

Irix 11mm f/4 Lens Review

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The Swiss designed and Korean manufactured Irix 11mm f/4 with Nikon mount was received in the office of EJPhoto.com one day after it was released for shipment in the USA. It is the widest non-fisheye full frame DSLR lens on the market. Only the Canon EF 11-24mm f/4L zoom lens can match its field of view on the wide end. The Irix 11mm comes in two different trim levels but they are optically identical. The Firefly lens, which is also the first model shipping, is housed in a high grade polycarbonate body with full weathersealing while the Blackstone lens is an all metal construction with etched glow in the dark lens markings. The Blackstone model is of course a bit heavier at 790g vs. 730g for the Firefly. The Firefly version of the lens was used for this review. It is extremely well constructed and still a weighty chunk of glass - I would rate its overall construction well above most lenses constructed of polycarbonate including the Nikon polycarbonate lenses. While I haven't personally handled the all metal Blackstone lens, I have it on good authority that it is built like a tank! Due to the very small focal length and its 126 angle diagonal field of view (117 angle horizontal field of view), it has a large bulbous front element with a permanent built-in lens hood. As such, it does not accept screw-on filters however one can drop slip in filters such as a Neutral Density (ND) filter in a rear lens mount filter slot. The Lee 150mm filter system can be kluged to work on this lens if front filters such as a polarizer or Graduated Neutral Density (GND) are required. While this is a manual focus lens, it does have electronic contacts and a lens ID chip. This allows the aperture to be changed from the camera body aperture controls and the correct EXIF data is written to the image files which will allow detection and automatic correction of lens artifacts such as vignetting, linear distortion and chromatic aberration if and when RAW converters support the lens directly. In the mean time, I will provide some correction values for Capture One and Adobe products in this review. The lens does not have a manual aperture ring.

The manual focus ring, while not Zeiss/Voigtländer smooth, provides a great amount of feedback and is mechanical in nature giving very precise control. Infinity focus is easily achieved with a click stop even though the lens does focus beyond infinity for extreme atmospheric and infrared situations. The focus ring has a locking mechanism in situations where focus distance is constant. On a Nikon body, the aperture is controlled via the older electro-mechanical linkage similar to G lenses, not the newer E-lens fully electronic linkage that has appeared in the most recent Nikon lens releases. On a Canon body the lens has a fully electronic



aperture diaphragm since all Canon EOS cameras have a 100% electronic mount. One great addition that is missing in many of today's lenses is an infra-red focusing mark which allows the photographer to dial in the proper offset for infrared photography since infrared light focuses in a different plane than the median wavelength of visible light.

The Irix 11mm f/4 Firefly lens ships in an attractive metal box and comes with a soft case while the Blackstone ships with a hard case. In the USA the Firefly retail price is \$575 and the Blackstone's price is \$775 - to reiterate, they are completely identical optically. A full comparison provided by Irix is found below:

Lens Version		Firefly	Blackstone
HOUSING MATERIAL		Lightweight material, 12% weight saving	aluminium-magnesium alloy, premium finish
HOUSING OUTER FINISH		standard	anti-scratch
FOCUS RING MATERIAL		anti slip coating	all-metal anodized ring with grooved surface
MARKINGS		printed	engraved
MARKINGS PAINT		standard	UV light reactive paint
WEATHER SEALING	FRONT LENS ELEMENT	no	
	FOCUS LOCK RING	yes	
	FOCUS RING	yes	
	CAMERA MOUNT	yes	
PROTECTIVE CASE INCLUDED		soft lens pouch	hard lens case

I put the Irix 11mm f/4 lens through a battery of optical tests and did some in the field shooting. I ran comparisons against the excellent Voigtländer Ultra-wide Heliar III 12mm f/5.6 lens as it is the only other prime lens in the focal length vicinity of the Irix lens for full frame cameras. My review of the Voigtländer lens can be found here:

<http://www.ejphoto.com/Quack%20PDF/Voigtlander%20Trio.pdf>

Full frame tests were conducted on a Sony a7R Mk II 42 megapixel camera as it is the most demanding sensor in 35mm format available to me. APS-C tests were conducted on the Nikon D500 and D7200.

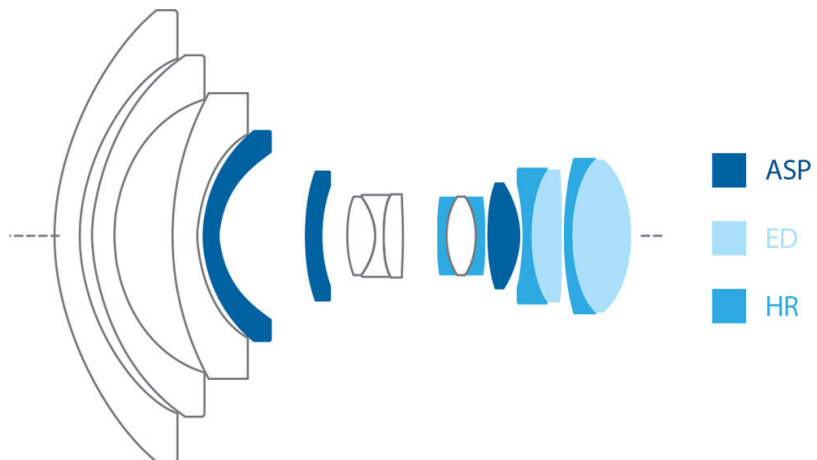
Sharpness

Utilizing the 4000 line per frame ISO 12233 chart the lens easily resolved all 4000 lines in the center even wide open at f/4. Towards the edge on a full frame camera there was some visible

fall-off at f/4 but less than I expected for a lens this wide. This was still visible at f/5.6 but became nearly undetectable at f/8. In the corners, the Irix lens is slightly sharper than the excellent Voigtländer 12mm f/5.6 lens at all apertures but not enough to choose one lens over the other - the difference is quite small. On an APS-C cropped camera, the softest part of the lens is cropped and by f/5.6 the Irix lens is excellent as is the Voigtländer.

Chromatic Aberration

Chromatic Aberration (CA) is visible at all apertures but much more noticeable at f/4 and f/5.6 in both the full frame, and to a minimal extent, the APS-C frame. I processed the lens through the automatic CA Analysis tool in Capture One and the CA completely disappeared. Similarly, in Adobe Camera Raw, checking the Remove Chromatic Aberration box in the Color tab of the Lens Correction section, all CA disappeared. Since Lightroom uses ACR under the hood, I would expect it to completely rid the image of CA as well. No noticeable reduction in resolution was seen by applying automatic CA reduction. If CA correction is accidentally forgotten in the RAW converter, one can still completely correct it in the lens correction filter within Photoshop by dialing in a -15 adjustment on the Green/Magenta slider. By comparison, the Voigtländer lens has nearly zero CA which is mind boggling for such a tiny lens.



Vignetting

Like all super wide lenses, the Irix 11mm f/4 suffers from noticeable light fall-off in the corners, often referred to as vignetting. It is, however, less than the fall-off on the Voigtländer Heliar III despite being a full stop faster. In Capture One for a shot photographed at f/4, a Light Falloff correction of +33 is required to eliminate this and it stays relatively constant at smaller apertures. At f/8, a value in the high 20's gets rid of the light fall-off. With the Adobe products a +73 value is required at f/4 while a +41 value takes care of the light fall-off at f/8. On an APS-C camera, about half of the values above are appropriate to get rid of any ultra-wide angle vignetting. By comparison, the Voigtländer requires a Capture One correction of +49 wide open at f/5.6. Users of Capture One can easily create a Lens Cast Correction profile for the lens and apply those in the RAW processing flow which will eliminate any vignetting on either lens without having to add in this adjustment. For more information on LCC profiles and how to create them, see my Summer 2017 Newsletter... (<http://www.ejphoto.com/Quack%20PDF/Quack%20Summer%202017.pdf>)

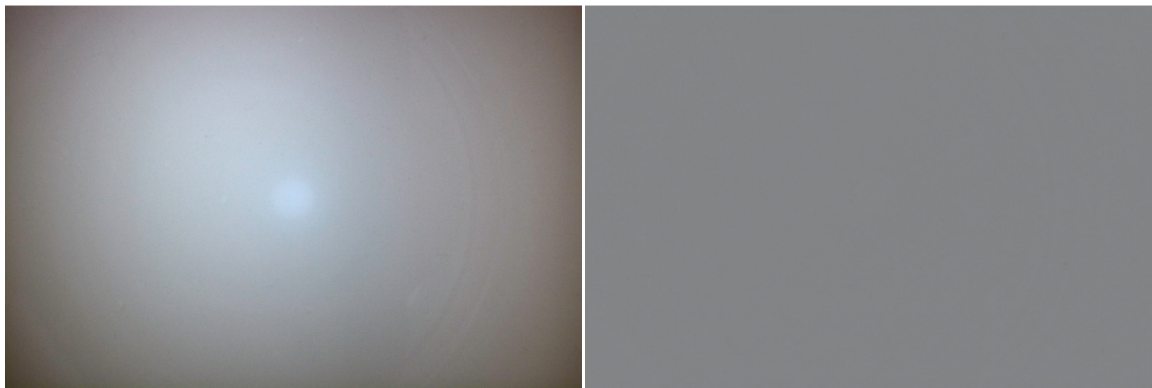
Linear Distortion

If there is one area where the Irix lens disappoints, it is in linear distortion. The distortion is in the form of significant barrel distortion and it is approximately double the barrel distortion of the Voigtländer lens. In the photograph of my bookcase, one can easily see how bowed the shelf is. Once you correct for the distortion on both lenses, they are virtual identical in field of view despite the Irix being a wider angle lens which should have a 5 degree wider angle of view. This is due to more of the image needing to be cropped after linearization of the photograph on the Irix 11mm f/4 than on the Voigtländer 12mm f/5.6. In most landscape applications, as long as there isn't a straight horizon or a vertical feature along the edge this won't be a problem. But in architectural or real estate applications, one will have to take into account that about 8 degrees will be lost off of the angle of view if truly vertical lines are desired - consider both lenses 12.5mm lenses if linear correction is necessary. In Capture One, a 34% correction level in the Distortion slider is required to correct this barrel distortion and in Adobe products, a +15 value is required - these adjustments are independent of frame size so one would use the same values for full-frame and APS-C. On a mirrorless camera like the Sony a7 series, due to the relatively strong linear distortion, the Voigtländer 12mm Heliar III is the better choice as it is much smaller and does not need an adapter. Only if the extra stop of an f/4 lens is needed or the lower price of the Irix is a consideration should one consider this lens for a mirrorless camera. On a DSLR though, this lens is the best and least expensive option into the realm of the "insanely-wide" rectilinear lens world. Canon shooters have the 11-24mm lens available at more than 5 times the price of the Irix but image quality isn't better than the Irix. In my limited experience with the Canon 11-24L, I would rate the Irix 11mm f/4 ahead of the Canon 11-24mm lens at a focal length of 11mm.



Infrared Considerations

One of my main reasons for wanting to evaluate this lens was as a wide option for my APS-C infrared converted cameras (Nikon D7100 - 720nm and Sony a6000 - 665nm). I therefore evaluated the lens for hot spots in the infrared spectrum. This is a common occurrence in many lenses. In the visible spectrum the color and illumination is uniform or at least behaves in a predictable manner such as with vignetting. In the infrared spectrum, however, lenses can have a relatively harsh spot, usually in the center, where the lens behaves very differently than in other areas. This lens clearly is intended to cater to the infrared shooter with its infrared focus offset markings on the lens barrel. The lens does have a hot spot in the center that is more pronounced at f/16 and f/22 and is just barely visible at f/11 - this hot spot also has a slight color shift. At larger apertures it is absent. For this reason I produced lens cast correction (LCC) profiles for the lens to be applied in Capture One. Below, please see a rendering of this hot spot in the f/22 case on the left and after lens cast correction on the right (which also eliminates the vignetting). I have increased the contrast to make it more visible in this article - the hot spot, nor the vignetting are nearly as bad as the illustration below would lead one to believe:



As you can see, the lens cast correction profile that I created for this lens will render infrared images perfectly. Note that an LCC profile can also be used for normal visible light color photography as indicated in the section on vignetting above.

Discussion and Summary

The Irix 11mm is the second focal length lens offered by the relatively new Swiss premium lens company Irix It is their second focal length offering following on to their widely acclaimed 15mm f/2.4 Firefly and Blackstone lenses. Overall, it's build quality is exceptional and handling is outstanding with convenience features such as a focus ring lock, a focus ring thumb rest, a positive click stop at infinity, full weather sealing and an expanded hyperfocal scale based on a more modern circle of confusion value of 15 microns rather than the classical value of 30 microns. This means that the hyperfocal scale is much more appropriate for today's high resolution sensors than lenses which feature the classical hyperfocal scale. Optically the lens is very good, better than the benchmark Voigtländer 12mm lens in some categories and a bit worse in others but for a DSLR user, this is an exceptional option. Some might think that it is

just too hard to manually focus a lens where features are so small in the viewfinder due to the extreme wide angle of view but this really couldn't be farther from the truth as the depth of field is enormous. A landscape photographer can simply focus the lens to a little past 4 feet and lock it in place with the focus ring lock, select f/8 as the aperture and be assured that even on a very high megapixel camera like the Sony a7R Mk II or Canon EOS 5DS(R), everything from 2 feet to infinity will be sharp - one essentially never has to focus the lens unless something is closer than 2 feet. The more I use the lens, the more smoothly the focus ring is becoming indicating that the focus mechanism is going through a break-in period, which is not unusual for mechanical manual focus lenses.

In photographic situations where there are straight lines away from the center of the frame, the photographer must be aware of the linear barrel distortion that will result in some loss of the edges if corrected. Similar to shooting with a fisheye lens, one must be careful not to include their own feet or tripod legs, especially when shooting close to the ground. Until lens profiles are available in RAW converters, it is important to take action to eliminate chromatic aberration.

On an APS-C camera, this lens really shines and becomes the approximate equivalent of a 16.5mm lens with staggering depth of field and better image quality than any zoom that goes that wide on the 1.5x crop sensor (1.6x for Canon resulting in 17.6mm effective focal length). CA correction is not necessary in most situations on a crop sensor camera.

I did not evaluate the lens for astro photography due to its f/4 aperture and feel that the Irix 15mm f/2.4 is better suited for that application.

Below, please find a couple of sample shots that I took in my neighborhood park. I purposely shot a subject with lots of detail in the corners and I am much more impressed with real world results than I am with the test chart results despite focusing the center and corner separately in the test chart shots due to the extreme angle and much bigger distance from camera to subject in the corners than in the center. In real world shooting, I saw very little detectable falloff in sharpness in the corners, so little that one really needs to pixel peep to see it. Similarly, the linear distortion was just not seen since I did not shoot subjects in nature with horizontal lines. If using this lens on a straight horizon, one definitely will want to consider some distortion correction and in any kind of shooting that includes buildings, distortion correction will be a must. This is clearly a specialty lens and the vast majority of photographers simply do not need anything wider than 16 or 20mm but for those that really like including a lot of foreground or those that shoot in tight places will this 11mm lens will be welcomed. Overall I find this lens to be an excellent addition for the photographer that demands this type of extreme wide angle lens and enthusiastically recommend it.



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