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[NEW! HP ZR2040w 20-inch LED Backlit IPS Monitor](#)
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High-Performance Displays for CAD

HP's high-performance displays offer the latest IPS technology at a mainstream price.

By Robert Green, *Cadalyst* Contributing Expert



So you're getting a new workstation? Great! Will you be plugging it into the same tired old monitor? Probably. I see this scenario play out all the time at my client's offices, so I'm sure you see it as well. Hot rod workstations plugged into old low resolution 4x3 aspect ratio, boat anchor monitors!

Well, it is only the monitor right? Wrong!

Considering that the monitor and the mouse are the only two pieces of equipment on your workstation that we physically interact with, maybe we should paying more attention to the monitor.

The Players High-Tech, Low-Cost Monitors

HP's new [HP ZR2740w](#), [HP ZR2440w](#), [HP ZR2240w](#), and [HP ZR2040w](#) performance displays offer in-plane switching (IPS) with all new LED backlight technology.¹ IPS means that you'll get great color display quality even when viewing from off-axis positions and the new LED backlights allow super thin-form factors, making the HP performance displays light and easy to mount.⁴

Ranging from the HP ZR2040w's 20-inch diagonal up to HP ZR2740w's 27-inch diagonal, the HP performance display series deliver sizes, resolutions, and connection technologies to serve most any desktop CAD application — whether you implement single or dual monitors.

At the high end of the HP performance display spectrum, the \$729² HP ZR2740w's large size, 1.07 billion color palette³, and 2,560 x 1440 resolution³ makes it an awesome choice for high-end CAD applications such as real time 3D visualization, rendering, and collaborative applications like design reviews and video conferencing. The HP ZR2740w features HP's Direct Drive Architecture. When paired with an HP Z Series Workstation, the HP ZR2740w receives color values directly from the graphics card making its 1.07 billion color display truly accurate, with no degradation in color.

[HP Z210 CMT](#)

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Screen image courtesy of Autodesk

[HP Z400 Workstation](#)

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At the low end of the spectrum, the \$189² HP ZR2040w's 16.7-million color palette and 1,600 x 900 resolution³ make it an ideal second monitor for dual configurations or a great quality smaller screen for inexpensive CAD workstations.

Right in between, the \$289² HP ZR2240w and \$425² HP ZR2440w offer 16.7-million color palettes and full HD resolution for great single, dual, and notebook pc docking station monitor configurations.



HP ZR2040w
The 20" diagonal HP ZR2040w performance display series offers IPS technology at a \$189² price point.

Size/Technology: 20" diagonal LED Backlit IPS
Resolution: 1,600 x 900
Colors: 16.7 million on screen
Aspect ratio: 16x9
Response/contrast: 7 msecond / 1000:1³
Power Consumed: 33W (maximum), 27W (typical), <0.3W (standby)
Connections: DisplayPort, DVI and VGA
Certifications: ENERGY STAR® 5.0 and EPEAT® Silver
Price: \$189²



The HP ZR2240w offers full HD in a compact size, plus IPS technology at a \$289² price point.

Size/Technology: 21.5" diagonal LED Backlit IPS
Resolution: 1,920 x 1,080 (full HD)
Colors: 16.7 million on screen
Aspect ratio: 16x9
Response/contrast: 8 msecond / 1000:1³
Power Consumed: 52W (maximum), 35W (typical), <0.3W (standby)
Connections: DisplayPort, DVI, VGA, HDMI, 4 port USB hub
Certifications: ENERGY STAR® 5.0 and EPEAT® Gold
Price: \$289²

Changing Technology — TN vs. IPS

One of the things that make the Performance Monitor ZR series notable is the use of IPS technology at price points as low as \$189² for the HP ZR2040w. To appreciate why IPS is of great value, you need to understand a bit about it and the mainstream technology in the industry.

Most consumer (low-cost) flat screen monitors are based on twisted nematic (TN) technology. While TN-based monitors are low-cost, they can't overcome the fundamental weakness of having a narrow viewing field, particularly in the vertical direction. This makes colors seem to change when you look at the monitor from outside its prime field of vision. In fact, if you look at a TN-based monitor from an extreme high or low vantage point, the colors seem to invert. You've probably seen this when trying to look at a coworker's monitor from a standing position — now you know why.



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IPS monitors have a much broader viewing angle range so their colors remain much truer as your eye moves off axis. In the past, IPS monitors have been more expensive, so they were relegated to use in color critical applications such as rendering, animation, and graphic arts where accurate color representations justified their higher price points. The superiority of color representation of IPS technology is one reason why the new HP monitors are worth noting.

Dual-Monitor Workflow

If you've ever tried working with dual monitors, you CAN appreciate how much more productive it really is. Rather than juggling and minimizing windows, you simply open up the tools you need, arrange them on your desktop and leave them open. A couple of CAD windows on one screen, email, spreadsheet, and notepad on the other and you can move from application to application easily without losing your train of thought fumbling with process windows. With the HP performance displays' great price points, a high-quality dual monitor setup may finally be within your reach.



The HP ZR2240w, HP ZR2440w, and HP ZR2740w monitors come equipped with a new HP Quick Release 2 flush mounting adapter on the rear (seen below) that allows easy mounting to a dual stand (also seen below) or on any VESA (Video Electronics Standards Association) compliant stand.⁴



For \$425², the HP ZR2440w offers full HD in a popular 24" diagonal size, plus IPS technology.

Size/Technology: 24" diagonal LED Backlit IPS
Resolution: 1,920 x 1,080 (full HD)
Colors: 16.7 million on screen



The HP ZR2740w offers *beyond HD* resolution, 1.07 billion colors, large 27" diagonal size, and IPS technology for \$729².

Size/Technology: 27" diagonal LED Backlit IPS
Resolution: 2,560 x 1,440
Colors: Up to 1.07 billion on screen



Aspect ratio: 16x10
Response/contrast: 6 msec / 1000:1³
Power Consumed: 59W (maximum),
48W (typical), <0.5W (standby)
Connections: DisplayPort, DVI, HDMI,
4 port USB hub
Certifications: ENERGY STAR® 5.0 and
EPEAT® Gold
Price: \$425²

Aspect ratio: 16x9
Response/contrast: 14 msec / 1000:1³
Power Consumed: 120W (maximum),
95W (typical), <2W (standby)
Connections: DisplayPort, DVI, HDMI,
4 port USB hub
Price: \$729²

Energy Conservation

When purchasing a new monitor, you're mainly concerned with image resolution and color quality, but does it hurt if you can save money on electricity at the same time?

All HP performance display ZR Series Monitors have 85% efficient power supplies that are ENERGY STAR® qualified, and either EPEAT Gold or Silver registered for low power consumption and

super-low standby power consumption.³ These low power ratings can translate into lower utility bills as well as lower waste heat, which can translate into lower air conditioning bills during the summer.



Wrapping Up

Every so often in the computer world you'll see a confluence of events that delivers higher technology at lower price points which makes better functionality available to the masses. The HP ZR IPS monitors are an example of such a confluence: Enhanced image quality, low price points, and low energy consumption in a thin form factor.

If your company is upgrading computers but skipping monitor upgrades, you may want to re-examine that decision. The new HP ZR IPS monitors may just bring those HD-quality, dual monitor configurations you've been wanting within reach.

About the Author

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Robert provides CAD implementation, consulting, and programming services for a variety of companies throughout the United States and Canada. He holds a degree in mechanical engineering from the Georgia Institute of Technology and is the author of *Expert CAD Management: The Complete Guide*. Reach him via his web site at www.cad-manager.com.

DISCLAIMERS

1. As compared to mainstream monitors with TN (Twisted Nematic) panels when viewed at 60°.
2. Prices may vary.
3. All specifications are provided by the component manufacturers. Performance specifications represent the typical specification of all HP's component manufacturers' typical level specifications for performance. Actual performance may vary either higher or lower.
4. Mounting hardware sold separately.

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