# Glossary B

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## Back EMF

Back Electromotive Force (EMF) generally refers to the voltage generated by the rotation of a motor but also to the voltage that will appear across an inductor if the current is changed or stopped suddenly.
Main article

## Baud

Baud in communications refers to changes per second. In the very early days of MODEMs, for example, each bit sent equaled a single change, so baud equaled bits per second (BPS). The terms were initially interchangable. As newer modulation methods (the way the signal is sent or encoded) came along a baud represented more than one bit per second. For example a single baud may have represented two, three or four bits for each change. From that point forward, baud and BPS were no longer the same, though many people still use the terms interchangably. For the sake of clarity, use BPS to represent the number of bits sent per second.
Baud

## BC3

The BC3 is an automatic block control system otherwise known as SuperBloc (QV). It is a development of and compatible with BloNg (Block oriented N gauge). It controls the speed of a model train depending on the occupation of the block ahead. If the block ahead is occupied the train will slow to a creep speed and stop at a designated point. Otherwise the train will accelerate to a preset speed. Manual control is also allowed for.
Literature about it is available from MERG - Technical Bulletins T33/01 to T33/28 although kits have been discontinued.
Main article

## Bell signals

Bell Signals are used as part of a block signalling protocol.

The cadence of the Bell Signals were used to convey information. An example would be two bell rings would mean a train is entering a section and two rings followed by one ring may mean the train is clearing a section.

Though there are some commonly used bell signals, different railways at different times have had

their own signaling schemes.
THE SIGNAL BOX website - Block System

## BGA

Ball Grid Array; a method of permitting a large number of connections in a smaller footprint for large scale Integrated Circuits. See BGA

## Bipolar

Within the context of the MERG Glossary **Bipolar** can refer to:

- BJT or Bipolar junction transistor
- DCC Track voltage
- Bipolar Turnout motor

The term is most commonly used for Bipolar disorder, aka manic depression, which is a mental disorder characterized by mood shifts.

## Bistable

A Bistable is a circuit with two stable conditions so that it can be switched between the one and the other and hold it indefinitely.

## Bit

A single 'Bit' of information that can either be 'True', 'On', 'Set' (1) or 'False', 'Off', 'Clear' (0).
The bit (a portmanteau of binary digit) is a basic unit of information used in computing and digital communications. A binary digit can have only one of two values, and may be physically represented with a two-state device. These state values are most commonly represented as either a 0 or 1. Bit

## Bite

A term used in some MERG documentation to refer to the indentation on DIL integrated circuits and the sockets used to mount them. This Bite or Notch indicates the end where pin 1 is located. The pins are numbered anticlockwise, so with the Bite facing away from you pin 1 is the top left.

## Block Control

Block control is the philosophy that a railway should be divided into blocks and that no train should

normally be allowed to enter a block which is already occupied. This means that each block has a stop signal at which a train is required to wait if the block ahead is occupied. Further back there will be a distant signal which informs the driver that he needs to slow because the signal ahead is at stop. Modern electric signalling systems allow for more variation in slow signals with the a double yellow as a preliminary caution as well as the yellow caution to give two stages of slowing.
http://www.signalbox.org/block.shtml

## Block occupancy

Block Occupancy In the traditional block sytem of working between signal boxes block occupancy is shown by the block instruments showing “Train on Line”. In more modern automatic block systems “Track circuits” are used these work by passing a current through the rails from a supply at one end of the block to a relay at the other, train wheels short out the relay to show block occupancy, essentially the relay energised proves that the block is clear. An alternative to track circuits is axle counters which count all axles in and out of a block and hence determine the state as occupied or clear.

## BloNg

The Block oriented N-Gauge (or “BloNg”) system was a method for automatic block control developed originally for an exhibition layout by the South-West Area Group of the N-Gauge Society (now the Exeter N-Gauge Railway Modellers). It employed a controller per block, colloquially known as “the BloNg”. The MERG superBloc system with its BC3 controller resulted from a collaboration between that Group and the Oxford MRS, who also model in 00. The BC3 therefore now replaces “the BloNg”, with which it is electrically compatible.

## Boolean

Boolean logic is the convention used in mathematics and circuitry for digital decision making. These are written as a statement which can be TRUE or FALSE. These statements can be joined by Boolean operators to form more complex statements which also are TRUE or FALSE. These statements have their parallels in electronic logic where the conditions of TRUE or FALSE are represented by the presence or absence of voltage and the operators are integrated chips.
There is nowhere in Boolean for MAYBE or DON'T KNOW.
http://www.ithacalibrary.com/sp/subjects/guide.php?subject=boolean

## Booster

A Booster in DCC is a second power supply to increase the power available from the main master power supply. This may also have the facility for voltage inversion to allow for reverse loops etc but this is more cheaply handled by a specific reversing module. It can also help to reduce potential damage and problems by being used to divide the whole layout into separate sections each supplied by a booster so that shorts in one section do not affect another and the potential current is reduced to

that available from one booster.

## BootLoader

The majority of Microcontrollers available today have Flash Memory as their program storage. A **BootLoader** is a special section of program, stored in a protected area of memory, which can overwrite any area of memory except its own. By this means the PICs used in the CBus system modules can have their firmware updated via the BootLoad facility of the FCU. The ATC Automatic Train Controller has a similar arrangement but requires a Bootloading attachment.

## Bps

Bits per second. In telecommunications and computing, bit rate (sometimes written bitrate or Rbit) is the number of bits that are conveyed or processed per unit of time. In digital multimedia, bit rate is the number of bits used per unit of time to represent a continuous medium such as audio or video. It is quantified using the bit per second (bit/s) unit or some derivative such as Mbit/s.
While often referred to as “speed”, bit rate does not measure distance/time but quantity/time, and thus should be distinguished from the “propagation speed” (which depends on the transmission medium and has the usual physical meaning).

## Bridge rectifier

A diode bridge (occasionall called a Graetz bridge) is an arrangement of four diodes connected in a bridge circuit that provides the same polarity of output voltage for any polarity of the input voltage.
Main article

## Buffer

In computing, a buffer is a region of memory used to temporarily hold output or input data, comparable to buffers in telecommunication. The data can be output to or input from devices outside the computer or processes within a computer. Buffers can be implemented in either hardware or software, but the vast majority of buffers are implemented in software. Buffers are used when there is a difference between the rate at which data is received and the rate at which it can be processed, or in the case that these rates are variable, for example in a printer spooler.
The difference between buffers and cache:

- Buffers are allocated by various processes to use as input queues, etc. Most of the time, buffers are some processes output, and they are file buffers. A simplistic explanation of buffers is that they allow processes to temporarily store input in memory until the process can deal with it.
- Cache is typically frequently requested disk I/O. If multiple processes are accessing the same files, much of those files will be cached to improve performance (RAM being so much faster than hard drives), it's disk cache.

In Hardware a buffer is a digital or analog stage used to isolate a signal source from the following

circuit's loading. This might be the case in Digital where a single output is required to fan out to multiple inputs. In analog it is usually the means to connect a high impedance signal source to much lower impedance circuits, normally with unity gain.

## Bus

An electrical bus (sometimes spelled buss) is a physical electrical interface where many devices share the same electric connection. This allows signals to be transferred between devices (allowing information or power to be shared). A bus often takes the form of an array of wires that terminate at a connector which allows a device to be plugged onto the bus.

- Buses are used for connecting components of a computer: a common example is the PCI bus in PCs. See W computer bus.
- Buses are used for communicating between computers (often microprocessors). See W computer bus.
- Buses are used for distribution of electrical power to components of a system. The (usually) thick conductors used are called busbars. In an electrical laboratory, for example, a bare bus-bar will sometimes line the wall, to be used by the engineers and technicians for its high electrical current carrying capacity, which allows a convenient approximation to zero voltage, or ground in the US, and earth in the UK. See W BUSBAR

## Byte

The byte is a unit of digital information that most commonly consists of eight bits, representing a binary number. Historically, the byte was the number of bits used to encode a single character of text in a computer[1][2] and for this reason it is the smallest addressable unit of memory in many computer architectures. W Byte