

An overview of DCC Terminology

This page already seems to go on forever and it is clearly a never ending project!

We have started with a general set of definitions and will hopefully expand it as time goes on. Please note it will never be total for all modellers - there are many "invented words" in DCC which have been created by the manufacturers, and I will not include them here unless they become to DCC as "Xerox" became to copiers... ie: common or dominant in usage and therefore generic.

If you are one who excels at proofing and finding odd typos go for it please....

Long lists of info like this are prone to errors as the brain shuts down after a couple of hours typing, so if you find a mistake please feel free to let us know!

A

Accessory decoder:

A decoder that is not intended to be installed in a locomotive, remaining in a fixed location and controlling accessories such as signals or track related items such as points or turnouts. It is also known as a stationary decoder.

Address:

The numeric (or more recently in some systems, alphanumeric) identification code by which a decoder recognizes commands directed specifically to it. It is also the identifier that a transponder broadcasts. The address is usually unique for each decoder, but this is not a requirement.

Address 00:

The special address used to send speed and direction commands which the command station uses to operate conventional, non-decoder equipped locos.

This is a band-aid only and is not recommended other than for a brief test of the loco. Because it can be destructive of DC motors, it is being dropped as a feature from most control systems.

Advanced consisting:

Operating and controlling several locomotives as if they were a single entity by sending speed and direction commands to a common address stored in CV19. Also called decoder assisted consisting. See also "Consist".

Aliasing or aliased addressing:

The method used by a command station to run trains with a long or alphanumeric name (address) stored in the command station when the decoder also has its own separate 2 or 4 digit address.

This feature is not part of the Standard or RPs. But is becoming common very quickly as command stations increase on-board memory capacity.

Amplitude:

The height of a wave form.

Analog:

A term used to describe conventional DC control where the loco responds to the magnitude of the track voltage.

Analog mode conversion:

Allows most DCC decoders to run on layouts that use conventional control. A quality decoder will run superbly on a DC layout, however when running decoder equipped locomotives on DC, any pulse power must be turned off for best results.

Armature:

Rotating frame which supports the field coils of a motor. In common usage the term applies to the entire rotating part of the motor.

Aspect:

A combination of lights or positions on a signal which has a defined meaning. This meaning is the signal's indication.

Automatic polarity reversing: (auto reverse controller)

Control circuits which sense opposite polarities at rail gaps and automatically reverse the polarity of the rails to allow smooth continuation of the motive power. Applications include: reversing loops; wyes; and turntables.

B

Back EMF:

A specific term that has become the generic name for a very important decoder feature: Back EMF assists superb slow running / provides proportional load compensation to the motor drive.

Back EMF features do vary brand by brand, however Back EMF operates by sensing load and it then compensates for variances by adjusting power provided to the motor under varying conditions. NO other method of control can match a quality back EMF decoder for running quality.

With Back EMF enabled, locomotive decoders sense the rotational speed and current needs of the motor and automatically adjust future digital pulses to the motor to maintain a desired speed by increasing or decreasing power available to the motor very smoothly.

Back EMF can be tuned to increase or moderate its effect, and even to allow it to gently turn off as speed increases. It is a VERY clever feature, highly desirable.

Basic consisting:

Operating and controlling several locomotives as if they were a single entity by sending discrete speed and direction commands to each locomotive in the consist. See also "Consist".

Baud:

Measurement of bits per second transmitted or received.

Bit:

A logical value, a binary digit that can be either a one or a zero.

Booster:

Booster is the electronic device that combines and amplifies the DCC commands generated by the command station with power from the power supply.

The booster sends the DCC commands as electronic signals along with the track power to the decoders to deliver both power and DCC signals to the DCC devices on the layout. A DCC system may have more than one booster. Boosters are also sometimes called power boosters or power stations. Also known as "Power stations" or "Power Boosters"

Braking sections:

Track segments where the power supply is set up so that DCC trains stop automatically. (-If the decoder is set to not run on DC, and that section is rectified to DC, the train slows and stops at the rate set into the decoder for acceleration (CV3) and deceleration (CV4). When the power returns to DC, the train starts again.

Broadcast packet:

A specially encoded digital packet that will be acted upon by all decoders that receive the packet. Commonly used in service mode programming and for stopping a locomotive in front of a red signal.

Bus:

A set of wires that carries electrical signals and power and distributes them around the layout.

C

Cab: (controller, throttle)

A device used by railway modellers to control motive power and accessories by sending electrical or electronic instructions to the locomotive (via the DCC command station).

Cab bus:

The bus used for "cab to command station" communication, and vice versa.

Closed:

The state of a turnout or the decoder which controls it, where the routing is through the straight leg or set for the main line.

Command Station:

The command station receives electrical signals (operator instructions) from the cab. The command station then creates NMRA DCC digital packets in accordance with NMRA specifications to achieve the desired results and transmits these packets to the power station(s).

Commutator:

The rotating contact area on the armature which transfers power from the motor brushes to the field coils. It will always have an odd number of "poles" 3, 5, or 7 are most common.

Compatibility: (NMRA DCC compatible)

A claim made by a manufacturer that their product will generally work with other compatible devices in areas where both devices support a given function.

Compliant:

This means the same as conformance. A compliant product is one that has passed NMRA tests and earned an NMRA Conformance Warrant.

Configuration register: (The most important CV – CV29)

CV29's configuration register soft switches control some of the most basic aspects of decoder operation.

These are normal direction of travel or opposite, 14 or 28/128 speed steps, analog conversion on or off, speed table on or off and two or four digit addressing. (See my description of setting CV29 in other website pages)

Configuration variable: (CV)

A place, folder or memory location in the decoder that contains the information that controls the decoder's characteristics. This information is permanently stored inside the decoder until the user wishes to change its value. Some CVs contain unchangeable data like manufacturer number or software version information.

Conformance:

Products that have passed the NMRA's extensive testing procedures are eligible for a Conformance Warrant if the manufacturer also agrees to fix any discrepancies that might become apparent in the future.

A "Conformance seal" is awarded by NMRA for products passing the Conformance and Inspection program for particular NMRA Standards.

Conformance Warrant:

An official document awarded by the NMRA to a manufacturer for a specific product that has shown conformance to NMRA Standards and applicable Recommended Practices by passing all appropriate tests as performed by the NMRA.

Consist:

Operating and controlling several locomotives as if they were a single entity.

For example, several diesels might be connected together to provide more power for a long train or a steep grade. The number of loco's can look high for a train in hilly territory, as added loco's can be attached to improve BRAKING ability, not pulling power!

There are three types of consisting: (1) Basic consisting is where all locomotive decoders in the lash up have the same address. (2) Advanced consisting is where the consist information is stored in CV19 in the decoder. (3) Universal consisting is where the consist information is stored in the command station.

Control Bus:

The bus used for transmitting digital packets from the command stations to power station.

Conventional control: (or DC or analog or block control)

This method of model train control uses extensive wiring to control the power delivered to the locos through the rails. It is a system of running the track, not the trains.

Current:

The flow of electricity in a circuit.

Current Draw:

The amount of electrical flow required by an operating device (it is measured in amps – connect meter in series with one side of the circuit).

D**DCC:**

DCC stands for Digital Command Control. The control information is provided in the form of a digital signal instead of a standard analog (DC or AC) power, overlaid with control information. NMRA DCC is a specific form of Digital Command Control specified by the NMRA as a nonproprietary international specification and is implemented by a significant number of manufacturers worldwide. On the most basic level, DCC encompasses systems and products that are interoperable with the basic NMRA DCC Standards and RPs.

In addition, DCC includes other related technologies that are designed to enhance and extend the basic capabilities outlined by the NMRA.

Decoder:

Electronic device that receives the DCC signal from the command station through the track, decodes it and tells the locomotive, turnout or other equipment, it is controlling, what to do.

Decoders come in a variety of sizes and specifications. See also "Accessory decoder", "Locomotive decoder", "function only decoder", "Stationary decoder" etc

Mobile decoders are installed in locomotives to control their movement and, in some cases, other functions such as lights or sound. Function only decoders are installed in equipment that moves, but function only decoders do not control movement. Rather, they control other functions like lights, sound, smoke or animation. Stationary decoders control fixed equipment like turnouts, lights, signals, sound and other immobile animation devices. These are sometimes called accessory decoders.

Decoder Reset:

Either you, your decoder or both can sometimes become confused. Quality decoders allow you to reset them and return all settings to the way they were the day it was made so you can start again. Usual reset procedure is set CV8 to 8 or CV30 to 2 and cycle power (to cycle power, pick loco off track and replace again)

Resetting a decoder returns it to all defaults, and address will become 3 again.

Direct home wiring:

Method of wiring layouts where each power district and its booster is electrically isolated by breaks in both rails each end.

Direct CV programming: (now a common programming track method)

A high performance form of service mode programming for manipulating the values of a decoder's CVs by calling them up, reading and adjusting directly. Also called service mode.

Direct programming:

Form of service mode programming defined by the NMRA-RPs.

Ditch lights:

Lights mounted on a loco's pilot or low on the hood to illuminate each side of the track just in front of the loco. When the horn is sounded they flash alternately increasing the visibility of the loco, especially at grade crossings.

Droppers: (Track feeds)

The short sections of wire which connect the power bus with the track and supply power to that track.

E**EEPROM:**

Stands for "Electrically Erasable Programmable Read Only Memory".

These computer memory devices are used to store data in a manner that is easily read, but that changes infrequently. Nonvolatile memory which is designed to be changed infrequently, and is used to hold the values programmed for the configuration variables that control the decoder's characteristics. Most decoders use EEPROM to store CV information.

EPROM:

Erasable Programmable Read-only Memory. These computer memory devices are used to store data in a manner that is easily read, but can only be erased and reprogrammed with special tools.

F**Fast clock:**

A clock set to run faster than real time to allow for operating sessions on a model railroad to be run in compressed time. The ratio between fast time and real time is typically 4:1, 6:1 or 8:1.

Feedback:

The ability of a device to transmit information regarding its status back to the command station.

Forward trim:

Scaling factor which is applied to all the speed step power values in a speed table for the forward direction of the loco.

Frequency:

The number of wave function cycles per second.

Function mapping:

The ability to specify (i.e. map) and change which function buttons on a controller will activate which specific decoder function outputs (or sounds in a sound decoder).

Function output:

A decoder controlled switch that can be turned on and off by selecting a function button on a controller

G

H

Handheld: (cab, controller etc)

A portable control unit used by the modeller to control one or more locomotives. Simple handhelds may have speed and direction controls only. More Specialized examples also control accessory functions. Fully feature handheld cabs have the ability to do it all.

Hertz:

Unit of frequency, cycles per second.

Hexadecimal:

Base sixteen number system. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E and F. Frankly this is mostly unintelligible to modellers, but if you want to play with it select your computer calculator, go to options & set it to scientific. Have fun!

Early decoders needed to be programmed in hex and this killed enthusiasm for DCC in many modellers. Now only Digitrax makes much comment on this in their (not very easily understood) product manuals – most brands and controllers can work with it but their product now sensibly talks plain English to you and uses conventional Arabic numerals to communicate!

Interoperability: (standards compatibility)

One of the most important features to look for in a command control system. This allows you to use your DCC compatible equipment with other DCC compatible equipment. Interoperability means that your DCC decoder made by DCC manufacturer A will work with a command station made by DCC manufacturer B.

Ironless core motor:

Also called a coreless motor (example brands, Falhauber, Escap, maxxon) Small ultrahigh performance motor developed as a precision instrument or servo motor, but occasionally used in model railroad applications. These are sometimes called Micro motors. Supersonic decoders or ballast lamps must be used when installing DCC decoders with this type of motor to prevent damage to the motor.

K

Kick start:

An entry in a speed table to regulate a burst of power sent to a motor when the decoder first commands it to start (at speed step 1).

L

LAN:

Local Area Network is a computer term referring to the interconnections by which various computers and devices communicate with each other in a geographically small location, as opposed to a Wide Area Network (WAN) like the Internet.

LED:

Light Emitting Diode, a solid state electronic device that converts electricity to light, without heat. It is polarity sensitive. (long leg is always positive)

LocoNet:

Digitrax proprietary Peer to peer local area network (LAN) system architecture. Used by Digitrax to carry DCC and other commands across Digitrax command control systems. (Other brands have other names for the similar concepts)

Locomotive decoder:

A decoder intended for controlling a locomotive (or other similar device). See also decoder, and mobile decoder.

M

Macro:

A sequence of user-definable commands, that is accomplished with a single button press. Macros are written to set turnout control for pre-set routes.

Master/Slave:

A network architecture where a central controller manages access and communications to remote devices. It usually uses polled communications.

Maximum voltage: (or Vmax)

Defined in CV5. It limits the maximum voltage sent by the decoder to the motor, effectively limiting top speed. Use it in combination with CV6 or Vmid for easy loco tuning!

Microprocessor:

A miniaturized, self-contained, computer on a single chip. The computer's operating instructions are not stored in this self-contained chip, but instead are stored in an external device, usually an EPROM or PROM.

Microsecond:

One millionth of a second. It is written as μsec .

Mid voltage: (or Vmid)

Defined in CV6. It defines the power sent by the decoder to the motor at the middle speed step. This is step 7 of 14, step 15 of 28 or step 65 of 128. Careful use of this will CV can quickly transform the acceleration rate and performance of a locomotive. It is easier to use Vmax and Vmid than a full speed table and set properly it really refines switching/shunting speed control

Milliamp:

1/1000 of an amp. 1,000 milliamps (mA) equals one ampere. See also ampere.

Mobile decoder: (Locomotive decoder)

A decoder that is designed to be able to properly work if installed in a device that moves around the layout using rotating wheels on tracks. See also decoder.

Motorola system:

Digital command control format used by Marklin AC digital HO and Marklin Maxi decoders. This format is different from the NMRA DCC Standards, and is now largely redundant for all but earlier marklin product..

MU lash-up:

One way that the prototype refers to consists. This is a group of locomotives linked together by cables (MU cables) and controlled as one unit. MU means multi or multiple unit.

N

Nested consist:

A consist which is part of another consist.

NMRA:

The National Model Railroad Association is an organization of volunteers that, among other things, created the NMRA/DCC Standards and Recommended Practices.

Founded in 1935, one of its purposes was originally to define and manage model railroad Standards related to interchange of equipment in North America, however it is now completely global with strongly managed affiliate bodies in all major MRR countries.

NTRAK:

The most widely used Standard for N scale modular layouts. Now global

O

Occupancy detector:

A device which senses and provides feedback of the presence of a train or specially equipped rolling stock on a section of track. Also called a block occupancy detector on conventional layouts.

Optical detectors can achieve the same result for many operations with any item of rolling stock. Detectors are not at this point covered by DCC Standards or RPs.

Ohm(s):

Unit of measurement for the electrical resistance of an electronic component or device. This is a "friction" measurement. The kilo Ohm (K), or 1000 ohms, is more commonly used. An ohm is a small unit, like a cent. Ohms are represented by the Greek letter Omega.

Operating current:

Operating current is the current draw in amps used by a loco, including its motor, lights and other accessories, under normal continuous operation at full load.

Operation (Ops) mode programming: (A more correct name for this method at this time is "Programming on the main)

A programming method where programming information is sent to a specific decoder on the layout instead of on the programming track. This method of programming decoders does not interfere with the operation or settings of other decoders on the same track. A programming track is not used, the information sent is directed to a specific address.

Programming on the main is often usable with higher current sound decoders that do not programme happily on the programming track.

Please note that you CANNOT read decoder CV's when programming on the main and not all decoders accept programming on the main. (All high quality decoders are happy with this method of programming)

P

Packet:

Packet is the organization of bits and bytes into complete DCC commands. It consists of preamble, address, instruction and error detection information with bits to indicate the start and end of the components of the packet. The packet format is defined by the DCC Standards. See also digital packets.

Paged programming:

A method used for programming of decoder CVs. It is a method of accessing the configuration variables, four variables at a time. Each set of four variables is called a page. See also Register Programming.

Polarity:

The two directions of current flow, plus (+) and minus (-), or potential in an electrical circuit.

Power bus: (Track Bus or Accessory Bus)

This is the term for the main heavier wires that carry the power from the booster to provide power feeds to the power district. A separate power bus is often used to power accessories as doing it this way keeps the main track power signals very clean and problem free.

Power pack:

Generic name for a source of electrical power for a model railway. Commercial power packs might also have controls for conventional analog operation. See also transformer.

Power routing turnout:

Turnout where only the route selected is live and the rail polarity changes when the turnout is thrown. (In Peco terms, electro frog)

Power Booster:

Booster is the electronic device that receives, combines and amplifies the DCC commands generated by the command station with power from the power supply.

The booster sends the DCC commands as electronic signals along with the track power to the decoders to deliver both power and DCC signals to the DCC devices on the layout.

A DCC system may have more than one booster. Power Boosters are also sometimes called amplifiers or power stations. Also known simply as "Boosters"

Power District:

Wiring, components and equipment that are controlled from both power bus wires by their own power management device, for example, a reversing section controlled by an automated reversing device, a sub section of the model railway which has its own independent power source or overload protection.

Power supply:

Transformer or power pack that provides electricity to the DCC system. A power supply is usually DC output – simple AC output devices are more correctly called transformers

Programming:

The action of setting or changing the internal control parameters of decoders and other DCC control equipment. During programming, values are set to determine the performance and active features of locomotives, stationary decoders and other programmable DCC devices.

Programming track:

An isolated track section used for programming decoder equipped locomotives or transponder equipped rolling stock. Can be a switchable siding or separate track.

Protocol:

The definition of the "language" used between two devices. The agreed upon definitions of the packet's format and intended meaning is known as a protocol. The DCC protocol definition is contained in NMRA Standard S9.2.

Pulse width modulation:

Controlling motor speed electronically and very smoothly with voltage pulses of varying time duration (pulse width). The wider the pulse, the more power is provided to the motor, the faster the motor rotates. The great advantage of this is that 100% of track voltage is always available to the motor, even at slow speed. It is largely the use of PWM that makes DCC so much better for slow speed running! This is also known as PWM.

R

Recommended practices: (NMRA RP)

Established by the NMRA as an adjunct to the Standards. RP's are not mandatory but most CV usage is pre-allocated and pre-planned and so almost all available CV's within a decoder are covered by these recommended practices.

Responsible manufacturers always follow RP's if a feature covered by an RP is implemented, it should follow the RP. This is essential for DCC's future!

Rectifier:

An electronic device which converts a bipolar alternating current (AC) into direct current (DC). At its most simple it is a single diode, however its most common form in our models is a bridge rectifier, which is made up of 4 diodes in one 4 lead epoxy package. Two input leads accept AC, and two output leads pass on DC.

Register programming:

This is the earliest and now almost totally redundant basic method for accessing the eight most basic decoder CVs.

Resistor or resistive wheel set:

Set of model railroad wheels where the two metal wheels are not completely insulated from each other. The wheels are connected by a fairly high value resistor (typically 10,000 ohms), which allows a little current to flow.

These wheel sets are made to trigger detection sections using certain types of detector.

Reverse trim:

A scaling factor which is applied to all of the speed step power values in a speed table for a loco in the reverse direction.

Reversing feature:

Track geometry which allows a locomotive to enter and exit on the same rails with the same direction of motion. Examples are reversing loops, wyes and turntables. A loco enters traveling forward and leaves on the same pair of rails still traveling forward, but in the opposite direction.

This geometry creates a polarity mismatch at one or the other end of the reversing section that must be corrected for the loco to continue moving no matter whether you use DCC or DC train control. (See reversing section).

Reversing loop:

A track design feature which is made up of a turn-back curve which connects back onto itself in a direction opposite to its start point. (imagine a teardrop).

A reversing loop situation can also be created with a wye shaped track layout or any diagonal track across an oval or track loop .

Reversing section:

An isolated track section within a reversing loop, wye or turntable which is set up to handle polarity conflicts either manually or automatically. In DCC, power is usually connected to this bit of track via a reverse loop controller which automatically matches polarity for passing trains so quickly that movements or operations are unaffected. A reverse loop controller usually acts so quickly you will not notice even the slightest impact on loco movement at any speed!

RJ12:

Standard type of telephone style plug and socket used for six conductor cable. This connector is used by many DCC brands as the connector of choice for their control bus, however whilst NCE and Lenz use the same wiring configuration, Digitrax do not, so do not try to use Digitrax layout panels or cables with Lenz or NCE etc

Route:

Stationary decoders linked together so that they operate on a single command. This is like consisting for stationary decoders. Usually a macro is written to create such a route command.

Routing control: (Macro control)

The act of specifying the desired route for a train and programming the DCC system to properly actuate all turnouts (track switches) automatically based on a single "execute" command when that route is chosen. See also Macros.

Rule 17:

Rule 17 refers to a lighting requirement on some US railroads. It is a rule on many railroads. Rule 17 dimming requires locos in sidings waiting to be passed and in some other circumstances to dim, but not extinguish their headlights.

S

Service Mode Programming (Uses a Programming track with limited power)

This method is used when programming decoders on the programming track. It is characterized by using broadcast packets and a safe power level. An electrically separate programming track is needed for this programming mode as all programming commands are simply broadcast to all decoders, irrespective of their address. This programming track can be a siding on the layout that can be isolated from the rest of the layout, or a totally separate length of track.

Slot:

A memory location in the command station which holds an active mobile decoder address.

Slow motion (or stall motor):

A turnout or point motor that is operated by a DC motor which simply stalls at the end of the throw with power still applied. Stall motors draw very little current, and are usually very quiet, strong and efficient. Cobalt is the best of them, and Tortoise™ and Switch master turnout motors are other examples of slow motion or stall motors.

Solenoid motor:

A turnout motor that is operated by the magnetic effect of a coil. NJI, Tenshodo, Kato and Atlas snap switches are US based examples. Seep and Peco point motors are examples of this from England. These can draw huge momentary currents and in many cases need big power supplies and heavy wire for good performance (for example, Peco has 4 ohm coils, meaning nearly 4 amps is drawn with a 15 volt supply)

Speed table:

A list of 28 or 128 customized power settings for each speed step. The table also includes Kick start, forward trim and reverse trim values.

Speed Steps:

Speed steps are the voltage increments which are used to control motor speed. With some decoders, the output power can be set for each speed step. Initially decoders had only 14 speed steps, and to remain backward compatible with older controllers this facility still exists in most decoders, however almost all modellers run now with the much smoother and more refined 28 or 128 speed steps available in all modern decoders. The size of each speed step in volts depends on the total track voltage available. (Available track voltage is divided equally into 14, 28 or 128

speed steps). This is customizable with a speed table, or by using a combination of CV5 (Vmax) and Cv6 (Vmid) adjustments

Spring switch: (or sprung blade point or turnout)

A point which can be run through against the direction in which it is set. Afterwards the blades spring back to their resting position / return it to its original setting. These exist in the prototype as well as the model form.

Square wave:

A wave form with vertical sides and a flat top. The perfect DCC signal is a square wave with little or no distortion, but in fact many brands do not exhibit this desirable form in their output, so can be susceptible to error and control issues with some brands of decoder. This is a good reason to seek out quality product.

Stall Current:

The maximum current draw in amps that a locomotive consumes when stalled. When a motor is prevented from rotating and its maximum rated voltage is applied, the current draw of the motor is known as its stall current.

It is often stated that to be safe, you should ensure that the current rating of a locomotive decoder exceeds the stall current of the motor being controlled. However in practical terms, the operational benchmark is the "slipping current, in which the current draw is measured when the locomotives wheels slip when being held back by a heavy load.

Standards (NMRA DCC S9.x):

NMRA defined Standards (NMRA DCC) which have been created to provide consistency in the way which Digital communication signals are generated and exchanged between DCC control systems, locomotives and accessories. The NMRA membership voted in favor of adopting the DCC Standards in 1994.

Start voltage (or Vstart):

Defined in configuration variable (CV) 02. It controls the voltage sent by the decoder to the motor for the first speed step.

Stationary Decoder:

See accessory decoder.

Stop packet:

A digital signal that commands a locomotive decoder to stop.

Supersonic (High frequency drive or silent drive) decoder:

A Decoder designed to power a DC motor with a very high pulse width modulation frequency which is essentially inaudible to the human ear. (20 to 30 kHz). Using such a high frequency drive eliminates any of the heating tendencies of low frequency pulsed power, making a decoder suitable for any kind of Iron Core or coreless motor.

T

Throttle:

This is the US Generic name for a controller or hand controller. In DCC it is an electronic input device that is used to tell the command station what commands to send to the decoders. A DCC system may have many throttles and a single handheld throttle unit may include more than one control knob and be able to control more than one train at once. Throttles are sometimes also called Cabs.

Track feed: (Droppers)

The short sections of wire which connect the power bus with the track and supply power to that track.

Track Power Bus:

The two wires of the track bus are heavy weight wires that follow the general flow of tracks within a layout. Much shorter "Droppers" or track feeder wires of a smaller diameter than the main bus are used to connect the power from the track bus and transmit it to the rails.

Transformer:

A device used to convert domestic house "mains power" to appropriate an voltage levels suitable for model railroad equipment. One or more transformers may be required to operate a layout and provide power to the DCC system, switch machines, lighting etc. Transformers are always AC, and should not be confused with Power supplies, which are usually DC or AC + DC capable.

Transponder (or transponding device):

Any device that can both transmit and receive information. In DCC it is usually an electronic device which can be installed in any rolling stock and programmed with a specific address. A transponder detector can receive the transponder address and, in some cases, other information which is broadcasts. Like RFID and other methods like RailCom, transponding can be used to locate locos and rolling stock on the layout. Transponding is usually a term associated with Digitrax in DCC, and is not covered by the DCC Standards and RPs.

Trigger:

anything which can cause a device to execute a task. For example, a reed switch can be regarded as a "trigger" for a relay or electronic circuit, an optical sensor or a wheel-set with a resistor added can be triggers for a detection device.

V

Volt(s):

Unit of measurement for electrical potential required or provided by an electric device. This is a gradient or "pressure" measurement.

W

Watt(s):

Unit of measurement for power required or provided by a device. In electrical devices this is calculated by multiplying volts x amps.

Whole layout common rail:

The method of wiring layouts where power districts and their boosters are connected electrically by a common rail or common power bus return wire.

This is not recommended with DCC, however if you want to convert a common rail wired layout to DCC you can, PROVIDING you make sure that all boosters do not share a common system grounding point!

Working Group: (NMRA DCC)

A group of DCC manufacturers and NMRA members who volunteer their time and expertise to create the many Standards and Recommended Practices that constitute the defining documents of digital packet command control systems.

Z

Zero bit stretching:

Process by which one half of the zero bit of the DCC signal, either the positive or negative part of the wave, is made longer to provide power to a conventional dc equipped locomotive motor running on a DCC layout. This was initially an accepted way of allowing a non chipped loco to run on a DCC layout, but experience shows it isn't good for the loco, and interference from the non chipped loco motor can also add a lot of hash to the DCC signal, confusing DCC operations.

So.... We recommend that you do NOT try to run DC loco's on your DCC layout!

Phew.... That took a while to put together...However I am sure we missed lots of important DCC words.

If you have a better description of any function, spotted a mistake or want us to add anything, please don't hesitate to call or email us.