Experience Seminars

Canon Digital EOS training

New Canon Lens

Canon announce new lens with image intensifying optics

Canon have just announced the first of a line of ground breaking new optics that actually intensify the light as it passes through the lens. This results in smaller lighter lenses which can have longer zoom ranges but still retain a f2.8 maximum aperture.

This technology has been in development for many years, but achieving a blend of high optical quality with a good amount of light gain and a realistic manufacturing cost has only just become possible with a revolutionary new manufacturing process.

Canon are not able to release details of exactly how they make the lenses but, have said that the whole process of manufacturing has to take place in total darkness until the new Starlight Spectra Coating, which is the key to the intensifying of light, has time to develop its light gathering ability.

From what we have gleaned this is the first of a whole new series of IO (Intensifying Optics) Lenses and more lenses are expected in the range later this year.

We were lucky enough this week to be able to handle one of the first lenses into the country and so are able to bring you some details about the new lens. We were unable to shoot any images with the lens as it was pre-production and unfortunately the production models will not be available

EF 20-400mm f2.8 IO USM IS

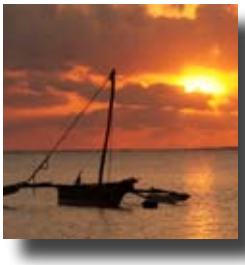
The lens differs from the other "white" lenses in the range by having a Blue ring rather than the traditional Red ring of the L series lenses. Apparently the whole range will carry this colour coding. Canon did a similar thing when they launched the DO optics a few years ago when the lenses carried the Green ring to designate the DO technology. The white colour is retained which will prevent heat expansion problems if the lens is used in hot climates.

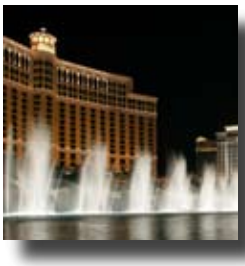
The range is incredible, 20mm through to 400mm in one lens is fantastic and with a widest aperture of f2.8, which is fixed throughout its range, it does beg the question as to why they are bringing out a range? This possibly is the last lens that you might ever buy.

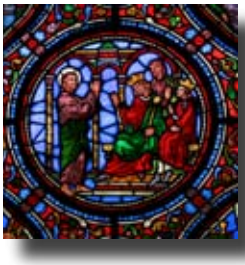
Although understandable as to why it has to be the one touch design, as per the 100-400mm and the 28-300mm models, this has to be the only down side to the lens. The feel is not to everyones taste, we have to just hope that they have improved the sealing on the lens over the other two lenses that they make in this design. The lens is supplied with a tripod mount, though it is small and light enough to be easily handheld. The lens weighs in at just 1409grams which is heavier than the 100-400mm lens but just over 250g lighter than the existing 28-300mm lens.

The lens is decidedly front heavy, if used on the lighter bodies, though put a camera with a battery grip or a 1D series body on it and the handling is useable. A lot of the weight comes from the IO optic that is at the front of the lens and features the very special Starlight Spectra Coating (SSC) that is apparently one of the key elements of getting the lens to work. This produces a very strange look to the front of the lens, with an red glow to the front optic, it's bizarre as in lowlight the front elements appears to almost glow, it is much less noticeable in bright light.

On thing Canon have said is that the SSC coating is very delicate on the element itself, but they







are making a special range of filters including UV, Protect, and Polarising that are designed to match the lens optics. They do not recommend the use of other filters as it can adversely affect how the SSC coating performs. We suspect that these may be fairly expensive as the lens does feature the larger 82mm filter size on its front element.

One very interesting aspect of the lens is its minimum focusing distance. Normally for a lens of this type we would expect that the minimum focusing distance to be about 1.6 to 1.8m. This one focuses straight down to 0.2m throughout the range. This means that at the 400mm setting the lens actually gives 1:1 reproduction size, though it has to be said that depth of field is going to be a problem, although at lower focal length settings it is very useable. It gives about 1:4 on about a 100mm setting.

The lens also features Canon's optical image stabilising system which has been further improved and now gives a 6 stop handholding benefit. An interesting thought is that if you combine this with the 5D Mark II ability to shoot at 25,600 ISO and the bright f2.8 aperture, virtually all photography can be conducted hand held.

One thing we are going to be interested to test will be the optical quality of the lens, All in one lenses have a tendency to be a compromise in optical technology producing issues with barrel distortion and pin cushioning in addition to fall off at the edges and peripheral illumination correction. Now to be fair the lens corrections within DPP software can be programmed to take these out, so they are less relevant for those that can shoot RAW than they used to be. Canon have said that the lens is on a par with the 28-300mm L series zoom lens, which is very good. The optics will be helped by all the elements in the lens, apart from the IO optic being aspherical elements, though this is undoubtedly what has pushed the price of the lens up. Though to be fair, the three L series zooms that it could replace would add up to more than this lens costs.

How does it work?

Canon, possibly not surprisingly are reluctant to give out full details of how this amazing lens works. The general principal appears to be that the Starlight Spectra Coating (SSC) in conjunction with the special glass of the Image Intensifying Optic (IO) excites the light as it enters the element and changes the wavelength of the light, as the wavelength of the light decreased it intensified the light in much the same way as an image intensifier works, though this works down a series of tubes rather than just through glass, The Starlight coating modifies the light in such a way that this effect is made even more pronounced. The light gain from this process intensifies as the focal length increases which is why the aperture can be kept at f2.8 all the way through the lens range. The light gain at 20mm is given as 2 stops increasing to 4 stops by the time the lens is at 400mm.

Key technology features of the lens are as follows:

- **A**pherical optics used on all elements except for front SSC coated element
- **P**ro quality optics on a par with L series lens quality
- **R**obust design with build quality equivalent to L series lenses
- **I**mage intensifying optics used in front element of lens
- **L**ens feature full time mechanical manual focusing
- **F**ully flocked throughout to prevent internal reflections
- **O**ne touch design for speed of zooming
- **O**ptical image stabiliser with 6 stop correction for handshake
- **L**ens supplied with removable tripod mount

Embargo data 01/04/09
Estimated availability Autumn 2009
Estimated cost £2799