

SIGMA FF High Speed Prime Line



Let's begin this article with the conclusion. The entire line of innovative SIGMA Cine Lenses combine three valuable qualities rarely found together: outstanding image quality, high speed, and amazing compactness. Now the rest of the story.

SIGMA Corporation adds two more cine lenses at NAB. Covering incredibly wide and extremely tight, the new cine lenses in the SIGMA FF High Speed Prime Line are 14mm T2 FF and 135mm T2 FF.

There are now seven prime lenses in the SIGMA FF High Speed Prime Line: 14, 20, 24, 35, 50, 85, and 135mm.

The magnificent seven new SIGMA Cine Lenses will be available to test at SIGMA's NAB Booth C11525. They join the SIGMA 24-35mm T2.2 FF Zoom along with SIGMA Super35 format 18-35mm T2 and 50-100mm T2 High Speed zooms.

All these cine lenses come with PL, EF and E-mounts. (Only the 24-35 T2.2 FF Zoom lacks a PL mount option: it comes in EF and E-mount only.) SIGMA offers a mount conversion service. They have been exchanging mounts on their still photography lenses for quite some time. For a modest fee, if you change cameras or change your mind, they can swap between EF and E-mounts. The reason for having this service done by the manufacturer or their authorized service facilities is that the EF and E-mount have electronic contacts for lens data as to focal length, aperture, distance, etc. The Mount Conversion Service is not available for PL mount lenses.

SIGMA cine lenses come with a choice of metric or imperial focus scales that can be changed later on for a small fee. The standard version has luminous text identifying focal length and speed (e.g. 18-35 T2), and the rest of the numbers and marks are white. There's a fully luminous option that includes all numerical markings on the lens barrels.

Where SIGMA FF Cine Lenses stand out:

- Among the smallest, lightest, fastest Full Frame Cine lenses available.
- T1.5 or T2 for entire range. That is remarkably fast for Full Frame lenses, especially of this small size and weight.

- SIGMA FF lenses cover 24x36mm image area, 43.3mm diameter. Of course, they cover S35 as well.

Compelling features of the entire SIGMA cine lens line:

- 95mm front diameter of all cine lenses
- Shown on barrel: image diameter, front diameter, filter thread
- 82mm filter thread for most lenses
- 180° focus barrel rotation
- 160° zoom barrel rotation
- 60° iris barrel rotation
- Focus and iris gears all at same same distance from mount
- Industry-standard 0.8M lens gears
- Lens support foot on all
- Dust-proof and splash resistant
- 9-bladed irises and round bokeh
- Metal body
- Distance scale in feet or meters. Can be swapped at an authorized service center
- PL, EF or E-mounts can be swapped by factory (except 24-35 T2.2 FF Zoom, which does not come in PL mount)
- Artistic look—these lenses are derived from SIGMA's acclaimed Art series of still photography lenses.
- Color matched across entire range.
- High resolution—planned for 50 MP sensors and beyond.

Art and Design: 14mm T2 FF

The new 14mm T2 FF and 135mm T2 FF Cine Lenses are based on SIGMA's stellar new 14mm f1.8 DG HSM and 135mm f1.8 DG HSM Art lenses introduced in February at CP+. The 14mm f1.8 was heralded as the world's first and only f1.8 ultra-wide angle Full Frame interchangeable lens.

The design philosophy from SIGMA's Art line of still photography lenses is carried forward into their new cine lenses. Everyone at the company, from CEO Kazuto Yamaki to the designers, planners, optical and mechanical engineers, made many references to a process of fulfilling artistic expression.

SIGMA FF High Speed Prime Line



SIGMA describes the new 14mm T2.0 FF Cine Lens: “It is made of three FLD (‘F’ Low Dispersion) glass elements and four SLD (Super Low Dispersion) glass elements to help minimize transverse chromatic aberration, which tends to be noticeable in shots taken with ultra-wide-angle lenses. Offering excellent peripheral brightness, this lens delivers outstanding image quality from the center to the edges. The new lens features a large 80mm diameter precision-molded glass aspherical lens as its front element.

“This technology has made possible the 14mm T2 full frame specification—the first of its kind, and effectively minimizes distortion. Offering excellent peripheral brightness, this lens delivers outstanding image quality from the center to the edges.

“This lens can capture a swarm of fireflies with crystal clarity, a beautiful bokeh effect, and available light scenes at night.”

135mm T2 FF

The SIGMA CINE 135mm Full Frame telephoto lens provides a signature compression effect with dramatic, round bokeh. The designers write, “By minimizing axial chromatic aberration, the SIGMA 135mm T2 FF delivers superb contrast and sharp image quality all the way to the edges of the lens. Resolution is of such clarity that individual hairs can be discerned in a portrait, while at the same time, skin textures are beautifully smooth and have a cosmetic quality, while backgrounds become pleasantly blurred and out of focus highlights are rendered in gorgeous bokeh.

“The lens features two SLD (Super Low Dispersion) glass elements and two FLD (‘F’ Low Dispersion) glass elements. These technologies help minimize chromatic aberrations, which tend to appear in the bokeh area outside of the area of focus, as well as on slender objects such as fine branches. The end result is ultra-high resolution and clarity throughout the image, even at wide-open aperture.”

SIGMA Corporation

FDTimes visited the SIGMA factory in June 2016 (see September issue 79). Almost every part of every lens is made here: from the large 80mm molded, aspherical front elements to the metal

lens barrels down to the screws and tiny lens data contacts in the mount. The factory is in Aizu, 300 km north of Tokyo and three hours by high speed Shinkansen and local railway. About 1,400 people work here in a modern 77,000 square meter facility.

Mr. Yamaki explained, “The concept of our factory is vertical integration. That means we do most of the steps by ourselves. We process the glass, from molding to grinding, polishing, centering, smoothing, coating, edge blacking, cementing and assembling.

“Our company was founded on September 9, 1961 by my father, Michihiro Yamaki, when he was 27 years old. His family was quite poor. As a student, he worked for a small optics company, aligning the prism in binoculars. After graduating, he worked for a small optics as a corporate executive. One day, the company went bankrupt. The owner disappeared suddenly with the company’s money and with his mistress. Some of the suppliers asked my father to work with them as a consultant. It went well and he then decided to start a factory of his own in Tokyo. I remember him saying to me that he had no plans to become an entrepreneur or company owner. He started the business simply because of the request of his suppliers. His two sisters and my mother worked in the company. It’s a family business.

“Our headquarters are in Tokyo. Approximately 200 people work there and about 160 people are engineers. We have very experienced designers. There’s a lot of team work among the optical, mechanical and electronic designers. They have to work very closely from the beginning because each parameter can influence size, weight and optical performance. Some engineers specialize. One group works in ghosting and flares. We call them ghost busters. They run simulations from the initial design and advise the optical and mechanical designers during the entire process.”

Mr. Yamaki concluded, “The entire line of innovative SIGMA Cine Lenses combine three valuable qualities rarely found together: outstanding image quality, high speed, and amazing compactness.”

SIGMA Headquarters



SIGMA's corporate headquarters and design center



Marketing, customer service, sales



Research, design and development department



SIGMA CEO Kazuto Yamaki demonstrating 1 candlepower lighting for his lenses at luminous Esquisse restaurant overlooking Ginza. Rated among the top 50 in the world, "chef Lionel Beccat blends French and Japanese techniques with the skill of a master painter..." or a master lens designer.

At SIGMA's corporate headquarters in Kawasaki, part of greater Tokyo, I met with Tomoki Kohno, Head of Optical Design, Takuma Wakamatsu from Product Planning and Shinji Yamaki from the International Division.

JON FAUER: What are the differences in designing cine lenses compared to still lenses?

SIGMA design team: There is no difference between still lenses and cine lenses in terms of the optical design in our cine lenses. The concept of our cine lens is 100% retained and 100% new. We used the optical design of our still lenses for the cine lenses. On the other hand, we designed the mechanical structures completely from the ground up. When we designed it, we considered usability for cine as much as possible.

For still photography, lenses with very high resolution started to be required with the coming of high resolution digital cameras. We have been designing and manufacturing still lenses for a long time and started to develop high resolution lenses with extraordinarily high speed apertures. For the design and manufacturing of such lenses, we had to adopt new technologies.

For example, we pursued the technique of making aspherical lenses, along with high accuracy of processing and assembling at the factory. As a result, we were able to manufacture lenses whose level of difficulty was high. Those lenses which have high specifications and performance started to be evaluated positively by large numbers of our customers. We also saw a gradual increase in the number of those customers who began using our still lenses for filmmaking.

From this experience, we understood that our optical design could be accepted in cinematography too, and we worked on improving the mechanical structure such as a wide rotational angle

of focus, zoom, and aperture. We standardized the mechanical function and feeling of the lenses for more convenient operation.

However, we had little experience in cinema at the beginning of this project, so we worked very hard, learned from trial and error and talking with users, but we think, we hope that we have succeeded. As there are some cine lenses that were launched quite some time ago, we would like to offer our cine lenses with new materials and techniques to cine users.

What are the differences in designing Full Frame vs S35 lenses?

Certainly, the image circle diameter of S35 (30mm) is smaller than Full Frame(43.3mm). In optical design, working at the corners of Full Frame can be difficult.

On the other hand, S35 is easier and a big advantage for design. We challenged the concept of wide aperture zoom lenses which were not in the market before, and produced the 18-35/T2 and 50-100/T2. For design the S35 lens design, we have optimized techniques that we learned from Full Frame. We utilized the advantage that comes from the difference of the image sizes. But, you could say that neither design was so easy.

Are there advantages in shorter flange focal depths for designing lenses? Does the E-mount result in smaller lenses than, for example, PL mount?

As the flange focal depth of the E-mount is short (18mm), there are some advantages in shorter focal length lenses. However there are some restrictions because of small diameter of the mount and some other mechanical conditions, so there is not so much special difference overall. It is possible to use SIGMA's cine lens in any mount without issues.

Sigma Cine Lens Specs



Full Frame High Speed Primes 14mm T2, 20mm T1.5, 24mm T1.5, 35mm T1.5, 50mm T1.5

Full Frame High Speed Primes 85mm T1.5, 135mm T2

Full Frame High Speed Zoom 24-35mm T2.2

S35 High Speed Zooms 18-35mm T2, 50-100 T2



Lens	Aperture	Close Focus ¹	Image Circle	Front Diam.	Filter Size	Length			Weight ⁴		
						EF mount ²	E-mount ³	PL	EF mount	E-mount	PL
14mm T2 FF	T2 - 16	0.27m 11"	FF Φ 43.3	95mm	-	119.5mm	145.5mm	111.5mm	1430g	1485g	1345g
20mm T1.5 FF	T1.5 - 16	0.276m 11"	FF Φ 43.3	95mm	-	118mm	144mm	110mm	1335g	1395g	1240g
24mm T1.5 FF	T1.5 - 16	0.25 m 10"	FF Φ 43.3	95mm	82mm	95mm	121mm	87mm	1125g	1185g	1030g
35mm T1.5 FF	T1.5 - 16	0.30 m 1'	FF Φ 43.3	95mm	82mm	95mm	121mm	87mm	1135g	1165g	1035g
50mm T1.5 FF	T1.5 - 16	0.40 m 1'4"	FF Φ 43.3	95mm	82mm	102mm	128mm	94mm	1295g	1355g	1210g
85mm T1.5 FF	T1.5 - 16	0.85 m 2'10"	FF Φ 43.3	95mm	86mm	134.5mm	160.5mm	126.5mm	1475g	1535g	1380g
135mm T2 FF	T2 - 16	0.875 m 2'11"	FF Φ 43.3	95mm	82mm	126.4mm	152.4mm	118.4mm	1565g	1630g	1495g
24-35mm T2.2 FF	T2.2 - 16	0.28 m 11"	FF Φ 43.3	95mm	82mm	122.7mm	148.7mm	N/A	1440g	1500g	
18-35mm T2 S35	T2.0 - 16	0.28 m 11"	S35 Φ 28.4	95mm	82mm	129.5mm	155.5mm	121.5mm	1445g	1505g	1410g
50-100mm T2 S35	T2.0 - 16	0.95 m 3'2"	S35 Φ 28.4	95mm	82mm	175.2mm	201.2mm	167.2mm	1885g	1945g	1830g

1. Close focus distance is measured from the image plane
2. Front to EF mount flange
3. Front to E-mount flange
4. Without lens support foot

Sigma Cine Lenses are available in EF (Canon), E-mount (Sony), and PL (all except 24-35mm T2.2 Full Frame Zoom)
Specifications are subject to change