



6 TECHNOLOGY POINTS TO KNOW BEFORE BUYING AN LED SIGN



1

BULB TYPES

What bulbs does the LED sign use?

DIP

Digital screens using DIP generally separate the key colors **red, green, and blue** (R, G, B) on different LED bulbs.

Occasionally another red LED will be added resulting in one green, one blue, and two red lights in a square shaped pixel.

Digital displays using DIP are **less expensive** to manufacture, but their **resolution is lower** due to older technology.

SMD

Digital screens using SMD integrate **all three key colors** (R, G, B) **into one bulb**, resulting in a much smaller and more compact LED panel.

Digital LED panels using SMD have a dramatically brighter screen. Since the technology used in SMD screens is more advanced, it has a higher picture quality and displays a more vivid image.

SMD screens run on **lower voltages** and use **less power** overall. The increased energy efficiency produces less heat, which leads to reduced breakdown of components. This allows for a **longer lifespan**.

2

MODULES

What are modules?

An **LED module** is the basic building block of an LED sign. The module houses the LED bulbs and the PCB, and provides protection for the electrical connection between the two.

How are modules fitted together?

Modules are fitted together by being placed into a **cabinet** or a **frame** designed for the size of module by the manufacturer. These cabinets are typically made out of sheet metal.

How are modules waterproofed?

For waterproofing, standard LED modules are constructed with plastic backing and drenched in silicone to keep out water.

An alternative to plastic and silicone waterproofing is encasing signs in **high quality aluminum** that keeps water out and disseminates heat effectively.

How are modules cooled?

Heat that is released from LED bulbs needs to be released, especially as **pixel pitch decreases** and bulbs are closer together. Many LED signs rely on fans blowing on the back of electronic components to create air flow and to blow hot air away from the sign.

GDTEch uses aluminum to create a **heat sink** at three different channels, from the bulbs, to the modules, to the cabinet. Each effectively eliminates heat, which means there are no need for fans.

3

PCB

What is a PCB?

A PCB, or printed circuit board, connects electronic components.

For an **SMD LED sign**, the bulbs are mounted on the PCB.

What to look for in a PCB:

The typical PCB is 2 to 3 layers thick. The more layers a PCB has, the more **sturdy and stable** it is. So, look for a PCB with **more layers** to last longer.

4

REFRESH RATE



REFRESH RATES

refer to how frequently the image on a digital display is **refreshed**, referred to in terms of hertz.

The higher the refresh rate, the better the screen will appear.

Hertz refers to one cycle per second, so 3950 Hz would be 3950 refreshes every second.

Higher refresh rates means a **clearer image**.

5

COLOR

How many colors can the display handle?

An important consideration for an LED display is the color capabilities. How many colors can the LED sign effectively produce?

The more colors produced, the more **brilliant** and **clear** the display will be.

How does the display handle grayscale?

Many signs do not handle grayscale well because of the difficulty in accomplishing different shades of gray. If you want to use your sign for night displays, this is an important consideration. The industry standard for grayscale is 14 bits. GDTEch's signs can reach **16 bit grayscale**.

6

BRIGHTNESS

How is brightness measured?

Brightness for LED signs is measured in **nits**.

How many nits should a sign have?

A sign needs to have **more nits than direct sunlight** in order to appear bright in daylight. Sunlight is 5,000 nits. The brighter the sign, the more visible it will be in daylight.

DIP STANDARD

DIP standard is 18,000 nits.

DIP signs can achieve a high brightness, but are much less energy efficient and have a lower resolution.

SMD STANDARD

SMD standard is 5,500 nits.

SMDs have lower brightness than DIP, but are more energy-efficient and high resolution.



WANT TO LEARN MORE ABOUT
HOW GDTECH TAKES LED TO
THE NEXT LEVEL?

