

# Glossary P

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## Parallel

1. Pertaining to the shunt connection of components or circuits.
2. Pertaining to the type of operation in a computer when all elements in an information item (e.g., bits in a word) are acted upon simultaneously, rather than serially (one at a time)
3. The condition in which two comparably sized objects or figures are equidistant at all facing points parallel).

## PCB

Printed Circuit Board. Are usually made of [Fibreglass](#) or [SRBP](#) (Synthetic Resin Bonded Paper) with a copper laminate on one or both sides, forming the electrical circuit. A detailed Wikipedia article is available [here](#). Most [MERG Kits](#) contain a PCB, the majority of them are single sided through hole construction. As the electronics become more sophisticated so double sided and surface mount technologies are being introduced.

## PCB software

Software for producing the "Gerber" files which are used in the etching process to produce the required PCB's

## Peco motor

The PECO implementation of the Point motor, notable because they are constructed so as to be directly attached to both N and 00 gauge PECO track, thus making it easier to line up the pull and throw of the point

## PEI

[Polyetherimide](#)

Used for the printable surface on some 3D printers, especially the Prusa range

## Phase

1. The angular relationship between two points in time of a sine wave.
2. The angular relationship between two sine waves simultaneously.

## PIC

Peripheral Interface Controller. A complex integrated circuit which may be programmed to carry out a controlled sequence of events, ie certain output events controlled by an input event.

A brand of micro processor chip from Microchip, often used in MERG projects. Eg PIC18F2480.

## PICKit

A device marketed by [Microchip](#) for programming their PIC microcontrollers. Beware of imitations.

The pin out of the PICKit differs from that of the programming connector on MERG CBUS boards, see [here](#) for details of how to build a connecting lead. A useful pdf is available from the [Picprijects website](#), detailing the pin out of various PIC packages.

## PiSo

**Parallel in Serial out**, refers to a type of [Shift Register](#) where data present on a set of input pins is captured by application of a strobe pulse and then presented on a single output pin under control of a [clock](#). For a graphic description see [Shift in/out](#).

## PLA

⚠ [Polylactic Acid](#) a plastic used in 3D printing

⚠ [Programmable Logic Array](#) a kind of programmable logic device used to implement combinational logic circuits.

## PM

### Phase Modulation

Phase Modulation. A specialist modulation mainly used in Radar equipment, the phase rather than the frequency of the carrier wave is varied in order to obtain information

### Pulse Modulation

There are basically 3 forms of pulse modulation, Amplitude, Position, and width, each having its own

characteristics and uses. This type of modulation may be superimposed onto RF or on DC voltages.

## PMD1

A piece of electronic kit designed by Gordon Hopkins which may be used to switch fast action point motors See TB G16/14

## PMD2

A piece of electronic kit designed by Gordon Hopkins which may be used to switch slow action point motors See TB G16/15

## PMR1

Solenoid Point motor /relay driver with on board relay see TBG16/26

## PMP

Pocket Money Project. Excellent simple, basic and inexpensive kits to learn basic electronic theory and techniques such as soldering. Currently there are 23 Kits and most cost less than £2.00. You can find them in the Kit Locker [here](#).

## PNP

A bipolar junction transistor in which the emitter and collector layers are p-type semiconductor material, and the base layer is n-type semiconductor material. See also [NPN](#) and [Transistor](#)

## Point Motors

An electro mechanical device for switching points. There are many examples of point motors, some are fast solenoid switched and others slower acting motor switched

## Points

A track based device for manually or electrically switching one input track to two or more tracks, or two or more tracks into one track. Also called turnouts in NA.

## Polarity

1. The condition of being electrically positive or negative.
2. The condition of being magnetically north or south.
3. The orientation of the positive and negative poles in a battery or power supply relative to a circuit.
4. The orientation of a magnetic field, relative to the surrounding environment.

## Positive

1. The condition of being electrically positive or negative.
2. The condition of being magnetically north or south.
3. The orientation of the positive and negative poles in a battery or power supply relative to a circuit.
4. The orientation of a magnetic field, relative to the surrounding environment.

## POR

Power ON reset i.e. just turning the power on to the whole system.

## Pot

Abbreviation for Potentiometer see below

## Potentiometer

1. A variable resistor used as a voltage divider. The input voltage is applied across the entire resistance element and the output voltage is taken from the wiper, relative to one end of the element. One end is usually grounded (at zero potential).
2. A null device whose operation is based on a variable resistor, and is used for precise voltage measurements. The unknown voltage is applied to the input of a variable resistor whose settings are known with great accuracy; the resistance is adjusted for an output voltage that exactly equals the voltage of a standard cell (as indicated by a null between the two voltages). The unknown voltage is then determined from the resistance and the standard-cell voltage.

## Power district

Power to the track is divided into sections. Can be to assist fault finding, to avoid shutting down the whole layout if a short occurs, and in large layouts to provide separate power supplies one to each district.

## Power pack

A controller including a power supply to the track.

## Programming

The activity of entering a list of instructions that a computer can act on. That is “run” the programme. These instructions take the form of a programming language that the computer can understand.

## Progressive cab control

The means to facilitate manually driven trains following one another on the same track but in different electrical sections powered by different controllers. (See MERG Journal Autumn 2005 page 10 (August 2005) and Winter 2005 (January 2006) page 10 )

## PSU

Power supply unit  
See also [Dirty PSU](#)

## PTP

RPC System - PTP (Point-to-Point)  
Self contained (non-PC) automatic data transfer system for up to 960 functions each way, using standard [RPC Modules](#). Includes PCBs and all components.

## PTP-Lite

Multiplex system using a RS485 bus, matching pairs of input and output modules communicate under the control of a master module.  
For details see these TBs: [LC02/01](#), [LC02/02](#), [LC02/03](#), [LC02/04](#) & [LC02/05](#).

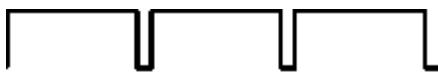
## Pulse

Can be any shape and is normally a short period of time. A rapid change of voltage or signal for a short duration.

# PWM

Pulse Width Modulation is a technique used to control devices such as motors and lights to vary the amount of power supplied to the device. The power supply to the device is switched between off and on such that the average power to the device can be varied between 0% - always off to 100% - always on. For example if the wave form is switched so that a motor is connected to power supply for 75% of the time then it will receive approximately 75% power and run at a slower speed. The frequency at which the switching takes place will affect the behaviour of the motor but is typically between 100Hz and 20KHz.

## Pulsed output



90% duty cycle ( $T_m = 9T_s$ )



50% duty cycle ( $T_m = T_s$ )



10% duty cycle ( $9T_m = T_s$ )

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