LED DISPLAY VACABULARY

Display Matrix or Array **-** The display area of a programmable display is composed of rows and columns of "pixels". The term pixel is short for "Picture Element". Turning on or activating specific patterns of pixels within the display matrix forms the characters and graphics of a message.

Full Matrix Display **-** A display in which the full display area is populated with LEDs. A full matrix display allows character size changes and use of graphics.

Character Matrix **-** A display in which only predetermined character areas are populated with LEDs. Character matrix displays can produce only the preset character height and are unsuitable for graphics.

Line Matrix **-** A display in which only predetermined line/row areas are populated with LEDs. Line matrix Displays are most often used for displaying text information in rows.

LED (Light Emitting Diode) **-** An LED is a tiny chip of silicon made to produce light in a variety of colors including red, green, orange, yellow, and blue.

LED and Display Colors **-** Bi-color LEDs are made in one of the following combinations; red and yellow, red and green, or orange and green. Discrete single color LEDs are enhanced by manufacturing the LED in a colored lens capsule.

Most indoor programmable LED displays today use either all red LEDs or they use red and green bi-color LEDs. To a lesser extent, all amber is sometimes selected.

Number of Pixels **-** LED displays are described by the number of rows by the number of columns. Example a 32 x 128 display has 4096 pixels.

Types of Pixels **-** The pixel can be one or more LEDs. A discrete LED is one individual diode. LED blocks and clusters are multiple LEDs installed as a single unit.

Pixel Light Sources **-** LEDs are significantly less expensive than incandescent lamps. LEDs are also less expensive than monitors over a life of 10 years.

LEDs have an expected life of > 100,000 hours of being lit, or from 11 to more than 20 years under normal operation. The longer life dramatically lowers maintenance expense compared to monitors or lamps.

LEDs need very little power and generate less heat than other light sources. Less power and heat mean lower operating and maintenance costs.

LEDs are small and lightweight. This lowers the cost of the enclosure and installation.

Discrete LEDs **-** Individual LEDs are inserted one at a time into a circuit board. The anode and cathode lead wires are then individually soldered to the circuit board. A pixel may be composed of either one LED or of several LEDs installed close together. LEDs grouped together appear as a single pixel when all the LEDs in the group are lighted at the same time. A group of LEDs in a single pixel may contain more than one color LED. Turning on the appropriate combination of LEDs in the pixel produces the various colors.

Data Block Modules - Data block modules are LEDs mounted on a rectangular circuit board and epoxied into block modules that contain a specific number of rows and columns of pixels.

Clusters - When a brighter pixel is needed, multiple LEDs are assembled in "Clusters" of LEDs that together form one pixel point when they are lighted. Multiple LEDs are connected to a molded cup, which is then filled with clear epoxy to hold the LEDs in place. Clusters may contain one color LED, or in a multi-color application the cluster may contain a combination of different color LEDs.

Tile Modules - To simplify the assembly of larger displays and to permit more flexibility in the design and construction of displays, we produce sub-assemblies that contain a specific number of rows and columns of pixels.

Pixel Diameter - The size of a pixel is stated by the diameter of the pixel. A pixel can be as small as a single .2" diameter LED.

Center to Center Spacing - The distance from the center of one pixel to the center of the next adjacent pixel is called "center to center spacing" or "pitch".

Brightness - The output intensity or brightness of an LED is measured in millicandela.

The most common technique used in indoor displays to get the greatest brightness is multiplexing. The LEDs are strobed rapidly, faster than the eye can detect, one at a time. This method limits the brightness of each pixel since the pixel is only turned on for a sequence of brief instances.

When an LED is latched on, it is lighted continuously until it is turned off again. This produces brighter pixels. Data block modules can only be multiplexed. Discrete clusters are usually latched.

Resolution or Density - Pixel diameter and center to center spacing define the resolution or density of the characters being displayed. The closer the pixels are to each other, the higher the resolution. Low-resolution characters are designed for distance viewing.

Viewing Distance - The size of the display and the size of its characters are defined by the application. A rule of thumb for determining how large characters must be to be easily read is to allow one inch of character height for every fifty feet of viewing distance. Example, 2" text is readable to about 100'. Remember that this is a rule of thumb and application conditions will effect viewing distance.

Programming - Programming sets the characteristics of the characters used in the message; font, size, color, and position; as well as any special effect.

Special Effects - Special effects are the method that graphics and messages appear on and disappear from the display. A list of possible special effects include:

Scroll on from left or right	Scroll on from top or bottom
Twinkle on	Reveal from middle
Fade in/out	Horizontal line drop
Jump on/off	Border On

Playfile - The full graphic content group of frames created in WinPlay or ComPlay designed to send to your display. A Playfile may have as many as 50 frames or as few as 5, depending on the purpose of the content.

Let us be the exclusive electronic display division of your company, allowing you to provide your Customer the power to engage, entertain and reach a broader base of consumer!
WE ARE YOUR SOURCE FOR PREMIUM LED DISPLAYS!