

Digital Command Control (DCC)

In short, DCC is the absolute best way to run trains! A lot of people have a lot of excuses as to why they don't want to try or use DCC most of these people are probably still chopping wood with a stone ax, and their VCR is blinking 12:00 because they don't want to take the time to read the manual to find out how to set the time.

The fact of the matter is that there are legitimate reasons to not use DCC, but these are few and far between. For example, you may simply want to run one train around in circles on a dormant, inactive, layout. But if you want to run more than one train at a time, or want your layout and trains to do more than just go around in circles, DCC is truly the bonanza you've been needing.

Following is a partial list of what can be done with DCC. Not all brands of systems can do all of these things. Digitrax systems can which is one reason Loy's Toys specializes in Digitrax.

- *Train control is individual and autonomous.* Run multiple trains with multiple engineers with NO need for toggle switches to control track power. Simply select the loco you want to run by its road number (address), turn the knob and go anywhere on the layout without having to mess with toggle switches. Other engineers can do the same with their trains, at the same time, with their own throttles.
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- *Except for the Zephyr, walk-around throttles are standard equipment.* Walk-around throttles can easily be added to the Zephyr. And radio and Infrared wireless throttles are also available for all Digitrax systems.
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- If you use fast clocks in your operating sessions, you can *have fast clock time shown in your hand-held throttle*, and have it synchronized to one or more fast clocks on the wall if you want.
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- *Most locos generally run better on DCC than DC analog.* In addition, there are many features to make them run even better, and to make each one run exactly the way you want it to run. Refer to the [Decoder Feature List](#) for more info.
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- *Control anything on the train that is electrical.* This includes lighting (more about this next), smoke units, sound units, and some people are even scratch building coupler controls, passenger car door operation, and other things.
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- *Special lighting effects* to simulate Mars lights, rotary beacons, strobe lights, blinking ditch lights, and many more. In the past, devices to do this would cost \$30 or more. Now, it's standard equipment in most loco decoders some costing less than \$20. These special effects are amazingly realistic. A rotary beacon, for example, actually looks like a rotary beacon even though nothing is rotating.
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- *MU consisting on the fly.* Select a lead loco and back it up to the loco you'll be consisting to it, and consist it just like the real thing. Consist as many locos as needed elephant style, head-to-head, or tail-to-tail.
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- *Turnout control and/or feedback* if you want it. Be able to control turnouts from a button on the fascia, from a master control panel, from your hand-held throttle, by computer, or from any number of other available devices. And even if you want to control your turnouts manually, you can still have feedback that will reflect the turnout setting in your hand-held throttle display.
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- *Route control* with the Chief or after market boards designed specifically for this no more diode matrix or other complex wiring.

- *Layout control for building lights, turntables, transfer tables, even other animation.* We have one customer who built an operating tippie he controls with his hand-held throttle - turning it on and off as coal cars move under it for loading.
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- *Signaling made easier,* with several different devices to mix and match to achieve the signaling system you want.
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- *Braking sections* to go along with signaling. You can wire/program your layout so trains will automatically stop at red signals even if the engineer doesn't do it with his throttle.
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- *Loco feedback* (called Transponding) so your computer can tell exactly where every loco is on the layout. Useful for automated layout operation of routes and schedules, hidden staging yards, and other esoteric applications.
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- *Simpler track wiring.* Even though some DCC wiring can become complex, that's only because more and more advanced and exotic features are being added. In any case, with equal features being used, DCC layout wiring is always simpler and easier
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- *Easier throttle network wiring* (exclusively Digitrax's). One network of 6 wire phone cables (up to 2000 feet long) and phone jacks is all it takes for multiple throttles, wall-hanging fast clocks, block detection reporting, track status reporting, signal control, turnout reporting, computer networking, Palm Pilot usage, or anything else that needs communication to or from the rest of the system.
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- *Just because all of these things are available (can be done) doesn't mean you must to do them.* Model Railroading is supposed to be fun. And not everybody defines fun the same way. That's what so great about model railroading, and about DCC you don't have to do it all.

Pick and choose which features you want to use, and forget about the rest. But because the rest is available, you can always implement it/them later. That's one of the nice things about DCC its open endedness. You don't have to know or know about everything you will eventually do with your railroad. Start with a Zephyr or Chief and you can add all these other things as you want or need them they can easily be added in on the fly.

Decoder Feature List

The decoder is the little electronic device you mount in the loco for control. Following is a list of features that are available on one decoder or another. No one decoder will have every feature. To save space, we just listed the more popular features. Other features and options exist. You decide which features you want and buy a decoder that has that feature set. The decoder you choose will probably have features you don't need. Just ignore them, they won't get in the way.

- Speed Steps: 14, 28, and 128
- Switching Speed: cuts speeds in half so you have finer control during switching
- Momentum: simulates a loaded train. Two settings: acceleration & deceleration.
- V-Start: sets the voltage for speed step #1
- V-Mid: sets the voltage for 50% throttle
- V-Max: sets the amount of voltage for full throttle
NOTE: steps between speed step #1, 50% throttle and full throttle are evenly incremented.
- Base-Direction Programming: lets you tell it which direction is forward
- User-Loadable Speed Table: lets you specify any custom speed curve, rather than using V-Start, V-Mid, and V-Max.
- TrimForward and Reverse: lets you trim forward and reverse top speeds to match.
- Kick Start: provides a little extra jolt of power to keep you from having to dial up to get it started, then back down to keep it running slow.
- Decoder-Assisted Consisting: provide an optional way to do MU consisting
- DAC Function Control: allows you to say which on-board functions on consisted locos will work.
- DAC Momentum Trim: lets you trim momentum differently when MUed.

- DC Analog Conversion: lets you say which functions will be on and off when running the DCC loco on a conventional analog layout.
- Directional/Non-Directional Lighting: lets you decide whether front and rear lights will respond automatically to loco direction changes.
- FX Lighting Effects: Gyalite, FRED, Random Flicker, Rotary Beacon, Flashing Headlight, Mars Light, Blinking Ditch Lights, Single- and Double-Pulse Strobe, Rule 17 Dimmable Headlight
- Master Light Switch: lets you turn all functions off with one operation.
- Function Re-Mapping: allows you to say which button will control which light or function.
- Back-EMF Control: cruise control. Also makes locos run smoothly across turnouts during switching.
- Quiet/Silent/SuperSonic Drive: makes locos run more quietly
- Dither: makes locos (even Athearn) run smoothly, like a Kato, even at very slow speeds.
- CV Reset: resets all decoder settings to factory defaults
- Transponding: allows the decoder to talk back to the command station
- Short-Circuit Protection: protects the decoder against bad wiring when first turned on.
- Thermal Protection: protects against heat damage if the decoder is overloaded.
- Decoder Programming Lock: protects against your settings being accidentally changed. It also allows for programming one decoder at a time when you have two or more in one loco.

Loy's Toys, thinks Digitrax's systems are superior in a lot of ways, including the true peer-to-peer throttle network that only one other manufacturer uses, their proliferation of new and innovative products each year, and the fact that you just flat get more for your money than with any other manufacturer.