LED video wall

Technical Specification

And Essential knowledge

Model - HLB-P6

outdoor fixed Installation

1. Definition

Q1-1 What does LED mean?

- LED means Light Emitting Diode.
- LED is a two-lead semiconductor light source.

Epoxy lens/case
Wire bond
Reflective cavity
Semiconductor die
Anvil
Post } Leadframe
Flat spot

+ Anode   **—** Cathode

Q1-2 What are common types of LED?

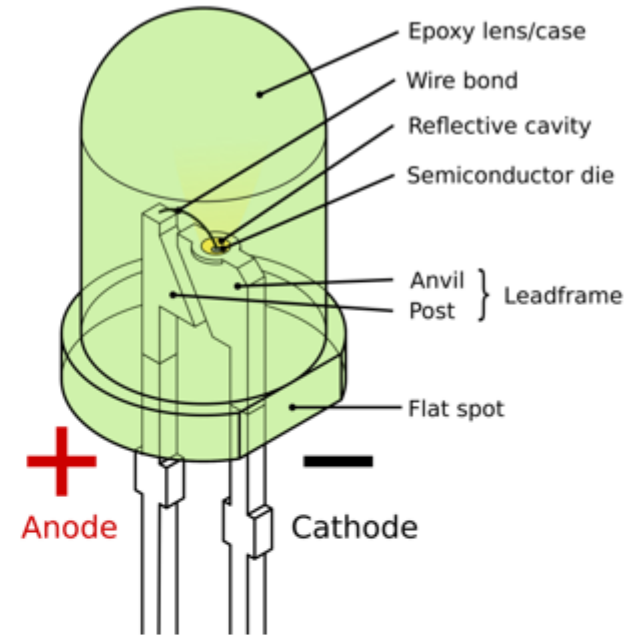A. Oval type RGB lamp
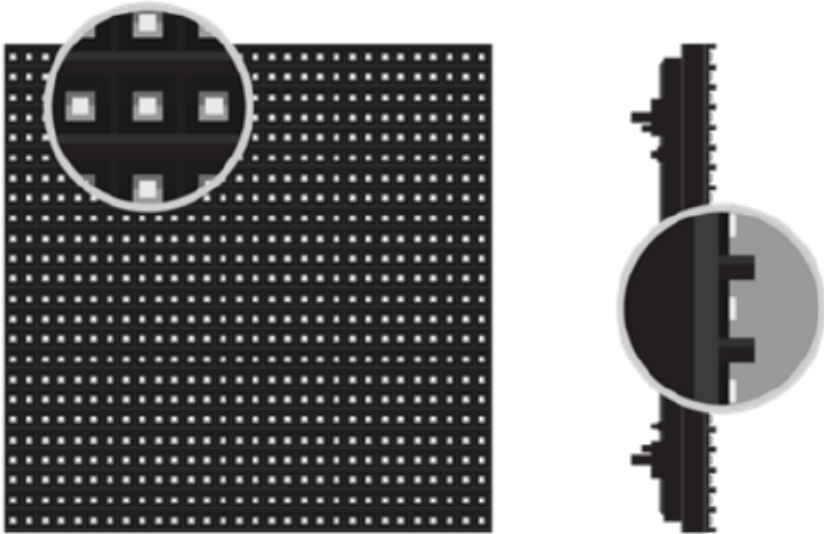
- DIP LED are plastic capsules containing individual LEI

B. SMD (Surface Mounted Device) 3-in-1 type

- Very Small in size as all three RGB diodes are on the Single chip

SMD type

SMD LEDs

Benefits of SMD:

- Outstanding color blending at short viewing distance
- No color shift at extreme angles
- Wide viewing angle

☞ **Outdoor SMD is white face where as indoor tends to use black face SMD for higher contrast**

What is Pixel Pitch?

➤ **The LED sign industry uses pixel pitch as a standard measurement to indicate the resolution of LED display based on the spacing of LED pixels.**

➤ **The Pixel Pitch of LED display is derived by measuring the distance between each pixel.**

➤ **Increasing the pitch is going to spread out the pixels and give you a lower resolution.**

➤ **A smaller pitch is going to compress the pixel spacing and result in a higher resolution.**

THD
DIP
OVAL

SMD

10 mm
Pixel Pitch

4mm
Pixel Pitch
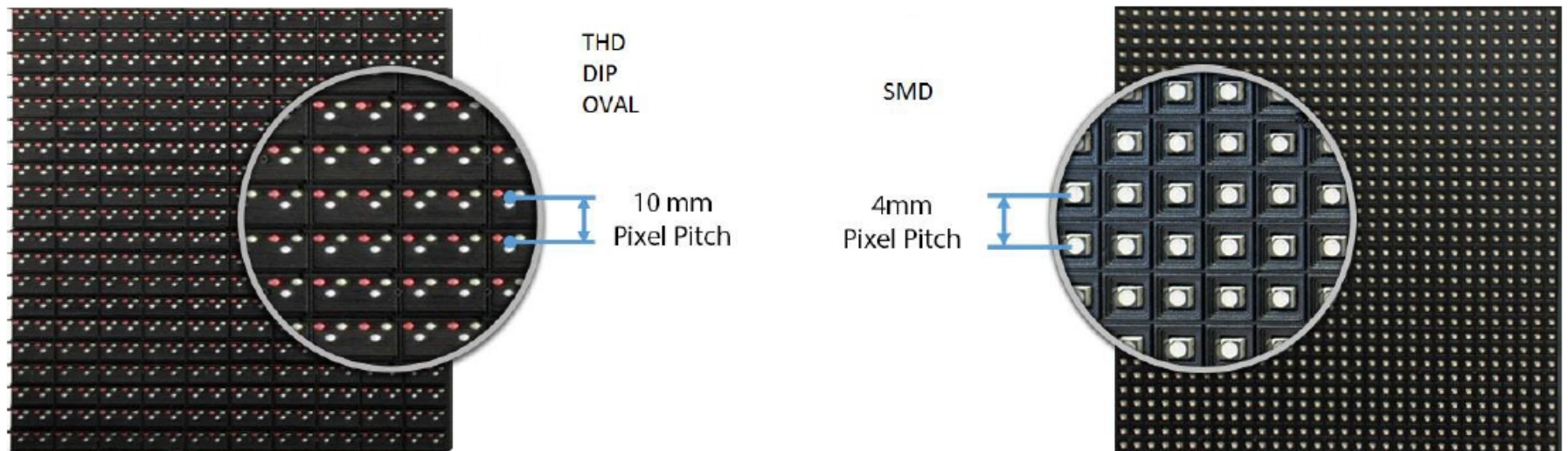
Resolution

What is Resolution?

➢ Resolution is the number of pixels contained in the physical area of an LED display.

➢ The greater the number of pixels per square meter, the greater the amount of detailed displayed.

➢ Resolution is determined by display size, pixel technology, pixel pitch and viewing distance.

How to calculate LED display Resolution?

$$\text{Screen resolution} = \frac{\text{Width (mm)}}{\text{Pixel Pitch (mm)}} \times \frac{\text{Height (mm)}}{\text{Pixel Pitch (mm)}}$$

Example:

Screen size = 14.4 x 2.88 m (W x H) = 41.472 m^2

Pixel Pitch = 6 mm

Screen resolution = 14400/6 x 2880/6 = 2400 x 480 = 1,152,000 pixels

Pixel Density = Total screen resolution/ screen area = 1,152,000 / 41.472

= 27,777.7778 pixels/ m^2

Viewing Distance

➤ In order to achieve the optimal viewing experience of the LED Display, the Spectator has to be within the viewing distance and viewing angel.

➤ Within the display coverage area, all the LED Pixels will blend together to give a superior image to the individuals, falling outside the viewing reach will affect the display image, contrast ratio and resolution.

➤ Minimum viewing distance in meters can be considered to be same as LED display pixel pitch in mm; for example:

P4 LED display → Minimum viewing distance = 4 m, P10 LED display → Minimum viewing distance = 10 m

Minimum Viewing Distance: Pitch x 1

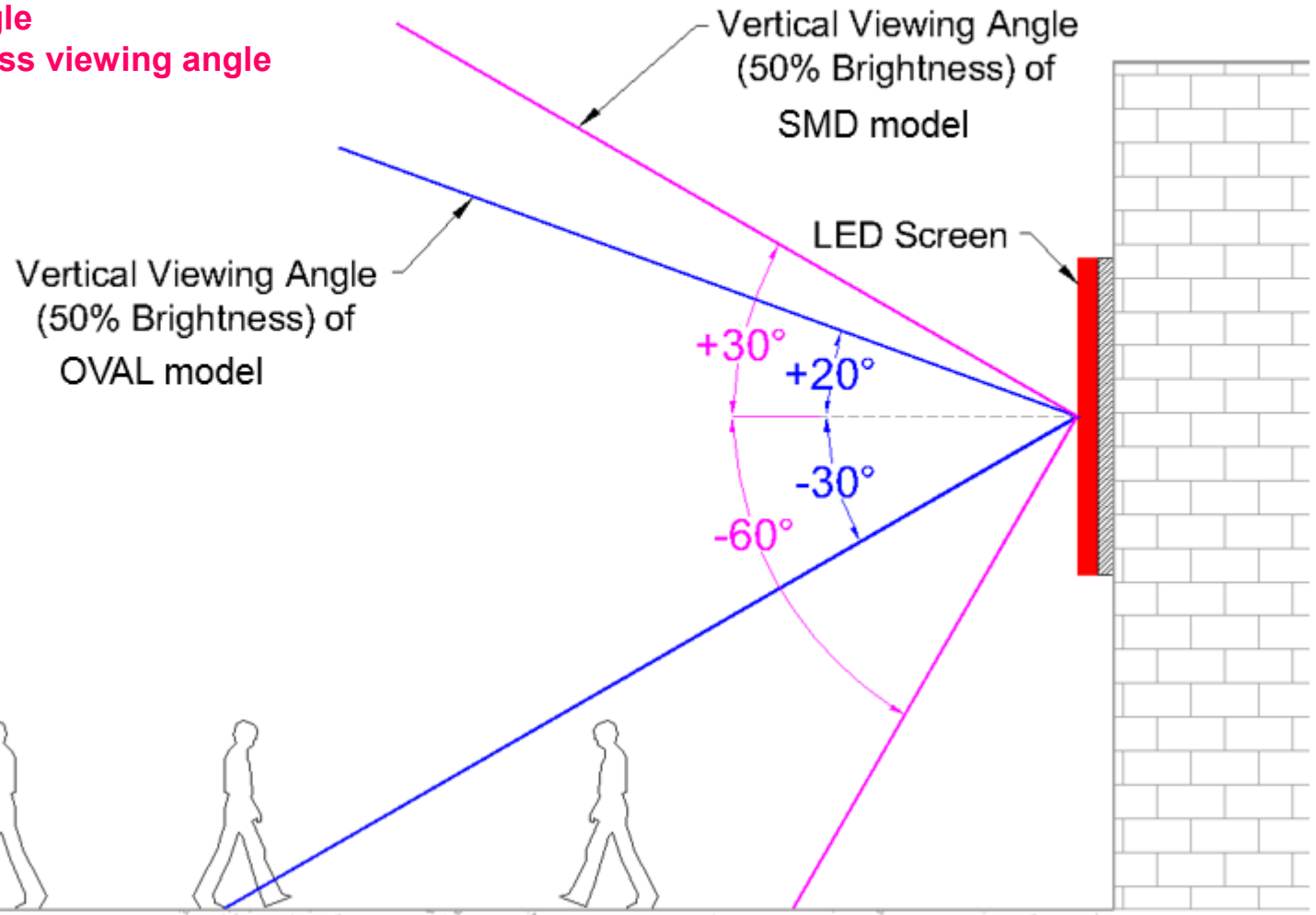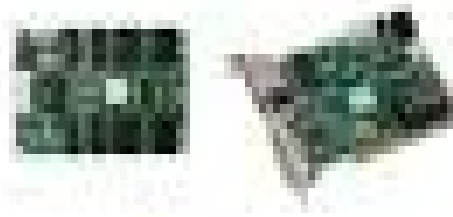**Optimum Viewing Distance: Pitch x 2.5**
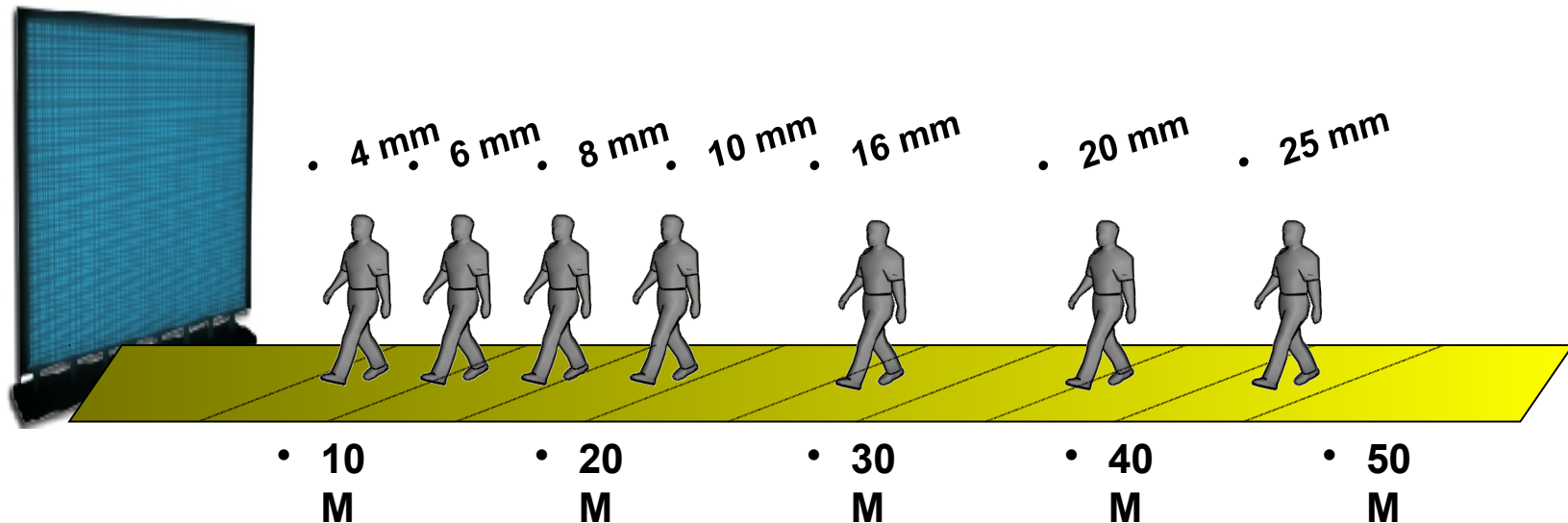
Viewing Angle

SMD LED provides a greater vertical viewing angle.

☞ **There are two type of viewing angle**
  ① **Visible viewing angle**
  ② **Up to 50% brightness viewing angle**

Vertical Viewing Angle
(50% Brightness) of
SMD model

Vertical Viewing Angle
(50% Brightness) of
OVAL model

LED Screen
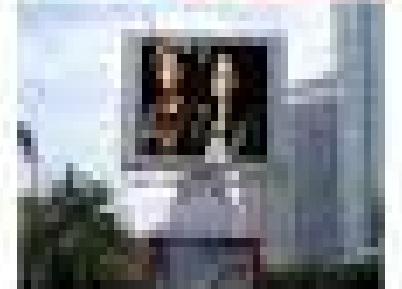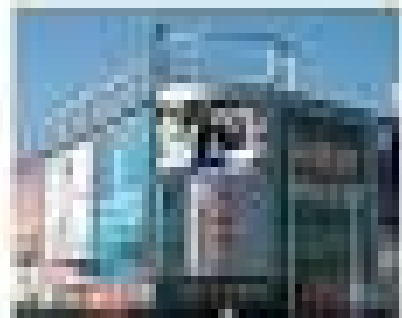
+30°
+20°
-30°
-60°

LED display control card

SMD 3 in 1

LED display module

LED display cabinet

Full color LED display

Processing Depth / Refresh Rate

➤ Processing Depth/ Color Depth/ Gray Scale

All above terms indicate how many colors can be shown on the LED display.

LED display is RGB color model, and each pixel consists of red, green, and blue color LEDs.

If the color processing depth is 16 then, each color will produce 2^{16} color levels, which equals 65536, so the combination for all color levels for R, G and B will be 65536 x 65536 x 65536 = 281.47 Trillion Colors

The higher value of color depth will increase the color levels, so colors shown on LED display will be richer!

➤ Refresh Rate

The refresh rate of a LED screen is the number of times in a second that the LED screen hardware draws the data.

Increasing the refresh rate decreases flickering.

☞ **When refresh rate is above 2880Hz, you will not see bar from mobile phone video shooting**

The flicker-free image prevents the black bars that occur from video shooting, as well as eye strain and blurred vision in viewers.

Low Refresh Rate

High Refresh Rate (LAPE)

Super Refresh Rate

processing technology achieves high refresh rate of 2880 Hz.

Other Brand

HLB

Lower Refresh Rate

Photo of display with low refresh rate

Higher Refresh Rate

Photo of display with sufficient refresh rate

Screen Depth

For rear access models (IM, PSU and parts are replaced from rear of panel), the overall depth of screen will include the physical depth of panel plus space for structural frame and working space for technician accessing (~600-850mm between back of panel and back wall).

Minimum Maintenance Space

LED Panel
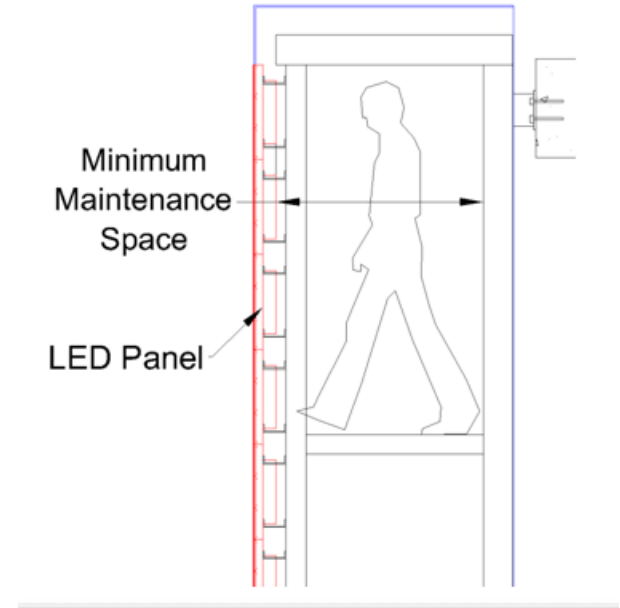
•Main advantages:

1. New mask design makes LED light almost zero reflection, which ensures the screen displaying effect;
2. The cabinet of unit modules adopts to high-temperature spraying technology, the antirust function is greatly improved;
3. Module surface flatness ± 0.2mm, the entire screen has good flatness;
4. High uniformity display color;
5. For improving the service life, PCB is made by wave soldering process with the green oxygen isolation layer, which prevents the line of moisture and oxidation.
6. Service efficiency of the screen switch power supply is increased substantially, which reduces power failure rate;
7. Using fishbone bus line greatly reduces the contact problem;
8. IP65 grade for high performance waterproof and dustproof capability;

9. -25°C – 65°Cworking environment for outdoor display, adapted to the harsh environment.

• TECHNICAL SPECIFICATIONS P6 OUTDOOR

1	Pixel Configuration	SMD3535 integrated 3in1
2	Pixel Pitch	P6mm
3	Imported module masking av	
5	Module Resolution	32*32
6	Cabinet Size(WXH)	768*768 mm 2.5*2.5 FEET
7	Cabinet Material	iron sheet metal or aluminum die cast
8	LED Size W*H	10*5 feet , 3072*1536 mm
9	Screen resolution	512*256
10	Brightness	≥5500 to 6000 nits m^2
11	Ingress Protection	IP65 front/ip54 back
12	View Angle	Horizontal 140° Vertical 130°
13	Optimum viewing distance	≥6meters
14	Driving method	1/8, constant current driving
15	Brightness control	Red, Green and Blue 14−16bits/each.
16	Refresh Rate	≥2880Hz higher refresh rate
17	Input Voltage	AC220V/50Hz
18	MTBF	>10000 hours
19	Life span on 50% brightness	≥100000 hours
20	Temperature−operating	0℃ ˜ 50℃
21	Display Control System	Led media controller synchronous and asynchronous both dual playback system

With internal storage 4gb, content management software, auto switching specially designed for campus information display with live feed, dual area supports

content supported video , photos, audio, text etc.