

Glossary H

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Hall effect

This a transistor type that is affected by a magnetic field placed in close proximity
See MERG TBs A7/2/ 3/ 4 merg members only

Handset

Is a means of control in your hand.



Handshaking

In information technology, telecommunications, and related fields, handshaking is an automated process of negotiation that dynamically sets parameters of a communications channel established between two entities before normal communication over the channel begins. It follows the physical establishment of the channel and precedes normal information transfer.

Happening

A term devised, and introduced in the documentation for Universal CANMIO, for an event that is internal to the module to distinguish it from an external event (on the bus). For instance, say input 1 changes from high to low, in early modules of the CBUS range this would simply produce an ON event with EN (Event Number) of 1, in the Universal code for the CANMIO it produces a 'Happening' with a value that indicates input 1 ON. Through the configuration process this may be mapped to produce

that same event or something entirely different.

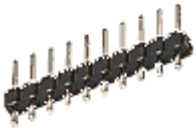
HASL

Hot Air Solder Leveling

HASL = hot air solder levelling - the bare copper of the etched PCB would soon oxidise and refuse to take solder, so a thin layer of "something" is added to make the shelf life longer. The standard HASL provided by Chinese manufacturers is leaded solder. More expensive options are lead free solder, organic solderable varnish stuff, nickel, or gold flash.

Header plug or socket

Are plug & sockets primarily for use on PCB boards to make connections to and from the board



Heat sink

Waste heat is produced in transistors due to the current flowing through them. Heat sinks are needed for power transistors because they pass large currents. If you find that a transistor is becoming too hot to touch it certainly needs a heat sink! The heat sink helps to dissipate (remove) the heat by transferring it to the surrounding air.



<http://www.kpsec.freeuk.com/components/heatsink.htm>

Hector

This is a track detector ([ToTi](#)) using an optical system to detect the location of a train. Merg kit (for members only)

Hexadecimal or Hex

Computer data is a collection of binary bits, ones and zeros. Programmers generally collect bits into

convenient sets of four bits (a nibble) or eight bits (a byte).

When it comes to writing and speaking the values of bits, rather than saying the value is 10010011, it is simpler to break the bits into small chunks and use a different number system. In the past collecting sets of three bits was common (Octal or base 8) but today sets of four bits are generally used (Hexadecimal or base 16).

Binary uses two characters to count before moving/carrying to the next column (0 or 1). Decimal uses ten characters (0 to 9). Hexadecimal uses 16 characters (0123456789ABCDEF). For example, binary 1110 has ones in the eights, fours and twos columns. So binary 1110 equals 14 in decimal, which is the letter E in Hexadecimal.

You can say the address of a byte of data in memory is at location 0101010010101001 in binary or at 21,673 in decimal. Alternately the binary number is broken into sets of four bits (0101 0100 1010 1001) and each set is converted to a hex number (5 4 A 9). So it can be said that the byte of data is at memory location 54A9. The four digit 54A9 is easier to remember, shorter to say and less error prone to write.

When a hex number is used in a program or written text, it is usually preceded by some characters to identify which number system you are using. Consider the number 100. In decimal this is one hundred. In binary this is four. In hex it is two hundred fifty six (0001 0000 0000). If you mean 256 then some programmers and programs would put a letter combination such as '0x', '0h' or # before the number (0x100) or a letter such as H or h after (100h). In the MERG forum you will generally see hexadecimal 100 shown as 0x100.

ASCII Hex

When sending numeric information over a serial link such as RS232 or RS485 it is not possible to send it as raw binary data as some of the possible 256 byte values have special meaning and are used to control the information flow, for an explanation of this see [ASCII](#). Instead each data byte is split into two hexadecimal digits and transmitted as text. For example the value zero, which would be 8 zero bits is transmitted as '00' that is <0x30><0x30>, value 255 which would be 8 one bits becomes 'FF' that is <0x46><0x46>.

High

This what we call greater than the base voltage or ground e.g. so high is 5v ~ 4.4volts above 0

H0

Scale and gauge common in America, Asia and Europe but excluding UK. Scale 1:87, gauge 16.5 mm.

HYPOTRAC

This a high voltage track detector system for 2 rail Model railway track , see TB T9/2 merg members only

Hysteresis loop

Hysteresis is well known in ferromagnetic materials. When an external magnetic field is applied to a ferromagnet, the ferromagnet absorbs some of the external field. Even when the external field is removed, the magnet will retain some field: it has become magnetized.

[W Hysteresis](#)

The term is also used to refer to one of the display modules often to be seen on the [MERG exhibition stand](#). This is because the track layout on the module resembles the graph of a [hysteresis loop](#).

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