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Dataflash 5000: The Strobe Fixture Redefined

By: Richard Cadena

In 1989, High End Systems introduced a new Xenon strobe fixture called Dataflash. It was unique in that it didn't rely on a large capacitor to boost the output; it took its energy directly from the mains power. That made it extremely bright, and it was an instant success. The 8.5" diameter fixture was 10.5" long, slightly reminiscent of a PAR 64 fixture, except it had a clear plastic dome instead of an output lens. In the second year of production, the company started making the dome out of Lexan, a shatter-proof polycarbonate. The inventor of the product, Richard Belliveau, used to demonstrate just how tough Lexan is. When customers came into the demo room, he would randomly choose a Dataflash fixture from the eight-by-eight matrix on the wall, unscrew the dome, and with all the might he could muster, throw it straight down on the concrete floor, which was covered with a thin layer of industrial carpet. It would bounce around but not break. It was an impressive show.

I know this because I worked for High End Systems at the time, and I watched him do it more than once. I started doing the same. One day, I took a customer into the showroom, spun off a dome, and said, "Watch this." I threw it down as hard as I could on the same concrete floor covered by a thin layer of industrial carpet, and it shattered into a thousand pieces. Apparently, it was one of the original plastic domes, not the new Lexan type. The customer watched in amazement and said, "Cool!"

Thirty-six years later, High End is re-introducing it as the Dataflash 5000. It looks somewhat similar; it's 13.9" or 11.2" long, depending on which dome you're using, and 8.5" in diameter,

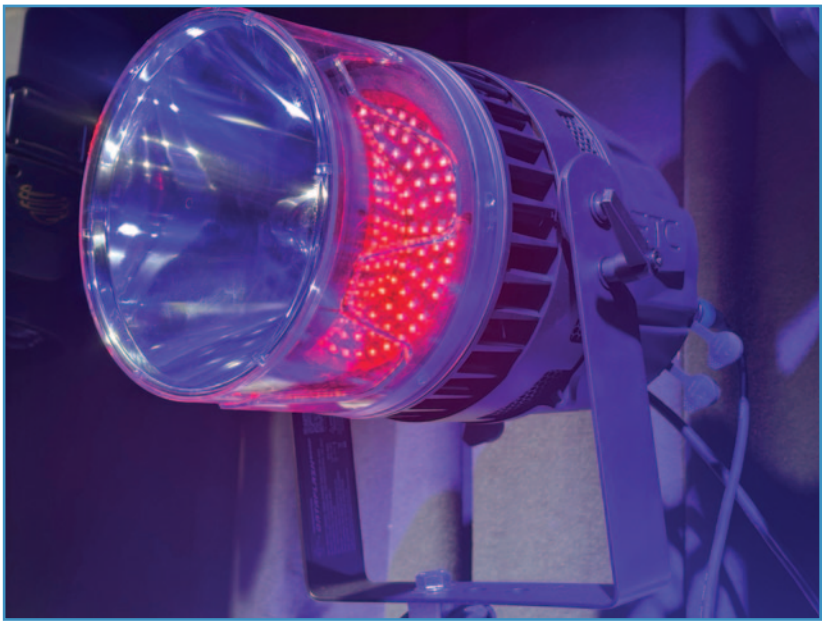

Figure 1: Dataflash 5000 with Reflector Dome.

including the acrylic dome. It has an aluminum housing with an IP65 rating, and this version is, of course, LED, not xenon. As similar as it looks, it's quite a reimaging of what a strobe is and what it could be. And as bright as the original was, so is the 5000, but this one adds eight individually controllable RGB pixel zones. The specifications list its output at 52,000 lumens, and since it's an LED source, it runs much cooler than xenon. So, unlike the original, it's a continuous duty fixture.

The light source includes a dual (cool white and warm white) COB LED for the main strobe output, plus a circular array of 120 RGB LEDs arranged in eight trapezoidal-shaped pixel arrays that surround the COB. Those RBG LEDs provide the "eye candy" for the "EC effects."

One of the many improvements in this fixture over the original is the variety of strobe effects offered: a range of pre-programmed strobe effects that snap, ramp, step, or pulse according to the strobe mode, which is DMX selectable. (See illustration below.)

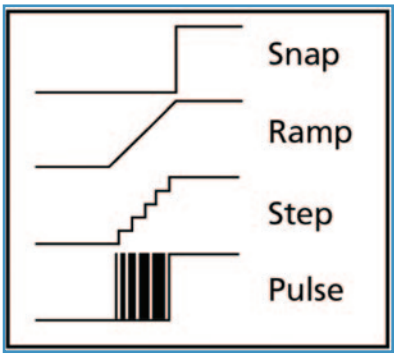

Figure 2: Dataflash 5000 strobe modes.

Depending on which DMX mode you're using, there are either 63 or 126 strobe presets; the main COB LEDs can be synchronized with the background RGB LEDs, or they can strobe

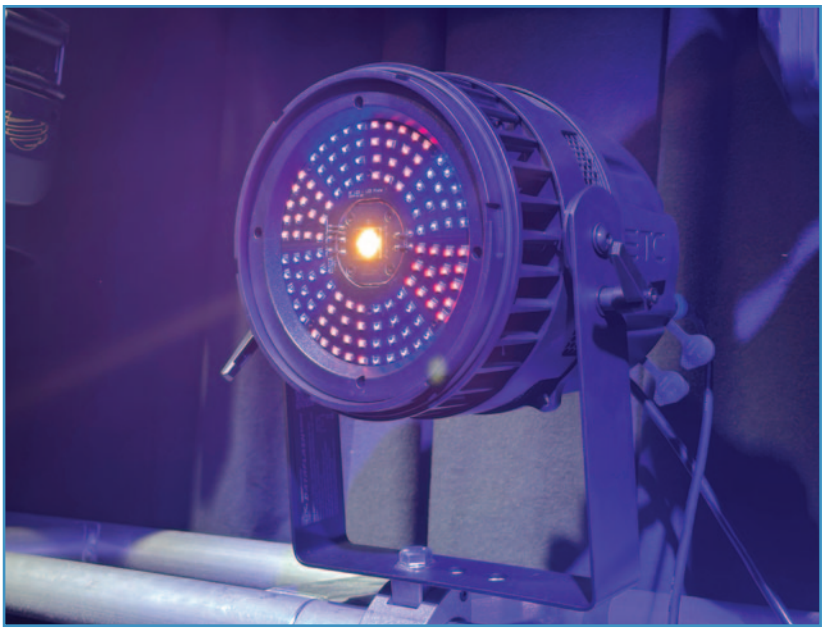

Figure 3: Dataflash 5000 without dome.

independently of them. You can also vary the speed and duration, which gives you a plethora of strobe options—far more than the original fixture. And that's before we even get to the many macros.

There are several static eye candy (EC) or background macros, several dynamic EC macros with movement, plus several that combine the center COB and the background EC color LEDs, both in static and dynamic flavors. That includes four different color temperatures (3,200K, 4,400K, 6,000K, and 7,500K) on the main COB. Altogether, there are 237 macros, each of which can be customized by varying the speed, crossfade time, and the number of times the sequence repeats, which they refer to as nShot.

In addition, there are 172 background strobe macros which include a lightning effect, tungsten blinder, random pixel effects, and a lot more. The result is a staggering number of looks with a huge number of possibilities.

All these combinations and variations add to the complexity of running these fixtures, but if that's an issue, there is a very simple DMX protocol with seven attributes, which include two dimmers (coarse and fine), strobe mode, rate, and duration, static color macros, plus a control channel. But even that mode goes very deep, because there are 82 strobe patterns, plus 249 static color macros that combine the COB LEDs at four different color temperatures with a solid color background on the RGB LEDs. It offers a lot.

The standard DMX protocol gives you control of 19 attributes, and to the 82 strobe patterns it adds 127 more strobe independent random and 237 macros, while the expanded mode (54 channels) adds individual control of each pixel segment including red, green, blue, and intensity, so it is possible to pixel map a Dataflash 5000 fixture or an array of fixtures. If the orientation of the fixture differs from fixture to fixture, a pixel clocking adjustment allows you to reorient the "top" of the fixture so it maps correctly.

The fixture comes with two different domes. The EC Dome has no reflector, thereby accenting the background RGB effects, while the Reflector Dome does. With the Reflector Dome, the

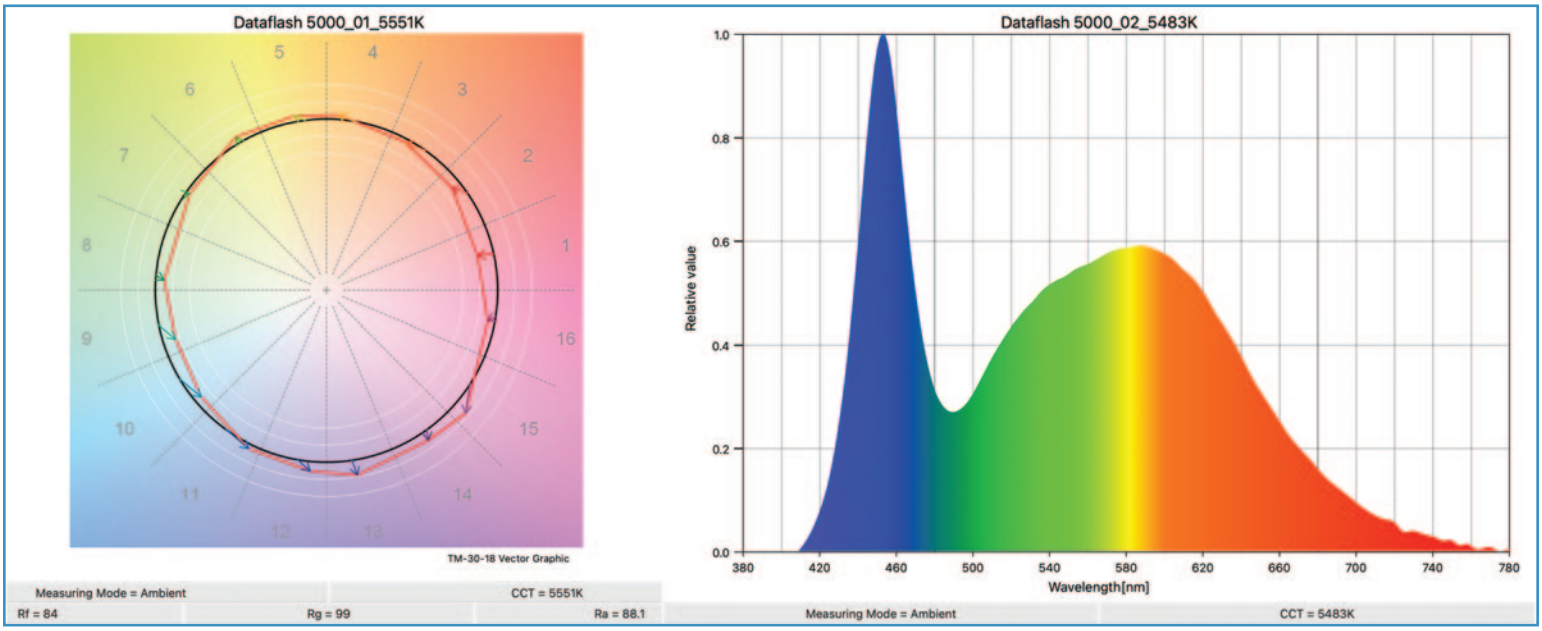

Figure 4: TM-30-18 vector graphic (left) and spectral distribution curve (right).

field angle is 60°, and with the EC Dome, it's 120°.

The specs show that at 7,249K, the TM-30-18 data reads Rf = 81, Rg = 95, and Ra = 81, while the TLCI is 65. At 3,255K, Rf = 84, Rg = 96, Ra = 82, and TLCI is 68. I metered it using a Sekonic C-800-U at a medium color temperature of 5,000K. I found the TM-30-18 data to read Rf = 84, Rg = 99, and Ra = 88.3, so it was very close to the manufacturer's info.

The fixture operates from 100V to 240V at 50Hz or 60Hz, and it draws 9.54A at 100V or 3.62A at 240V. The fixture is power factor corrected to 0.99. The half-cycle inrush current is 25A at 120V or 101A at 230V, which is considerably less than the original fixtures, although the manufacturer recommends using no more than one fixture on a 20A circuit. The electrical connectors can be Seetronic X series, which are rated IP65, or powerCON True1 TOP. The fixture weighs 15.5lb.

Thirty-eight years ago, when the original Dataflash fixture was launched, there were no LED fixtures, no pixel mapping, and no IP65 fixtures. This fixture is a powerful strobe/effects fixture, and, because it has a legacy, it affords a unique opportunity to see how far the entertainment lighting industry has come in less than four decades. By contrast, it's a modern-day marvel. By today's standards, it's very impressive. So either way you look at it, it's a great lighting tool.