

sigma superlenses

It's odd that Sigma can make lenses which others can't. No-one else has a 20mm wide-angle with an $f1.8$ maximum aperture. No other maker has attempted a 15-30mm zoom. Are these extreme designs any good?

Since you are all impatient, I'll put the conclusion at the beginning of the article. The 15-30mm Sigma zoom is much better than I expected it to be, the 20mm $f1.8$ has exactly the faults and merits you would predict, and the 24-70mm $f2.8$ does not break any records but matches up to more expensive marque equivalents.

Now for the unexpected bit: these Sigma lenses are massive. Without being excessive heavy, they contain large glass elements and have been given generous protection in oversized mounts. If you are used to some of the small cheap Sigma designs sold with SLR bodies in chainstores, forget any preconceptions; these EX and DG series lenses have build quality, cosmetic finish and ergonomics on a different level.

Despite this they are not very expensive; and despite the low price, they come complete with carrying cases, shoulder straps, and precisely matched lens hoods.

We are forced to ask why the optical research of the major camera companies has never persuaded them to attempt the extreme specifications of Sigma designs, and why they can not provide similarly functional cases with all their lenses. Some don't even supply the matched lens hood but require you to buy it separately. Marque lenses may cost two or three times as much, so why do they let an independent competitor show them up?

The lenses tested

To go with the Fuji S2, we needed some Nikon D compatible lenses which would make good use of the small sensor size (roughly half frame in 35mm terms, producing a 1.5X magnification effect).

The new DG (digital) Sigma lenses include a 20mm $f1.8$, 24mm $f1.8$ and 28mm $f1.8$ as primes. The DG zooms are 15-30mm $f3.5-4.5$, 17-35mm $f2.8-3.5$, 20-40mm $f2.8$ constant aperture and 24-70mm $f2.8$ ditto. This last lens would be the normal choice of standard

Illumination tests – full aperture and 3 stops down



The 20mm $f1.8$ at full aperture, left, and $f8$, right (this is 4 stops down)



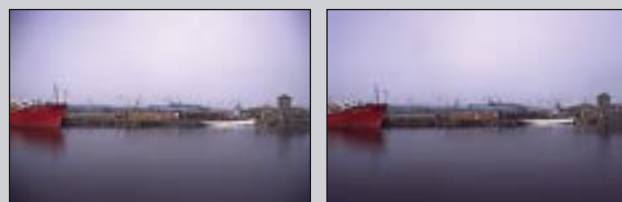
In contrast, the 15-30mm set to 20mm, at $f4$ and $f11$



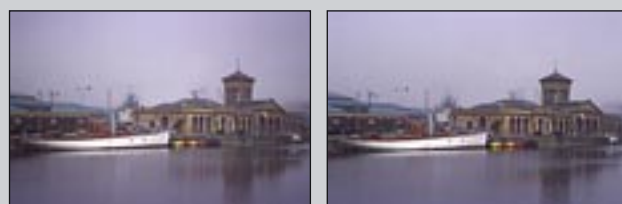
The 15-30mm set to 15mm, at $f3.5$ and $f11$



The 15-30mm set to 30mm, at $f4.5$ and $f11$



The 24-70mm set to 24mm, at $f2.8$ and $f8$



The 24-70mm set to 70mm, at $f2.8$ and $f8$

zoom for a digital camera or a conventional SLR, and a reasonable range easily compared to other lenses for quality.

From the others, we selected the 20mm $f1.8$ just because it pushes extreme wide-angle and high speed into one lens – there have been plenty of 28mm $f1.8$ or 24mm $f2$ lenses made, but never a 20mm $f1.8$.

The 15-30mm zoom was a natural choice because no lens of this range has ever been made.

Using a Nikon F70 with Fuji-chrome Provia 100F alongside the Fuji FinePix S2 Pro, a full film test was conducted including a series of shots taken at all apertures of a suitable distant subject..

20mm $f1.8$ EX DG

With a front glass measuring under 60mm, the mount size is generous with an 82mm filter thread. This aspherical-element lens is 90mm long without its additional 40mm of petal lens hood, and in Nikon D fit it weighs just under 500g.

The large 'focusing ring' functions as such when slipped back towards the camera, engaging light resistance and a 90° twist from 190mm close focus to infinity. This AF-MF push-pull switching allows a slight play in the ring, and we found that when mounting the lens (press in towards the camera) the natural action set the lens to MF every time, requiring the ring to be pulled forward to AF before shooting. This was a minor annoyance.

The aperture scale runs in full stop intervals from $f2.8$ to $f22$, and there is a lock facility on 22. The camera will generally require $f22$ to be set, and will not function on P settings otherwise. The cameras will control the aperture in half-steps, which combined with shutter speed control in third-steps permits very accurate exposure indeed.

The 20mm $f1.8$ exhibits overall low contrast combined with marked illumination fall-off at full aperture, and the edges of the field combine such an interesting cocktail of residual aberrations you

might as well be shooting with a Meyer Primoplan. The centre of the field is very sharp even at full bore, and the lens changes nature dramatically as you stop down – the fall-off slowly disappears until by $f8$ it is gone entirely, the sharpness in the centre become exquisite at $f4$ and the edges finally get there at $f8$. The overall contrast is never very high, but performance is held well all the way to $f22$.

Geometry is very good for such an extreme lens specification, if not perfect; slight barrrelling is easily handled with careful composition even for architectural subjects. The flatness of field at close range is excellent, a bonus considering the ultra close focusing.

Freedom from flare is acceptable despite the low overall image contrast, and the lens can be aimed into the sun with care.

This is, of course, on full frame 35mm film and not even allowing for slide mounting which trims off the extreme 0.75mm all round. Assuming a digital sensor of roughly 15mm x 23mm, the story changes completely. Within this zone, sharpness is very high at all apertures and the peripheral aberrations are excluded; vignetting is not quite absent but disappears by $f4$. The low contrast, being combined with very high resolution, is no disadvantage for digital cameras.

In short, this is a superb lens for general digital SLR use which will act as a top grade 20mm if stopped down to $f8$ or smaller for full frame 35mm. The strong illumination fall-off and high central sharpness combined with softer outer field would also make it a rather effective low-light, fast monochrome film candid photojournalism weapon. Full bore images have the look and feel of early Leica fast lenses, only this is a 20mm $f1.8$ not a 50mm $f1.5$.

15-30mm $f3.5-4.5$

With a fixed petal lens hood bringing its length to 130mm, this massive zoom has a domed front element and can't accept conventional filters. Since the front unit moves forward at shorter lengths, the petal hood is self-zooming and very effective.

All comments about the focusing ring, AF/MF switching and aperture settings apply. The focus down to 290mm is much stiffer, and the zoom ring is quite solid too, but everything works well. The lens weighs over 600g.

In use, the $f3.5-4.5$ finder image is much crisper than the 20mm's, and the lens proved to have higher contrast despite the complex zoom



Out of the trio of lenses tested, the one which gets a recommendation on grounds of unique qualities is the 15-30mm. Top, a full aperture close-up showing just how reasonable the geometry and field flatness are at 30mm. Below, a 15mm shot taken at $f8$, deliberately composed using a subject which will reveal the geometry of the lens – the good rectilinear handling of the verticals in the scaffolding, the inevitable wide-angle distortion of the iron ball, and the difficulty of getting that building precisely true.



design. Again, it is very free from flare and could be used into the sun, even with the sun included in shots.

Even at $f3.5$, the lens is sharper across the entire field than the 20mm fully open, and when set to 20mm for a matched test it yields a more even distribution of sharpness. The centre never quite matches the 20mm but the edges are better all the way to $f11$. The illumination fall-off is slightly more linear, with the central pool of brightness being smaller and the fall-off more gradual. Overall, exposures made with the zoom appeared to be half a stop darker, but this was mainly because of the 20mm's lower contrast.

Distortion in the extreme corners at 15mm is marked, of course, and the lens is great for pure effect. Stopped down to $f8$ or $f11$ it can be used for architectural work as long as building verticals are aligned with care; geometry is once again surprisingly good. Even for close-ups, at 30mm, flatness of field and lack of distortion are impressive.

This lens is better than most 17mm primes were 20 years ago, and better than many 19-35mm, 20-35mm or 18-35mm zooms are today. I exclude 17-35mm zooms, as for some reason this is a range which attracts some excellent expensive designs (Contax, Minolta, Canon, and Sigma themselves).

I would not hesitate to work with this lens on full frame 35mm. For digital SLRs it's just great, the extremes of 'drawing' are omitted and the vignetting is almost absent.

24-70mm $f2.8$

Finally, I tested the 24-70mm EX DG with its fixed fast aperture and useful general range.

Again, this is a lens of good contrast with a massive body – 82mm filters, over 700g weight, 115mm long when fully collapsed. It has a reversed arrangement for the AF/MF action on the focusing ring, meaning the problem mentioned earlier does not happen, and a pleasantly balanced manual focus over 90° down to 390mm. The zoom action is a little stiff, especially around 28-35mm where a cam seems to change direction, but as with the 15-30mm there is no question of 'zoom droop' when carrying the lens front down – it stays put.

The image at $f2.8$ shows an even field out to the corners, where a fairly sudden slight vignetting comes in at 24mm; this looks partly mechanical. It is more even at 70mm. Sharpness is very good from full aperture down, and really kicks in at $f5.6$. The tele end of the range is as sharp as the wide. For critical work,



any focal length at $f5.6$ or less will be fine, and the good geometry and flat field make the 24-70mm suitable for copying.

Because the lens is quite long and the focus is measured from the film plane, the close focus is more impressive than you would assume. On a digital camera with 1.5X magnification, the close repro ratio of 1:3.8 is equivalent to 1:2.5 and that's approaching macro range.

With the same high resistance to flare as its brothers, my only complaint about the 24-70mm is the price you pay in terms of size and weight.

Conclusion

All three Sigma EX DG lenses are optically advanced, and only the 20mm $f1.8$ falls in any way short of less adventurous designs when used with full frame 35mm, and it's still excellent when stopped down. The 15-30mm is an inspiring and unique lens on 35mm film and an essential wide zoom for digital SLR use. The 24-70mm is just a regular standard zoom with a nice fast aperture and good quality.

Viewing the sheets of E6, the consistent colour balance came through, with just a hint of extra warmth is the 24-70mm. This is a fairly new thing for Sigma lenses, and it looks as if some attention is being paid to making the EX DG lens series match each other for colour transmission if not for contrast.

These are the only lenses made for the digital SLR user and Sigma has once again stolen a march on the big makers.

– David Kilpatrick



The 24-70mm used outdoors for close-up work and below at full aperture by natural light indoors, both taken on the Fuji S2 Pro digital SLR. The magnified section is a 300 dpi enlargement (to about 11 x 14 inches).

