Cambridge Scanner Makes Performance Breakthrough

Twice the Speed Or Twice the Scan Angle

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ILDA members attending the 2003 Advanced Technology Workshop in Brussels were the first to see Cambridge Technology's latest scanning products, the 6215H galvo and 673XX MicroMax Servo Driver. The new scanner was said to offer a far higher level of performance than Cambridge's existing scanners, but the specifications presented in Brussels were only preliminary. After testing the equipment, I can now say that the 6215H is a remarkable scanner: it will become the new performance benchmark by which all other scanners are measured.

Pangolin recently received a set of the new scanners and drivers, and subjected them to a battery of tests, including square wave tests, raster patterns, three high-RMS abstracts, typical laser show graphics, and the ILDA Test Pattern.

60K Scanning is Here

The results demonstrate that with the 673XX driver and 30K tuning, images and laser shows can be displayed roughly twice the size as they could with Cambridge's 6800 or 6210 scanners. Using Cambridges's high-power 671XX HP MicroMax driver, images and laser shows can be displayed at 60K with roughly the same angle as the 6800 or 6210 scanners tuned to 30K. Thus, you can relate to this system intuitively as "twice the angle or twice the speed," depending on the model of the servo driver you choose.

In the interests of full disclosure, I worked with Cambridge over the past several months, providing input that helped Cambridge optimize the performance of the 673XX servo driver (also referred to as a scanner amplifier) and develop a second "high power" servo driver called the 671XX HP.

How is this higher performance achieved? In part, it is because of the construction of the scanner. The 6215H is a stretched and modified 6210. The rotor magnet is twice as long as the rotor magnet found in a 6800 or 6210. The coil is also twice as long and made with thicker wire, which provides a lower coil resistance, better heat dissipation and higher current handling capability. It is these factors that contribute to the unmatched performance of the 6215H.

Servo Drivers Make a Difference

Cambridge offers two servo driver options for the new scanner. The first is the 673XX, which is a conveniently packaged dual-axis driver. This servo driver is perfect for casual light-show jocks because it has only four adjustment pots per axis. This allows for no-nonsense setup and field adjustment. The 6215H coupled with this amplifier delivers solid 30K performance with scan angles roughly double what was previously possible with 6800 and 6210 scanners.

The second servo driver option is the model 671XX HP, which is a single axis driver intended for Cambridge's large-format industrial scanner. This servo driver includes a high power option with additional transistors for extra power handling capacity. Because it is a single axis driver, two units are required to control an X-Y scanner set. And unlike the 673XX, each 671XX HP has 14 adjustment pots. The 6215H coupled with this amplifier delivers solid 60K performance with roughly the same angle as a 6800 or 6210 running at 30K.

Steve Krusemark of Cambridge Technology speaks at the 2003 ATW in Brussels.

Heat Handling Not a Problem

One of the long-standing problems with the 6800 and 6210 scanners is "power limiting." If the servo driver determines that the width of a fast and repetitive pattern would overheat the scanner, the servo driver reduces the size so that no overheating will occur. Because the 6215H includes a modified coil design, it can handle wide angle,

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Another Look: Thumbs Up for Shows

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The new Cambridge 6251H scanners allow fast and complex images to be displayed at larger angles than previously possible. As for performance: wow! The ILDA Test Pattern can be scanned at more than twice the angle of stock 6800s without distortion, right out of the box. The test pattern was displayed well in excess of 30K pps at the full 60 degree optical scan angle without any distortion (except that of the inner circle, which is expected).

We tested the 30K model of the 6215H, not the faster model that uses a high-perfomance service driver intended for 60K scanning. Our testing focused on the practical field use of these scanners as opposed to technical specifications. In addition to the new scanner, Cambridge also manufacturers a new scanner driver card that handles both X and Y scanners on a single compact board. This eliminates the need for mounting and wiring two separate driver cards. Several trim pots have been eliminated from the new servo driver. The driver card, for example, uses only one "damping" adjustment rather than two. This change, as well as the elimination of several other adjustments not typically critical to laser display applications, will allow almost anyone with just a couple of minutes of training to adjust this scanner to a perfect tuning. This is a tremendous benefit

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Benner: No Limiting

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fast and repetitive content far better. The result is that power limiting is virtually eliminated for normal light show content when displayed at twice the scan angle (at the same speed) or twice the speed (at the same scan angle).

One question you may be wondering about is bearing wear at 60K. The jury is still out on this one, but we did torturous tests that included 10 million scans of a 2.5-degree square wave. Once the test was completed, no bearing wear could be detected.

Because of the longer rotor and modified coil configuration, a stronger power supply will definitely be needed. For both drivers, a 260-watt power supply per axis should be sufficient.

In conclusion, the 6215H is definitely the scanner that many laser display professionals have waited for. When coupled with the 673XX servo driver, it provides wide-angle 30K performance with convenient packaging and no-nonsense adjustments. When coupled with the 671XX HP driver, it provides standard-angle 60K performance with adjustments that professionals will appreciate.

As for retrofitting these scanners into existing projectors, I strongly recommend the use of a mount made specifically for the 6215H, as this will assure proper heat dissipation. The new scanner is roughly one-half inches longer than the 6800 and 6210 models, so you'll have to make sure there is sufficient room in your projector. Mounting the small 673XX servo driver should not pose a problem, although the larger 671XX hp driver may require additional space. Finally, 6215H scanners require a more substantial power supply, although this is a small price to pay for the convenience and performance offered by these systems.

For more information, contact Cambridge Technology, Inc., www.cambridgetechnology.com; (+1) 617-441-0600