

Glossary B

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Back EMF

Back EMF generally refers to the voltage that will appear across an inductor if the current is stopped suddenly and in particular to the voltage generated by the rotation of a motor.

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Baud

Most people use baud to describe modem speeds in bits per second-but they are wrong. They may say a 9,600-bps modem transmits at 9,600 baud, but really baud is a measure of how frequently sound changes on a phone line. Modern modems transmit more bits with fewer changes in sound, so baud and bps numbers are not equal. However, only editors, pedants, and communications engineers now care about the distinction. But if you run into members of these groups, use bps instead of baud.

<http://www.cnet.com/Resources/Info/Glossary/Terms/ baud.html>

BC3

The BC3 is an automatic block control system otherwise known as SuperBloc (QV). 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. Kits for the [BC3](#) and literature about it is available from MERG - TBs T33/0-20.

The BC3 kit is No38 Nos 39 and 40 are a test jig and a setting up kit. Kit instructions for 38 and 39 are available from MERG.

http://merg.org.uk/merg_resources/superbloc.php

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Bell signals

Bell Signals were used to convey information from between signal boxes.

<http://www.signalbox.org/block/bells.shtml>

BGA

BGA stands for Ball Grid Array. If you look at a large scale integrated circuit (LSI) of any kind you will see either lots of pins on the bottom for plugging it in or lots of tiny legs on the side. The side legged

ones are called Quad Flat Packs (QFPs) in some cases and are considered surface mount parts. The pinned ones are normally through hole parts that insert into a Zero Insertion Force (ZIF) socket like a CPU (Central Processing Unit) on a computer motherboard.. Imagine if all the pins on one of those were filed flat on the bottom of that LSI chip. The metal circles that remain could each have a wire soldered to them and then wired into the circuit. A BGA part comes that way with gold circles underneath the chip or, in some cases, a row of flat spots under the edges. To solder them to a board, a BGA part has matching spots on the PC Board which, like other surface mount parts, must have a dab of flux applied with tiny balls of solder in the flux. Those are the “balls” in the BGA nomenclature. You put only the slightest amount of solder and paste and then set the BGA part precisely in place. Heat it with hot air or a reflow oven and the part bonds quite strongly with the board.

Bipolar

Bipolar transistor - presumably not bipolar disorder or manic depression.

http://en.wikipedia.org/wiki/Bipolar_junction_transistor

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.

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. This will be set back 0.25 mile from the start of the next block. 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 (The [ToTI](#) of the real railways) is detected by the electric track circuit which detects

the presence of a train by conduction between the rails via the wheels. In the past some leading turnouts had a lock which was applied by a treadle on the near approach which applied a local mechanical lock when it was depressed by the passage of wheels.

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.

http://merg.org.uk/merg_resources/superbloc.php

<http://www.ngauesociety.com/index.php?page=area-groups>

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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.

Bps

Byte 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 (occasionally 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.

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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:

- Unordered List ItemBuffers 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.
- Unordered List ItemCache 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 computer bus.
- Buses are used for communicating between computers (often microprocessors). See 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 busbar 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.

In analysis of an electric power network a “bus” is any node of the single-line diagram at which voltage, current, power flow, or other quantities are to be evaluated. These may or may not correspond with heavy electrical conductors at a substation.

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