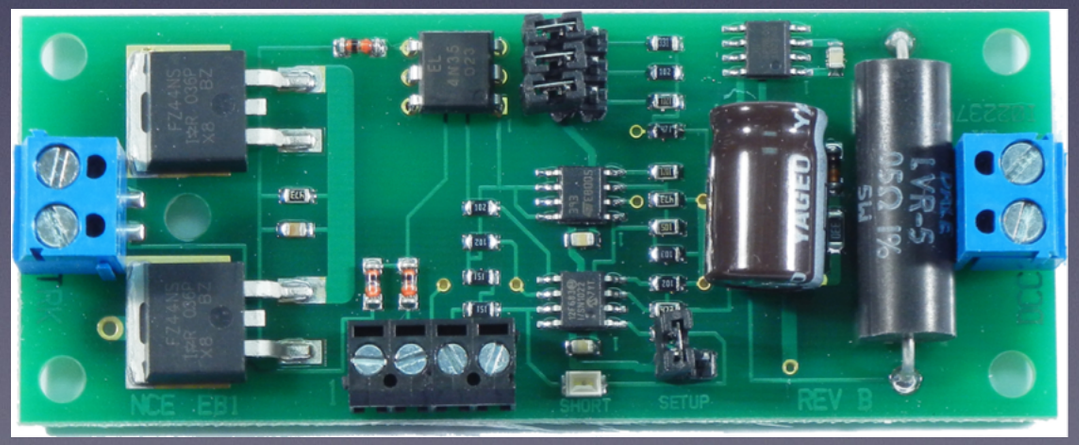
- Break up layout
  - Ease of troubleshooting
  - Job separation
- Ease of expansion

Power districts circuit breakers

- PSx from DCC Specialties

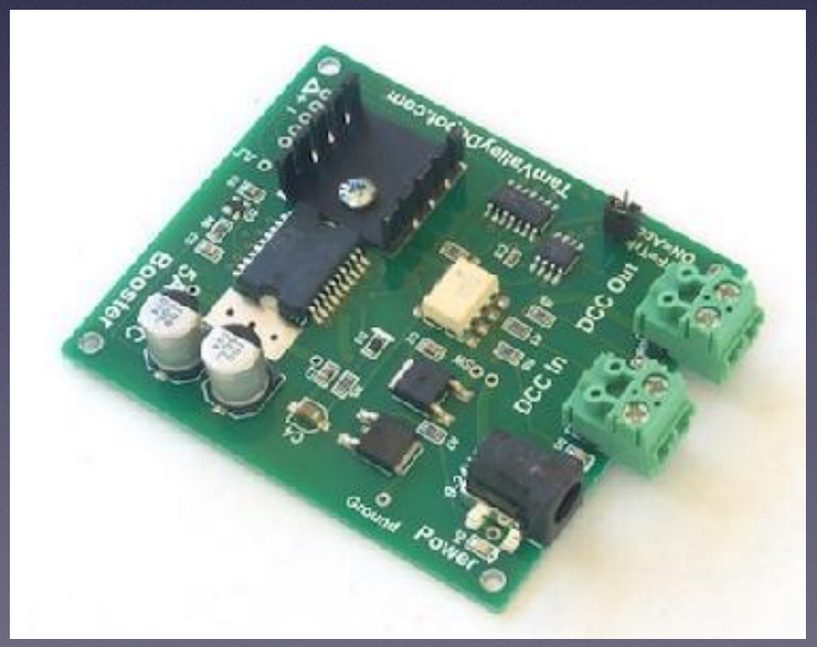


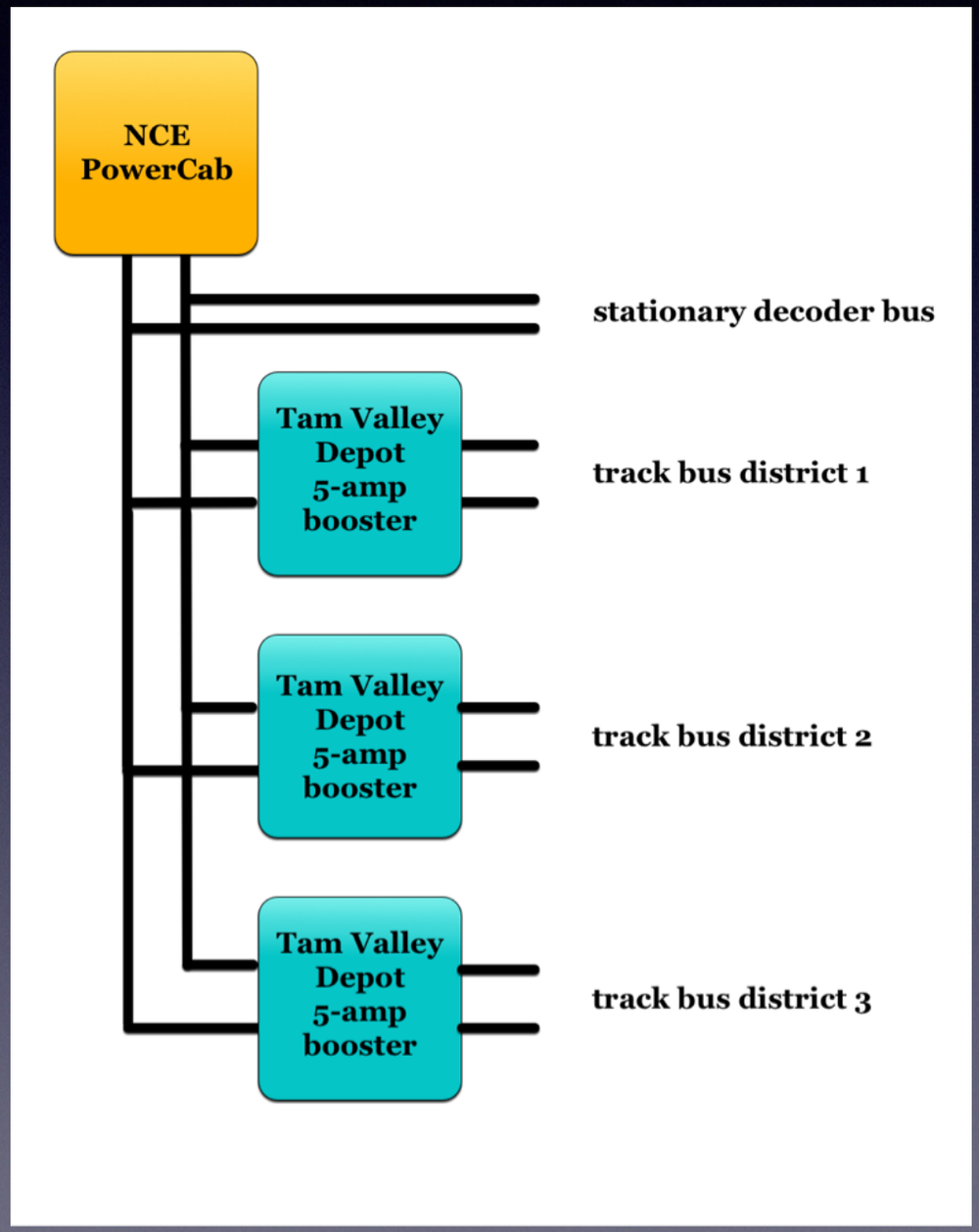
- EB1 from NCE Corporation includes block detection



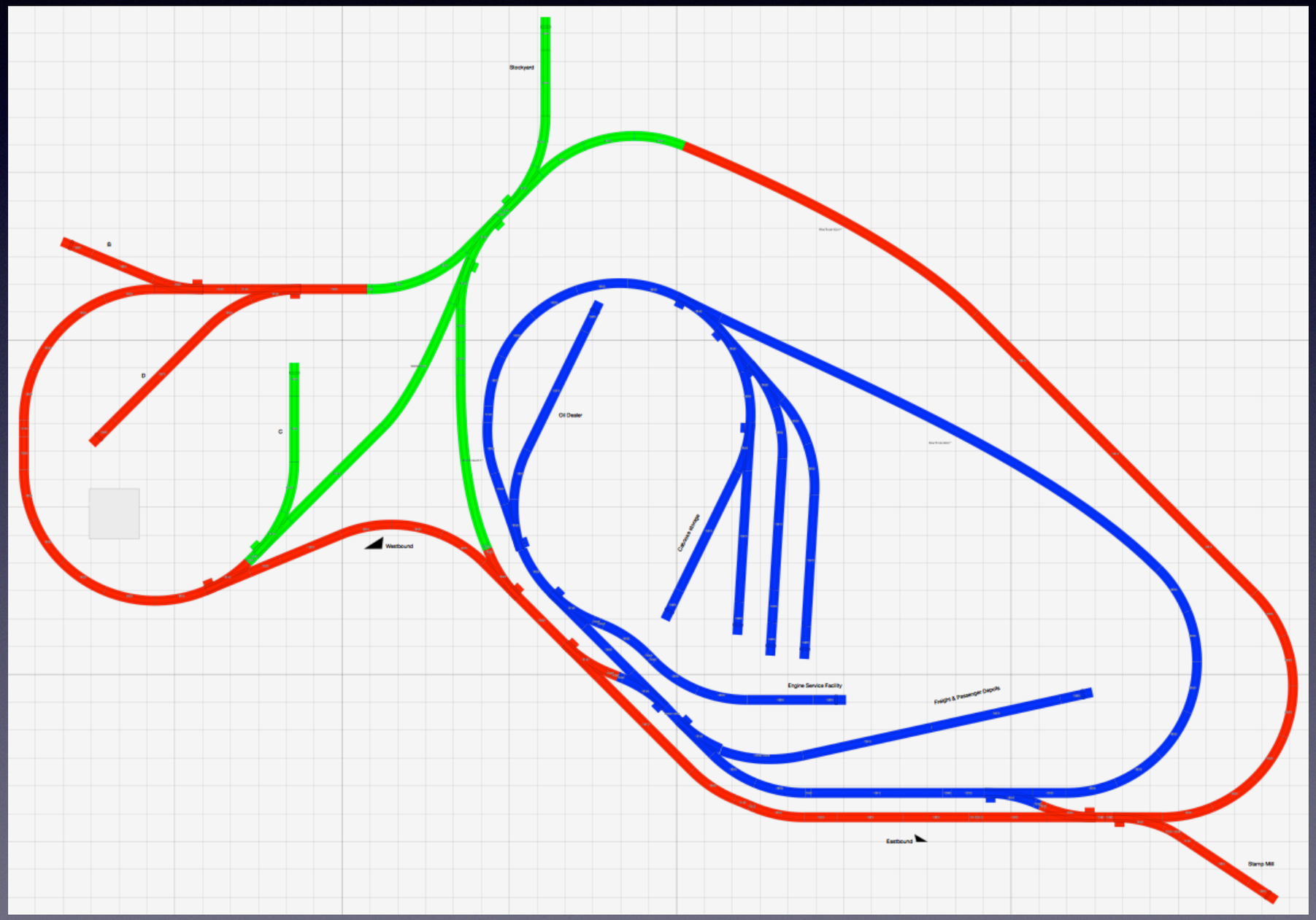
Power districts small boosters

- Tam Valley Depot 5-amp booster with circuit protection
- Less expensive for my layout than a full system & circuit breakers





Reversing sections



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