

# Glossary R

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## RailCom

RailCom is the bidirectional (return) element of DCC, although not released at the same time as the main elements of DCC the bidirectional side was introduced in 2011. The subsystem enables selected CV data held within the loco or accessory decoder to be transmitted back to the command station or in the case of loco DCC address to a local block detector. It was originally developed by Lenz the creator of DCC, and is now a RailCommunity standard (RCN-217). Further development is in progress by European companies, and this extension is called RailComPlus (Auto-logon).

RailCom works by having the command-station/booster stop driving the rails between DCC packets and placing a short circuit across the track for approx. 470uS, during the inter-message idle packet and is known as the "cutout", then the decoder generates a 30 mA serial encoded signal on to the track. The data output by the decoder can be in either Channel 1 or Channel 2 or both, Channel 1 is for the loco addresses that the decoder will respond to. Channel 1 data is unsolicited data 2 (6 bit) bytes in size called datagrams, that is to say the data is sent out without being requested and is received and decoded by "local" detectors around the layout in track "blocks". Channel 2 data can be up to 6 bytes of 6 bit bytes and is only transmitted out by the decoder in response to a command sent to the decoder by the command station. This data is received and decoded by only one "global" detector on the system layout. Therefore the maximum data transmitted in the DCC cutout period for CH1 and CH2 is 8 bytes (datagrams).

An example of RailCom Channel 1 detectors are shown here [railcom](#).

RailCom/Plus allows: the identification of unknown trains; block occupancy; transmission of train information, such as its actual speed; and more efficient 'on-the-main' programming. See: [RailCommunity standard](#) and [ESU RailCom Plus](#).

## RailCommunity

RailCommunity is a German organisation made up of primarily DCC decoder manufacturers. Due to the fact that the NMRA (original custodians of the Lenz DCC standards) were not passing on the enhancements being made to the DCC system and making their way into the documented standards at the rate required by mainly the European decoder manufacturers. Although the NMRA DCC standards are still active the RailCommunity was formed to bring the system enhancements and developments quicker so manufacturers and customers alike were quicker informed. So, today the current standards are published by RailCommunity with close involvement with the NMRA, MOROP and BDEF. One slight disadvantage is that although the RailCommunity always up to-date they are only published in the German language. Fortunately, Merg has these German documents translated into English and available for members to view here: [DCC Standards](#)

## Raspberry Pi

[RASPBERRY PI FOUNDATION](#) provide low-cost, high-performance computers that people use to learn, solve problems and have fun.

Two current models of single board computer running LINUX based system with several development environments...

Pi Zero (aka Pi0) 1 GHz single-core CPU, 512 MB RAM, HDMI, USB and 40 pin GPIO (~ £4)

Pi 3 B (aka Pi3) 1.2 GHz quad-core CPU, 1 GB RAM, Ethernet, Wireless, Bluetooth, HDMI, 4 x USB and 40 pin GPIO (~ £35)

## RC filter

A resistance and capacitor network to limit a particular frequency  
Or noise rejection from motors

## Rectification

The process of converting alternating current (AC) to direct current (DC). most often using diodes. The diodes are commonly arranged in a set of 4 combined in one package. See also "Bridge rectifier".

## Reed Switch

The contacts of a reed switch (usually SPST) are closed by bringing a small magnet near the switch. They are used in security circuits, for example to check that doors are closed. Standard reed switches are SPST (simple on-off) but SPDT (changeover) versions are also available. Warning: reed switches have a glass body which is easily broken!



## Regulated power supply

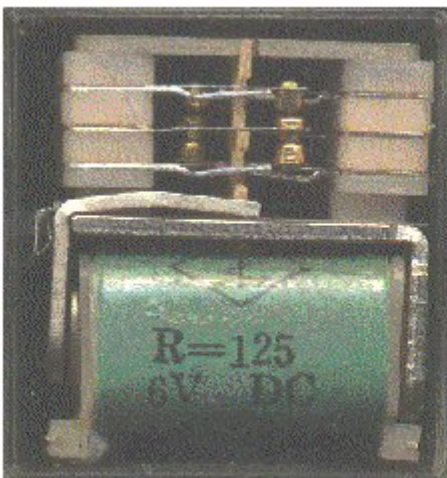
This is a typical simple regulator supply using an LM317 Integrated circuit. Zener diodes can also be





Relays

courtesy Rapid Electronics



Relay showing coil and switch contacts

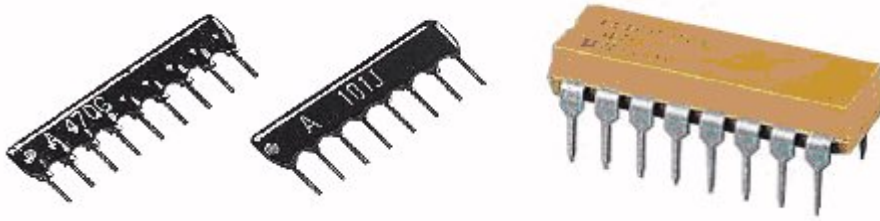
## Resistor

Resistor is the name for an electronic component exhibiting Resistance. Resistance is the property of a component which restricts the flow of electric current. Energy is used up as the voltage across the component drives the current through it and this energy appears as heat in the component.

Resistance is measured in ohms, the symbol for ohm is an omega. 1ohm (written 1R0) is quite small for electronics so resistances are often given in 'k' (kilo) and M (meg). 1k = 1,000 (1k0); 1M = 1,000,000 (1M0). Resistors used in electronics can have resistances as low as 0.1ohm or as high as 10M.

## Resistor network

A set of resistors combined in one package for convenience in assembling circuits. Often abbreviated to "Resnet".



“Resnets” come in 3 basic package types. Pin at one end is common to all (odd number of pins). Individual resistors in single line, pair of pins for each resistor. Individual resistors in DIL, resistors connect to pins on opposite sides of package.

## Resonator

A device used to produce an oscillation of a specific frequency, primarily for use as the clock signal for digital circuits.

## Reverse polarity

The Positive voltage goes to the Negative part of a circuit and vice versa. Used to reverse DC motors in trains.

## RFC

Request for Comment is a way of making a suggestion for a change to some standard or way of working. It is used within MERG for discussion of changes to the CBUS protocol.

## RFID

Radio Frequency **I**Dentification

[Wikipedia: RFID](#)

[MERG Demonstration](#)

### **MERG RFID systems**

The tags generally used in MERG RFID systems have a 40 bit ID number, that is 5 bytes, when transmitted there is then a sixth byte added which is a checksum for data integrity. The tag readers transmit the data over a serial link using [ASCII Hex](#). The start of a message is STX <0x02> this is followed by the 12 ASCII Hex characters of the data plus checksum, some readers then send LF <0x0A> CR <0x0D>, and finally ETX <0x03>. This makes a message of either 14 or 16 bytes in total. The MERG Concentrator replaces the STX with a reader identification letter, A to H or I to P. For CBUS the incoming data is converted back to its original 5 bytes and checked against the checksum. These 5 bytes are then transmitted as bytes 3 to 7 of an 8 byte message. <Opcode><DN/NN Hi><DN/NN Lo><data0><data1><data2><data3><data4>

## Risk assessment

An analysis of the risks and the method of management in a strategy or practice.

## RLSC

Reversed Linked Section Control is a method for the control of the switching of DC power to sections of track on a model railway layout. It is described in Technical Bulletin T32/1 of April 2002. Also see [here](#) for articles on the subject.

## RMS

Root Mean Square. This is what you read on an analogue meter used on AC voltage. It compares to the dc level. So it's an average value. [Wikipedia - RMS](#)

## Road Vehicle Control

Usually refers to a electronic system to control model road vehicles.

## Route setting

This is used when you operate a set of instructions to drive a train from A>>B with all the instructions to operate points and signals.

## RPC

Remote Panel Control. RPC System - Remote Panel Interface ([RPI](#)) (RS232 Single Unit PC Interface Module) Includes [PCB](#) and all components a MERG system  
[Main article](#)

## RPI

Remote Panel Interface. [RPC](#) System - RPI.  
Serial interface module for PC control. RS485 Multi-Drop version. Includes [PCB](#) and all components. a MERG system  
[Main article](#)

## RS232

It is commonly used in computer serial ports. Is a standard for serial binary data signals connecting between a DTE (Data terminal equipment) and a DCE (Data Circuit-terminating Equipment) [w RS232](#)

## RS485

It is commonly used in computer serial ports. RS485 enables the configuration of inexpensive local networks and multidrop communications links. It offers high data transmission speeds (35 Mbit/s up to 10 m and 100 kbit/s at 1200 m). Since it uses a differential balanced line over twisted pair (like EIA-422), it can span relatively large distances (up to 4000 feet or just over 1200 metres). [w RS485](#)

## RSA

The RSA is a RS 232 to RS485 converter a MERG system

## RSE

[RPC](#) System - RSE (Remote Stack Extension)

Allows a stack of [RPC](#) modules to be divided into remotely located parts, connected using standard 4 pair Cat 5 network cables. Includes [PCBs](#) and all components. A MERG system

## RTC

Computer controller train controller from the [RPC](#) collection a MERG system

## RTFM

Read The Flipping Manual

## RTOS

Real Time Operating System.

From:

[https://mail.merg.org.uk/merg\\_wiki/](https://mail.merg.org.uk/merg_wiki/) - **Knowledgebase**

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