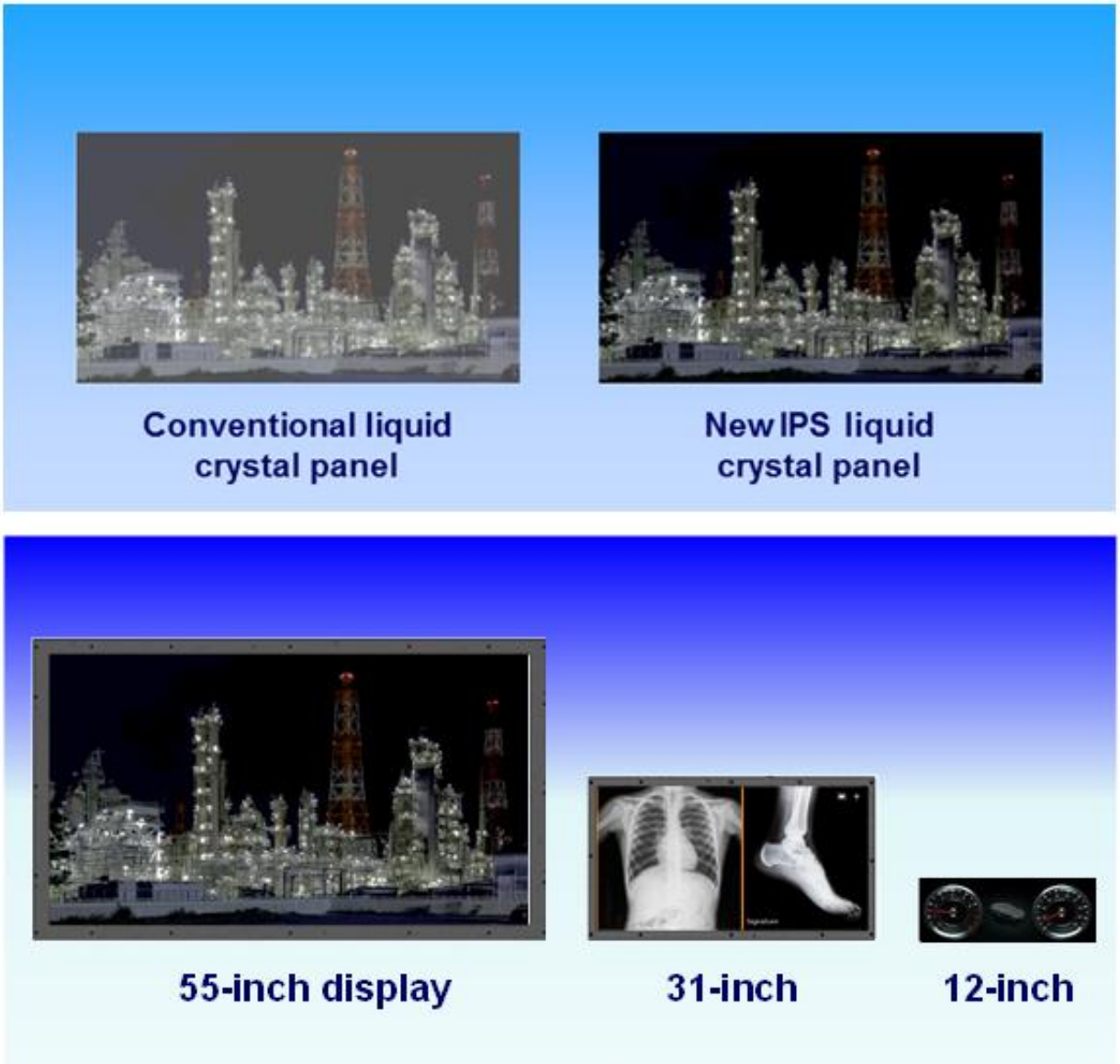
Panasonic develops first IPS liquid crystal panel with contrast ratio of over 1,000,000:1

December 6 2016



Credit: Panasonic

Panasonic Liquid Crystal Display Co., Ltd., a subsidiary of Panasonic Corporation, today announced it has developed a new model of its IPS liquid crystal panel that achieves a contrast ratio of over 1,000,000:1, which is 600 times that of conventional liquid crystal panels. With Panasonic's unique IPS liquid crystal technologies that feature wide viewing angles, high brightness, and high reliability, the new IPS panel has achieved a high contrast ratio of over 1,000,000:1 by integrating newly developed light-modulating cells that permit pixel-by-pixel control of backlight intensity. This achieves a faithful and high-grade video display, ranging from dazzling light to pitch-black.

The new IPS panel is ideal for use in professional-use High Dynamic Range (HDR) monitors for broadcasting stations and video production studios. HDR displays can reproduce images that are faithful to what people see, ranging from bright light to jet-black darkness. Also, the new high-contrast panel is suitable for use such as medical monitors that require faithful video display and automotive monitors that require clear visibility without black floating.

Panasonic's new IPS Liquid Crystal Panel has the following features:

1. An industry-first high contrast ratio of over 1,000,000:1, which is 600 times that of conventional products
2. Capable of stable operation at a maximum brightness of 1,000 cd/m^2
3. Can be manufactured using existing liquid crystal panel manufacturing facilities

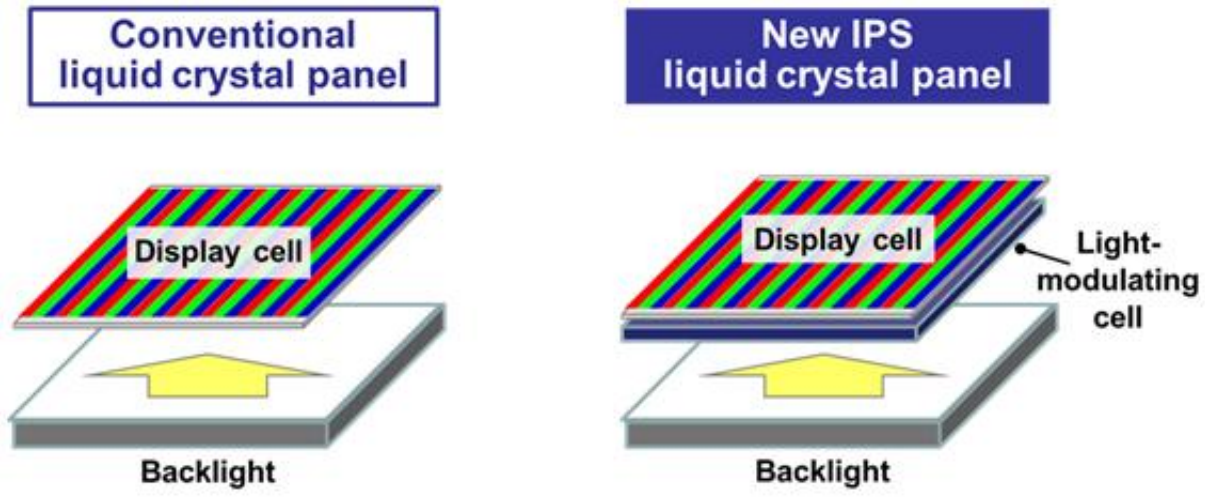
The new high-contrast IPS panel solves the problems inherent in conventional liquid crystal panels. Despite their track record in wide-ranging applications from B-to-C to B-to-B fields, conventional liquid

crystal panels suffer black floating, white washout phenomenon, in dark parts of the display area when the backlight intensity is increased to raise brightness. When the backlight intensity is lowered to make dark parts clearer, these panels also suffer a loss in sparkle in bright parts. The technology has applications in high-end monitors for broadcasting, video production, medical, automotive, and other fields.

Features

1. Industry-first high contrast ratio of over 1,000,000:1—600 times that of conventional products

Conventional liquid crystal panels, with a contrast ratio of approximately 1,800:1, suffer black floating in dark parts when the backlight intensity is increased, and they suffer a loss in sparkle in bright parts when the backlight intensity is lowered.



Structural comparison between conventional and new liquid crystal panels. Credit: Panasonic

Panasonic's new high-contrast IPS panel uses newly developed light-modulating cells, which operate based on the operating principle of liquid crystals, and these cells are integrated into the display cells. As a result, it is capable of controlling the amount of backlight entering the display cells pixel by pixel, thus achieving a contrast ratio of 1,000,000:1.

The light-modulating cells are composed of a liquid crystal material that differs in light-transmission properties from that used in the display cells, allowing independent control of the display and light-modulating cells. This has reduced light leakage significantly, allowing finely-tuned gradation expression. Furthermore, the application of Panasonic's IPS liquid crystal technologies, developed for industrial use, has achieved a contrast of 1,000,000:1 (maximum brightness: 1,000 cd/m^2, minimum brightness: 0.001 cd/m^2) while maintaining features including wide viewing angles and high light-transmission efficiency.

Consequently, the new high-contrast IPS panel can make HDR-compatible displays for professional use at broadcasting stations and video production studios, and is suitable for uses including medical monitors and automotive monitors.

2. Capable of stable operation at a maximum brightness of 1,000 cd/m^2

The new high-contrast IPS panel achieves a maximum brightness of 1,000 cd/m^2 by enhancing the transmittance of the display and light-modulating cells and adopting a high-brightness backlight. For the light-modulating cells, the company has developed a light-tolerant material that provides stable operation over a long period of time, despite exposure to intense light from the high-brightness backlight, as well as a unique cell structure.

3. Can be manufactured using existing liquid crystal panel manufacturing facilities

The new panel can be manufactured using the existing equipments for liquid crystal panel manufacturing. Panasonic Liquid Crystal Display Co., Ltd., possesses an industry-leading scale of 8.5th-generation (G8.5) production lines that are capable of manufacturing 10- to 100-inch products.

Provided by Panasonic Corporation