Elation Professional Platinum FLX

By Mike Wood

Fig. 1: Fixture as tested.

After a year or so of reviews covering nothing but LED-based fixtures, this year has seen a bit of a change with the resurgence of units using very small arc HID lamps to produce tight beams. This is an area where LEDs still cannot compete with the raw power density of a very short electric arc. For narrow beams, you need a lot of lumens in a very small space. That's all to do with etendue—and you've heard me rattle on about that more than once. I refer you to my articles in *Protocol* if you want to know more.

Even more recently, we've seen units that originally were just beam projectors expand their capabilities to provide both spot (gobo projection) and wash functionality. To my mind, a multi-purpose unit will never do quite as good a job at each function as a dedicated one, but I have to say that the current generation of luminaires from the major manufacturers does a pretty good job, with not many compromises.

This month, we are looking at an offering in this market sector from Elation Professional: the Platinum FLX. This is an addition to the company's Platinum range, so named, presumably, because the products use Platinum lamps from Philips.

As with other reviews of this kind of luminaire, I've modified my testing in some areas to reflect the usage as an effects beam projector where simple power measurements like lumens don't necessarily give you the whole picture. I'll try and adjust things as we go along to give you a feel for each function of the light. All my tests were run on a nominal 115V 60Hz supply; however, the Elation Platinum FLX is rated to run on 100-240V 50/60Hz (Figure 1).

Lamp

The Platinum FLX uses the Philips MSD Platinum 20R 470W lamp (Figure 2), which is rated to produce 16,900 lumens from its 1.2mm arc. This lamp is mounted in a lamphouse with some interesting and novel features. You can see the lamp inside its lamp house in Figure 3. Lamp change is straightforward: Remove three screws to access the enclosure, then slacken the retaining bracket at the top and swing the spring clip away. This could be done while the lamp is in the rig, although the small screws securing the access plate aren't captive and could easily be lost. So far, this is fairly standard. However, take a look at the gears on the left side of Figure 3. What are they for? Digging further, it seems that these connect an external stepper motor with a small metal plate covering an air vent. The plate has three different-sized apertures that move across the vent to control both the air flow volume and direction over the lamp. This, coupled with a speed-controlled fan and thermal sensors, allow Elation to keep tight control of the lamp temperature while the fixture changes modes (more of that later). Elation tells me they also use inputs from accelerometers in the head to adjust the air flow as fixture orientation changes. All this is necessary because Platinum lamps are finicky beasts; they don't have an outer envelope and are very sensitive to surrounding air temperature.

Figure 2: Lamp.

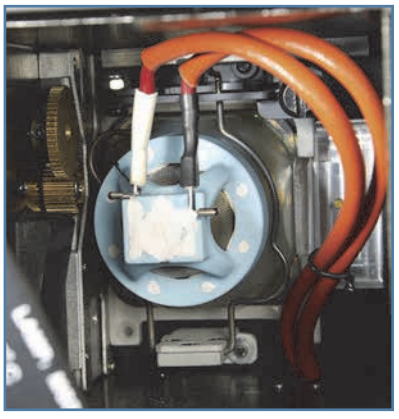

Figure 3: Lamp and lamphouse.

Dimmer and strobe

The lamp house is capped by the usual angled hot mirror, immediately followed by a pair of saw-tooth-edged flags providing dimming and strobe functions. Figure 4 shows a view through the back of the lamphouse, where the hot mirror and dimming flags are clearly visible. Figure 5 shows the dimmer curve when operating in spot or wash mode. The curve is a reasonable approximation for a square law and, with the downstream homogenizing system in place, provides smooth, glitch-free dimming across the entire range. Dimming in aerial beam mode is not as smooth, but, arguably, that doesn't matter and is common among these lights. I measured the strobe as providing speeds up to 10Hz. Arc flicker while dimming was also very good, presumably in part due to the lamp temperature control systems we've just discussed. Small variations in temperature can often make this type of amp flicker, and mechanical dimmers, by reflecting energy back and restricting air flow, can often inadvertently cause these kinds of issues.

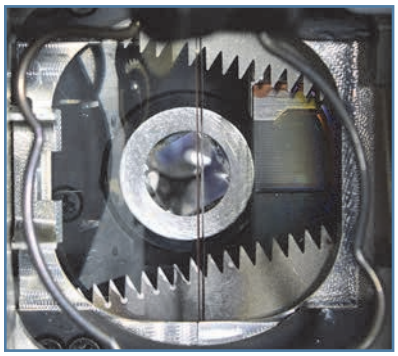

Figure 4: View through aperture.

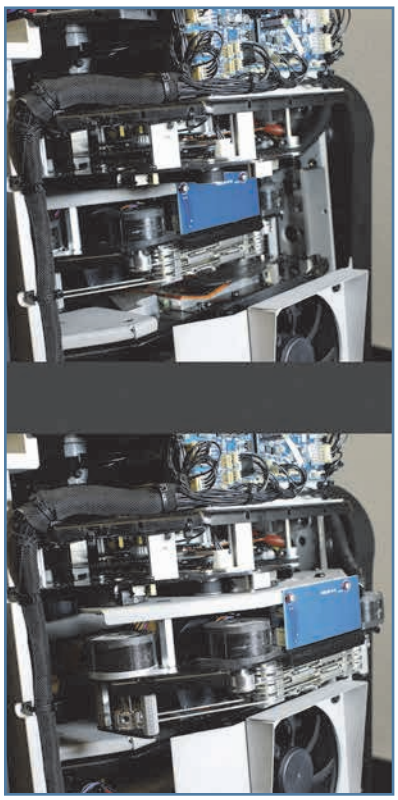

Figure 6: Color mix assembly.

Color

As you know, I always try and follow the optical path through from beginning to end in these reviews. In the case of the Elation Platinum FLX, that isn't completely straightforward. Next in line in the spot and wash modes is the color-mixing system; however, in beam mode this entire assembly is moved out of the light path to allow the lamphouse to move forward into a new optical position. Figure 6 shows the mechanism in operation. At the top of Figure 6, the color-mix assembly (with the blue circuit board) is in the optical path while the bottom of Figure 6 shows it moved out of the way. To facilitate this, the color-mixing flags are tiny, quite the smallest I've seen. Each of the four flags (cyan, magenta, yellow, and CTO) comprises a pair of angled dichroic plates that are moved across the beam to increase saturation. In a normal spot optical system, this wouldn't work very well, as we'd see the flag coming in from the side of the beam; however, the Platinum FLX contains an homogenizing system that smooths everything out. This homogenizer is a short polygonal tube containing internal mirrors, capped by a fly-eye lens. It is part of the color-mix assembly and also moves in and out of the optical path as the unit switches from beam mode into spot and wash mode. Both the color mix flags and the end of the homogenizing system are visible in Figure 4.

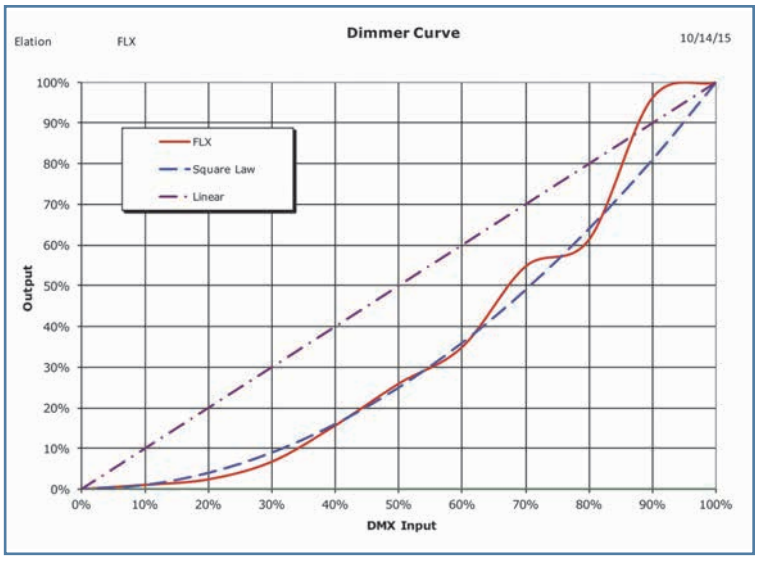

Figure 5: Dimmer curve.

This is an interesting and neat design decision by Elation. By moving the color mix system out of the way in beam mode, the lamphouse can be moved forward much closer to the gobos. This significantly alters the optical path and maximizes the light through the tiny gobo apertures needed for tight beams. By also making the homogenizer part of the same movable system, the Platinum FLX protects the color-mix flags and glass gobos from the intense lamp when in spot mode while allowing all the energy through in beam mode. A downside perhaps is that you are unable to use color mixing in beam mode, but I think that's a reasonable compromise. Although I've seen all the components before, Elation has assembled them into an interesting combination.

The Platinum FLX also contains a conventional color wheel. This is mounted on the far side of the gobos, but we'll discuss it now as part of color control. It has 10 non-removable colors plus open hole. The filters are trapezoidal and provide reasonable half-color effects.

COLOR WHEEL

Color Mixing	Red	Blue	Green	Yellow	Magenta	Amber	Cyan	CTO	CTB	UV
Trans mission	2.5%	3.9%	19%	84%	4.4%	37%	13%	61%	60%	.3%

The open white color temperature of the Platinum FLX with no color correction is 6,960K with a CRI of 77, CQS of 71. With the color wheel CTO filter in place, it measured 2,960K (CRI 52, CQS 51), and, with the CTB, 15,340K (CRI 84, CQS 75). These colors are mostly deep saturates, clearly chosen for the beam mode. (When operating in beam mode, the color mixing system is moved out of the optical path, so color mixing isn't available. However, the color wheel is always accessible.) The range of colors is broad, with strong saturates from the discrete colors. Snap color changes are quick.

COLOR WHEEL

Color change speed – adjacent	0.1 sec
Color change speed – worst case	0.4 sec

The color wheel can be spun at speeds varying from 120rpm down to just under 2rpm.

COLOR MIXING

Color	Cyan	Magenta	Yellow	Red	Green	Blue	CTO
Transmission	30%	6.7%	82%	5.7%	19%	0.8%	45%

Color change speed – worst case	0.7 sec

Color mixing is smooth, thanks to the homogenizing system. Elation has chosen a very deep magenta, presumably in order to get good blues, and a lighter yellow. The CTO wheel can adjust color temperature down to 3,070K from the native 6,960K.

Figure 7: Rotating gobo.

Gobo wheels and animation

The Platinum FLX has two gobo wheels, rotating and static. As previously mentioned, the rotating wheel is unavailable in beam mode—it just couldn't stand the heat! The rotating wheel has eight positions plus the open hole and can utilize glass or metal gobos. Figure 7 shows one of the gobos removed from the wheel contained in its snap-in cartridge.

ROTATING GOBO WHEEL

Gobo change time – adjacent apertures	0.3 sec
Gobo change time – max (Gobo 1 - 5)	0.5 sec
Maximum Gobo spin speed	0.4 sec/rev = 148 rpm
Minimum Gobo spin speed	113 sec/rev = 0.53 rpm
Maximum wheel spin speed	0.7 sec/rev = 88 rpm
Minimum wheel spin speed	22 sec/rev = 2.8 rpm

Figure 8: Fixed gobo and animation.

The static gobo wheel is slightly unusual in that Elation has combined it with the animation effect. One half of the stamped metal wheel contains six discrete gobos, while the other half has a single large animation breakup pattern (Figure 8). When used as a gobo wheel, it behaves like a single 12-slot wheel, where the last six slots are different positions across the large breakup pattern. In animation mode, the wheel scans back and forth over the 180° breakup pattern. This works well at the lower speeds where the reverse in movement direction every few seconds isn't noticed. Programming this system will require some planning and thought by the operator, as the animation

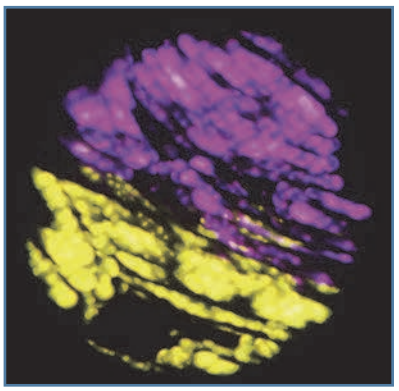

Figure 9: Animation effect.

wheel, being part of the static gobo wheel, can only be used in conjunction with the rotating gobo wheel. It's not a full animation wheel, as it cannot change rotation angle (to be fair to Elation, they don't call it an animation wheel; instead, they refer to it as an animation effect), but it does give some useful effects in conjunction with the rotating gobo wheel. Figure 9 shows an example of the animation wheel used with a gobo and a split color.

STATIC GOBO WHEEL	
Gobo change time – adjacent apertures	0.1 sec
Gobo change time – max	0.4 sec
Maximum wheel spin speed	0.7 sec/rev = 86 rpm
Minimum wheel spin speed	22 sec/rev = 2.7 rpm

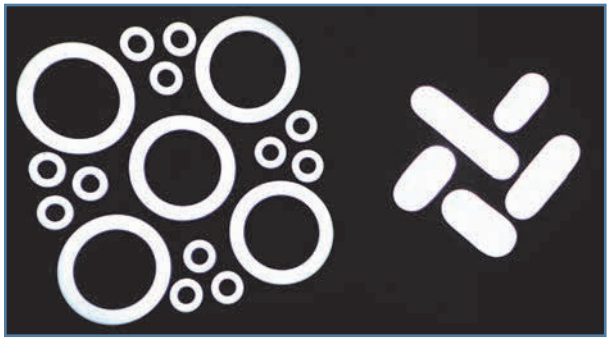

Figure 10: Gobo focus.

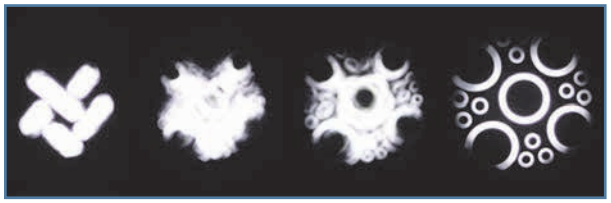

Figure 11: Gobo morph.

Focus quality on both gobo wheels in spot mode was excellent. Figure 10 shows examples of the rotating wheel (left) and fixed wheel (right); Figure 11 shows a gobo morph as I pulled focus from a static gobo to a rotating gobo. The rotating gobo wheel showed a positional rotational hysteresis of approximately 0.17°. This equates to 0.7" at 20' throw (30mm at 10m).

Prism and frost

The Platinum FLX has two separate rotatable prisms that can be positioned across the beam: an eight-facet circular prism and a five-facet linear prism. These are mounted in the same plane so can only be used one at a time. Figure 12 shows the prisms.

Depending on lens position, either prism can be inserted or removed in about one second, and can then be rotated

Figure 12: Prisms.

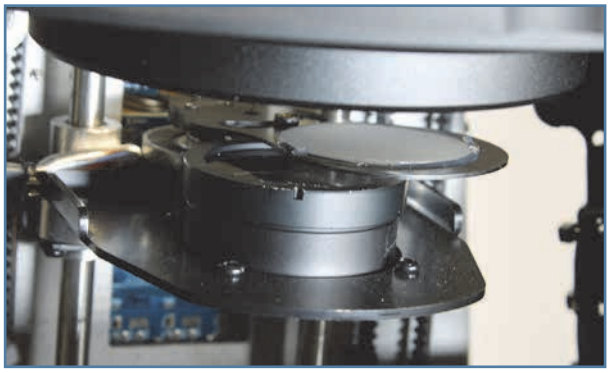

Figure 13: Frost flag.

at speeds varying from one second/rev (60rpm) down to 332 seconds/rev (0.18rpm).

A frost filter (which provides wash mode) is provided by a single flag that is moved across the beam. It is either in or out, not variable. Movement of the frost took 0.4 seconds (Figure 13).

Lenses and output

The Platinum FLX has the typical three lens groups commonly seen on automated lights. The first two lenses are internal and move to provide zoom and focus while the third group is the static external front. The frost system is part of, and moves with, the second lens.

In spot mode (homogenizer and color mixing in, lamp house back), I measured the output at full zoom of 24° at just under 10,000 lumens. Figure 14 shows the extremely flat beam profile. Thanks to the homogenizer again for that flat field. Minimum beam angle varies, depending on which gobo aperture you use, but is around 8° with no gobos, 3° or less with the round apertures in place.

In beam mode (homogenizer and color mixing out, lamphouse forward), the output rises significantly to around 19,000 lumens at a maximum beam angle of 18° (Figure 15). With the smallest aperture on the fixed gobo wheel, you can get this angle down to 0.4°, although that reduces the light output considerably of course.

Adding the frost in gives you what Elation is calling the wash mode. It's got a good zoom range, but inevitably loses light output with all the homogenizing and frost filters that are in place. Still, it provides a nice quality of light and I can see the utility of it.

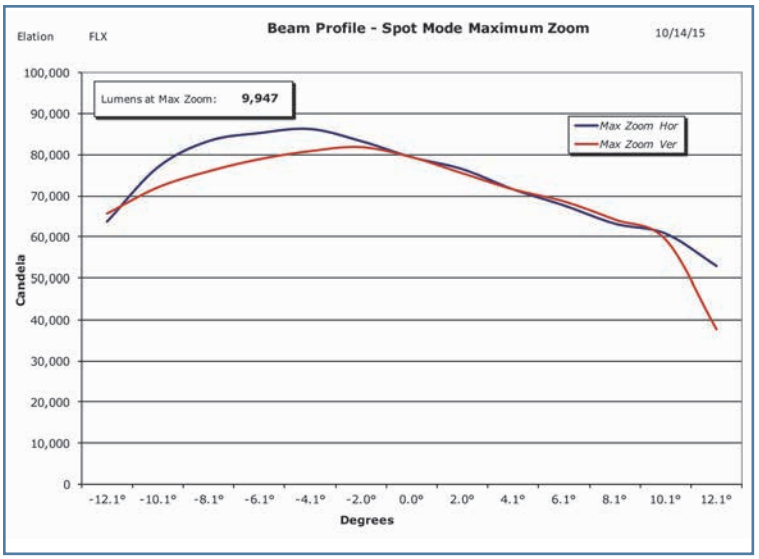

Figure 14: Spot mode maximum zoom.

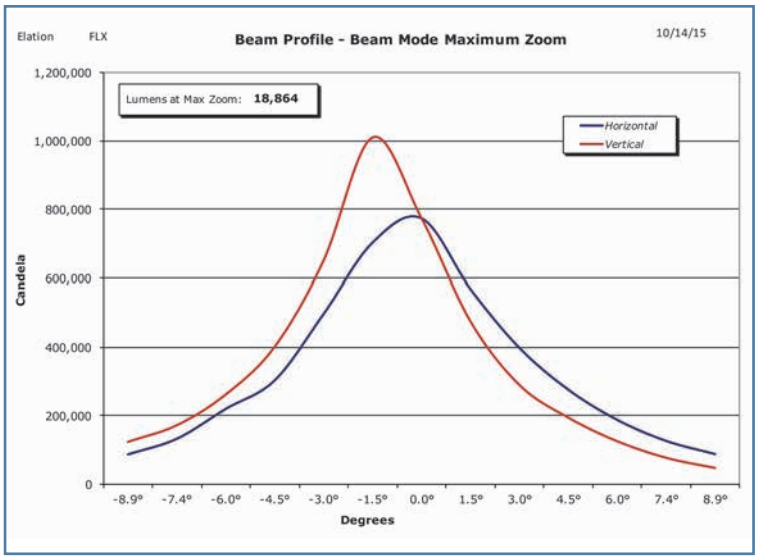

Figure 15: Beam mode maximum zoom.

Figure 16: Yoke.

Pan and tilt

The Platinum FLX has a full pan and tilt of 540° and 270°, respectively. Pan time at full speed over the total range of 540° was four seconds, while the time for a more normal 180° was 2.4 seconds. Corresponding times for tilt were 2.6 seconds for 270° and 2.1 seconds for 180°. The movement on both axes was smooth, with very little stepping at slow speeds, although there is some overshoot and wobble in final positioning. Hysteresis, after the overshoot, on both axes was less than 0.1°. This equates to 0.3" at 20' throw (10mm at 10m). Figure 16 shows the tilt mechanism and rotational encoder inside one of the yoke arms.

Noise

Most of the noise in the Platinum FLX comes from the fan with the motor noise being low. Running at full power the unit measured at 53.5dBA at 1m. Tilt was the noisiest motor function and took the noise level up to 56.7dBA at 1m.

SOUND LEVELS

Ambient	<35 dBA at 1m
Stationary	53.5 dBA at 1m
Homing/Initialization	59.2 dBA at 1m
Pan	53.7 dBA at 1m
Tilt	56.7 dBA at 1m
Color	53.5 dBA at 1m
Prism	53.5 dBA at 1m
Gobo select	3.5 dBA at 1m
Gobo spin	53.5 dBA at 1m
Focus	53.8 dBA at 1m
Zoom	54.1 dBA at 1m
Strobe	54.5 dBA at 1m
Frost	53.5 dBA at 1m

Homing/initialization time

Power up initialization is quite lengthy, taking about three to four minutes. The Platinum FLX enforces keeping its shutter closed as the lamp warms up so as to stabilize temperature as quickly as possible. The lamp is not hot-restrike.

Power, electronics, and control

Running on a 118V 60Hz supply, the Platinum FLX consumed 5.34A with a power consumption of 630W and a power factor of 0.99. Motor control electronics are on a number of circuit boards in the head of the unit, as shown in Figure 17, while lamp and motor power supplies are in the base of the luminaire.

The Platinum FLX has a comprehensive menu and control system accessible through a color LCD display and controls (Figure 18). On the connection side, power is supplied through a single powerCON. Control is provided through Art-Net or KlingNET via an etherCON connector or

via DMX-512 and RDM through standard five pin XLRs. Figure 19 shows these connections.

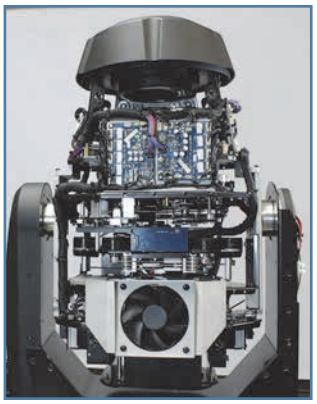

Figure 17: Head assembly.

Construction and serviceability

The Platinum FLX doesn't really use a modular construction; however, all parts looked to be straightforward to access for cleaning and maintenance. I don't get to run

Figure 18: Display.

Figure 19: Connections.

the units for any period of time and cannot comment on longevity or reliability, but I saw nothing that caused me immediate concern.

This is an interesting product. Elation has mixed some clever design and some engineering compromises to come up with a unit that, although not having absolutely every feature of its competitors, hits some major points. The compromises in some features is, I'm sure, driven by a desire to keep the price down. As always with these reviews, I hope I've given you enough information to whet your appetite and to decide if a demonstration of the Elation Platinum FLX is worth your while.

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