## Best lighting gear

 An essential buyer's guide - from household lamps to off-camera flash

How to spot and use great
light for incredible results

- Dawn \& dusk shooting secrets
- How to improve on natural light
- Master indoor lighting techniques


## Fujifilm's new nifty 50 mm <br> Full test of short telephoto prime for X-system

## The monkey selfie

 ruined my life......but I don't regret taking it
David Slater's cautionary tale
APOY goes wild Your best widllife shots could win you a Sigma $150-600 \mathrm{~mm}$ lens


## I AM CHASING MOMENTS



I AM THE NEW NIKON D7500. Don't let a great moment escape you. Equipped with a 20.9MP DX-CMOS sensor, 51-point AF and ISO 100 to 51200, the new Nikon D7500 can achieve stunning images in low light and has a continuous shooting speed of 8 fps . Wherever you move, an intuitive, tilting touch screen and slim body with deep grip offer added agility, and you can share your images in an instant to your smart device. Alternatively, capture movies in incredibly sharp 4K UHD to relive again and again. Go chase. nikon.co.uk



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## Idays A week in photography

What is the one thing you need for any successful photograph? A fast, sharp lens? A full-frame sensor? No - it's good light, or to qualify that, light good enough to deliver the photographer's intentions and do justice to the subject. Outdoor photographers know all about the benefits of shooting at the best times of day (usually dawn or dusk), but studio
photographers need to be able to master and shape artificial light, too. So this issue is dedicated to light in all its forms. As well as a comprehensive guide to making the most of glorious dawn and dusk light by David Noton, you'll find lots more, including a guide to the best lighting accessories (some of which you may own already, such as an anglepoise lamp). We hope you find this issue of AP illuminating! Nigel Atherton, Editor

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## ONLINE PICTURE OF THE WEEK



## Wildflowers in Bo'ness <br> by David Queenan

Nikon D610, $14-24 \mathrm{~mm}, 1 / 60 \mathrm{sec}$ at $\mathrm{f} / 16$, ISO 100, flash

This image was uploaded to our Twitter page using the hashtag \#appicoftheweek. 'It was taken on the foreshore at Bo'ness [Borrowstounness] where some new wildflower meadows have been planted out over the last couple of years,' says David. 'I used my Nikon D610 and $\mathbf{1 4 - 2 4 m m}$ lens at its
widest setting and put my tripod down as low as it would go. I set the camera to manual and underexposed the image, taking test shots until I achieved a dark and moody sky. I used a remote Nikon SB-900 flash, handheld offcamera, and just experimented until I was happy with the result.'

## Perma $=$ It

Win!Each week we choose our favourite 需 picture on Facebook, Instagram, Flickr, Twitter or the reader gallery using \#appicoftheweek. Perma Jet proudly supports the online picture of the week winner, who will receive a top-quality print of their image on the ${ }_{3}^{2}$ finest PermaJet paper*. It is important to bring 零 images to life outside the digital sphere, so we encourage everyone to get printing today! Visit www.permajet.com to learn more.

[^0]
## 7days: <br> A week in photography

## NEWS ROUND-UP

The week in brief, edited by Liam Clifford and Hollie Latham Hucker

## Datacolor Spyder5ELTE+ upgrade offer

Colour management solutions company Datacolor is offering all display calibration owners the chance to upgrade to Spyder5ELITE+, the company's ultimate display calibration device and software, for a fraction of the price. Until 31 August users can save $£ 130$ on the package, which will also include a 90 -day Adobe Creative Cloud Photography Plan membership. See www.datacolor. com/promo/crossgrade15.


Campaign to recreate legendary Glaukar 3.1


In 1910 lens maker Emil Busch pioneered one of the most important lenses of its time, the Glaukar f/3.1. Photographers Benedikt Ernst and Firat Bagdu have launched a Kickstarter campaign to bring the Glaukar $97 \mathrm{~mm} f / 3.1$ into the modern age. See kickstarter.com.

## Jessops opens in York

 Jessops has opened its doors to a new store in York, its 58th since it was bought out of administration by Dragons' Den tycoon Peter Jones. The new location provides specialist kit, a Jessops Academy, cleaning and maintenance services, photo lab, rental and photography workshops.

## New Tenba Roadie Collection


owng the success of its original Roadie range of bags, Tenba has launched an
updated and remodelled Tenba Roadie
Collection, featuring five rolling bags across the new series. Sizes vary within the range and the bags can accommodate several camera bodies, lenses and laptops up to, and including, 17in. See www.tenba.com for more information.

## New auction house

Flints Auctioneers specialise in cameras and photography equipment, scientific instruments and early technology. It will hold four Fine sales and three Collectors sales for more affordable pieces) annually at the Stoke Newington West Reservoir Centre in London. Visit www.flintsauctions.com.



## GET UP \& GO



## Eadweard Muybridge

This exhibition, on show at Beetles + Huxley, will showcase 65 collotype prints made by the Eadweard Muybridge in 1887 from his influential series Animal Locomotion, which features images of animals and people captured mid-movement.
Until 2 September
www.beetlesandhuxley.com


Yorkshire Photographic Union 2017
As part of the Northern Summer of Photography, the Huddersfield Art Gallery is displaying the best amateur works from 75 Yorkshire photographic clubs. Here you can see 200 mounted prints and a number of digital images.
Until 2 September
https://tinyurl.com/y96eq8fh


The most interesting things to see, to do and to shoot this week. By Oliver Atwell


## Sunrise landscapes

Landscape photographer and LPOTY winner Andy Farrer will be on hand to show you how to make the best of sunrise across the stunning location of the Jurassic Coast, which runs from Exmouth to East Devon. Book well in advance as places will fill up quickly.
18 September, www.lightandland. co.uk/photography-tours


## Macro Photography

The Royal Photographic Society is once again teaming up with Nikon to offer a hands-on workshop on how to develop some serious macro-photography skills. The workshop will give an overview of the techniques and technical know-how, setting you on your way to capturing worlds invisible to the naked eye.
15 August, www.rps.org/events


## Michael Prince

Bred for their strength, the Clydesdale horses at Flanders Moss in Stirling have been the subject of Michael Prince's photographs since 2013. In this exhibition, viewers will get a chance to view these incredible animals through the eye of Prince's distinct aesthetic.

## Until 15 October

www.falkirkcommunitytrust.org


The Beatles brought to life in a new book from Harry Benson

BACK IN 1964, Scottish photographer Harry Benson was readying himself for a trip to cover a news story in Africa. However, he then he received a call from the photo editor of the Daily Express asking him to go out to the US to cover The Beatles' first shows in America. Benson, by his own admission, had zero interest in the project. Once he met the band and saw them play, though, all that changed. He followed the group and caught perhaps some of the most famous images of a band stepping into music history.
Taschen is releasing a book of some of Benson's best images, including this one capturing the band's legendary performance on The Ed Sullivan Show.
Harry Benson: The Beatles. On the Road, 1964-1966 published by Taschen is released this month priced £29.99.

## Words \& numbers

If you want to be a better photographer, stand in front of more interesting stuff.

## Jim Richardson

American photojournalist and National Geographic photographer

price in pounds of the most expensive photograph sold at auction, taken by the German artist Andreas Gursky


# Magnum and LensCulture award winners announced 

\&TWELVE photographers from around the world have been announced as winners of the second Magnum and LensCulture Photography Awards.
The competition spans six categories, with awards for both series and single entries. Topics were diverse; Nick Hannes, the documentary series winner, pursued a project featuring the culture of the elite in Dubai (above). While the single image portrait winner was Artur Zdral from Poland for his picture of Kasia (right).
Each winning photographer will be awarded a cash prize - \$3,000 for series awards and $\$ 1,500$ for a single award - and will also receive international exposure through Magnum Photos and LensCulture's combined audience of more than 6.5 million.

The winning projects will be shown in a digital exhibition at The Photographers' Gallery in London later this year, as well as being exhibited at photography festivals worldwide. The laureates can also look forward to accessing expert guidance from Magnum and LensCulture.
This year has seen Magnum turn

70 years old, representing some of the world's best-known photographers and photojournalists. The co-operative was started by legendary names in photography such as Robert Capa, David 'Chim' Seymour, George Rodger and Henri Cartier-Bresson.
Speaking about the competition, Magnum's former president Martin Parr writes: ‘Surviving 70 years


Artur Zdral's winning portrait image
as an artistic co-operative is in itself an achievement, and in this period Magnum has accumulated an unrivalled photographic archive. A key objective of 2017 and of Magnum's anniversary celebrations is to expand audiences and encourage mass participation in the agency's work. Our collaborative Photography Award with LensCulture provides a perfect platform for us to see a diverse range of photography globally, and for the wider photography community to access us more easily.'

LensCulture is one of the largest online destinations to discover curated contemporary photography from around the world. It currently reaches a huge audience via the web, social media and mobile platforms, and hosts several international photography competitions with participating photographers from more than 140 countries. It also curates exhibitions in leading cities and creates projections that are screened at photography festivals around the world.
To learn more about the contest and see more of the winning images, visit www.lensculture.com.


Updates for Lightroom Mobile
A A008Ehas
announced a new host of updates for its iOS and Android Lightroom Mobile apps, including both cosmetic changes and fresh features.

Lightroom for iOS has seen some userrequested tools find their way onto the app.
Users can now use their fingertips to paint selectively in enhancements to specific parts of their images. The Details tab has been added, offering control over sharpening and noise reduction for the whole image. Finally, the interface for the tablet version of the app has been redesigned.
The android version of the app has been redesigned from the ground up, although with no specific new features, with a modern user interface that Adobe promises will feel more natural.


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# Laowa turns ultra-wide angles into shifts 

5

CHINESE

manufacturer Venus Optics, creator of the Laowa line of lenses, has unveiled the Laowa Magic Shift Converter (MSC) for use with Sony full-frame E-mount cameras specifically for the Laowa 12 mm f/2.8 Zero-D in its Canon and Nikon versions. As the name implies, the idea of the MSC is to act as a lens adapter that effectively turns an ultra-wideangle lens into a shift lens without causing vignetting to occur. It does this by optically expanding the image circle of the lens, allowing it to be shifted vertically or
horizontally relative to the sensor.
With converging verticals and perspective distortions particularly difficult to avoid when shooting buildings such as skyscrapers, lenses with good shift capabilities are often prized by architecture and interior photographers.
By applying the MSC, the $12 \mathrm{~mm} \mathrm{f} / 2.8$ Zero-D becomes a $17 \mathrm{~mm} \mathrm{f} / 4$ Zero-D lens with $+/-10 \mathrm{~mm}$ shift capability. According to Venus Optics, when tested at maximum shift the lens exhibited no vignetting and there was no noticeable drop in its performance.

The Laowa MSC is available to pre-order from www.laowalens.co.uk for £299, with stock for both the Canon and Nikon variants listed as being due at the end of July.
The MSC will be the first in the Magic Converter family to be available to consumers. Venus Optics had previously announced the Laowa Magic Format Converter which uses the same optics system - this time to fit a full-frame lens onto a GFX medium-format body without vignetting - but it isn't due until later in the year.

## AP reader takes a different view

HaAP reader Brian Dion has developed a way to get close to the ground for those impractical shots - the Slingpod. He has built a system for taking pictures that might otherwise prove difficult, by placing the camera on a plate that can then be lowered safely down to ground level and triggered with a remote release. Inspiration struck a few years ago. 'I wrapped a remote cable around my lens and held both camera strap and remote switch in one hand and got some really good shots,' he writes.
Dion hopes that the Slingpod will help older people or those with wheelchairs wanting to shoot closer to the ground. For more on this ingenious system visit www.briandionphotos.com.


Brian Dion's Slingpod in action

[^1]
## New Books

The latest and best books from the world of photography. By Oliver Atwell


## Birds in Pictures

by Markus Varesvuo, New Holland, £30, 384 pages, hardback, ISBN: 978-1921517952


FOR years, Markus Varesvuo was, like many of us, trapped in the drudgery of a nine-to-five life. However, back in 2005 he made the decision to focus his attention on the hobbies that had become his true passions: birdwatching and photography. Since then, Varesvuo has been slowly building an impressive portfolio of work, and in this book we see the results of years spent trudging through the wilderness. Birds in Pictures is Varesvuo's personal taxonomy of European birdlife. It benefits hugely from the fact that the photographer has set himself such a stringent parameter. By focusing on European birds, Varesvuo is able to offer a solid and thorough survey of the birds that are right on our doorstep. Varesvuo is therefore able to present a clear and well-researched account of Europe's fascinating feathered subjects. It's a lovely book and one well worth the attention of any budding ornithologists. $\star \star \star \star \star$

I Know Not These My Hands
by Sarah Cooper and Nina Gorfer, Kehrer, £39.70, 416 pages, hardback, ISBN: 9783868287783


SARAH Cooper and Nina Gorfer, an artist duo, are a pair whose primary objective is to highlight issues of cultural identity through a series of projects that combine multiple methods and aesthetics. In this utterly gorgeous book the pair has created a deeply affecting meditation and exploration of northwestern Argentina. The book consists of a collection of interviews and ethereal portraits, all of which look into the ideas of identity, colonialism, forced migration and political displacement, all big topics for the historically troubled region. The portraits are seriously captivating, perhaps some of the best examples of the genre so far this year, and the publisher, Kehrer, has done an admirable job of presenting them in the best light. This is a beautiful book. $\star \star \star \star \star$

# News special Monkey selfie malarkey 

An embittered David Slater, the man behind the 'monkey selfie' image, is thinking of giving up photography as a career. Geoff Harris finds out more

- IT'S BEEN six years since - David Slater managed to get a grinning macaque monkey to take a self-portrait, a picture better known as the 'monkey selfie,' but any early joy at its global popularity was soon replaced by exasperation - and expensive legal wrangling. AP readers may recall that Slater soon got involved in a major legal spat with Wikipedia over copyright and whether the image was 'royalty free'. As he told the BBC in 2014, 'I made £2,000 [for that picture] in the first year after it was taken. After it went on Wikipedia all interest in buying it went. It's hard to put a figure on it but I reckon

I've lost $£ 10,000$ or more in income. It's killing my business.'
Things got even messier in 2015, when People for the Ethical Treatment of Animals (PETA) sued Slater on behalf of the monkey it dubbed Naruto, claiming it was the rightful owner of the copyright. A judge ruled against PETA in 2016, saying that the relevant copyright law did not cover animals, but PETA appealed. As the courtroom arguments drag on in the US, AP contacted Slater for a catch-up.

## No joke

'I've been watching the
proceedings online as I am not going to risk any more money by
travelling to the US,' Slater explains from his base in Chepstow. 'I didn't understand half of it, and even the judges are baffled. The judge kept asking "where is the injury to the monkey?" much to the amusement of the courtroom, which is full of law students. There's even a question over whether Naruto is the right monkey!'

Slater first heard that PETA was suing him on behalf of Naruto when he read a story from an Associated Press reporter. At first his lawyers thought it was a joke. 'Then a man in a suit from a local law firm came round and served me the papers. I opened them in front of him and we had a bit of a giggle.'


David Slater can also see the funny side of the story and still manages to sound cheerful and positive on the phone

Even though Slater's team won the first round, the appeal won't be concluded in the short term. 'My lawyers say I could be waiting months for a judgment, so I am still dangling in a twilight zone. I have no idea whether I will have to pay PETA's costs if the appeal is upheld. I guess all my earnings from the image over the last six years, which is about $£ 15,000$, would go to them.'
Slater claims he has already spent a lot of money and time trying to confirm his copyright, and finds the PETA case a massive distraction from what he sees as his real battle with Wikipedia - an organisation he describes as 'institutionally arrogant'. 'Wikipedia is probably going to issue a press release if the appeal is thrown out saying of course nobody can hold copyright on this image. They are going to try and make even more capital out of it. There is a big anti-copyright lobby out there that want everything on the internet to be free. It's very depressing.'

## Success story

The aggravation surrounding the monkey selfie has clearly taken its toll on Slater, both personally and financially, but he has no regrets about taking the image. 'I love the picture. It hangs on my wall, and keeps me smiling. Not only that, a recent National Geographic article suggested it's helped to save the species - it's encouraged a lot of ecotourism, so it's in the interests of the locals to help preserve the macaques. I took the risk getting the picture, nobody paid me to go out there, and while it has proved to be very expensive, it's great that the expense has made some positive difference.'
To add to Slater's woes, he suspects the Press Association (PA) distributed the image without his permission (or indeed the monkey's, should PETA's appeal be upheld). A spokesperson from PA Images responded, 'PA Images licensed the image through a reseller agreement with one of our distribution partners. We removed the picture as soon as we became aware of the licensing issues around it.'
Slater is seriously thinking of giving up on photography as a full-time career. 'I don't want to, but I am almost being forced into this. I've run out of funds and my camera gear is failing. The bodies and lenses are old, and the

## Never give away the high res

WHILE Slater doesn't regret taking the monkey selfie, he is kicking himself for allowing his agent to distribute the original high-res version to the press when the Wikipedia dispute first erupted.
As he explains, 'If you are contacted by the press, give them the smallest copy they are happy with,' he advises. 'My agent handed out the full-res image in case somebody wanted to turn it into a poster. We soon lost control of it online, as bots are trawling the internet all time for the best quality images.'

‘This squirrel image displays great personality, connecting us to nature'
The picture that launched a lot of court cases - Naruto, which is the name of the monkey given to it by PETA, is doubtless blissfully unaware of the furore
contacts are failing, which is going to be expensive to fix. I'm supposed to be a professional and I am reduced to using knackered old gear.' He continues,
'Something has to change as I am earning peanuts at the moment.'

## Can of worms

As well as making the monkey selfie an even more expensive picture for Slater, a PETA victory would have implications for all
wildlife photographers. 'If it wins it will open a can of worms. If animals own copyright on their images, what about the past 100 years of remote cameras, cameras strapped to animals, infrared traps triggered by wildlife, and so on?' He suspects the whole thing is a publicity stunt.

PETA tried to bring lawsuits on behalf of animals before, including suing George Bush on behalf of dolphins who it said were suffering
from the effects of US sonar equipment. It got thrown out, so why bring this case against me? PETA knows that there is no such thing as bad publicity. They don't care who it destroys in the process. This has been its campaign strategy for years.'

Keep up to date with the case, and Slater's subsequent response, at www.facebook.com/DavidJSlater/. The PETA website is www.peta.org.

For the latest news visit www.amateurphotographer.co.uk

‘This giraffe image shows the sheer elegance and beauty of nature'

A week in photography


?he legal dispute currently going through the US courts over the ownership of the 'Monkey Selfie' is so farcical that it sounds like a Monty Python sketch. But it is no laughing matter for the photographer, David Slater. Back in that Indonesian jungle, when Slater first saw that now famous image that he had, through skill, patience, and coaxing, coerced a macaque into taking of itself, he could scarcely have imagined how much trouble it would cause him, first with Wikipedia and now with PETA (People for the Ethical Treatment of Animals), who have brought this case.

At the core of the argument is whether, if an animal takes its own picture, it is legally the owner and copyright holder of it. If so, then not only does Slater not own his macaque photos but neither would photographers behind any photos taken using remote camera triggers. It's a ridiculous argument since animals have no concept of what a photo even is, let alone what to do with the copyright of one.

You may also reasonably ask why, since Slater is British, and the monkey is Indonesian, what this has to do with the US? Well it seems that, when the internet is involved, the whole world is now at the mercy of the whims and greed of the American legal system.

Last weekend I watched David Slater debating on Sunday Morning Live with a representative from PETA UK, and it was
clear that its motive goes beyond mere copyright law. It takes issue with the fact that, by photographing animals without their consent and making money from them, Slater is exploiting them. By extension this charge must apply to all wildlife photographers, as well as the likes of David Attenborough and the BBC Wildlife Unit. Of course as an employee of PETA, its spokesperson also makes money from animals without their consent, but this irony wasn't pointed out to her.
It's a real shame that with so many real problems faced by the world's animals, such as cruelty and loss of habitat, PETA chooses to frivolously fritter away its public donations on paying lawyers to fight for the right of animals to own copyright. Meanwhile conservation photographers such as Slater devote their energies to helping wildlife in a much more useful way, by raising awareness of their plight and encouraging their conservation. In the past few months alone tens of thousands of pounds has been raised by two books of wildlife photography, Remembering Rhinos and Remembering Elephants, both of which were featured in AP. I hope that as a result of this case AP readers will avoid donating to this group of lunatics and attention seekers and will instead support more worthy animal and wildlife charities, of which there are many.
Read our interview with David Slater on page 8. The monkey declined to comment.


Do you have something you'd like to get off your chest? Send us your thoughts in around
500 words to the address on page 22 and win a year's digital subscription to AP, worth $€ 79.99$

## Innext week'sissue

On sale Tuesday 8 August


We reveal the tricks of the trade for shooting historic buildings inside and out


## Leica TH2 review

The latest stylish update to Leica's APS-C mirrorless range

## APOY results

The incredible top 30 images from the macro round of our competition
Lightroom masterclass
Presentation matters - 20 top tips to showing off your images

## A week in photography

# Inbox 

Email amateurphotographer@timeinc.com and include your full postal address. Write to Inbox, Amateur Photographer, Time Inc. (UK), Pinehurst2, Pinehurst Road, Farnborough Business Park, Farnborough, Hanks GU147BF

## LETTER OF THE WEEK

## Don't be scuppered by bad weather

A couple of years ago, I set myself the challenge to go out and shoot on a dull, drizzly day and it changed the way I view what some might term 'bad weather'. I no longer view these conditions as 'bad weather', just different weather with different opportunities. For landscape photography, Neutral Density (ND) and ND graduated filters can be used to create long exposures and bring out detail in the sky. Long exposures are also easier to achieve during the daytime on overcast days and so you can capture motion blurred clouds and silky Above: Tim's successful results water more easily.
I frequently hear photographers saying that they shoot black and white in overcast conditions, but sometimes you can capture the mood of the scene better in colour. The colours will not be as punchy or saturated as a sunny day, but that's what creates the mood. Something else to bear in mind is that clouds in the sky mean water vapour in the air. Some of the most colourful sunrises and sunsets are when there are clouds and therefore water vapour in the air that catch the sun's rays. Clouds on the horizon are more likely to scupper sunrise and sunset photography than any overhead clouds.
Cloudy skies also mean a greater chance of rain and stormy conditions. Perhaps a rain shower in the distance, a rainbow, waves crashing against cliffs or a thunderstorm. Whilst challenging conditions to work in, and certainly requiring more self motivation to get out there, the results can be very rewarding. Tim Jackson, Southampton

A great reminder to get out even if it's raining - a familiar scenario here in the UK - Geoff Harris, deputy editor

[^2]

## Good things come

 to those who waitI was interested to read your feature on editing out distractions (AP, 22 July). The main technique I have employed is patience.

Instead of spending 15 minutes cloning out objects from an image, you could spend the same amount of time (or less) when making the exposure in the first place. For example, I take quite a lot of city shots, and tourists are a constant distraction to an otherwise uncluttered composition. I have been delighted with the results of long exposures (30secs to 10 mins ) in being able to remove people from a busy environment. The only special equipment needed was a tripod and ND filter.
The other side to patience is simply waiting for a moment when people are not in the frame.

## James, via email

A point well made, James, but it's still good to know this essential editing skill - Geoff Harris, deputy editor
Smoke on the water
I read Rick McArthur's excellent feature in AP's Technique section: A guide to removing unwanted objects (AP, 22 July). It's great how he removed the cruise ships from the fjord in the main picture. Unfortunately he left the smoke from the ships' funnels in the shot!

## Bert Powell, via email

Well spotted, Bert! Rick spoke to me about the smoke and we agreed it might pass as mist, but nothing gets past our readers! - Tracy Calder, technique editor


An image detail from our 22 July issue - before the ships were removed


## In AP 22 July we asked...

 How often do you remove objects from photos?
## You answered....

A Never - ld rather delete the shot 20\%
B Occasionally, when I really couldn't reframe the shot 46\%
( Regularly - a bit of 'gardening' is fine 25\%
D All the time, as I like digital manipulation 4\%
E $\mid$ wouldn't know how to remove objects even if I wanted to 5\%

## What you said

'I sometimes remove stuff from commercial location shots - wires that I cant otherwise hide and the like, or something that grabs attention in the background that just couldn't be moved. The odd blemish from skin in portraits - my aim is to make people look their best, but normal.'
'I once took a really good photo of a walkway over a ford. I spent ages removing a red lorry that was right next to it. When I showed my wife what a fantastic job I had done, she kindly pointed out I had left the reflection in the water... back to the drawing board.'
'lm more than happy to clone out litter, stray birds in the sky that look more like dust bunnies than birds, small highlights and non-descript black blobs. When it comes to larger objects then I'm less inclined to do so.'
'I took a few pictures by a pond in low, warm sunlight. Afterwards I cloned out around three-and-half million midges.'

## Join the debate on the AP forum

This week we ask...
Do you go out of your way to find great light for photography?
Vote online www.
amateurphotographer.co.uk

#  



Wildlife photographer Rob Cottle, who contributed to the book Remembering Rhinos, takes us through the kit bag he took on a recent trip to the Kruger National Park in South Africa. To see more of his images, visit www. robcottleimages.co.uk.

## Canon EOS 7D Mark II

(1)When I bought this camera, it was the number one APS-C for autofocus speed and the best compromise in terms of weight and quality. I love using its joystick to shuffle through focus arrays and I use the three custom settings on the mode dial all the time.

## Canon EF $100-400 \mathrm{~mm}$ f/4.5-5.6L I IIIUSM

2This is a great wildlife lens. It's sharp at the long end where it's wanted and versatile enough to zoom back when I want to include more of the environment.

## Canon EF 1.4x III extender

3This makes the $100-400 \mathrm{~mm}$ lens a 140-560mm lens (in 35mm terms $224-896 \mathrm{~mm}$ ). Unfortunately, it means I can only use the 7D Mark II's centre point to compose, but sometimes that's better than cropping and losing pixels.

## Olympus OM-D E-M1

(4)
This is my go-to camera for everything non-wildlife related, but also my second camera for wide, macro and fisheye shots while on safari. It's unobtrusive and light for travel, yet offers great quality and functionality.

## Panasonic Leica DG Summilux 25 mm f/1. 4 ASPH

5This incredibly sharp lens has a human's eye view of the world, with fantastic bokeh for a Micro Four Thirds lens and it works great for travel portraits of people or wildlife.



## Grappler bean bag

6
The saddle bag' design allows the sides to form around a car-door window or lie flat in a hide. But don't fill it before you travel otherwise the only item in your luggage will be a bean bag! It takes around 10 kg of dry rice.

List of kit Canon EOS 7 D Mark II, Canon EF $100-400 \mathrm{~mm}$ IS II USM $\mathrm{f} / 4.5-5.6 \mathrm{~L}$, Canon EF 1.4 x III extender, Olympus OM-D E-MI, Panasonic Leica DG Summilux $25 \mathrm{~mm} \mathrm{f} / 1.4 \mathrm{ASPH}$, Grappler bean bag, Canon EF-S $18-55 \mathrm{~mm} \mathrm{f} / 3.5-5.6$ IS STM, M. Zuiko digital ED $9-18 \mathrm{~mm} / 4-5.6$, M.Zuiko digital ED $60 \mathrm{~mm} \mathrm{f} / 2.8$ Macro, Samyang $7.5 \mathrm{~mm} \mathrm{f} / 3.5 \mathrm{UMC}$ fisheye, batteries, SD and CF card case, rranscend 2TB Store Jet portable hard drive, various cloths and Lenspen, Matin neoprene camera straps, Energizer head torch, LED Lenser TT torch. All items fit snugly into a Think Tank Airport 4-Sight camera case (not pictured).

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Light is a photographer's raw material, the building block that makes or breaks our images. Pro shooter David Noton explains the skill in learning how to see, feel and understand it


## David Noton

David Noton is recognised as a leading landscape and travel photographer. His passion for photography, travel and the world's beautiful places are the defining influences that have shaped his life, work and his creative approach to photography. His images sell all over the world - both as fine-art photography and commercially in advertising and publishing. Visit www.davidnoton.com.


The rising sun backlighting a misty dawn behind Salisbury Cathedral, Wiltshire Canon EOS-Ds Nark $11,24-70 \mathrm{~mm}$, 1/100secat $/ 11$, 150100


## DSLR with high ISO

The high ISO capabilities of cameras such as the Canon EOS-1D X Mark II allow photographers to shoot handheld at night, opening up a world of new possibilities.

## \ND filters

Neutral density graduated filters really come into their own when you are shooting straight into the light, helping to balance the exposure difference between the sky and land, without affecting colour balance.

My college lecturer used to assert that a good photographer could make a lump of coal look appealing with the skilful use of lighting. I never felt the need to prove his point, but my subsequent decades behind the lens have convinced me he was right. Even the Grand Canyon can look uninspiring under the flat grey light of an overcast day, whilst a view of some flat Essex fields can be transformed into a breathtaking vision by evocative dawn light. Light is our raw material; the building block that makes or breaks our pictures. In fact, lighting is so important to the finished image that I often feel I photograph the light more than the subject.

We photographers need to see the light, and I mean really see it, feel it and understand it in all its endless forms and subtleties. When contemplating a scene the first thing to do is consider where the light is coming from. And beyond seeing what is happening now we need to predict the light that will best illuminate the picture we have in mind at different times of the day and year. Anticipating what could happen with the light in a few minutes, an hour, later the same day, the next morning, in a few months or next year is a fundamental photographic skill. It comes with experience and is the product of every photographic vigil, productive or otherwise. Standing by the tripod watching the light paint a landscape is never time wasted.
We have the obvious time options - daylight, dawn, dusk or night. Beyond those we have the directional aspect to consider; do we want the main light to come from the front, back, side or above the subject, or a combination? Then there's the nature and colour quality of the light: high or low, hard or soft, warm or cool? In truth, most lighting situations in the natural world are a subtle fusion, and the permutations are endless.

## Colour temperature

All light sources have a colour temperature, expressed in Kelvin. The light our planet receives from the sun is constant, but as the Earth rotates what we receive on the surface goes through radical daily transformations. As photographers we have five different lighting options: daylight, golden hour, twilight, blue hour and night. All have their appeal, but atmospheric conditions, the weather, our position on the globe and the time of year are all factors affecting the nature of the light painting the landscape. That's why, after a lifetime behind the lens, I still feel I'm only beginning to appreciate the endless subtleties of natural light.
Take any photo group out at sunset or sunrise and most will be transfixed by the sun peeping over the horizon. It takes mental effort to turn away and observe the far more subtle lighting effects playing on the landscape and sky to the north or south, but that's where the photographic gold dust lies. Seeing it is one thing, predicting it is something else. Our ability to pre-visualise these lighting situations is what sets photographers apart. It's a skill to be honed, so read on for details on how to shoot using various types of natural light.
> 'A good photographer could make a lump of coal look appealing with the skilful use of lighting'

## Technique



## Daylight

At noon the overhead sunlight has had the shortest passage through the atmosphere so it is neutral in colour balance; what we term daylight, with a colour temperature of 5200 K , give or take a few Kelvin. Generally speaking the hard vertical light of midday is the least favourable to work with.

Shadows are hard, contrast is high; time was I wouldn't touch the camera after 10am and before 4 pm . But ideas change and I'm confronting some of my more entrenched assumptions. Sometimes the skies in the middle of the day have billowing cumulonimbus and streaking cirrus clouds that beg to be captured.


Loch Maree and Slioch,
Wester Ross, Scotland Canon EOS SDS R, 247-70mm,
Isecat/f11, 150100

## The golden hour

The contrast between the warm highlights and the cool shadows enhances the scene with the complementary colours of orange and blue. The last golden light of a crystalclear evening after a rain
shower is perfect for revealing all the form, texture and scale of a landscape. How soft the light of the golden hour is depends on the clarity of the atmosphere. Light that is too soft can be too insipid for big views but perfect for details.

The Milky Way and night sky over Lago Roca, Patagonia Canon EOS $-1 \mathrm{DX}, 14 \mathrm{~mm}$,
20 secsat $/ 44,15012,800$

## Night

The night sky is an enticing subject, and we have the ability to capture it in all its glory. Including a landscape in the scene as well as being in the right place at the right time takes planning, and a truly clear night is essential. The capability of modern DSLRs to work with minimal noise at high sensor speeds makes this possible.


## Twilight

Minutes before the sun rises and after it sets, the light reaching Earth goes through some great transformations. Whilst direct rays are absent we are still bathed in twilight from the sun below the horizon. That twilight reaches us as the last rays of sunlight
bounce off the bottom of clouds and down into the landscape, and as residual ambient light that the atmosphere has scattered. The two combine, which is why this time of day is so special and worth rising before the crack of dawn or lingering as dinner beckons to witness.


## Theblue hour

The residual ambient half-light that either brightens as dawn approaches or dims as dusk settles has had all of the warmth stripped from it after being bounced and scattered through the atmosphere. Its colour temperature is sky-high, well in excess of $10,000 \mathrm{~K}$, resulting in a very blue light,
and virtually non-directional. This cool monochromatic twilight is a favourite for those hooked on seascapes with slow exposures of swirling water. It's also the perfect light for night shots of illuminated landmarks, when the artificial lights of our towns and cities perfectly match the lingering tones of the twilight sky.

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a Sony E-mount camera. Sold Separately.

## Technique

## Direction of light

With such wide discrepancies dependent on our location when planning a shoot we need to know when the sun is due to come and go, and where in the sky it will rise and set. I have to admit I rely on experience, but it pays to be precise. Apps such as The Photographer's Ephemeris and PhotoPills are handy, but I'm cautious of relying on them. We still need to ascertain which direction we want the light to be coming from to paint the landscape best - front, back, side or above.

## Side lighting

Side lighting is my favoured default for landscape work. The low rays of a rising or setting sun slanting across a scene reveal every shape, texture and contour in the landscape. Shadows provide strong shapes and every detail from the poppies in the foreground to the distant mountains beyond is apparent.

Late-afternoon cross lighting reveals all of the detail and form in the landscape at Malham in the Yorkshire Dales Canon EOS-IDS Mark III, 70-200mm, $1 / 6$ sec at $/ / 11,150100$


Sun rising behind Salisbury Cathedral, Wiltshire


## Backlighting

Backlighting can often be the route to graphic impact.
Shooting into the light is beset with problems - flare, exposure and contrast to name a few, but strong shapes backlit and silhouetted against a dramatic sky often have a bold simplicity that can be very powerful. The big drawback though is any tantalising detail in the shadowy foreground will be lost. How much detail is sacrificed depends entirely on the contrast range between
the rocky vegetation and the bright sky; softer light allows us to retain more foreground detail, whilst stronger more dramatic light renders silhouettes and foregrounds black. We have stratagems for tackling that immense contrast range; namely graduated filters or exposure merging, but there is a limit to what can be achieved without the loss of all credibility. In my book any such wizardry needs to be done with subtlety if believability is to be retained.


## Front lighting

 Full frontal light from directly behind the photographer leaves little to the imagination; all is revealed with maximum stark illumination, usually with the photographer'sshadow thrown in, but the harsh flattening effect and lack of shadow/highlight contrast rarely shows a landscape or indeed any subject off to its best; it's an unappealing light that I avoid like the plague.


## Top lighting

When the clouds coalesce into an oppressive grey ceiling the low-contrast diffuse top lighting can be just the job for
woodland and canyons. When the clouds close in there's also the option of turning the camera on faces; it's the perfect light for portraiture.


## Light on my local patch

Dorset's Jurassic Coast is my home patch where I have the luxury of being able to choose precisely the best time of year to shoot a specific location. The east-west aspect of the coastline makes shooting most locations between the spring and autumn equinoxes unfeasible; the sun is rising
and setting over the land to the north, which casts its shadow across the cliffs and beaches. In the short days of winter though, when the sun is rising to the southeast and setting in the southwest, tantalising side lighting bathes the white cliffs and coves. It's a view I never tire of, and one that provides endless inspiration.


# Engineering victory 

Enter this exciting photography competition, capturing the creative and progressive face of engineering and engineers

Iorget outdated images of hard hats and oily men with spanners in workshops; engineering is an exciting and fast-changing sector, shaping the world around us and improving the quality of our everyday lives. From a photography perspective, modern engineering yields many fascinating subjects. So Amateur Photographer is proud to support this major new contest, the IET International Engineering Photography Competition.
To enter, all you need to do is take images of engineeringrelated subjects that truly capture the dynamic, creative and progressive face of engineering and engineers today. Winning photographs will help to challenge public misconceptions of engineering and demonstrate the ingenuity, breadth and vibrancy of its world. For full details, see bitlylietcompetition.

## HOW TO ENTER

To enter, please send in your images by 23:59 (BST) on Thursday 31 August 2017 to photography@theiet.org along with an entry form, available to download from bit.ly/ietcompetition.

The competition is open internationally, and split into three categories: adult ( $18+$ ), primary youth ( $5-11$ ) and secondary youth (12-17). Anyone who meets the age criteria is able to enter, completely free of charge.

## CATEGORIES AND PRIZES

You can enter up to five photos across The five adult category winners win any of the following five categories:

## Design and Production

This celebrates innovation around the design, development and production of the things that people need. Images might include those of mechanics, materials and manufacturing.

## Digital

This category includes photography on the theme of electronic tools, systems, devices and resources that generate, store or process data.

## Energy and Environment

A focus on engineering and technology within our environment, as well as energy efficiency, energy services, facility management and alternative energy technologies.

## Robotics

This category looks at the design, construction, operation, and application of any robots or robotics.

## Structure and Transport

This encompasses architecture, buildings, bridges, cityscapes and all forms of transportation.
$£ 500$, while the five primary youth category winners and the five secondary youth category winners will each receive $£ 150$. Furthermore, one overall winner will then be selected from the 15 winners, and awarded an extra $£ 250$. On top of the cash prizes, a selection of the winning images will be made into a photographic display at IET London: Savoy Place in central London.


IEThe Institution of Engineering and Technology

## Technique mixed Licht



Many cities look their best at night, but capturing them in all their glory takes preparation and persistence, says David Noton

There was a time in my career when I seemed to spend inordinate amounts of time hanging around on breezy bridges or embankments, busting for a pee while waiting for dusk to become dark enough for the city lights to come on.
Many cities, in fact most, look their best at night. Darkness hides clutter and imperfections whilst artificial illumination highlights the best bits, such as castles, cathedrals and bridges. So in this quest to investigate the nature of the light in all its forms, which is the fundamental building block of our art, let's analyse and deconstruct the challenges, pitfalls, frustrations and rewards of shooting city lights.
Successful city night photography is all about preparation. As ever, finding the location is the most difficult part, and you will need to scout out potential shoots thinking through how they'll look illuminated at
night. A tricky thing to do, because until we see it for real it's pretty much impossible to envisage. Spending a night wandering the city looking at the floodlighting on key buildings and features is the best preparation; there is simply no substitute for 'eyeballing' a scene.
You've planned the shoot, discerned how the scene will be lit, scouted for obstructions and are now beside the tripod waiting for the lights to come on. That's the way to do it, as city lights photography is all about timing. You may think you have all night but in reality the decisive moment will only last minutes. The prime time is when the artificial illuminations match the twilight sky after sunset. That balance is the key, and endlessly variable. Much of it depends on how bright the city lights are: the brighter they are the earlier we can shoot. Sometimes I like the sky to be a deep blue with the artificial lights appearing bright and dominant. Other times I like to


## IET International Engineering Photography Competition

## Open to any photograph of an engineering-related subject that captures the

 dynamic, creative and progressive face of engineering and engineers today.

## 'Many a time I've waited and waited as the sky turns from pink to blue to inky black'

shoot earlier with a brighter sky retaining the last mauves of sunset, and with the unobtrusively discernible city lights below.

Adjusting white balance for night shoots is again a matter of taste. The blue residual ambient light will have a sky-high colour temperature, whilst the street lighting and illuminations could be anything - fluorescent, tungsten or a gelled garish pink. Trying to achieve a neutral white balance in such situations is virtually impossible and pretty pointless. The whole attraction of city nightscapes is usually based around showing the multitude of colours painting the scene. I leave the camera on daylight, as usual, and that's that. I rarely tweak the colour balance in Lightroom. But then again we shouldn't ignore the power of black \& white. A nightscape of Paris rendered
in black \& white can be achingly evocative.
So far I've only mentioned shooting at dusk. Of course there's nothing to say that the same balance between ambient and artificial light can't be achieved at dawn. In practice though it doesn't often work; floodlights are usually turned off in the early hours. That business of not knowing when and if the lights are going to come on has often caught me out. Many a time I've waited and waited as the sky turns from pink to blue to inky black, before abandoning the shoot as it's then too late. Inevitably as I trudge away exasperatedly the lights then come on, just to taunt me. It's all part of the game, so often frustrating, occasionally rewarding.
A belief that city-light photography must be done when there's still some tone left in the twilight sky is a rule just waiting to be broken. I think it


The Sydney skyline at night Canon EOS-IDS Mark II, TS-E 24mm, 30 sesc at $/ / 10,150100$
holds true if there's a great deal of sky in the frame, but for bustling streets shooting through the night is certainly an option. There is all sorts of potential: from night markets to nightlife. And, for more options, think about shooting in the city at night without a tripod, or flash. The high-ISO capabilities of recent cameras open up a whole new world of
nocturnal photographic opportunities on the streets of Paris, Saigon or London. Technological advances also present any number of possibilities, which stimulate inspiration. Misty landscapes at dawn take some beating, but occasionally the bright city lights beckon. I'll see you there - dodging the tripod gendarmes together.


# Guardians of the Forest By Simon Baxter Following a serious sporting injury, Simon Baxter discovered that photography was able to provide the solitude and distraction he craves 

iving in a small town in North Yorkshire, I spent much of my childhood playing in the local forest - exploring and building hidden dens. In later years, I continued to spend many hours in the forest as an avid mountain biker. I'd tear through the trails, passing the trees with as much speed as possible. This ended abruptly upon injuring my back in 2012. The difficult years and resulting chronic pain that followed changed my view of the natural world forever.
I struggle to feel content without progression within the things I'm passionate about, so with mountain biking out of the picture, it was time to rekindle my casual interest in photography. It was in early 2015, while photographing a local landmark in the company of our labradoodle, Meg, that I suddenly became aware of a reduction in pain. The fresh air, natural movement and genuine distraction that the process of landscape photography provided were profoundly beneficial. But I craved more distraction. I needed to become truly absorbed within the landscape - always on the
move, always exploring, discovering and enjoying. Woodland photography became the answer, and since late 2015, it's been both a necessity and my passion.

## Seeking solitude

In May 2016, I visited
Snowdonia with some other photographers. During a flat, grey afternoon, we found ourselves in a forest where we all wandered off in different directions in search of a shot or two. I came across these two moss-laden oak trees and was immediately drawn to them, with their almost symmetrical appearance and imposing trunks forming a gateway to a woodland waiting to be discovered. I knew instantly that, under the right conditions, it would make a fabulous image, encompassing many of the things I enjoy so much about woodland photography. It's all about the mystery, mood, story and the feelings of solitude and discovery. There are two things I crave in woodland photography - mist and being alone (except for my dog). Being alone allows you to get into the zone, let your mind wander and create a true


## Simon Baxter

Simon Baxter is a landscape photographer who specialises in capturing the atmosphere and character of quiet and obscure local woodland. He has a YouTube channel with video blogs offering tips and inspiration as he explores the great outdoors with his dog, one-year-old labradoodle, Meg. Visit www.baxter.photos.


## 'It's all about the mood, story and the feelings of solitude'

connection with the landscape. With this in mind, I returned to this spot on my own in the early hours of the following morning with my fingers crossed and a vision in my mind. What transpired was far better than I could have ever hoped for.
My $55 \mathrm{~mm} \mathrm{f} / 1.8$ prime was my lens of choice. Primes are great fun to use in woodland as the constant shuffling around and repositioning slows the process down and helps you to nail the composition. Set up with my Sony A7 II, a tripod and a cable release, I took a series of images as the light slowly moved from left to right, until it eventually filled the centre of the image and created magical rays. The thin mist also adds to the depth, mystery and mood. I used large pine trees to the left and right to create a natural and dark frame. The intention was to show off the wonderful character and shape of the oaks and then be invited underneath their arch and into the light.

## Wait for the light

I spend many months or longer hoping and waiting for conditions like this in my local area, so for this to happen on my second visit to this scene felt incredibly rewarding. It is a real privilege to witness and be absorbed into the atmosphere and uniqueness of moments such as this. Was I thinking or worrying about pain at the time? Absolutely not.
My need to venture out on a regular basis means that I continue to explore any small pockets of woodland I can find tucked away in my local area. The standout images are very few and far between, but the process is therapeutic and enriching, and serves as a reminder of how landscape photography is about far more than a photograph.
It was with great surprise and pleasure that this image was commended in the Take a View, Landscape Photographer of the Year competition. It then went on to be featured in the 10-year anniversary edition of their awards book.

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## Round Five Into the wild

So far in APOY 2017 we've looked at black \& white, street photography, macro and cities. Now we want you to turn your lens on the animals we share our planet with, both at home and abroad, in Round Five, Into the Wild. Your shots can take the form of portraiture or they can be your attempt at the ultimate wildlife image. With camera equipment becoming so much more affordable and compact cameras boasting impressive zoom lenses, wildlife photography is now far more accessible and you don't have to travel thousands of miles for this category. While images of tigers and elephants in far-off lands are always an attractive prospect, the wildlife on your own doorstep is equally fascinating. These warmer months will give you a chance to get out looking for home-grown wildlife such as badgers, foxes and birds. So get outside and keep your eyes peeled!

## Plan your APOY 2017 year

Below is a list of all this year's rounds, including when the rounds open, when they close and the dates the results will be announced in Amateur Photographer. When you are planning your entry, remember to take into consideration the criteria required to fulfil the brief, and apply the creativity and technical excellence on which you will be judged.

| Theme | Synopsis | Announced | Closes | Results |
| :---: | :---: | :---: | :---: | :---: |
| Magical monochrome | Black \& White | 25 Mar issue | 28 Apr | 10 Jun issue |
| Hit the streets | Street Photography | 6 May issue | 26 May | 15 Jul issue |
| Small wonders | Macro Nature | 27 May issue | 23 Jun | 12 Aug issue |
| City clickers | Cityscapes | 1 Jul issue | 28 Jul | 23 Sep issue |
| Into the wild | Wildlife | 5 Aug issue | 25 Aug | 140 ct issue |
| Creative eye | Abstract Art | 2 Sep issue | 29 Sep | 11 Nov issue |
| Land lovers | Landscapes | 7 Oct issue | 270 ct | 9 Dec issue |
| Face to face | Portraiture | 4 Novissue | 29 Nov | 6 Jan issue |

To enter visit www.amateurphotographer.co.uk/apoy

## ROUND 5: WILDLIFE PHOTOGRAPHY TIPS

Advice and ideas to help you capture engaging images of wildlife


Get down low
Don't be afraid to get down and dirty. Dropping by a metre or so brings the viewer into the world of the animal subject, and shooting in this way will give your image a much more natural feel.


## Backgrounds

A background can make or break a wildlife image Take your time ensuring that your subject is set against a clean and complementary background. Your subject will pop out of the frame providing beautiful context.

## her of the Year

## petition for amateur photographers




Wildlife in action
Wildlife gives a fantastic opportunity to capture some great action shots. A bird in flight, for example, can create an image of real drama. Even just a shot of a running horse or deer can really hold the viewer's attention.


## Black \& white

謷 Even though a great number of animals have incredible and vibrant fur or feathers, their character can still be emphasised with beautiful black \& white or even toning. Monochrome can add real atmosphere to an image.

## 



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## $\bullet$-The

## image



From his studio at Blackrock in Dublin Bay, Tony Hurst has produced beautiful and iconic Nikon product shots for nearly three decades. Andrew Sydenham travels over the water to Ireland to uncover the secrets of his success

Tony Hurst has been an avid camera collector for years. With his a particular fascination for Nikon models, it was logical that Tony would soon beat a path to the long-established Grays of Westminster in London, which sells new and secondhand Nikon cameras, cases and accessories. At that time, Tony had already started photographing his own camera collection, rapidly developing his own unique style, when Grays of Westminster owner Gray Levett asked him to photograph something
for his company's adverts. The rest, as they say, is history, and Tony has been photographing Grays' product shots ever since. All this took place some 25 years ago, and now Tony's photographs are so admired and well known that the celebrated photographer and film director Terence Donovan once told Gray Levett that Tony Hurst is a genius. As with many prominent
photographers, Tony's passion for photography began at an early age. When he was just 12 years old, he could be found tinkering with a folding Kodak camera and

Tony Hurst seated in the studio with his Nikon D3 and studio camera stand

## A selection of

 W-Nikkor lenses styled in a sardine can with a Nikon w-Nikkor.C 1:2.5 $f 3.5 \mathrm{~cm}$ in the foreground
## ‘Editing in Photoshop is like working in the darkroom... shading and balancing the image to match my vision'

discovering the magic of the printing process in a home darkroom. ‘There was one thing about photography that I really liked - you could do the whole thing yourself, bar manufacturing the film. You didn't have to be reliant on anybody,' he says.
Things soon became more serious when Tony enrolled on a course at the Regent Street Polytechnic in London. 'I was a pretty poor student, and I don't know whether I got much out of it,' says Tony. 'They just didn't teach you how to survive. My first job was working in a darkroom for a guy who learnt his trade in the 1930s photographing fine art, glass, jewellery and pictures. It was very formal photography, but he really knew how to paint with light, with his four-minute exposures at $\mathrm{f} / 45$ on a plate camera with me wiggling a curtain behind the subject for a smooth background. It was hardly the last word in creativity, but the key element was that it taught me that quality is paramount. This set a benchmark that's always stayed with me.'

## Tradesecrets

This excellent grounding in the trade soon led to Tony setting up on his own at a time when film was still king, but what I really wanted to find out is how he has adapted to the digital age and achieved a standard of imagery quite different to that of others in his area of specialisation. 'Editing in Photoshop is very much like working in the darkroom for me, admits Tony. 'I'm assembling a finished print in a gradual process - not so much correcting as perfecting, shading and balancing the image to match my vision.'
As I enter Tony's fantasy-factory studio, I'm surprised that it isn't at all as I expected. There are no pristine white walls in a high-tech environment, but what I'm immediately struck by is the collection of backgrounds lining the walls that must number in the hundreds. It's not a large studio by any means, but clearly it's one that has evolved to suit a

0specific purpose over a long period of time. As I look around, I can see just about everything a still-life photographer would ever need squirrelled away somewhere on the shelves or boxed up on the floor.
'Backgrounds are vitally important in my work, and choosing something that works and is sympathetic to the subject is half the battle,' says Tony. 'Dublin isn't like London with its prop hire outfits, so I've evolved my own collection out of necessity.'
He adds: 'Photographing cameras and lenses is an almost unnatural process. I'm very much working in a bubble here, taking all the time I need and making all the creative decisions myself. Attention to detail is key, and so is absolute cleanliness as I don't want to spend all my time removing dust spots.'

## Tracing paper and Soltirost

ONE OF the most conspicuous and significant modifications to the basic lighting in Tony's studio is the sheet of diffusion material hanging from a boom arm or made up as frames. Adding extra layers of diffusion to an already soft light not only gives an extraordinary softness to shadows, but it also enhances saturation.
'I can bend, fold and shape the material to give exactly the effect I require,' says Tony. 'Shadows are gone. Placed in front of multiple hard sources, this dense filter will transform the beams into a single source of evenly dispersed soft light.' It looks deceptively simple, but patient, skilful use yields extraordinary results for Tony.


Tony Hurst painstakingly removes specks of dust from a Nikon $F$


Nikonos photographed on a paper engineering background inspired by The Great Wave off Kanagawa by Hokusai


Nikon F2 and 50 mm f/ 1.4 Nikkor with Sport Finder (1971-1980) on Perspex and pebble background

After sorting out the camera and background combination, the next stage in Tony's photographic process is the lighting. This is undoubtedly the most vital ingredient and is significantly more than just arranging flash heads around the set. Standard and spot dishes are shone through diffusers to create pools of light. Black card and other materials shade and shape highlights and shadow areas, while the all-important mirrors pick out minute details, throwing light into seemingly impossible-to-reach crevices. Sometimes these mirrors are so close to the subject that multiple exposures are required so the mirror can be removed from the final shot in digital editing.

## The Nikon link

I couldn't tie Tony down to numbers, but many hundreds of exquisite cameras and lenses have received his rather special treatment over the years. Everything from Nikon mugs to branded clocks and watches line the shelves in his studio, and it's fitting to see Nikon products being photographed by a Nikon enthusiast, with a Nikon camera in a Nikon environment. While we were sitting at Tony's workstation selecting his favourite images to illustrate this feature, I was overwhelmed by the sheer volume


Tony Hurst's images feature regularly in AP, adorning the Grays of Westminster advertisements. He also contributes to the Nikon Historical Society's publications. Visit www.nikonhistorical society.com and www. graysofwestminster. co.uk.

Grays of Westminster has produced a special signed, limited-edition book called Grays of Westminster Presents The Legendary Photography of Tony Hurst. There are 100 images to celebrate 100 years of Nikon. To order a copy, email infora graysofwestminster. co.uk.
of material he'd amassed over the years. There were folders within folders that formed a unique record of the Nikon brand and its history.

## Tony's gear

The lens that almost permanently resides on the front of Tony's Nikon D3 is the Micro Nikkor $70-180 \mathrm{~mm}$ $\mathrm{f} / 4.5-5.6$ zoom. He loves the flexibility this combination brings to framing and composing the picture almost as much as the camera's legendary resolution. In fact, he still favours the D3 in vivid setting over his Nikon D800. 'The D3's JPEG images just sparkle, and suit my way of working,' he says. A number of Bowens Gemini flash heads with various softboxes and light shapers provide Tony's illumination, but it's the tracing paper, diffusion material, reflectors and mirrors - along with a lifetime of experience - that help create his stunning images.
'I could never do without my studio camera stand,' he says. 'I lock it off and it just won't move. I've always hated tripods in the studio as they are far too easy to knock. And handholding? Never.
'As for going back to shooting film, that's not going to happen,' Tony adds. 'I can edit a shot, revisit it the next day, see something different and change it, so it's too much of a luxury to relinquish.'

## Trade in vade

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## Jason Lanier



Jason Lanier is an LA-based wedding and portrait photographer with an international following. He has over 400 videos on his YouTube channel. To find out more visit his website at jasonlanier.com.

6ny portrait photographer who says they only shoot in natural light is basically lazy.' So says Jason Lanier, the straight-talking Californian people photographer and socialmedia sensation.

We're in a park just outside Windsor, with five models and around 30 pro, semi-pro and aspiring pro photographers. They have travelled from all over Europe to attend a workshop organised by British lighting innovator Rotolight, for whom he is an ambassador. He is also a Sony Alpha ambassador. Anyone who says you can't make a living through social media clearly hasn't met Jason, whose videos have given him a huge YouTube following and means he fills his workshops wherever he goes in the world.

Bluntness is clearly part of his appeal to his followers, which is just as well because there's a lot more where that came from.

## Being better

'Too many photographers are lazy. They choose the laziest ways to light and the laziest ways to shoot and then wonder why they can't make a living. The thing is, we live in an age when everybody owns a camera and everybody can get decent shots, so you have to be better.
You shoot a wedding and there's 200 people there with smartphones. You may not realise it, but they are your competition. If the couple can have their friends send them all their pictures of the day for free, which people do these days, why would they hire you? If your pictures are not markedly better you won't have a job.'
So how do you make your pictures better? By offering something camera phone users can't compete with.
'What can you do at a wedding that the guests can't? Posing, right? If you know how to flatter the bride's figure, and make them look better, that's a big advantage over the guy sitting on the edge


> There is virtually no natural light that can't be improved upon, savs pro portrait photographer Jason Lanier


## 4Sony Alpha9 and7RIIbodies

'Mirrorless cameras are the future,' says Jason. 'When I switched to Sony three years ago industry friends laughed at me, but Sony is overtaking Nikon now. They offer so many advantages over DSLRs.'


Sony 85mm f/1.4 G Master
'If I could only have one lens it would be this one,' says Jason. It gives a beautiful rendition, and the bokeh is amazing. He also uses the Sony G Master $70-200 \mathrm{~mm} f / 2.8$, and Sony Zeiss 35 mm and $50 \mathrm{~mm} \mathrm{f} / 1.4$ lenses.
$\triangle$ Rotolight AEOS lights
The British-made AEOS is a location LED light aimed at stills as well as video shooters. It uniquely offers a strobe mode with variable colour temperature control. Read more about this light on page 34.

- Think Tank StreetWalker Hard Drive bag Jason uses Think Tank bags for his Sony cameras and lenses, including this one, which is big enough to hold his $70-200 \mathrm{~mm}$, multiple other lenses, hard drives, media cards and other accessories.


## Jason on the Rotolight AEOS

FOR JASON, a key benefit of LED lights compared with flash is that you can see how the light falls on the subject before you fire it, and if you're using an electronic viewfinder this benefit is even greater.
'Shooting outside with monolights, the modelling lamps aren't strong enough to actually see where the light is going to fall, and the light isn't the same as what you get from the flash - it's just an approximation. With LEDs you can see exactly what lighting you're going to get before you shoot whether it's Rembrandt lighting, profile lighting, butterfly lighting - and that's huge.
'When you use strobe, the light is generally cooler than the ambient light, so even though I'm getting nice warm tones on the background, because we're shooting close to magic hour, the tone on the subject will be cooler. With the AEOS I can choose a colour temperature on my camera and then set the light to the exact same Kelvin setting, or set the light to match the colour of the available light so it blends in. I don't have to mess around with gels, and let me tell you, when you start resorting to gels it's a guessing game, it really is. You can't fine-tune it.' Jason sees LEDs as the future of lighting. 'I'm telling you, they will ultimately put monolights out of business, as they get more and more powerful. Because they run cool, there's no recycle time, and you don't burn through the batteries. When I shoot with the Profotos they have a great recycle time but the batteries are dead in 45 minutes. That's why they come with a car charger.'
For today's shoot, Jason is using just one light to demonstrate the benefits it can bring, but for his own commercial shoots he will often use more.
'Usually I'll use a key light and a fill. My ideal kit is an AEOS as the key, another AEOS behind as a rim light to get that "pop" and then maybe sometimes a Neo as a fill. That makes a great three-light kit.'


of the aisle with his cell phone, taking a picture as the bride walks past, and she looks as big as Shamu because she is so close and he's shooting from below.'
Here's another advantage: you can be a master of posing but everyone behind you, shooting over your shoulder, is going to copy your shots. But what they can't do is achieve that beautiful bokeh that you get from shooting at wide apertures on cameras with larger sensors.
'If you're a portrait photographer, and you're not using fast glass and shooting wide open you may as well be using your iPhone,' argues Jason.

## Let there be light

The third and possibly biggest advantage, according to Jason, is lighting. 'What really separates us from the crowd is how we use light. For pretty much every genre of photography that includes people except for photojournalism and street you need lighting. For about one hour a day, around golden hour, you get some great natural light (and even then you'll probably want to diffuse it) but what do you do for the other 23 hours? It's rare that the natural light is so perfect that it can't be improved upon. If you don't understand light and you can't use light you're going to really limit yourself in terms of what you can accomplish as a photographer.'
Jason is keen to emphasise that lighting isn't solely to illuminate the model's face. 'What a lot of photographers don't understand is the difference that lighting can make to your backgrounds. I was photographing our model just now and there was a guy shooting right next to me, taking exactly the same shots. But my shots were ten times better than his because I was synched to the AEOS and he was just using available light. I was able to expose for the background and use the flash to light the model. He had to bring


Behind the scenes at Jason's Windsor workshop
up the ambient exposure for everything, leaving the background washed out.'
Budget should be no barrier to taking control over the lighting so that you can model and sculpt it to best flatter your subject. Reflectors and diffusers are cheap to buy and can even be home made.
'Probably only $20-30 \%$ of photographers bother using diffusers or reflectors any more,' Jason guestimates. 'But this is important. Make the effort. A diffuser is an inexpensive solution to bad light. You'll need someone to hold it, but if you don't have an assistant, pay some kid 20 bucks to follow you around and hold it.'
Finding the best position for a reflector is a matter of trial and error, but wherever it's positioned there's one important rule: get it as close as possible.
'As you move the diffuser closer to the face they'll start to glow and you'll get that catchlight,' Jason demonstrates. 'This is applicable not just for natural light but also strobes, LEDs, anything you use. The closer you can get the light or modifier to the subject, the more they will "light up".
But although diffusers or reflectors work well they're not without their challenges.
better. Using longer lenses with shallow depth of field, and mastering lighting,
are two ways to achieve this

'They're great, but anyone who has ever used them outdoors will tell you that they're hard to hold still. When the wind picks up, the reflector moves and the light on the model becomes inconsistent. Traditionally, photographers would choose reflectors over strobes because strobes had a recycle time. You couldn't just fire away. But with the AEOS that isn't an issue.
'The other thing about reflectors in bright light is that you can only use them for about five minutes at a stretch because they're really wearing on the models' eyes. If you have the money for lights I would almost always recommend those instead.'

## Lighting options

Until recently Jason primarily used monolights such as the Profoto, an industry-leading flash that offers bags of power, short recycle times and the ability to easily attach modifying accessories.
'You can get some beautiful light out of monolights and strobes, but you have to diffuse them,' says Jason. 'You have to modify them, attach Octoboxes, beauty dishes and baffles and so forth. But the AEOS changes the game because it gives off a softer light than monolights so you
can just immediately shoot with it, bare bulb, either with the continuous LEDs or in strobe mode. It has no recycle time, and doesn't blind the model like reflectors, or suffer from their inconsistency issues. You can hold it with one hand and shoot with the other too, which is difficult with most reflectors. Except for midday in bright sun, which is still monolight territory, about $70 \%$ of what I shoot now is with the AEOS.'
Ultimately, Jason stresses, the type of lighting you choose is less important than the fact that you use it. But you also need to know how to use it.
'Your creativity won't come unless you are technically sound. I can't emphasise that enough. When you're not secondguessing, and you have the ability to problem solve quickly, your creativity flows. And the secret to becoming accomplished at anything is practice, practice, practice.
'Use the TF market ("Time For": where model and photographers give their time for free in exchange for pictures). Do as many TF shoots as you can to hone your craft. To this day, if I want to try something new I don't do it on the client's time, I do a TF shoot.'


Give models something to do with their hands

## Jason's posingtips

There are two parts to posing: the . physical aspect of posing the person, and the communication part: connecting with them. That's one of the biggest aspects of being a successful photographer. If they feel like they're in it with you, it's a team effort, they'll go so much further for you.

2
If you're working with a new model, ask them to send you a current selfie from their phone. Even if you've seen their Facebook photos, you want to see what they look like today. I also make them send me pictures of them wearing their outfits, rather than a photo of the outfit lying on a bed.

2 The feet are the foundation to the pose.
5 Ask the model to spread their feet to the width of their shoulders. Don't have them do 'duck feet' - bring their toes in a little bit.

Ask them to rotate their hips, and shift their weight from one leg to the other. You also need to give the hands something to do. They need a purpose. Try asking them to put a thumb in the belt loop, and another thumb in a pocket. Then ask them to go on tiptoes, if they aren't wearing heels.

5If they are wearing a coat, get them to take it off and hang it off one shoulder.

6Take the time to explain poses - it makes things 10 times easier. Don't touch the model, unless moving them for positioning (and you've asked first) and just use your fingertips to move them into pose.

7Use all the posing options: get the model to look right, look left and look centre. Also, use the three Hs: half, huge and headshots (half length, wide shots, and close-ups). Taking the time to get a variety of shots makes your clients happy.

Don't crop beneath the joints. Cut above
the knee, tummy and above the bust. If you crop below the joints, it looks awkward. Be careful of where hands are positioned, but if you're cutting above the elbow, you don't need to worry about the hands.
©
Don't ask them to smile - just crack a joke for a natural smile.

# Eveningiclass 

Photoshop guru Martin Evening sorts out your photo-editing and post-processing problems


## Working with Smart Object layers

DAVID Fairhead photographed this recreated medieval street at Archeon in the Netherlands using a Nikon Df with a super-wide zoom lens. It looks like a fascinating place to visit, although I'm sure the real thing wouldn't have been so clean and tidy! I liked David's original interpretation, where he chose to add more light and shade contrast to the buildings and added a darkened
sky. What I did here was something similar. However, I found it tricky to balance the detail in the sky with that on the buildings. I therefore chose to process the image two ways. First to get the lighting on the houses looking right, and second to achieve an optimum exposure for the sky. I then merged the two versions using Photoshop to produce the final version.


## 1Crop the image

I started by selecting the Crop tool to crop the image more tightly. I also clicked Transform to reveal the Transform options and apply an Auto Upright adjustment. In the Basic panel I increased the global contrast, lowered the Highlights slider and added a positive Shadows adjustment.


## 2 Add Radial Filter adjustments

I then added Radial Filter adjustments to lighten the window on the left, the doorway on the right and the path edge on the right. With each Radial Filter adjustment, I lightened using a positive Exposure setting.


## 3Duplicate the

 Smart Object layerI held down the Shift key and clicked on the Open as Object button to open in Photoshop as a Smart Object layer. I right-clicked the layer and selected 'New Smart Object via Copy', then double-clicked the duplicate Smart Object layer and edited the settings to darken the sky. Finally, I added a layer mask to this Smart Object layer to reveal the sky area only.

## Adding a split colour tone

I PARTICULARLY liked Gary Telford's shot of a trio of punks sitting on a bench drinking cans of lager. It is as if time has stood still the past 40 years for these guys, even though the ageing process clearly hasn't. It is a great documentary photograph and my aim was to stay true to the original. To strengthen the composition, I cropped out the distracting elements on the left and right of the frame and opted for a square crop, making full use of the empty space of the brick wall backdrop. This photograph would have worked really well as a black \& white image. However, I chose to keep it in colour and used the Split Toning panel to add a green/blue colour wash, which muted the colours slightly.



## 1 Apply Basic panel adjustment

In the Basic pane I I applied a lightening Exposure adjustment combined with an added Contrast and lightening Shadows adjustment. In the Presence section I added more Clarity and boosted the Vibrance. I then selected the Crop tool to crop out the bench on the left and the rubbish bin on the right.


## 2 Add localised adjustments

I then selected the Radial Filter tool and added a negative Exposure adjustment that darkened the outer areas and adjusted the Radial Filter Feather slider to soften the boundary edge. I also selected the Graduated Filter tool and added a darkening adjustment to the bottom-right corner.


## 3 Add a Split Toning colour effect

In this step I first went to the HSL panel and selected the Saturation tab. I then selected the Target Adjustment tool and dragged upwards on the brick wall to boost the saturation of the red and orange colours. Finally, I went to the Split Toning panel, where I added a green tint to the highlights and a blue tint to the shadows.

## Smart Objects

SMART Objects can be used to place an image layer, or a group of layers, within a single container that can then be edited as if it were a regular layer, while preserving the full resolution
image data within the Smart Object itself. Photoshop users may already be aware of how you can convert a layer to a Smart Object and add filter adjustments or regular image adjustments that are then re-editable. Camera Raw also allows you to open edited raw images as Smart Object
layers, thereby preserving the source image as a raw master with the Camera Raw adjustments you applied. As you continue to edit the image in Photoshop you can at any point double-click to open the Smart Object layer and re-edit the Camera Raw settings.

> Submit yourimages Please seethe Send us your pictures' section on page3 for details or visit wwwamateur photographercouk

Lighting your shots can be as simple or advanced as you like. James Abbott guides you through a number of lighting solutions - ranging from typical household lights to professional kits

## Creativity around the home

## It's time to raid the cupboards and ransack the house because there are plenty of simple lighting options you probably already have at your fingertips

PHOTOGRAPHY is all about light - it's what makes image capture possible. While any available light will allow you to take a shot, it's taking more control over how the subject is lit that results in something special. All it takes is careful consideration and a touch of ingenuity, and you can truly bring a subject to life. It doesn't matter whether you're using flash or continuous light of some sort, because both can be versatile tools.
Artificial light comes in many shapes and forms, and can be controlled in a number of ways. Some of these are completely free, in that you most likely already have them at home, while others are dedicated photographic accessories. So with this in mind we'll be looking at a range of options at varying price points covering beginners, intermediate photographers and professionals.

## Laptop screen

IN THE same way that a mobilephone screen can be used as a soft, yet weak, light source, a laptop can be used to the same ends. However, with a larger screen you can also shoot colourful cross-polarised images of
clear plastic objects. Simply position the plastic item in front of the laptop screen using Blu Tack and attach a polarising filter to your lens. Rotate the filter until the screen turns black and the clear plastic takes on colourful hues. It is possible to shoot cross-polarised images with a tablet or phone screen, but space is obviously much more limited.

## Anglepoise lamp

ONE OF the most basic lighting options available in the home is the humble Anglepoise desk lamp. Almost everyone has one, and these lights are ideal for shooting small tabletop still-life set-ups because they can be moved into a variety of positions. With this type of
lighting the shutter speed will be slow, so you'll need to mount your camera on a tripod and set white balance to auto to neutralise any colour cast. If you're shooting in the day close the curtains to block out as much natural light as possible, so the lamp is the main, and therefore controllable, source of light.

## Fairy lights

MOST fairy lights only ever come out at Christmas, but for photographers they can be a great way to light images, or create highlights and abstract bokeh shots. If shooting indoors, the standard plug-in variety will work perfectly, but if you'd like to use them on location you can get versions that run on AA batteries.


## Lightbox

BACKLIT flowers and sliced fruit are a classic still-life subject, and one that can be recreated easily at home using a lightbox. For this type of shot simply position the flowers or fruit on the lightbox with your camera attached to a tripod and aimed straight down. You'll need to use exposure compensation to avoid underexposure because the backlight will fool the camera's metering system. A lightbox can also be used to light a subject from the side, front or top.

## Tablet/phone

SMARTPHONES and tablets can be used to light subjects either by using the LED light on the back as a continuous light, or using the screen itself for a softer light source. This type of lighting is generally best suited to shooting small individual objects, but some photographers have shot portraits lit by a tablet or phone screen using high ISO settings.


## Torch

A TORCH is a great way to create light trails and to light a subject with interesting results. For painting with light you'll need to attach your camera to a tripod and shoot with a shutter speed of 15-30secs - the darkness of the location will dictate this. Then, after firing the shutter with a cable release, bathe every part of the subject in torchlight using a painting motion. The result is uneven yet dynamic lighting.

## Flashgun accessories and LEDs

Take your lighting skills with you wherever you go with high-quality flashguns and LED lighting that can be controlled in a number of ways using special modifiers


## Metz Mecablitz 52 AF-1

- $£ 209$ - www.metz-mecatech.de/en

WITH a maximum guide number (GN) of 52m @ ISO 100 and 105 mm , the Metz 52 AF-1 is a powerful mid-range flashgun that includes both manual and TTL flash control alongside a motorised zoom covering $24-105 \mathrm{~mm}$. For ease of use there's an illuminated touchscreen display that turns $90^{\circ}$ when the camera and flashgun are in portrait format.
As you'd expect, the head swivels and rotates, and features an integrated diffuser for wideangle shots, as well as a white reflector card for use with bounce flash techniques. The Metz 52 AF-1 is available for Canon, Nikon, Sony, Olympus/Panasonic and Pentax cameras, and comes with a belt pouch and slave stand.


## Hähnel Modus 600RT Speedlight

- £230 - www.hahnel.ie

IF YOU'RE looking for a flashgun that packs a serious punch, the Hähnel Modus 600RT Speedlight is a powerhouse. Thanks to a high-capacity Extreme Li-ion battery, recycle times are said to be 4 x faster than when using AA batteries. And with a fully charged battery you get up to 600 shots at full power, or 1,000 shots at half power.

The guide number of this flash is 60 m @ ISO 100 and 200 mm . Plus, there's a built-in 2.4 GHz wireless receiver and transmitter offering compatibility with some third-party flashguns. The Modus 600RT Speedlight is available for Canon, Nikon and Sony cameras.


## Lastolite Ezybox Speed-Lite 2 Plus

- $£ 59$ - www.manfrotto.co.uk

SMALL, lightweight and featuring a near-flat profile when folded, the Manfrotto Ezybox Speed-Lite 2 Plus is clearly designed for photographers on the go. With a $22 \times 22 \mathrm{~cm}$ diffusion panel, and a second diffusion layer, the softbox loses 2 stops of light but
provides great diffusion as a result. The mounting mechanism is universal, which means you can attach the Ezybox to practically any flashgun. You can also connect Lastolite Honeycomb Grids and Gel Holder to it.

## LitraTorch

- \$79 (around £61) - www.litra.com

IT'S NOT often that photographic lights are built like a tank, but the LitraTorch is small (just $3.8 \times 3.8 \mathrm{~cm}$ ), lightweight, waterproof and shockproof. With flicker-free 5,700K daylight-balanced light available at 800, 450 and 100 lumen settings, the LitraTorch can be used for both stills photography and video. The Li-ion rechargeable battery is charged via Micro USB, and the light includes several mounting options including standard 6.4 mm thread, GoPro mount and magnets for versatility.


Nissin Di700 Air flashgun<br>- $£ 169$ - www.nissindigital.com

WITH a colour LED control panel and selector dial, this flashgun is designed for single-finger operation. The motorised zoom extends from $24-200 \mathrm{~mm}$, and the flash offers a guide number of 54m@ISO 100 at 200 mm . The head swivels and tilts, and offers a wideangle diffuser and bounce card. Wireless TTL is
supported and includes Canon E-TTL/ E-TTL II, Nikon i-TTL and Sony ADI/ P-TTL, giving you the same control as a manufacturer's flashgun. The Nissin Di700 Air Flashgun Speedlight offers manual, TTL and high-speed sync up to $1 / 8000 \mathrm{sec}$ and is available for Canon, Nikon and Sony cameras.


## Ray Flash Universal Ringflash Adapter <br> - $£ 99$ - www.ray-flash.com

THE Ray Flash Universal Ringflash Adapter is the perfect way to transform a standard flashgun into a ringflash in just a few seconds. The Ringflash Adapter attaches to the front of your flashgun and hangs over the lens with an aperture for the lens to poke through. The result is even lighting with the classic ringflash look. It allows you to shoot with the flashgun in TTL or manual mode with no effect on colour temperature.

## Gary Fong Lightsphere Collapsible Speed Mount

- $£ 50$ www.garyfong.com

THE best way to take control of your flashguns is to use light modifiers that change the quality and behaviour of the light. The Lightsphere Collapsible provides a soft omni-directional light that can be used as a main or fill-light primarily for portraits, but will work well for other subjects too. The light is said to be soft and even, thanks to eliminating the harshness of bare direct flash. It also collapses flat for transportation and storage.


## Manfrotto Lumimuse 6 LED

- $£ 70$ - WWW.manfrotto.co.uk

LED lights are great options for lighting a range of subjects because you can clearly see how the light falls. The Manfrotto Lumimuse 6 is a compact light made of aluminium and, as the name suggests, features six LEDs. The light includes a USB rechargeable Li-pol battery, and comes with a snap-fit filter mount and filters for colour correction and creative use. A 6.4 mm thread allows you to attach the Lumimuse to a standard tripod head or other mount.

## Home-studio options

Whether you shoot indoors or out on location away from a power source, there are many excellent lighting options available for all photographers and budgets

## BASIC STUDIO KITS

## Elinchrom D-Lite RX One/One Softbox To Go Set

- $£ 499$ - www.elinchrom.com

WITH a variable power output of 100 W -6W, the Elinchrom D-Lite RX One/One Softbox To Go Set is designed to be the next logical step from using flashguns off-camera. There's a built-in receiver for wireless triggering and power control with the EL-Skyport Plus, and there's multi-voltage auto-detection for using the lights in different countries.
The RX One/One Softbox To Go Set includes: two RX One flash heads, two stands with a carry bag, two Portalite softboxes, one translucent deflector, an EL-Skyport Transmitter Plus, and a storage bag to carry everything. That's pretty much everything you need to get started with studio photography.


Bowens Gemini 400Rx kit

- $£ 569$ - www.bowens.co.uk

WITH a full power output of 400W, the Bowens Gemini 400Rx kit is at the more powerful end of the scale when it comes to mid-range studio lighting options. It offers a 5-stop flash power output, which, when coupled with the 250W modelling lamp, provides you with a powerful and versatile kit. The flash heads have a built-in Pulsar Radio Receiver, and the kit includes a Pulsar Tx Radio Trigger.
The Bowens Gemini 400Rx kit includes: two Gemini 400Rx heads, one Pulsar Tx radio trigger, two 90 cm umbrellas, two wideangle reflectors, two stands, a kit holdall and a PC sync cable.


## Metz Mecastudio BL-200 SB/UM kit II

- $£ 369$ - www.metz-mecatech.de

THE METZ Mecastudio BL-200 SB/ UM kit II provides a medium maximum power output of 200W. And with a $50 \times 70 \mathrm{~cm}$ softbox in the kit and an 80 cm white reflective umbrella, you have everything you need to begin shooting a range of subjects straight away. The heads use the Bowens S-type mount, so there's a wide range
of modifiers available.
The Metz Mecastudio BL-200 SB/ UM kit II includes: two BL-200 flash heads, two air-cushioned stands, SB 50-70 softbox, UM-80 BW umbrella, one SR-18 standard reflector, a carry bag and a PC sync cable. No wireless trigger is included, but third-party options can be purchased separately.

## WIRELESS TRIGGERS

## Hähnel Captur

- $£ 55$ - WWW. hahnel.ie

OFFERING two-inone functionality, Hähnel Captur triggers are both wireless camera
and flash triggers. As a camera trigger you get full functionality, including Bulb shooting, and with flash they offer basic yet reliable
triggering of one or more flashguns. Available for Canon, Fujifilm, Nikon, Olympus/Panasonic and Sony cameras and flashguns.


## PocketWizard Plus III Transceiver Twin Set

- $£ 229$ - www.pocketwizard.com

POCKETWIZARD was one of the first companies to achieve dominance in the wireless trigger market thanks to well-built and reliable products. The PocketWizard Plus III Transceivers live up to this
heritage and offer backwards compatibility with all PocketWizard products. It's for these reasons, and that they are available worldwide, that makes them a popular choice for pros.

## Phottix Strato II Multi 5-in-1 Wireless Trigger set - $£ 140$ - www.phottix.com

THE PHOTTIX Strato II Multi 5-in-1 Wireless Trigger System allows you to trigger flashes and studio lights wirelessly, and fire your camera remotely. The latter can be achieved via a cable or wirelessly. With this system you have one on-camera trigger and then one or multiple receivers to fire one or more flashguns.


## PORTABLE BATTERY KITS



## Lencarta Safari 2

- £700 www.lencarta.com

THE LENCARTA Safari 2 is a portable battery pack and 600W light that packs a punch whether you're shooting in the studio or on location. The battery pack powers a single flash head, so a two-head kit would use two batteries. This means more flashes per charge and the ability to move the two lights further apart without worrying about cable length. The Safari sports an LED modelling lamp and a 5-stop flash range covering full power to 1/32nd power. Safari kits come with a Commander System wireless trigger, but also have a sync socket for other radio triggers and sync cables.

## Profoto B2 250 AirTTL Location Kit

- £1,994 - www.profoto.com

THANKS to TTL and manual control, high-speed shooting up to $1 / 8000$ sec and 9 stops of power control up to 250 W , the Profoto B2 250 AirTTL Location Kit is a great option for professionals and enthusiasts who demand the latest and greatest features on offer. The battery can provide up to 215 flashes at full power, and the basic kit weighs just over 2kg, making it highly portable.
The kit doesn't include stands or modifiers, so these will need to be purchased separately, and to take advantage of TTL shooting and high-speed sync you'll need to purchase the optional AirTTL-C



## Summer Offers

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Buy a D-Lite RX 4/4 Softbox Kit + Get a Free 44cm Beauty Dish
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## Extended Until August 31st

The shallow depth of field created at $\mathrm{f} / 2$ can be used to draw the viewer's eye to points of interest in an image Fujifilm X-Pro2, 1/4000sec at $\mathrm{f} / 2$, ISO 200

# Fuiinon XF $50 \mathrm{mmf} / 2 \mathrm{R}$ WR <br> <br> Michael Topham puts the latest mid-telephoto <br> <br> Michael Topham puts the latest mid-telephoto prime for Fujifilm's X-series through its paces 

 prime for Fujifilm's X-series through its paces}

hen Fujifilm announced a smaller and lighter alternative to its $X F 35 \mathrm{~mm} f / 1.4 \mathrm{R}$ in the shape of the XF $35 \mathrm{~mm} f / 2 R$ WR, I half suspected that it might be the first lens in a new series of $\mathrm{f} / 2$ primes. We didn't have to wait too long before Fujifilm announced its second example and the XF $23 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR became a popular choice with those who wanted a more compact, weather-sealed alternative to the XF $23 \mathrm{~mm} \mathrm{f} / 1.4 \mathrm{XF}$ R that arrived in 2013. After reviewing both the 23 mm and $35 \mathrm{~mm} \mathrm{f} / 2$ primes, I came to the conclusion
that unless you really require the extra stop the manufacturer's f / 1.4 lenses provide, you won't see a huge benefit from choosing the larger and heavier alternatives.
At the beginning of the year, Fujifilm added another prime to its $\mathrm{f} / 2$ series with the release of the Fujinon XF $50 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR. This mid-telephoto prime offers a focal length equivalent to 75 mm in full frame, and is an alternative to the Fujinon XF $56 \mathrm{~mm} \mathrm{f} / 1.2 \mathrm{R}$, which has garnered a reputation as being one of the finest X -system lenses for portraiture. With $£ 300$ separating the XF $50 \mathrm{~mm} \mathrm{f} / 2$ R WR
from the XF $56 \mathrm{~mm} f / 1.2 \mathrm{R}$, it seems those who've held out for Fujifilm to release an affordable lens for shooting portraiture, travel, low-light and everyday subjects finally have what they've been waiting for.

## Features

Although the lens is slower than the XF 56mm $\mathrm{f} / 1.2 \mathrm{R}$, there are benefits to be had from making the front element smaller and limiting the maximum aperture to $f / 2$. The big appeal is its practical size and weight. When it's placed alongside the XF $56 \mathrm{~mm} f / 1.2$ R, you get a much better idea of just how petite it is. The difference in weight $(205 \mathrm{~g})$ is very noticeable when paired with a Fujifilm X-series body, and to keep the lens as small and

0lightweight as possible, Fujifilm has developed an optical formula that arranges nine glass elements in seven groups. Of these nine lens elements, one is an aspherical ED (extra-low-dispersion) lens, which is designed to minimise performance fluctuations between different focal distances and prevent spherical and chromatic aberrations. Just like the other lenses in Fujifilm's series of $f / 2$ primes, it features nine curved aperture blades that are designed to render striking circular bokeh at wide apertures.
Thanks to its inner focusing system, users of this lens needn't fret about the front element rotating or shifting back and forth when performing autofocus duties. To ensure the focusing is both fast and silent, the lens inherits the same stepping motor as used inside the XF $35 \mathrm{~mm} \mathrm{f} / 2 R$ WR and XF $23 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR. If the lens performs as well as these lenses do, we anticipate faster and quieter focusing than you get on the XF $56 \mathrm{~mm} / \mathrm{f} 1.2 \mathrm{R}$ - something we'll touch on shortly in this review.
The WR abbreviation in its name highlights that this is one of Fujifilm's weather-resistant lenses. It features no fewer than 10 seals around the barrel to keep moisture and dust at bay, and you'll find a rubber seal around the perimeter of the metal mount to prevent moisture or dust creeping inside the camera body. Its WR status will appeal to outdoorsy types and those who don't like the thought of having to stop shooting in inclement weather or challenging environments. There's nothing to stop it being used with non-weather-sealed X-series cameras, but for the highest level of protection when it's needed, it's best paired with the manufacturer's weather and dustresistant X-Pro2 or X-T2 bodies.
Another part of its spec not yet mentioned is its 46 mm thread at the front for attaching filters and adapters. This is smaller than the 62 mm filter thread on the XF $56 \mathrm{~mm} \mathrm{f} / 1.2 \mathrm{R}$ and slightly larger than the 43 mm filter thread on both the XF $35 \mathrm{~mm} \mathrm{f} / 2 \mathrm{RWR}$ and XF $23 \mathrm{~mm} f / 2$ R WR. The minimum focus distance


The lens is a great choice for those who'd like to shoot candid portraits Fujifilm X-Pro2, $1 / 2000$ sec at $\mathrm{f} / 2,1$ 1s0 100
is another area where it has an advantage over the XF $56 \mathrm{~mm} \mathrm{f} / 1.2 \mathrm{R}$. It has a maximum magnification of $0.15 x$ and can focus within 39 cm of a subject, whereas the XF 56 mm $\mathrm{f} / 1.2 \mathrm{R}$ can only focus as close as 70 cm .

## Build and handling

Compare this lens to Fujifilm's wider $f / 2$ primes and you'll notice it's a fraction longer than the XF $23 \mathrm{~mm} \mathrm{f} / 2$ R WR and not as stubby as the XF $35 \mathrm{~mm} \mathrm{f} / 2$ WR. It has the same difference in diameter between the rear and the front of the lens, resulting in the aperture ring being slightly larger than the manual focus ring. In typical Fujifilm tradition, the aperture ring is located closer to the mount, meaning fingers of the supporting hand can find it easily without having to shift the holding position.
When you consider there's a good saving to be made choosing this lens ahead of the XF

$56 \mathrm{~mm} / \mathrm{f} 1.2 \mathrm{R}$, you could be mistaken for thinking some corners might have been cut in terms of its build quality. The good news is that this isn't the case. It's constructed to the same high standard as its siblings in the $\mathrm{f} / 2$ range and feels every bit as solid as you'd expect for a lens that's designed to work as well on Fujifilm's premium mirrorless cameras as it is on their enthusiast and entry-level models.
The fact it doesn't have any switches on the barrel gives it a clean and stylish appearance. As well as having good aesthetics, it operates smoothly and precisely. The aperture ring clicks through its range in $1 / 3$-stop increments and offers a little more rotational resistance than you get on the XF $56 \mathrm{~mm} \mathrm{f} / 1.2 \mathrm{R}$. This good level of feedback translates to a very satisfying user experience from behind the camera. Rotating the aperture ring anticlockwise to its farthest point sets it to its 'A' setting, where users can take control of shutter priority or let the camera decide on the best aperture setting in its auto mode. The manual-focus ring has a nicely damped feel to it when it's rotated and if the difference in size wasn't enough to help the user differentiate between it and the aperture ring, it's also more finely grooved. The manual-focus ring offers a comparable level of resistance to the XF $35 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR and $\mathrm{XF} 23 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR in use, while the fairly long standard circular lens hood that comes supplied with the lens does a fine job of preventing flare when shooting towards the light.
Our review sample of the lens was supplied in black, but those who opted for an X-series camera in a silver finish will be glad to know this lens is also available in silver to match.

## Autofocus

Fujifilm's latest lenses have come a long way from early examples in terms of their autofocus

# ‘This lens is perceptibly faster at locking on and acquiring focus' 

performance. Compared to the Fujinon XF $56 \mathrm{~mm} \mathrm{f} / 1.2 \mathrm{R}$, which was known for making some pesky whirring noises as it focused, this lens is noticeably quieter. It's not entirely silent - you can still hear a faint clicking when the shutter is half depressed and the aperture blades move, but on the whole it's a big improvement. Testing the lens with an X-Pro2 and then switching across to using the XF $56 \mathrm{~mm} / \mathrm{f} / 1.2 \mathrm{R}$ also highlighted the fact that this lens is perceptibly faster at locking on and acquiring focus.

## Image quality

The quality of the images created using this lens do not disappoint, and by opening the lens to its widest aperture setting of $f / 2$, it's possible to create a pleasing separation between near and far subjects. The quality of out-of-focus highlights means a lot to photographers who like to generate images with a super shallow depth of field. Bokeh has a tendency to shift from circular in the centre to an elliptical shape at the edges, and although it doesn't create the same 'dreamy' feel to images as the more expensive XF $56 \mathrm{~mm} \mathrm{f} / 1.2$ R or $\mathrm{XF} 56 \mathrm{~mm} \mathrm{f} / 1.2$ APD ASPH lenses do at their maximum apertures, it delivers a pleasing level of background blur that'll satisfy almost everyone who uses it.

Centre sharpness out-resolves corner sharpness at $\mathrm{f} / 2$ and the same can be said right through the aperture range to $\mathrm{f} / 11$, at which point diffraction starts to soften images noticeably. Sharpness in the centre improves by stopping the lens down from $f / 2$ to $f / 4$ and there's a very gradual improvement in corner sharpness from $\mathrm{f} / 2$ to where it peaks at $\mathrm{f} / 8$. To preserve optimum sharpness right across the frame from corner to corner, users will want to shoot between $\mathrm{f} / 4-5.6$ on this lens.

Examination of our Image Engineering test alongside real-world images revealed visible levels of corner shading at the widest aperture. However, this soon disappears when the lens is stopped down to $f / 2.8$. Even at $f / 2$, vignetting from the lens isn't distasteful. It's tolerable for most applications and can be of benefit to portraiture and other subjects where you'd like to encourage the viewer's eye to travel straight to the centre of the frame.

Chromatic aberration is handled reasonably well by the lens, with only minor fringes of colour being observed along high-contrast edges at wide apertures. Distortion isn't a cause for concern on this lens either, and users should be aware that Fujifilm delivers correction for raw files via lens-specific metadata. This is accessed automatically by the raw converter you use to correct or mitigate common optical phenomena. It's the reason you won't find Fujifilm lenses listed under lens profiles in Camera Raw or Lightroom.


The lens acquires focus quickly with minimal fuss

## Verdict

THIS lens is another well-received addition to Fuififilm's X-series. It follows on from the success of the XF $35 \mathrm{~mm} \mathrm{f} / 2 \mathrm{RWR}$ and XF $23 \mathrm{~mm} \mathrm{f} / 2$ R WR lenses and complements these wider focal length primes superbly. X-series users aren't short of choice when it comes to buying a fast mid-telephoto prime, but this lens has key advantages in that it's a convenient size for travelling and feels just as good on smaller X -series camera bodies such as the $\mathrm{X}-\mathrm{T} 20$ as it does with the more advanced X-T2 and X-Pro2 models.
Added to this, it can focus quickly and has the benefit of being weather sealed. Factor in that it can be bought with the XF $35 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR for only $£ 30$ more than you'd spend on the XF $56 \mathrm{~mm} \mathrm{f} / 1.2 \mathrm{R}$ and you can see why these little $\mathrm{f} / 2$ primes are so popular and continue to sell like hot cakes.

## Data file

Price $£ 449$
Filter diameter 46 mm Lens elements 9 Groups 7 Aperture blades 9 Aperture $\mathrm{f} / 2-\mathrm{f} / 16$ Minimum focus distance 39 cm Dimensions $60 \times 59.4 \mathrm{~mm}$ Weight 200 g Lens mount Fujifilm $X$-mount Included accessories Lens cap, lens hood


# Fujinon XF 50 mm f/2 R WR 

## Resolution

The results from our Image Engineering tests tell us the lens gets gradually sharper in the centre when it's closed down from its maximum aperture of $\mathrm{f} / 2 \mathrm{to} \mathrm{f} / 4$. There's a very gradual increase in corner sharpness between $f / 2$ and $f / 5.6$, with the sharpest results at the edge reaching their optimum at $\mathrm{f} / 8$. With centre and corner sharpness being affected by diffraction beyond $f / 8$, we’d consider $\mathrm{f} / 4-\mathrm{f} / 5.6$ to be the lens's sweet spot.


50 mm centre
50 mm corner ...............

## Shading

Vignetting is apparent in images taken at $f / 2$, although it is well controlled. Corners appear approximately $0.4 E V$ darker than the centre and you'll start to see an improvement by $f / 2.8$. The vignetting correction that's built into the raw file metadata did a good job of correcting shading on our raw files when processing through Lightroom.


## Curvilinear distortion

Thanks to Fujifilm's integration of software distortion correction, users can expect well-corrected JPEG and raw format files with virtually no curvilinear distortion. To take control over how much distortion correction is applied, you'll need to use software such as Iridient Developer or Capture One.



Ebony 45SU, Rodenstock Grandagon-N 90 mm f/4.5. Fujifilm Velvia iso 50 . Exposure detail not recorded

## Seilebost sunset

Seilebost (pronounced 'Shaylabost', near enough) is the southern shore of Losgaintir/ Luskentyre Bay, Isle of Harris. The bay is partially sheltered by the island of Taransay just offshore; it is a place that perfectly distils the essence of the Outer Hebrides.
Soft air quality characterises Atlantic-facing shores of northwest Europe. The warmth of the Gulf Stream, combined with strong winds and an active sea surface make for an awful lot of water vapour. This softness is evident here, in a photograph made some years ago with my beloved 5x4inch Ebony 45SU view camera.
The contrast range was not ridiculously high, but shooting on transparency film the photographer always looks to hold the tonal range to a limit of five stops if possible, and accept there may be some black shadows. This composition required a soft 0.9 ND graduate. I recall having the filter angled strongly. Imagine a line drawn from bottom left to top right corner, with the gradient zone straddling that, and full density starting just about where the sun is.
Transparency film is notoriously unforgiving, but here soft light and a LEE soft grad balance the strong tones and colours of Velvia, hopefully to convey a little bit of that Hebridean magic.


Joe Cornish www.joecornishgallery.co.uk

leefilters.com

# $2+264 \mathrm{AT}$ 

Vanguard Alta Pro

Andy Westlake tests out a tripod with an ingenious multi－angle centre column －$£ 189$－www．vanguardworld．co．uk

MOST tripods currently follow a＇travel＇pattern，with legs that reverse fold around the head for a more compact size．The Vanguard Alta Pro 2＋264AT， however，is based on a rather different concept．Its legs fold conventionally，but it has a multi－angle centre column that can be tilted off－vertical then rotated freely relative to the legs，allowing the camera to be pointed in almost any direction．This extra flexibility can be really useful in the field， particularly for macro work．All of the centre－ column movements are adjusted using large controls with textured rubberised grips．
Vanguard has included lots of other neat features， too．The 4－section aluminium legs have clever twist locks that are restricted to just $35^{\circ}$ rotation between loose and tight，which means they＇re extremely easy to operate．All three locks on each leg can be undone together in a single movement， making the tripod quick to set up．

Rather than the usual two or three leg angles， Vanguard offers four，of $20^{\circ}, 40^{\circ}, 60^{\circ}$ and $80^{\circ}$ ， changed via easy－to－grip sliding locks．Chunky， curved rubber feet provide good ground contact at all leg angles．The lowest position enables practically ground－level shooting when used in concert with the tilting centre column，and crucially you don＇t have to disassemble anything，which again means it＇s quicker to set up than tripods with split or short centre columns．
A matte grey gunmetal finish and yellow markings provide a utilitarian，almost military aesthetic；there＇s no chance of this tripod attracting undue attention， or reflecting a colour cast back into your images． The build quality offers few causes for complaint， the only small disappointment being that the centre column height adjustment screw isn＇t captive．The tripod also gets a bit wobbly at its full height，as this requires fully extending the rather long centre column，and I was happier restricting it to 140 cm ． With the column down，you＇ll only get 120 cm ．

## Verdict

If you like the sound of a tripod that can hold your camera at angles most others can＇t，then the Vanguard Alta Pro 2＋264AT is certainly worth脤 a look．It＇s well thought－out，quick to use and easily莀 sturdy enough to hold an enthusiast DSLR．It does崖 face strong competition from the Manfrotto 190筦 Go，which is a bit smaller and lighter，but has a less管 flexible centre column that can only be set to ： for nature and macro photography．
 Grips
Rubberised grips on two
of the legs make the tripod more comfortable to carry． especially in cold

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Previewing in mono on OM-D

QI have switched from Canon to Olympus and now have an Olympus OM-D E-M1 Mark II. Is it possible to preview images in black \& white? It was possible to do this with my Canon - I was able to check skin tones for each image I shot. John Smith

AI am assuming that this is a technique you found useful with your Canon, using black \& white to check the luminance tonality of colour images? If that is the case, you can simply use raw capture mode and enable Monotone Picture Mode. By recording raw files, you preserve all the colour data which can be unlocked in post-processing but the camera will both preview and review the raw images taken - in greyscale. That does force you to compose through the camera's electronic viewfinder or the rear screen in black \& white. If you want to work in colour and only occasionally check images in mono, you can use the raw edit
mode when reviewing raw files to produce a mono version, which can be saved in the camera alongside the original raw file. This can be in any of the picture modes, including monotone. This is rather fiddly but it does work.

## Screen calibration difificulties

QI am new to calibrating and have hit a wall with what to do. I bought a Datacolor Spyder5 Pro, calibrated as per the instructions, and sent a batch of photos to a professional print lab. The results look completely different to what I see on my screen, they are much less vibrant and dull. Do you have any advice on how I can ensure an accurate calibration?
Crum (AP forum)

AThe whole idea of calibration is to ensure that the colours and tone you see on the screen is what everyone else will see on their calibrated display as well as when printed on a properly calibrated printer. However, it's not as simple as that. The imaging


Effective calibration gives a unified colour space throughout your workflow

## HDR halo problem

QI realise this is not for everyone, but I have a problem each time I try to make a three-image HDR photo, whether I use Lightroom or Aurora HDR 2017. The issue occurs whenever the sky meets a solid object, for example a roof, tree or mountain. The


Keith's image with strong halo effects object always appears to have a halo around it. What can I do to eliminate this? I've included an exaggerated example for you (above).

## Keith Jones

AIt's possible to create extended dynamic range images from multiple frames with bracketed exposure, without the heavy effects of a typical HDR mode. I often do this to create a natural-looking result in anticipation of blown highlights or blocked shadows when shooting in challenging conditions. The key is to not overdo it. The more donor images the better, using a generously wide range of exposures. To control the halos effectively, try not to crank up the adjustments when merging the images. I would also recommend working in raw, if you aren't already. Of course, don't use images that have already had the HDR treatment in-camera.
application you are using at either end of the workflow must also respect the same calibration framework. This includes the colour space you are working in and the colour space of the resulting file. I would check to see if you are producing files with Adobe RGB or another extra wide colour space, like ProPhoto. If your printing service is expecting files in sRGB, then the colour mapping will be wrong and you will get results that you describe. If the printing service is expecting Adobe RGB and you are sending files that are sRGB or something else, then the result will once again look different.

## EOS-M to Micro Four Thirds lens adapter

QIs it possible to use a Canon EOS-M lens on my Panasonic Lumix GX80 using an adapter? I can't seem to find any. Zeb Childen

AThe reason you can't find any such adapters is that the flange back distance required to focus an EOS-M lens to infinity on a Micro Four Thirds body like your GX80 is too short. The provision of electronic control of aperture and focusing would also be very challenging.
Q\&A compiled by Ian Burley

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## Professor Newman on... The patent minefield

A patent holds a lot of interesting information about the ownership of lens manufacturing

My attention was drawn recently to a number of interesting lens patents that have been posted on Camera-wiki (camera-wiki.org/wiki/ lens_patents). While not every design is patented or patentable, many companies will take out a patent if they think it contains original intellectual property.

Lens designs are particularly easily patentable, since every configuration is in detail different, so the claims in lens patents tend to be along the following lines:
'A first lens group having positive refractive power, a second lens group having negative refractive power, a third lens group having positive refractive power, an aperture stop, a fourth lens group having a positive refracting power, a fifth lens group having a positive refracting power, and a sixth lens group having a negative refracting power. Wherein the first lens group is composed of three lenses, and the distance from an infinite object to a nearest object. Wherein the second lens group, the fourth lens group and the fifth lens group are independently moved in the optical axis direction upon focusing.'
This is a quote from the patent for the Zeiss Touit $50 \mathrm{~mm} f / 2.8$ macro lens, submitted by Fujifilm Corporation. Since companies patent to protect their intellectual property, the claimant has a very good indication of which company designed and developed the lens, especially since it absolutely protects that configuration of elements. In the case of this lens, Zeiss is also an assignee.
This is not always the case. The Sony lenses for its cameras are generally claimed by Sony, including those branded Zeiss. The Sony full-frame 70-400mm
$\mathrm{f} / 4-5.6$ is claimed by Tamron. All the Zeiss Batis brand lenses are claimed by Tamron (see my article in AP 28 November 2015).
Most of the Panasonic Micro Four Thirds lenses branded Leica are claimed by Panasonic, which does not surprise anyone familiar with these lenses. Hasselblad lenses are claimed by Fujifilm, which will not surprise anyone who knows the history of the Hasselblad H series.
Some other oddities are the Olympus M. Zuiko $75 \mathrm{~mm} \mathrm{f} / 1.8$, which is claimed by Sigma, as are the $8 \mathrm{~mm} \mathrm{f} / 1.8$ and $25 \mathrm{~mm} \mathrm{f} / 1.8$. More interestingly, so is the
> 'A lens designed to be built in one factory could end up being quite different from a lens for another factory'

Panasonic $25 \mathrm{~mm} \mathrm{f} / 1.4$, which is actually branded Leica.
What does this all mean? As I outlined in my earlier article, this is a result of the manufacturing methodology known as ‘OEMing', whereby one company contracts an 'original equipment manufacturer' to manufacture products on its behalf. The assignment of the intellectual property rights shows that in many cases this is not simply a manufacturing subcontract, but a 'design and build' arrangement.
This makes a lot of sense in the world of lens design, because much of the design of a lens is determined by the manufacturing process used to make it. A lens designed to be built in one factory could end up being quite different from a lens for another factory. Lens designers within a company are familiar with their own processes and achievable tolerances, so if a company wishes to subcontract manufacture, 'design and build' is a sensible option.


A Leica lens, or is it a Panasonic or a Sigma?

Bob Newman is currently Professor of Computer Science at the University of Wolverhampton. He has been working with the design and development of high-technology equipment for 35 years and two of his products have won innovation awards. Bob is also a camera nut and a keen amateur photographer

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# Buying Guide 

Our comprehensive listing of key specifications for cameras and lenses

## Cameras

Interchangeable-lens cameras come in two types: DSLRs with optical viewfinders, and mirrorless models with electronic viewing

## Controls

Entry-level cameras tend to have simple, easy-to-understand controls, while more expensive models add lots of buttons and dials to give quick access to settings.


## Handgrip

DSLRs traditionally have relatively large handgrips, while many mirrorless models have much smaller grips to keep size down. However, some can accept accessory grips to improve handling with larger lenses.

## Lens mount

Each camera brand uses its own lens mount, and mirrorless cameras use different lenses to DSLRs even from the same brand. However, mirrorless models can often use DSLR Lenses via a mount adapter.

## Viewfinder

The biggest difference between DSLRs and mirrorless cameras is that the latter use electronic, rather than optical viewfinders. They're more power hungry, but can display more information and show exactly how your pictures will turn out.

## Size and weight

Mirrorless models tend to be smaller and lighter than DSLRs, and not just the cameras themselves, but their lens systems, too. However, there's still a wider choice of lenses available for DSLRs.


ALMOST all serious photographers prefer to use cameras with interchangeable lenses, as this gives the greatest degree of creative flexibility. At one time, this meant digital single-lens reflex (DSLR) cameras, but these have now been joined by mirrorless compact system cameras (CSCs) that use electronic viewfinders. Previously, these lagged behind DSLRs in some respects such as autofocus. But the
latest models have narrowed the gap considerably, and are true alternatives to DSLRs, offering the same image quality and creative options. Camera manufacturers offer a range of models, from simple, relatively inexpensive beginner-friendly designs through to sophisticated professional models. In the middle of the range you'll find enthusiast cameras with more advanced control layouts.

|  | DSLR cameras |  |  |  | $\qquad$ | 訇 空 | $\begin{aligned} & \text { oㄹ } \\ & \frac{x}{2} \end{aligned}$ | $\stackrel{\stackrel{!}{3}}{8}$ |  |  |  |  |  |  |  |  | 宸 |  |  |  |  |
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|  | NAME \＆MODEL | RRP | SCORE | SUMMARY |  |  |  |  |  |  | SHOOTI |  |  |  | EEN |  |  |  | DIMEN | SIONS |  |
|  | Canon EOS 1300D | £450 | 4 | Beginner－friendly model with simple controls and built－in Wi－Fi | 18MP | Canon EF | 12，800 | 1080p |  | 9 | 395 | － | － | 3 n |  |  | 500 | 129 | 101.3 | 77.6 | 485g |
| HEW | Canon EOS 200D | £580 |  | Very compact entry－level DSLR with fully－articulated touchscreen | 24．2MP | Canon EF | 51，200 | 1080p |  | 9 | 95 | － | － | 3 n | － | － | 650 | 122.4 | 92.6 | 69.8 | 453g |
|  | Canon EOS 700D | £750 | 4．5 ${ }^{\text {t }}$ | Likeable entry－level DSLR，but sensor is now Looking dated | 18MP | Canon EF | 12，800 | 1080p | － | 9 | 595 |  | － | 3 n | － |  | 440 | 133 | 100 | 79 | 580 g |
|  | Canon EOS 750D | £599 | 4＊ | Entry－level model with 24MP sensor and articulated touchscreen | 24．2MP | Canon EF | 25，600 | 1080p | － | 19 | 595 |  | － | 3 n | － | － | 440 | 131.9 | 100.7 | 77.8 | 555g |
|  | Canon EOS 760D | E649 | 5 | Higher－end version of EOS 7500 with improved control layout | 24．2MP | Canon EF | 25，600 | 1080p | － | 19 | 5100 |  | － | 3in | － | － | 440 | 131.9 | 101 | 77.8 | 565 g |
|  | Canon EOS 800D | £780 | 4．5 ${ }^{\text {t }}$ | Updates EOS 7500 with sophisticated 45－point autofocus | 24．2MP | Canon EF | 25，600 | 1080p | － | 45 | 695 | － | － | 3 n | － | － | 600 | 131 | 99 | 76.2 | 532 g |
|  | Canon EOS 77D | £830 | 4．5 $\begin{aligned} & \text {＊}\end{aligned}$ | Same core spec as EOS 8000 but in higher－end body design | 24．2MP | Canon EF | 25，600 | 1080p | － | 45 | 695 | － | － | 3 n | － | － | 600 | 131 | 100 | 76.2 | 540 g |
|  | Canon EOS 80D | £999 | 5 | Extremely capable mid－range DSLR for enthusiast photographers | 24．2MP | Canon EF | 25，600 | 1080p | － | 45 | 7100 | － | － | 3 n | － | － | 960 | 139 | 105.2 | 78.5 | 730 g |
|  | Canon EOS 7D Mk II | £1599 | 4．5 $\star$ | High－speed APS－C DSLR includes sophisticated AF system | 20．2MP | Canon EF | 51，200 | 1080p | － | 65 | 10100 |  | － | 3in |  |  | 670 | 148.6 | 112.4 | 78.2 | 910 g |
|  | Canon EOS 6D | £1700 | 4．5 ＊ | Canon＇s most affordable full－frame DSLR includes Wi－Fi and GPS | 20．2MP | Canon EF | 102，400 | 1080p | － | 11 | 4.597 | － |  | 3 in |  |  | 980 | 145 | 111 | 71 | 755 g |
| LEW | Canon EOS 6D Mk II | £1999 |  | Includes 26．2MP full－frame sensor and fully articulated screen | 26．2MP | Canon EF | 102，400 | 1080p | － | 456 | 6.598 | － |  | 3 n | － | －1 | 1，200 | 144 | 110.5 | 74.8 | 765 g |
|  | Canon EOS 5D Mk III | £299 | 5 | Great all－round DSLR for serious enthusiasts and professionals | 22．3MP | Canon EF | 102，400 | 108 | － | 61 | 6100 |  |  | 3.2 in |  |  | 950 | 152 | 116 | 76 | 950 g |
|  | Canon EOS 5DS | £2999 |  | High－resolution model with 50MP sensor | 50．6MP | Canon EF | 12，800 | 1080p | － | 61 | 5100 |  |  | 3．2in |  |  | 700 | 152 | 116.4 | 76.4 | 845 g |
|  | Canon EOS 5DS R | E3199 | 5 | Same as the 5DS，but low－pass filter removed for maximum resolution | 50．6MP | Canon EF | 12，800 | 1080p | － | 61 | 5100 |  |  | 3．2in |  |  | 390 | 152 | 116.4 | 76.4 | 845 g |
|  | Canon EOS 5D Mk IV | £3599 | 4．5 $\star$ | Hugely accomplished workhorse model，but pricey | 30.4 MP | Canon EF | 102，400 | 3840p | － | 61 | 77100 | － |  | 3．2in |  | － | 900 | 151 | 116 | 76 | 890 g |
|  | Canon EOS－1D X Mk | E5199 |  | Professional high－speed sports and action model | 20．2MP | Canon EF | 409，600 | 3840p | － | 61 | 14100 |  |  | 3．2in | － | － 1 | 1，210 | 158 | 167.6 | 82.6 | 1．340g |
|  | Nikon D3300 | £600 | 4．5 $\star$ | Entry－level simple DSLR for beginners | 24．2MP | Nikon F | 25，600 | 1080p | － | 11 | 595 |  | － | 3in |  |  | 700 | 124 | 98 | 75.5 | 460 g |
|  | Nikon D3400 | £399 |  | Adds Bluetooth to D3300 for connecting to smartphone | 24．2MP | Nikon F | 25.600 | 1080p | － | 11 | 595 |  | － | 3 n | － |  | 1，200 | 124 | 98 | 75.5 | 445 g |
|  | Nikon D5300 | £830 | 4．5 $\star$ | Ageing mid－range DSLR is now available at bargain prices | 24．2MP | Nikon F | 25，600 | 1080p | － | 23 | 595 | － | － | 3．2in | － |  | 700 | 125 | 98 | 76 | 530 g |
|  | Nikon D5500 | £720 | 4．5 $\star$ | Excellent image quality and handling from a small DSLR | 24．2MP | Nikon F | 25.600 | 1080p | － | 39 | 595 | － | － | 3.2 in | － | － | 820 | 124 | 97 | 70 | 470 g |
|  | Nikon D5600 | £800 |  | Minor update to the D5500 adds Bluetooth smartphone connection | 24．1MP | Nikon F | 25,600 | 1080p | － | 39 | 595 | － | － | 3．2in | － | － | 970 | 124 | 97 | 78 | 465 g |
|  | Nikon D7100 | £1100 | 4．5 $\begin{aligned} & \text { t }\end{aligned}$ | A highly accomplished camera with excellent image quality and AF | 24．1MP | Nikon F | 25，600 | 1080p | － | 51 | 6100 |  | － | 3 in |  |  | 950 | 135 | 106 | 76 | 765 g |
|  | Nikon D7200 | £939 | 4＊ | Updates the $\mathrm{D7100}$ with some useful extras such as Wi－Fi | 24．2MP | Nikon F | 25，600 | 1080p | － | 51 | 6100 | － | － | 3．2in |  |  | 1，100 | 135.5 | 106.5 | 76 | 765 g |
|  | Nikon D7500 | £1299 | 4．5 $\begin{aligned} & \text {＊}\end{aligned}$ | Places the excellent sensor from the D500 into a smaller body | 20.9 MP | Nikon F | 1，640，000 | 3840p | － | 51 | 8100 | － | － | 3．2in | － | － | 950 | 135.5 | 104 | 72.5 | 720 g |
|  | Nikon D500 | £1729 | 5＊ | Probably the best DX－format DSLR ever，with remarkable autofocus | 20．9MP | Nikon F | 1，640，000 | 3840p | － | 153 | 10100 | － | － | 3．2in | － | － 1 | 1，240 | 147 | 115 | 81 | 860 g |
|  | Nikon D610 | £1800 | 5 | Nikon＇s cheapest full－frame model with a solid feature set | 24．3MP | Nikon F | 25，600 | 1080p | － | 39 | 6100 |  | － | 3．2in | － |  | 900 | 141 | 113 | 82 | 850 g |
|  | Nikon D750 | £1800 | 5＊ | Great all－round enthusiast full－frame model with tilting screen | 24．3MP | Nikon F | 51，200 | 1080p | － | 51 | 6.5100 | － | － | 3．2in | － |  | 1，230 | 140.5 | 113 | 78 | 840 g |
|  | Nikon DF | ¢2600 | 4＊ | Retro－styled full－frame model with excellent sensor | 16．2MP | Nikon F | 204，800 |  |  | 395 | 5.5100 |  |  | 3．2in |  |  | 1，400 | 143.5 | 110 | 66.5 | 765 g |
|  | Nikon D810 | £2699 | 5 | High－resolution full－frame DSLR offers superb image quality | 36．3MP | Nikon F | 51，200 | 1080p |  | 51 | 12100 |  | － | 3．2in |  |  | 1，200 | 146 | 123 | 82 | 980g |
|  | Nikon D5 | ¢5199 |  | Nikon＇s top－end sports and action model for professionals | 20．8MP | Nikon F | 3，280，000 | 3840p | － | 53 | 14 tbc |  |  | 3．2in | － | － 3 | 3，780 | 160 | 158.5 | 92 | 1．405g |
|  | Pentax K－S1 | £550 | 4＊ | Pentax＇s entry－level DSLR comes in a range of colours | 20．2MP | Pentax K | 51，200 | 1080p | － | 11 | 5.4100 | － | － | 3 n |  |  | 410 | 92.5 | 120 | 69.5 | 498 g |
|  | Pentax K－50 | £600 | 4．5 ${ }^{\text {t }}$ | Large viewfinder and two control dials－unusual at this price | 16．3MP | Pentax K | 51，200 | 1080p |  | 11 | 4100 |  | － | 3 n |  |  | 410 | 130 | 97 | 71 | 650 g |
|  | Pentax K－S2 | £649 | 4．5 ＊ | Includes a fully articulated screen and in－body stabilisation | 20．2MP | Pentax K | 51，200 | 1080p | － | 11 | 5.4100 | － | － | 3 n | － |  | 410 | 122.5 | 91 | 72.5 | 678 g |
|  | Pentax K－70 | £600 | 4．5 $\star$ | Solid performer that updates the K－S2 with a 24 MP sensor | 24．2MP | Pentax K | 102，400 | 1080p |  | 11 | 6100 | － | － | 3 n | － |  | 410 | 125.5 | 93 | 74 | 688 g |
|  | Pentax K－3 | £950 | 4 ${ }^{\text {® }}$ | Well－featured enthusiast model with in－body image stabilisation | 24．2MP | Pentax K | 51，200 | 1080i | － | 27 | 8100 |  | － | 3．2in |  |  | 560 | 131 | 100 | 77 | 800 g |
|  | Pentax K－3 II | £769 | 4．5 $\begin{aligned} & \text { t }\end{aligned}$ | Updates the K－3，with built－in GPS instead of a flash | 24．3MP | Pentax K | 51，200 | 1080p | － | 278 | 8.3100 |  |  | 3．2in |  |  | 720 | 131.5 | 102.5 | 77.5 | 7859 |
|  | Pentax KP | £1099 | 4＊ | Compact but well－specified DSLR with interchangeable hand－grips | 24．3 MP | Pentax K | 819，200 | 1080p | － | 27 | 7100 | － | － | 3 in | － |  | 390 | 131.5 | 101 | 76 | 703 g |
|  | Pentax K－1 | £1599 | 5 | The first Pentax full－frame DSLR is excellent value for money | 36MP | Pentax K | 204，800 | 1080p | － | 334 | 4.4100 | － |  | 3．2in | － |  | 760 | 136.5 | 110 | 85.5 | 1，010g |
| 左 | Sigma SD Quattro | £850 | 3 | SD－mount mirrorless camera with unique Foveon X3 sensor | 19．6MP | Sigma SD | 6400 |  |  | 93 | 3.6100 |  |  | 3 in |  |  | tbc | 147 | 95.1 | 90.8 | 703g |
| 空 | Sigma SD Quattro H | ¢1499 |  | Physically identical body to SD Quattro，but with larger APS－H sensor | 25．7MP | Sigma SD | 6400 | － |  | 9 t | tbc 100 |  |  | 3 in |  |  | tbc | 147 | 95.1 | 90.8 | 708 g |
| 흔 | Sony Alpha 58 | £450 | 4＊ | Entry－level SLR－like camera but with electronic viewfinder | 20．1MP | Sony A | 16，000 | 1080p |  | 15 | 5100 |  | － | 2．7in | － |  | 690 | 129 | 95.5 | 78 | 492g |
| 坒 | Sony Alpha 68 | £479 | 3＊ | Excellent AF and sensor，but low－resolution LCD screen and no Wi－Fi | 24MP | Sony A | 25,600 | 1080p | － | 79 | 8100 |  | － | 2.7 in | － |  | 580 | 142.6 | 104.2 | 82.8 | 675 g |
| 腿 | Sony Alpha 77 II | £1000 | 4．5 ${ }^{\text {t }}$ | Impressive autofocus and fast shooting，plus good handling | 24．3MP | Sony A | 25，600 | 1080p | － | 79 | 12100 | － | － | 3 in | － |  | 480 | 142.6 | 104 | 81 | 647 g |
| 芯 | Sony Alpha 99 | £1800 | 4＊ | Fast－shooting SLR－like camera with an electronic viewfinder | 24．3MP | Sony A | 25，600 | 1080p | － | 19 | 10100 |  | － | 3 n | － |  | 500 | 147 | 111 | 78 | 812 g |
| $\ddagger$ | Sony Alpha 99 II | £2999 | 4．5 ＊ | Places the superb sensor from the Alph 7R II in a DSLR－styled body | 42.4 MP | Sony A | 102，400 | 3840p |  |  | 12100 | － | － | 3 n | － | － | 100 | 142.6 | 104.2 | 76.1 | 8499 |

We＇ve tried our hardest to ensure that the information in this guide is as complete and accurate as possible．However，we don＇t have space to list every camera and lens on the market，and some errors will inevitably have crept in along the way．We advise double－checking any crucial specifications or requirements with a reputable retailer or the manufacturer＇s website before making a major purchase．If you spot an error， please let us know by emailing amateurphotographer＠timeinc．com．

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| Miryorless cameras |  |  |  | $\begin{aligned} & \text { 흔 } \\ & \text { 흘 } \\ & \text { 信 } \end{aligned}$ | $\begin{aligned} & \text { 欲 } \\ & \text { 흘 } \end{aligned}$ | $\begin{aligned} & \text { 을 } \\ & \frac{1}{x} \end{aligned}$ | 율 |  |  |  |  |  |  |  | 宸 |  | 조춫 | 畆 | 咭 |
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| NAME \＆MODEL | RRP | SCORE | SUMMARY |  |  |  |  |  |  |  | OOTIN |  |  | REEN |  |  | DIMEN | SIONS |  |
| Canon EOS M10 | £399 |  | Compact，extremely simple CSC designed for beginners | 18MP | Canon M | 25，600 | 1080p |  | 494. | 4.6 |  | －－ | 3 in | － | － 255 | 108 | 66.6 | 35 | 301 g |
| Canon EOS M3 | £599 | 4＊ | Mid－range model with enthusiast controls but no viewfinder | 24．3MP | Canon M | 25.600 | 1080p | － | 494 | 4.2 |  | －－ | 3 n | － | 250 | 110.9 | 68 | 44.4 | 366g |
| Canon EOS M6 | £730 | 3．5 $\star$ | Update to EOS M3 with faster autofocus and improved controls | 24．2MP | Canon M | 25，600 | 1080p | － | 49 | 9 |  | －－ | 3 n | － | 295 | 112 | 68 | 44.5 | 390 g |
| Canon EOS M5 | £1049 | 4＊ | DLSR－style mirrorless camera combines speed and good handling | 24．2MP | Canon M | 25，600 | 1080p | － | 49 | 9 | － | － | 3．2in | － | － 295 | 115.6 | 89.2 | 60.6 | 427g |
| Fujifilm X－A10 | £500 | 4＊ | Simple entry－level CSC with tilting screen for selfies | 16．3MP | Fuji X | 25，600 | 1080p |  | 49 | 6 |  | －－ | 3in | － | 350 | 119.6 | 67.4 | 40.4 | 331 g |
| Fu | ¢599 |  | Fuji＇s budget range of viewfinderless CSCs gains 24．2MP sensor | 24．2MP | Fuji X | 25，600 | 1080p |  | 91 | 10 |  | －－ | －3in | － | － 410 | 116.9 | 66.9 | 40.4 | 339 g |
| Fujifilm X－E2S | £549 | 4 | Rangefinder－style design with viewfinder and analogue controls | 16．3MP | Fuji X | 51，200 | 1080p | － | 49 | 7 | － | －－ | 3 in |  | 350 | 129 | 74.9 | 37.2 | 350 g |
| Fu | £499 | 4．5 ${ }^{\text {＊}}$ | Compact and very likeable camera with many features from the X－ | 16．3MP | Fuji X | 51，200 | 1080p | － | 77 | 8 | － | －－ | 3 n | － | 350 | 118.4 | 82.8 | 40.8 | 381 g |
| Fujifilm | ¢799 | 5 | Small SLR－style model with strong feature set including touchscreen | 24．3MP | Fuji X | 51，200 | 3840p | － | 325 | 8 | － | －－ | 3 in | － | － 350 | 118.4 | 82.8 | 41.4 | 383 g |
| Fujifilm X－T1 | $£ 1100$ | 5 | Re | 16．3MP | Fuji X | 51，200 | 1080p | － | 49 | 8 | － | － | 3 n | － | 350 | 129 | 89.8 | 46.7 | 440 g |
| Fujifilm X | £1349 | 5 | Flagship model with unique optical／electronic hybrid viewfinder | 24．3MP | Fuji X | 51，200 | 1080p | － | 77 | 8 | － | － | 3 n |  | 250 | 140.5 | 82.8 | 45.9 | 4959 |
| Fujifilm X－T2 | £1450 | 5 | Superb image quality and handling make it the best APS－C CSC to date | 24．3MP | Fuji X | 51，200 | 1080p | － | 325 | 14 | － | － | 3 in | － | 340 | 132.5 | 91.8 | 49.2 | 507g |
| Leica | £135 |  | Stylish aluminium body and touchscreen－led control | 16MP | Leica L | 12，500 | 1080p |  | 195 | 5 |  | －－ | 3.7 in |  | － 400 | 134 | 69 | 33 | 3849 |
| Leica TL2 | £1700 |  | Update to the TL with 24MP sensor and much faster operation | 24 MP | Leica L | 50，000 | 3840p |  | 49 | 20 |  | － | 3.7 in |  | － 250 | 134 | 69 | 33 | 3999 |
| Leica SL | £5500 | 4 | Leicas full－frame CSC has an astonishing viewfinder | 24 MP | Leica L | 50，000 | 4096p |  | 49 | 11 | － | － | 3 in |  | － 400 | 147 | 104 | 39 | 847g |
| Nikon | £349 |  | Nikon＇s latest CSC aims to attract both beginners and enthusiasts | 21MP | Nikon 1 | 12，800 | 3840p |  | 171 | 60 |  | －－ | 3 n | － | － 250 | 98.3 | 59.7 | 31.5 | 265g |
| Nikon 1 AW1 | ¢749 | 3．5 ${ }^{\text {® }}$ | High－end CSC is waterproof and shockproor | 14．2MP | Nikon 1 | 6400 | 1080p |  | 41 | 15 |  | －－ | 3 in |  | 220 | 113 | 71.5 | 37.5 | 356 g |
| Olympus PEN E－PL | £499 | 4 | High spec，compact size and superb image quality | 16MP | Mic4／3 | 25，600 | 1080p |  | 81 | 8 |  | －－ | 3 n | － | － 350 | 114.9 | 67 | 38.4 | 357 g |
| Olympus PEN E－PL8 | £399 |  | Retro external design hides serious specifications | 16．1MP | Mic4／3 | 25，600 | 1080p |  | 81 | 8.5 |  | －－ | 3in | － | － 350 | 117.1 | 68.3 | 38.4 | 374 g |
| Olympus OM－D E－M10 II | £549 | 4．5 | Mid－range model has a strong feature set and performs very well | 16．1MP | Mic4／3 | 25，600 | 1080p |  | 818 | 8.5 | － | －－ | 3 n | － | － 320 | 119.5 | 83.1 | 46.7 | 3429 |
| Olympus OM－D | £900 | 5 | Combines great handling and image quality with stylish looks | 16MP | Mic4／3 | 25，600 | 1080p | － | 81 | 10 | － | － | 3in | － | 750 | 123.7 | 85 | 44.5 | 4699 |
| Olympus P | £1000 | 5 | Lovely retro rangefinder－styled CSC with built－in viewfinder | 20．3MP | Mic4／3 | 25，600 | 1080p |  | 81 | 10 | － | －－ | 3 n | － | － 330 | 124.8 | 72.1 | 37.3 | 427g |
| Olympus OM－D E－M1 | £1300 | 5 | Fully weather－proofed and Wi－Fi－enabled pro－level CSC | 16．8MP | Mic4／3 | 25600 | 1080p | － | 81 | 10 | － | － | 3in | － | － 330 | 130 | 93.5 | 63 | 497g |
| Olympus OM－D E－M1 II | £1850 | 5 | Superb AF system，super－fast shooting and remarkable in－body IS | 20．4MP | Mic4／3 | 25，600 | 3840p | － | 21 | 18 | － | － | 3 in | － | －tbc | 134.1 | 90.9 | 68.9 | 5749 |
| Panasonic Lumix G7 | £679 | 4 | 4 K video capture in a relatively inexpensive SLR－style CS | 16MP | Mic4／3 | 25，600 | 3840p | － | 49 | 8 | － | －－ | 3 in | － | － 360 | 124.9 | 86.2 | 77.4 | 410 g |
| Panasonic Lumix 680 | £699 | 4．5 $\star$ | DSLR－style model for enthusiasts with in－body IS and 4K video | 16MP | Mic4／3 | 25，600 | 3840p | － | 49 | 9 | － | －－ | 3 in | － | － 330 | 128.4 | 89 | 74.3 | 505 g |
| Panasonic Lumix GX800 | £500 | 4 | Tiny easy－to－use pocket CSC with tilting screen and 4K video | 16MP | Mic4／3 | 25，600 | 3840p |  | 49 | 5.8 |  | －－ | 3in | － | － 210 | 106.5 | 64.6 | 33.3 | 269 g |
| Panasonic Lumix GX80 | £599 | 4．5 ${ }^{\text {® }}$ | Well－judged compact model with IS，tilting screen and viewfinder | 16MP | Mic4／3 | 25，600 | 4096p |  | 49 | 8 | － | －• | 3 in | － | － 290 | 122 | 70.6 | 43.9 | 426g |
| Panasonic Lumix GX8 | £1000 | 5 | In－body stabilisation and tilting viewfinder in a large rugged body | 20．3MP | Mic4／3 | 25，600 | 3840p | － | 49 | 8 | － | － | 3in | － | － 330 | 133.2 | 78 | 63.1 | 487g |
| Panasonic Lumix GH4 | £1300 | 4 ${ }^{\text {¢ }}$ | Both 4 K video quality and still images are impressive | 16MP | Mic4／3 | 25，600 | 4096p | － | 49 | 12 | － | －－ | －3in | － | － 500 | 133 | 93 | 84 | 560 g |
| Panasonic Lumix GH5 | £1299 | 4．5 ${ }_{\text {t }}$ | Video－focused hign－end CSC with in－body stabilisation and 4K recording | 20．2MP | Mic4／3 | 25，600 | 4096p | － | 225 | 12 | － | － | 3．2in | － | 410 | 138.5 | 98.1 | 87.4 | 7259 |
| Sony Alpha 5000 | £420 | 4 | Simple，compact model aims to compete with entry－level DSLRs | 20．1MP | Sony E | 16，000 | 1080p | － | 253 | 3.5 |  | －－ | 3 n | － | 420 | 110 | 63 | 36 | 2969 |
| Sony Alpha 5100 | ¢549 | 4 | One of the very best entry－level cameras for video and image quality | 24MP | Sony E | 25，600 | 1080p |  | 179 | 6 |  | － | 3 in | － | － 400 | 110 | 63 | 36 | 283g |
| Sony Alpha 6000 | £670 | 4．5 ぇ | Sophisticated AF and an impressive APS－C sensor | 24 MP | Sony E | 25，600 | 1080p |  | 179 | 11 | － | － | $3 i n$ | － | 310 | 120 | 67 | 45 | 344 g |
| Sony Alpha 6300 | £1000 | 4．5 ＊ | Premium CSC that boasts fast AF tracking and 4K video | 24．2MP | Sony E | 51，200 | 3840p | － | 425 | 11 | － |  | 3 n | － | 350 | 120 | 66.9 | 48.8 | 4049 |
| Sony Alpha 6500 | £1500 | 5 | Technically hugely accomplished CSC with in－body image stabilisation | 24．2MP | Sony E | 51，200 | 3840p | － | 425 | 11 | － |  | 3 in | － | － 350 | 120 | 66.9 | 53.3 | 453g |
| Sony Alpha 7 | £1300 | 4．5 ${ }^{\text {＊}}$ | One of the lightest，smallest full－frame cameras | 24．3MP | Sony E | 25，600 | 1080p | － | 117 | 5 | － | － | 3in | － | 340 | 127 | 94 | 48 | 4749 |
| Sony Alpha 7 II | £1498 | 5 $\star$ | The full－frame Alpha 7 II includes in－body image stabilisation | 24．3MP | Sony E | 25，600 | 1080p |  | 117 | 5 | － | － | 3 in | － | 350 | 126.9 | 95.7 | 59.7 | 556 g |
| Sony Alpha 7R | £1700 | 4．5 ＊ | Same body design as the Alpha 7 but higher resolution sensor | 36．4MP | Sony E | 25，600 | 1080p | － | 25 | 4 | － | － | 3in | － | 340 | 127 | 94 | 48 | 465g |
| Sony Alpha 7R II | £2599 | 5 | A big step up from the A7R；one of the best full－frame cameras available | 42．4MP | Sony E | 102，400 | 3840p |  | 399 | 5 | － | － | 3 in | － | 290 | 126.9 | 95.7 | 60.3 | 6259 |
| Sony Alpha 7S | £2259 | 4 | Remarkable low－light and video capabilities | 12．2MP | Sony E | 409，600 | 1080p | － | 25 | 5 | － | － | 3 in | － | 380 | 126.9 | 94.4 | 48.2 | 489g |
| Sony Alpha 7S II | £2500 | 5 | A specialist camera for low light shooting and 4K video | 12．2MP | Sony E | 409，600 | 3840p |  | 169 | 5 | － | － | 3 n | － | 310 | 126.9 | 95.7 | 60.3 | 627g |
| Sony Alpha 9 | £4500 | 5 | Super－fast CSC with 20fps shooting and stunning overall performance | 24．2MP | Sony E | 204，800 | 3840p |  |  | 20 | － | － | 3 in | － | － 650 | 126.9 | 95.6 | 63 | 673 g |


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## Lenses

Interchangeable lenses come in a huge array of types for shooting different kinds of subjects

FOR MOST enthusiast photographers, the easiest way to expand the kinds of pictures you can take is by buying different types of lenses. For example, telephoto lenses let you zoom in on distant subjects, while macro lenses allow you to focus on small subjects. Large-aperture lenses allow you to isolate subjects against blurred backgrounds or shoot in low light without having to raise the ISO too high. Meanwhile, all-in-one superzooms cover a wide range of subjects, but with lower optical quality.

## Filter thread

A thread at the front of the camera will have a diameter, in mm, which will allow you to attach a variety of filters or adapters to the lens.

## Lens mounts

Each manufacturer has its own lens mount and most aren't compatible with one another. For example, a Canon DSLR can't use Nikon lenses, although you can use independent brands if you get them with the right mount.

## Built-in focus motor

Most lenses now incorporate an internal motor to drive the autofocus, although some are still driven from the camera body. DSLR lenses often use ultrasonictype motors for fast focusing, while those for mirrorless cameras tend to employ video-friendly stepper motors.

## LENS SUFFIX GUIDE USED BY MANUFACTURERS

| AF | Nikon AF lenses driven from camera | DC | Nikon defocus-control portrait lenses |
| :---: | :---: | :---: | :---: |
| AF-S | Nikon lenses with Silent Wave Motor | DC | Sigmȧs lenses for APS-C digital |
| AF-P | Nikon lenses with stepper motors | DG | Sigma's designation for full-frame lenses |
| AL | Pentax lenses with aspheric elements | Di | Tamron lenses for full-frame sensors |
| APD | Fujifilm lenses with apodisation elements | Di-II | Tamron lenses designed for APS-C DSLRs |
| APO | Sigma Apochromatic lenses | Di-III | Tamron lenses for mirrorless cameras |
| ASPH | Aspherical elements | DN | Sigmás lenses for mirrorless cameras |
| AT-X | Tokinás Advanced Technology Extra Pro | DO | Canon diffractive optical element lenses |
| AW | Pentax all-weather lenses | DT | Sony lenses for APS-C-sized sensors |
| CS | Samyang lensesfor APS-C cropped sensors | DX | Nikon's lenses for DX-format digital |
| D | Nikon lenses that communicate distance info | E | Nikon lenses with electronic apertures |
| DA | Pentax lenses optimised for APS-C-sized sensors | E | Sony lenses for APS-C mirrorless |

DSLR Lenses

ED Extra-low Dispersion elements
EF Canon's DSLR lenses for full frame EF-S Canon lenses for APS-C sized sensors EF-M Canon's lenses for its mirrorless M range EX Sigmas's 'Excellent' range FA Pentax full-frame lenses FE Sony lenses for full-frame mirrorless G Nikon lenses without an aperture ring HSM Sigmás Hypersonic Motor IF Internal Focusing IS Canon's Image-Stabilised lenses L Canon's 'Luxury' range of lenses

LD Low-Dispersion glass LM Fujfilm Linear Motor MP-E Canons high-magnification macro lens OIS Optical Image Stabilisation OS Sigmás Optically Stabilised lenses PC-E Nikon tilt-and-shift lenses PF Nikon Phase Fresnel optics PRO Tokina and Olympus Professional lenses PZD Tamron Piezo Drive focus motor SAM Sony Smooth Autofocus Motor SDM Pentax's Sonic Direct Drive Motor SMC Pentax Super Multi Coating

Maximum aperture Wider apertures mean you can use faster, motion-stopping shutter speeds.

## CANON DSLR

EF 8 - 15 mm f/4 L USM
EF-S 10-18mm f/4.5-5.6 IS STM
EF-S $10-22 \mathrm{~mm} \mathrm{f} / 3.5-4.5$ USM
EF 11-24mm f/4L USM
EF 14 mm f $/ 2.8$ LII USM
EF-S $15-85 \mathrm{~mm}$ f/3.5-5.6 IS USM
EF $16-35 \mathrm{~mm}$ f/2.8LIIUSM
EF $16-35 \mathrm{~mm}$ f $/ 2.8 \mathrm{~L}$ III USM
EF $16-35 \mathrm{~mm}$ f/4L IS USM
TS-E 17 mm f/4L
EF $17-40 \mathrm{~mm}$ f/4L USM
EF-S $17-55 \mathrm{~mm}$ f/2.8 IS USM
EF-S $17-85 \mathrm{~mm} \mathrm{f} / 4-5.6$ IS USM
EF-S $18-55 \mathrm{~mm}$ f/3.5-5.6 IS STM
EF-S $18-55 \mathrm{~mm} \mathrm{f} / 4-5.6 \mathrm{IS} \mathrm{STM}$
EF-S $18-135 \mathrm{~mm} / \mathrm{f} 3.5-5.6 \mathrm{IS}$
EF-S $18-135 \mathrm{~mm} / / 3.5-5.61$ S STM
EF-S $18-135 \mathrm{~mm}$ f $/ 3.5-5.6$ IS USM
EF-S $18-200 \mathrm{~mm}$ f/3.5-5.6 IS
EF 20 mm f/2.8 USM
EF 24 mm f/1.4LII USM
EF $24 \mathrm{~mm} \mathrm{f} / 2.8$ IS USM
EF-S 24 mm f/2.8 STM
TS-E 24 mm f/3.5LII

## Impressive-looking fisheye zoom lens from Canon

 A superb ultra-wideangle that's a must-have for anyone shooting landscapes and cityscapes A good performer, with solid MTF curves and minimal chromatic aberationLong-awaited by Canon full-frame users, this is the wordd's widest-angle rectilinear zoom lens
Impressive resolution at $/ 88$ but less so wide open
Four-stop image stabilisation and Super Spectra coatings, together with a useful range
A good performer with strong results at $f / 8$ in particular
Revamped wideangle zoom includes new optics in a weather-sealed lens barrel
4ᄎ Versatile and with a useful IS system, this is a very good ultra-wideangle zoom for full-frame cameras •
Tilt-and-shift optic with independent till-and-ssift ototaion and redesigned coatings
Designed to match the needs of demanding professionals - and does so with ease
Very capable lens with three-stop image stabilisation, Super Spectra coating and a circular aperture
Doesi't really live up to its promises. The zoom range is excellent but there are better alternatives
Versatile, affordable standard zoom featuring four-stop image stabilisation
Latest standard zoom for Canon's APS-C EeS DSLRs, with compact design and updated optics
Four-stop image stabilisation, and automatic panning and tripod detection Uses stepper motor for silent and fast autofocus that's also well suited to video work Versatile wideangle zoom with new Nano USM focus technology

- Automatic panning detection (for image stabilisation) and a useful $11 x$ zoom range Wideangle lens with a floating rear-focusing system and a USM motor Subwavelength structure coating, together with UD and aspherical elements Small wideangle optic with image stabilisation
Bargain price, tiny carry-verrywhere size and a highly competent imaging performance Tilt-and-shift toptic with independent till-and-shift rotation and redesigned coatings
D/
DSL


## NIKON DSLR

LHEWI $8-15 \mathrm{~mm}$ f/3.5-4.5 E ED Fisheye AF-S [ $\mathrm{U}=\mathrm{W} 10-20 \mathrm{~mm}$ f/4.5-5.6 G VR AF-P DX
$10-24 \mathrm{~mm}$ f/3.5-4.5 G ED AF-S DX
10.5 mm f/2.8G ED DX Fisheye
$12-24 \mathrm{~mm} / \mathrm{f}$ G ED AF-S DX
$14 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{D}$ ED AF
$14-24 \mathrm{~mm}$ f/2.8 G ED AF-S
$16 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{D}$ AF Fisheye
$16-35 \mathrm{~mm} / 4 \mathrm{f}$ ED AF-S VR
$16-80 \mathrm{~mm}$ f/2.8-4E ED VR AF-S DX
$16-85 \mathrm{~mm} \mathrm{f} / 3.5-5.6$ G ED VR AF-S DX
$17-55 \mathrm{~mm}$ f/2.8 G ED-IF AF-S DX
$18-35 \mathrm{~mm}$ f/3.5-4.5 G ED AF-S
$18-55 \mathrm{~mm} \mathrm{f} / 3.5-5.6 \mathrm{G}$ II AF-S DX
$18-55 \mathrm{~mm}$ f/3.5-5.6 G VR II AF-S DX
$18-55 \mathrm{~mm}$ f/3.5-5.6 G AF-P DX
$18-55 \mathrm{~mm}$ f/3.5-5.6 G VR AF-P DX
$18-105 \mathrm{~mm} \mathrm{f} / 3.5-5.6$ G ED VR AF-S DX
$18-140 \mathrm{~mm}$ f/3.5-5.6 G ED VR AF-S DX
$18-200 \mathrm{~mm} \mathrm{f} / 3.5-5.6 \mathrm{GIF}$-ED VR II AF-S VR DX
$18-300 \mathrm{~mm}$ f/3.5-5.6 G ED-IF VR
$18-300 \mathrm{~mm} \mathrm{f} / 3.5-6.3 \mathrm{G}$ ED VR
$19 \mathrm{~mm} / \mathrm{L} \mathrm{EED}$ PC

LENS $\quad$ RRP $\mid$ SCORE

20 mm f／1．8 G ED AF－S $20 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{D}$ AF
$24 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{D} \mathrm{AF}$
24 mm f／1．4 G ED AF－S
$24 \mathrm{~mm} / 1.8 \mathrm{G}$ ED AF－S
24 mm PC－E f／3．5 D ED PC－E $24-70 \mathrm{~mm}$ f／2．8 G ED AF－S
$24-70 \mathrm{~mm}$ f／2．8E ED VR
$24-85 \mathrm{~mm}$ f／3．5－4．5 G ED VR
24－120mm f／4 G ED AF－S VR
28 mm f／1．4EED AF－S
WIW 28 mm f／1．8 GED AF－S
$28 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{D} \mathrm{AF}$
$28-300 \mathrm{~mm}$ f／3．5－5．6 G ED AF－S VR
$35 \mathrm{~mm} / 1.8 \mathrm{G}$ AF－S DX
$35 \mathrm{~mm} / 1.8$ G ED AF－S
$35 \mathrm{~mm} / 2 \mathrm{D}$ AF
$35 \mathrm{~mm} / 1.4 \mathrm{G}$ ED AF－S
40 mm f／2．8 G AF－S DX Micro
45 mm PC－E f／2．8 D ED Micro
$50 \mathrm{~mm} \mathrm{f} / 1.4 \mathrm{D} \mathrm{AF}$
50 mm f／1．4 G AF－S
$50 \mathrm{~mm} / 1.8 \mathrm{D}$ AF
50 mm f／1．8 G AF－S
$55-200 \mathrm{~mm}$ f／4－5．6 G VR AF－S DX
$55-200 \mathrm{~mm}$ f／4－5．6 G VR II AF－S DX
$55-300 \mathrm{~mm}$ f／4．5－5．6 G VR AF－S DX
58 mm f／1．4 G AF－S
60 mm f／2．8 D AF Micro
60 mm f／2．8 G ED AF－S Micro
$70-200 \mathrm{~mm}$ f／2．8 G ED VR II AF－S
$70-200 \mathrm{~mm} \mathrm{f} / 2.8$ E FL ED VR AF－S
$70-200 \mathrm{~mm} \mathrm{f} / 4 \mathrm{G}$ ED VR
$70-300 \mathrm{~mm} \mathrm{f} / 4.5-5.6$ G ED AF－S VR
UEW $70-300 \mathrm{~mm} / 4.5-5.6$ E ED VR AF－P $70-300 \mathrm{~mm}$ f／4．5－6．3 G AF－P DX
$70-300 \mathrm{~mm}$ f／4．5－6．3 G VR AF－P DX $80-400 \mathrm{~mm}$ f／4．5－5．6 G ED VR AF－S
85 mm f／3．5 G ED AF－S DX VR
85 mm f／1．4 G AF－S
$85 \mathrm{~mm} / \mathrm{f} / 1.8 \mathrm{D}$
85 mm f／1．8 G AF－S
$85 \mathrm{~mm} / 2.8 \mathrm{D}$ PC－E Micro
105 mm f／1．4 E ED AF－S
$105 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{G}$ AF－S VR II Micro
105 mm f／2 D AF DC
$135 \mathrm{~mm} / 2 \mathrm{D}$ AF DC
180 mm f／2．8 D ED－IF AF $200 \mathrm{~mm} / \mathrm{f} / 4 \mathrm{D}$ ED－IF AF Micro 200 mm f／2 G ED AF－S VR II $200-500 \mathrm{~mm}$ f／5．6E ED VR AF－S
$300 \mathrm{~mm} \mathrm{f} / 4 \mathrm{E}$ PF ED VR AF－S
300 mm f／2．8 G ED AF－S VR II
LAOM／A DSLR
12 mm f／2．8 Zero D
$15 \mathrm{~mm} \mathrm{f} / 41: 1$ Macro
60 mm f／2．8 2X Ultra－Macro
105 mm f／2（T3．2）STF

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£1899 5 $\ddagger$
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A fast $F$ X－format prime lens that＇s compact and lightweight
MOUNT
DIMENSIONS

Compact wideangle lens with Nikon＇s Close－Range Correction system
Compact wide lens with Close－Range Correction system
Nothing short of stunning．Aside from its high price，there is very little to dislike about this optic
Fast FX－format lens that aims to appeal to landscape，interior，architecture and street photographers
Perspective Control lens with Nano Crystal Coating and electronic control over aperture
$\square$
207782
80.5 335 335 g

An excellent set of MTF curves that show outstanding consistency，easily justifying the price of this lens Nikon＇s latest pro－spec standard zoom looks like its best lens yet
FX－format standard zoom with Auto Tripod detection and VR
Constant maximum aperture of $\mathrm{f} / 4$ and the addition of VR makes this a superb lens

Boasts a dust－and drip－resistant build for reliable shooting in challenging weather conditions
If you crave a wide aperture and prefer a single focal length then this Nikon prime delivers Compact wideangle lens with a minimum focusing distance of 25 cm
4．5ぇ Technical testing shows this zoom to be，as Nikon claims，the ideal walkabout lens＇ Designed for DX－format DSLRs，a great standard prime lens
Fast FX －format prime lens with bright $f / 1.8$ aperture．Versatile and lightweight
At wide－aperture settings this optic achieves respectable resolution，which decreases with aperture
A Nano Crystal－coated lens designed for the FX range
A budget－priced macro lens that delivers the goods on multiple fronts
Perspective Control（PC－E）standard lens used in specialised fields such as studio and architecture Entry－level prime puts in a fine performance while offering backwards compatibility with Al cameras Internal focusing and superior AF drive makes this a good alternative to the $D$－series $50 \mathrm{~mm} \mathrm{f} / 1.4$ Compact，lightweight，affordable prime，will stop down to $\dagger / 22$
A cut－price standard lens for FX shooters or a short telephoto on DX－format DSLRs Designed for DX－format cameras，with Vibration Reduction and SWM technology Offers a versatile focal range and an ultra－compact design，perfect for smaller DX－format DSLRs Offers a wide telephoto coverage，but better options available
4ぇ FX－format full－frame premium prime lens with large f／1．4 aperture Nikon＇s most compact Micro lens，with Close Range Correction（CRC）system Micro lens with 1：1 repro ratio，as well as a Silent Wave Motor and Super ED glass Very little to fault here，with stunning image quality and consistent results at different focal lengths Latest update to Nikon＇s pro workhorse fast telephoto zoom brings electronic aperture control Latest $70-200 \mathrm{~mm}$ offers third－generation VR and weight savings over its more expensive $\mathrm{f} / 2.8$ cousin Feature－packed optic，with a VR II system，9－bladed diaphragm，SWM and ED glass Nikon＇s first full－frame lens to feature a stepper motor for autofocus Budget telephoto zoom with stepper motor for AF and space－saving collapsible design Adds extremely useful optical stabilisation to Nikon＇s budget compact telephoto Successor to the $80-400 \mathrm{~mm} \mathrm{f} / 4.5-5.6 \mathrm{D}$ ED VR，focusing is excellent at tracking fast－moving subjects DX－format Micro lens with a 1：1 reproduction ratio，VR II system and ED glass Fast mid－tele lens with an internal focusing system and rounded diaphragm Portable medium telephoto－ideal for portraits Rear－focusing system and distance window in this medium telephoto lens Perspective Control（PC－E）telephoto，designed to be ideal for portraits and product photography A 105mm FX－format prime lens with bright $f / 1.4$ aperture，ideal for portraiture A very sharp lens，with swift and quiet focusing and consistent MFT results A portrait lens with defocus control Defocus－Image Control and a rounded diaphragm in this telephoto optic Useful telephoto length and internal focusing technology，together with ED glass 1：1 reproduction range in this Micro lens，with a Close－Range Correction system A full－frame lens offering ghost－reducing Nano Crystal coating A super－telephoto zoom lens compatible with Nikon FX－format DSLR cameras Light，compact AF－S full－frame telephoto lens with ED glass elements This lens promises fast and quiet AF，and is fitted with Nikon＇s latest VR II system
5ぇ Internal focusing and superior AF drive makes this a good alternative to the D-series $50 \mathrm{~mm} f / 1.4$

| Ultra－wideangle lens for full－frame DSLRs that promises minimal distortion |  | － | － | － |  | 18 | 77 | 74.8 | 82.8 | 6099 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Wideangle lens，with 1：1 Macro available in Canon，Nikon，Pentax，Sony E and Sony A | － | － | － | － |  | 12 | 77 | 83.8 | 64.7 | 410 g |
| With 2：1 Macro，an all－in－one option for normal portrait photography as well as ultra－macro | － |  | － | － |  |  | 62 | 95 | 70 | 503 g |
| Designed for full－frame DSLRS，and features an apodization element that renders lovely bokeh |  |  |  |  |  |  |  | 98.9 |  |  |

## PARKCameras（6）

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SAMYANG DSLR
$8 \mathrm{~mm} \mathrm{f} / 3.5$ UMC Fisheye CS II
10 mm f/2.8 ED AS NCS CS
$12 \mathrm{~mm} \mathrm{f} / 2.8$ ED AS NCS Fisheye
14 mm f/2.8 ED UMC
$14 \mathrm{~mm} \mathrm{f} / 2.4$ Premium MF
16 mm f/2.0 ED AS UMC CS
$20 \mathrm{~mm} \mathrm{f} / 1.8$ ED AS UMC
24 mm f/1.4 AS UMC
24 mm f/3.5 ED AS UMS TS
35 mm f/1.4 AS UMC
$50 \mathrm{~mm} / 1.4$ AS UMC
$85 \mathrm{~mm} / \mathrm{f} / 1.2$ Premium MF
85 mm f/1.4 IF MC
$100 \mathrm{~mm} \mathrm{f} / 2.8$ ED UMC Macro
135 mm f/2 ED UMC


Up to

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f/3.5-6.3 Di II VC HLD

# DSLR Lenses 

SIGMA DSLR
4.5 mm f/2.8 EX DC HSM $8 \mathrm{~mm} \mathrm{f} / 3.5 \mathrm{EX}$ DG
8-16mm f/4.5-5.6 DC HSM
$10 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{EX}$ DC
$10-20 \mathrm{~mm} \mathrm{f} / 3.5$ EX DC HSM
$10-20 \mathrm{~mm} / 4-5.5$ EX DC HSM
$12-24 \mathrm{~mm}$ f/4 DG HSM IA
$12-24 \mathrm{~mm} \mathrm{f} / 4.5-5.6$ EX DG HSM
14 mm f/1.8 DG HSM | A
$15 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{EXDG}$
$17-50 \mathrm{~mm}$ f/2.8 EX DC OS HSM
$17-70 \mathrm{~mm} / 2.8-4$ DC Macro OS HSM
$18-35 \mathrm{~mm}$ f/ 1.8 DC HSM
$18-200 \mathrm{~mm}$ f/3.5-6.3 DC
$18-200 \mathrm{~mm} / \mathrm{f} 3.5-6.3$ DC OS
$18-250 \mathrm{~mm}$ f/3.5-6.3 DC OS HSM
$18-250 \mathrm{~mm} / / 3.5-6.3$ DC Macro OS HSM
$18-300 \mathrm{~mm}$ f/3.5-6.3 DC Macro OS HSM
$20 \mathrm{~mm} \mathrm{f} / 1.4$ DG HSM I A
$24 \mathrm{~mm} \mathrm{f} / 1.4 \mathrm{DG}$ HSM I A
$24-35 \mathrm{~mm} \mathrm{f} / 2 \mathrm{DG}$ HSM IA
$24-70 \mathrm{~mm} \mathrm{f} / 2.8$ EX DG IF HSM
$24-70 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{DG}$ OS HSM | A
$24-105 \mathrm{~mm} \mathrm{f} / 4 \mathrm{DG}$ OS HSM I A
$30 \mathrm{~mm} \mathrm{f} / 1.4 \mathrm{DC}$ HSM IA
35 mm f/1.4 DG HSM IA
50 mm f/1.4 EX DC HSM
$50 \mathrm{~mm} \mathrm{f} / 1.4$ DG HSM IA
$50-100 \mathrm{~mm}$ f/1.8 DC HSM | A
$50-500 \mathrm{~mm} / 44.5-6.3$ DG OS HSM
$70-200 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{EX}$ DG OS HSM
$70-300 \mathrm{~mm}$ f/4-5.6 APO DG Macro 70-300mm f/4-5.6 DG Macro 85 mm f/1.4 EX DG HSM 85 mm f/1.4 DG HSM | A
$100-400 \mathrm{~mm}$ f/5-6.3 DG OS HSM IC 105 mm f/2.8 EX DG OS HSM Macro
$120-300 \mathrm{~mm} \mathrm{f} / 2.8$ DG HSM IS
135 mm f/ 1.8 DG HSM |A
$150 \mathrm{~mm} \mathrm{f} / 2.8$ EX DG OS HSM Macro APO $150-500 \mathrm{~mm}$ f/5-6.3 DG OS HSM $150-600 \mathrm{~mm}$ f/5-6.3 DG OS HSM IC $150-600 \mathrm{~mm} / 5 / 5-6.3$ DG OS HSM IS
$180 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{EX}$ DG OS HSM Macro APO
300 mm f/2.8 APO EX DG HSM
SONY DSLR
11-18mm f/4.5-5.6 DT $16 \mathrm{~mm} / / 2.8$ Fisheye
$16-35 \mathrm{~mm} \mathrm{f} / 2.8$ ZA SSM T*
$16-50 \mathrm{~mm}$ f/2.8 SSM
$16-80 \mathrm{~mm} / 3.5-5.4 .5 \mathrm{ZA} \mathrm{T}^{*}$
$16-105 \mathrm{~mm}$ f/3.5-5.6 DT
$18-135 \mathrm{~mm}$ f/3.5-5.6 DT SAM
$18-200 \mathrm{~mm}$ f/3.5-6.3 DT
$18-250 \mathrm{~mm}$ f/3.5-6. 3 DT
$20 \mathrm{~mm} \mathrm{f} / 2.8$
24 mm f/2 ZA SSM T ${ }^{*}$
$24-70 \mathrm{~mm}$ f/2.8 ZA SSM T*
$28-75 \mathrm{~mm} / 2.2 .8$ SAM
30 mm f/2.8 DT SAM Macro
$35 \mathrm{~mm} / 1.4 \mathrm{G}$
35 mm f/1.8 DT SAM
50 mm f/1.8 DT SAM
50 mm f/1.4
50 mm f/1.4 ZA SSM
50 mm f/2.8 Macro
$55-200 \mathrm{~mm} \mathrm{f} / 4-5.6$ DT SAM
$55-300 \mathrm{~mm}$ f/4.5-5.6 DT SAM Extra Low Dispersion (ELD) glass, multi-layer coatings and a Hyper Sonic Motor

Premium full-frame wideangle zoom designed to have minimal distortion in its wideangle imagery
A tightly matched set of MTF curves, but APS-C users are advised to look at the $10-20 \mathrm{~mm}$ instead World's first f/1.8 ultra-wideangle prime lens for full-frame DSLRs
4 $\begin{aligned} & \text { This fisheye optic puts in a very solid performance - not to be dismissed as a gimmick! }\end{aligned}$

$$
\begin{array}{llllllllllll}
\bullet & \bullet & \bullet & n / a & 101 & 152 & 1150 g \\
\bullet & \bullet & \bullet & \bullet & 28 & n / a & 87 & 102.5 & 600 \mathrm{~g} \\
\bullet & \bullet & \bullet & \bullet & 27 & n / a & 95.4 & 126 & 1170 \mathrm{~g} \\
\hline
\end{array}
$$ FLD and aspherical elements, a constant $\mathrm{f} / 2.8$ aperture and Optical Stabilisation

Compact redesign of this well-received lens launches the 'Contemporary' range

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\begin{array}{|l|l|l|l|l|l|l|l|l|}
\hline & \bullet & \bullet & \bullet & 15 & \pi / a & 73.5 & 65 & 370 \mathrm{~g} \\
\hline & \bullet & \bullet & \bullet & 28 & 77 & 83.5 & 92 & 565 \mathrm{~g} \\
\hline
\end{array}
$$ Said to be the world's first constant $\mathrm{f} / 1.8$ zoom; DoF equivalent of constant $\mathrm{f} / 2.7$ on full frame An outstanding wideangle fixed-focal-length lens Latest premium fast standard zoom for full frame includes optical image stabilisation Unique fast prime for APS-C DSLRs that gives 45 mm equivalent 'normal' angle of view

5 $\star$ Superb large-aperture prime; first lens in company's Art' series This lens has a unique design that pays off in truly excellent image quality This APS-C--format lens aims to cover the focal lengths of three prime lenses in one Two FLD glass elements, said to have the same dispersive properties as fluorite This tele-zoom lens has a 9-bladed diaphragm and two SLD elements Generally unremarkable MTF curves, and particularly poor at 300 mm The Sigma's resolution from $\mathrm{f} / 4$ to $\mathrm{f} / 8$ is excellent
Optically stunning fast short telephoto prime is the ultimate portrait lens for DSLR users An optically stabilised macro lens, this super-sharp lens is one of our favourites Super-fast portrait prime designed to provide sufficient resolution for 50MP DSLRs A macro lens offering image stabilisation

3ネ Significant softness at wide maximum apertures for all focal lengths This portable, high-performance telephoto zoom from Sigma's Sports line is dust and splashproof $\begin{array}{ccc}\text { n/a } & 76 \\ \text { n/a } \\ 735\end{array}$ \begin{tabular}{c|ccccc}
\hline 4 \& 72 \& 75 \& 105.7 \& 555 g <br>
3 \& n/a \& 75.8 \& 83 \& 475 g

 A Hyper Sonic Motor (HSM) and built-in hood feature in this diagonal fisheye lens 

2 \& 87.3 \& 88.2

 $\begin{array}{cc}88.2 & 520 \mathrm{~g} \\ 81 & 470 \mathrm{~g}\end{array}$ 

\hline 77 \& 83.5 \& 81 \& 470 g <br>
\hline n/a \& 101 \& 132 \& 1150 g
\end{tabular}

$\square$

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\begin{array}{lll|l|l|l|l|c|c|}
\bullet & \bullet & \bullet & \bullet & 28 & 77 & 83.5 & 92 & 565 \mathrm{~g} \\
\bullet & \bullet & \bullet & \bullet & 22 & 72 & 79 & 82 & 470 \mathrm{~g} \\
\hline
\end{array}
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| 3丸 | Good CA control at 200 mm but otherwise an average performer |
| :--- | :--- | :--- | :--- |
| $4 \star$ | Excellent resolution and consistent performance, but control over CA could be a little better |

A very capable set of MTF curves that only shows minor weakness at wide apertures

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\begin{array}{llllllll|l}
\bullet & \bullet & \bullet & \bullet & 45 & 62 & 70 & 78.1 & 405 \mathrm{~g} \\
\bullet & \bullet & \bullet & & \bullet & 45 & 45 & 79 & 100 \\
\hline & \bullet 10 g \\
\hline & \bullet & \bullet & \bullet & \bullet & 75 & 72 & 79 & 101 \\
6300
\end{array}
$$ Ultra-compact $13.8 x$ high zoom ratio lens designed exclusively for digital SLR cameras Compact and portable high ratio zoom lens offering enhanced features to make it the ideal all-in-one lens

$$
\begin{array}{llll|l|l|l|l|l|l}
\bullet & \bullet & \bullet & \bullet & 35 & 62 & 73.5 & 88.6 & 470 \mathrm{~g} \\
\hline \bullet & \bullet & \bullet & 39 & 72 & 79 & 101.5 & 585 \mathrm{~g} \\
\hline
\end{array}
$$

$\begin{array}{lll}5 \star & \text { An outstanding wideangle fixed-foca-lenghtens } \\ 5 \star & \text { The latest addition to Sigma's Art' line of high-quality fast primes }\end{array}$
$5 \star$ The world's first large-aperture full-frame zoom offering a wide aperture of $\mathrm{f} / 2$ throughout the zoom range
5 $\star$ Not perfect, but an excellent alternative to Canon and Nikon's $24-70 \mathrm{~mm}$ lenses, with great MTF curves
$4.5 \star$ Serious full-frame alternative to own-brand lenses at a lower price, with no compromises in the build

This lens may be priced above the norm, but it delivers results that are similarly elevated A $10 \times$ zoom range, SLD elements and compatibility with $1.4 \times$ and $2 x$ teleconverters Relatively lightweight telezoom comes with weathersealing and choice of push-pull or twist zoom

First lens in company's'Sports' series; switch enables adjustment of both focus speed and focus limiter
 - 1:1 macro lens featuring three FLD glass elements and floating inner-focusing system

Circular fisheye lens designed for digital, with SLD glass and a gelatin filter holder
Excellent performance at 8 mm , which sadly drops at the 16 mm end An absolute gem of a lens that deserves a place on every photographer's wish list

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\begin{array}{lllllllll|l|l}
\bullet & \bullet & \bullet & \bullet & \bullet & 140 & 77 & 86.4 & 197 & 1430 \mathrm{~g} \\
\bullet & \bullet & \bullet & \bullet & \bullet & 95 & 58 & 76.6 & 122 & 550 \mathrm{~g}
\end{array}
$$

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\begin{array}{llllllllllll}
\bullet \bullet & \bullet & \bullet & & 95 & 58 & 76.6 & 122 & 545 \mathrm{~g} \\
\hline \bullet & \bullet & \bullet & 85 & 77 & 86.4 & 87.6 & 725 \mathrm{~g}
\end{array}
$$

$$
\begin{array}{lll|l|l|c|c|c|c|c|}
- & \bullet & \bullet & 160 & 67 & 86.4 & 182.3 & 1160 \mathrm{~g} \\
\bullet & \bullet & \bullet & \bullet & 312 & 67 & 78 & 1264 & 725 a
\end{array}
$$

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\begin{array}{l|l|l|l|l|l|l|l|l|}
\bullet & \bullet & \bullet & & \bullet & 31.2 & 62 & 78 & 126.4 \\
\hline & 725 \mathrm{~g} \\
\bullet & \bullet & \bullet & & 150 & 105 & 124 & 291 & 3390 \mathrm{~g}
\end{array}
$$

$$
\begin{array}{llllllllll}
\bullet & \bullet & \bullet & 87.5 & 82 & 91.4 & 114.9 & 1130 \mathrm{~g}
\end{array}
$$

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\begin{array}{lllllllllll}
\bullet & \bullet & \bullet & - & 38 & 72 & 79.6 & 150 & 950 \mathrm{~g} \\
\hline
\end{array}
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\begin{array}{lllllllllll}
\bullet & \bullet & \bullet & \bullet & 260 & 105 & 121 & 290.2 & 2860 \mathrm{~g} \\
\bullet & \bullet & \bullet & \bullet & 1.7 & 86 & 05 & 201 & 16 i n \mathrm{n}
\end{array}
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| A solid overall performance that simply fails to be outstanding in any way |  | $\bullet$ |  |  |  |  | 25 | 77 | 83 | 80.5 | 360 g |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Fisheye lens with a close focusing distance of 20 cm and a $180^{\circ}$ angle of view |  | - |  |  |  | - | 20 | n/a | 75 | 66.5 | 400 g |
| High-end Zeiss wideangle zoom lens ideal for full-frame Alpha DSLRs |  | - |  |  |  | - | 28 | 77 | 83 | 114 | 900 g |
| Bright short-range telephoto lens |  | - |  |  |  |  | 100 | 72 | 81 | 88 | 577g |
| Carl Zeiss standard zoom lens |  | - |  |  |  |  | 35 | 62 | 72 | 83 | 4459 |
| An ambitious lens that is good in parts, although quality drops off at 105 mm |  | - |  |  |  |  | 40 | 62 | 72 | 83 | 470 g |
| A versatile zoom with Direct Manual Focus | - | - |  |  |  |  | 45 | 62 | 76 | 86 | 398 g |
| While the focal range is certainly useful, the lens is overall an average performer |  | - |  |  |  |  | 45 | 62 | 73 | 85.5 | 405g |
| Good overall, but performance dips at longer focal lengths |  | - |  |  |  |  | 45 | 62 | 75 | 86 | 440g |
| Wideangle prime lens with rear focusing mechanism and focus range limiter |  | - |  |  |  | - | 25 | 72 | 78 | 53.5 | 285g |
| An impressively bright wideangle Carl Zeiss lens |  | - |  |  |  | - | 19 | 72 | 78 | 76 | 555 g |
| Carl Zeiss mid-range zoom lens with superb optics ideal for full-frame Alpha DSLRs |  | - |  |  |  | - | 34 | 77 | 83 | 111 | 955g |
| A constant $\mathrm{f} / 2.8$ aperture and a Smooth Autofocus Motor (SAM) in this standard zoom |  | - |  |  |  | - | 38 | 67 | 77.5 | 94 | 565g |
| Macro lens designed for digital with 1:1 magnification and Smooth Autofocus Motor |  | - |  |  |  |  | 12 | 49 | 70 | 45 | 150 g |
| With an equivalent focal length of 52.5 mm , a wide aperture and aspherical glass |  | - |  |  |  | - | 30 | 55 | 69 | 76 | 510 g |
| Budget-price indoor portrait lens |  | - |  |  |  |  | 23 | 55 | 70 | 52 | 170 g |
| A very useful lens that performs well and carries a rock-bottom price tag |  | - |  |  |  |  | 34 | 49 | 70 | 45 | 170 g |
| While this lens performs well overall, performance at $f / 1.4$ could be better |  | - |  |  |  | - | 45 | 55 | 65.5 | 43 | 220 g |
| Carl Zeiss design said to be ideal for quality-critical portraiture and low-light shooting |  | - |  |  |  | - | 45 | 72 | 81 | 71.5 | 518 g |
| A macro lens with a floating lens element |  | - |  |  |  | - | 20 | 55 | 71.5 | 60 | 295g |
| Designed for cropped-sensor DSLRs, with a Smooth Autofocus Motor |  | - |  |  |  |  | 95 | 55 | 71.5 | 85 | 305 g |
| Compact, lightweight telephoto zoom offering smooth, silent operation |  | - |  |  |  |  | 140 | 62 | 77 | 116.5 | 460 g |


| $D S T R$ |  |  |  |  |  |  | $\begin{aligned} & \text { 単 } \\ & \text { 亲 } \\ & \text { 咅 } \end{aligned}$ |  |  |  | 㖘 | 氫 |
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| LENS | RRP | SCORE | SUMMARY |  | MOUNT |  |  |  |  |  | MENSIO |  |
| $70-200 \mathrm{~mm} \mathrm{f} / 2.8$ G SSM II | £2799 |  | High－performance G Series telephoto zoom lens | － |  |  | － 1 | 120 | 77 | 87 | 196.5 | 1340g |
| $70-300 \mathrm{~mm} \mathrm{f} / 4.5-5.6$ G SSM | £869 | 3．5 ${ }^{\text {t }}$ | G－series lens with ED elements，Super Sonic wave Motor and a circular aperture | － |  |  | － 1 | 120 | 62 | 82.5 | 135.5 | 760 g |
| $70-400 \mathrm{~mm} \mathrm{f} / 4-5.6$ G SSM II | £1799 |  | Redesign of original features a new LSI drive circuit and promises faster autofocus | － |  |  | － 1 | 150 | 77 | 95 | 196 | 1500 g |
| $75-300 \mathrm{~mm} \mathrm{f} / 4.5-5.6$ | £219 | 3＾ | Compact and lightweight zoom with a circular aperture | － |  |  | － 1 | 150 | 55 | 71 | 122 | 460 g |
| $85 \mathrm{~mm} \mathrm{f} / 1.4$ ZA Planar T＊ | £1369 |  | Fixed－focal－length lens aimed at indoor portraiture | － |  |  | － 8 | 85 | 72 | 81.5 | 72.5 | 560 g |
| $85 \mathrm{~mm} \mathrm{f} / 2.8$ SAM | £219 |  | A light，low－price portraiture lens | － |  |  | － | 60 | 55 | 70 | 52 | 1759 |
| $100 \mathrm{~mm} \mathrm{f} / 2.8$ Macro | £659 |  | Macro lens with circular aperture，double floating element and wide aperture | － |  |  | － 35 | 35 | 55 | 75 | 98.5 | 505 g |
| 135 mm f／1．8 ZA Sonnar T＊ | £1429 |  | A bright，Carl Zeiss portrait telephoto lens | － |  |  | － 7 | 72 | 77 | 84 | 115 | 10049 |
| 135 mm f／2．8 STF | £1119 |  | Telephoto lens fitted with apodisation element to give attractive defocus effects | $\bullet$ |  |  | － 8 | 87 | 80 | 80 | 99 | 730 g |

## TAMRON DSLR

$10-24 \mathrm{~mm}$ f／3．5－4．5 SP AF Di II LD Asph IF
$10-24 \mathrm{~mm} \mathrm{f} / 3.5-4.5$ Dill VC HLD $15-30 \mathrm{~mm}$ f／2．8 SP Di VC USD
$16-300 \mathrm{~mm}$ f／3．5－6．3 Di II VC PZD Macro
$17-50 \mathrm{~mm} \mathrm{f} / 2.8$ SP AF XR Di II LD Asph IF
$17.5 \mathrm{~mm} \mathrm{f} / 2.8$ SP AF XR DillVC LD Asph IF
$18-200 \mathrm{~mm} f / 3.5-6.3$ AF Di II VC
$18-270 \mathrm{~mm}$ f／3．5－6．3 3AF Dill IVC LD PZDIF Macro Hew $18-400 \mathrm{~mm}$ f／3．5－6．3 Dill VC HLD
$24-70 \mathrm{~mm}$ f／2．8 SP Di VC USD
LISW $24-70 \mathrm{~mm}$ f／2．8 SP Di VC USD G2
$28-75 \mathrm{~mm} / \mathrm{f} / 2.8$ SP AF XR Di LD Asph IF Macro $28-300 \mathrm{~mm} / / 3.5-6.3$ ． F F XR Di LD Asph IF Macro $28-300 \mathrm{~mm} / 3.5-5.6 .3$ Di VC PZD
35 mm f／1．8 Di VC USD
45 mm f／1．8 DiVC USD
60 mm f／2 SP AF Dill LD IF Macro
$70-200 \mathrm{~mm} / 2.8 \mathrm{SP}$ AF Di LD IF Macro
$70-200 \mathrm{~mm}$ f／2．8 Di VC USD
$70-200 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{SP}$ Di VC USD G2 $70-300 \mathrm{~mm}$ f／4－5．6 SP VC USD $70-300 \mathrm{~mm} \mathrm{f} / 4-5.6$ AF Di LD Macro 85 mm f／1．8 DiVC USD
$90 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{SP}$ AF Di Macro
$90 \mathrm{~mm} / 2.8$ Di Macro $1: 1$ VC USD
$150-600 \mathrm{~mm} / 5-6.3$ SP Di VC USD G2
$150-600 \mathrm{~mm}$ f／5－6．3 SP VC USD $180 \mathrm{~mm} / \mathrm{f} 3.5$ SP AF Di LD IF Macro
200－500mm f／5－6．3 SP AF Di LD IF

|  | $4$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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3．5 $\star$
Good consistency at 10 mm and 18 mm ，but a steep decline at 24 mm

4．5 $\begin{aligned} & \text {＊}\end{aligned}$ Wideangle zoom of APS－C with dust and splashproofing and optical stabilisation | $\bullet$ | $\bullet$ |  |  |  | 24 | 77 | 83.2 | 86.5 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | $\mathbf{4 0 6 g}$

« Excellent value，this is the only wideangle zoom with image stabilisation and an $\mathrm{f} / 2.8$ aperture Versatile megazoom，a very good all－in－one solution，as long as you won＇t need to enlarge to A2 size Very good optical performance，which peaks at $f / 5.6-8$
Very strong performance at longer focal lengths but weaker at the other end Lightweight all－in－one lens for APS－C DSLRs with Vibration Compensation The next－generation incarnation offers a new form of ultrasonic engine The longest－ranging telephoto zoom yet made turns in a susprisingly decent performance Fast zoom with image stabilisation for both full－frame and APS－C cameras Upgraded fast zoom with improved image stabilisation and moisture－resistant construction Standard zoom with constant $\mathrm{f} / 2.8$ aperture and minimum focusing distance of 33 cm A useful $10.7 x$ zoom range and low－dispersion elements in this optic
A new，full－frame，high－power zoom incorporating PZD（Piezo Drive）
4．5 $\begin{aligned} & \text { ® Moderately wide prime combines ultrasonic focusing，image stabilisation and a fast aperture }\end{aligned}$
4．5 太 A lens that rewrites the standard focal length with a fast aperture coupled with optical stabilisation $\star$ Macro lens designed for APS－C sensor cameras，with $1: 1$ reproduction ratio

No image stabilisation and no advanced AF system，but at this price it＇s a steal Compact yet full－size telephoto zoom with vibration compensation ＊Excellent telephoto zoom with updated autofocus and image stabilisation plus sealed construction 4ぇ Ultrasonic Silent Drive（USD）technology for focusing and Vibration Compensation Low－dispersion glass and compatible with both full－frame and cropped－sensor DSLRs The first full－frame $85 \mathrm{~mm} \mathrm{f} / 1.8$ lens with image stabilisation，that＇s also moisture resistant A very nice macro lens that is capable of producing some fine images Redesign of the $90 \mathrm{~mm} \mathrm{f} / 2.8 \mathrm{SP}$ AF Di Macro；comes with vibration compensation Updated version of Tamron＇s popular long telezoom
4 4 Longest focal length of any affordable enthusiast zoom on the market and produces excellent results Two Low Dispersion elements and internal focusing system in this $1: 1$ macro lens
£1124 $4.5 \star$ A well－matched and consistent set of MTF curves，with good performance at $f / 8-11$

TOKINA DSLR

AT－X $10-17 \mathrm{~mm} / 3.55-4.5$ AF DX Fisheye
AT－X $11-16 \mathrm{~mm} \mathrm{f} / 2.8$ PRO DX II
AT－X $11-20 \mathrm{~mm} / / 2.8$ PRO DX
AT－X $12-28 \mathrm{~mm} / 4$ PRO DX
AT－X $14-20 \mathrm{~mm}$ f／ 2 PRO DX
AT－X $16-28 \mathrm{~mm}$ f／2．8 PRO FX
AT－X $17-35 \mathrm{~mm} \mathrm{f} / 4$ PRO FX
AT－X $24-70 \mathrm{~mm} \mathrm{f} / 2.8$ PRO FX
AT－X $70-200 \mathrm{~mm} \mathrm{f} / 4$ PRO FX VCM－S
AT－X $100 \mathrm{~mm} \mathrm{f} / 2.8$ AF PRO D Macro

| £550 |  | Fisheye zoom lens with Water Repellent coating and Super Low Dispersion glass |
| :---: | :---: | :---: |
| £449 |  | Update to the popular $11-16 \mathrm{~mm} \mathrm{f} / 2.8$ lens，for slightly improved optical performance |
| £499 |  | Compact，ultra－wideangle lens featuring an expanded telephoto zoom range |
| £529 |  | Replacement for $12-24 \mathrm{~mm}$ F4 wideangle zoom；for Nikon DX DSLRs |
| £849 |  | Wideangle zoom with super－fast，super－bright，constant $\mathrm{f} / 2$ aperture for shooting in very low light |
| £757 | 5 | A pro－end wideangle zoom aimed at full－frame cameras |
| £830 | 5 | One of the most capable super－wide zooms available，though only available in Canon and Nikon mounts |
| £679 |  | Three precision－moulded all－glass aspherical lens elements and a fast，constant f／2．8 aperture |
| £691 |  | Features a new Vibration Correction Module and ring－shaped ultrasonic style autofocus motor |
| £360 | 4 | Some weaknesses wide open，but reasonable MTF curves make this a decent optic |


|  | － | － |  | 14 | n／a | 70 | 71.1 | 3509 |
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| － | － | － |  | 30 | 77 | 84 | 89.2 | 550g |
|  | － | － |  | 28 | 82 | 89 | 92 | 560 g |
|  | － | － |  | 25 | 77 | 84 | 90 | 6009 |
|  | － | － |  | 28 | 82 | 89 | 106 | 7259 |
|  | － | － |  | 26 | n／a | 90 | 133 | 950g |
|  | － | － |  | 28 | 82 | 89 | 94 | 6009 |
|  | － | － |  | － 38 | 82 | 89.6 | 107.5 | 1010 g |
| － |  | － |  |  | 67 | 82 | 167.5 | 9809 |
|  | － |  |  |  |  |  |  | 5409 |

## ZEISS DSLR

15 mm f／2．8 Milvus $18 \mathrm{~mm} \mathrm{f} / 2.8$ Milvus 21 mm f／2．8 Milvus $25 \mathrm{~mm} \mathrm{f} / 2$ Distagon $\mathrm{T}^{*}$ 25 mm f／2．8 Distagon T＊ 28 mm f／2 Distagon $^{*}{ }^{*}$ $35 \mathrm{~mm} \mathrm{f} / 1.4$ Distagon $\mathrm{T}^{*}$ ［ m w 35 mm f／1．4 Milvus

35 mm f／2 Milvus
50 mm f／ 1.4 Planar T＊
50 mm f／1．4 Milvus
$50 \mathrm{~mm} \mathrm{f} / 2$ Milvus Macro
85 mm f／1．4 Planar T＊
85 mm f／1．4 Milvus
100 mm f／2 Milvus Macro
$135 \mathrm{~mm} \mathrm{f} / 2$ Milvus


| CSC Lenses |  |  |  |  | 증 |  |  |  |  |  | 鴀 | - |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| LENS | RRP | SCORE | SUMMARY |  |  | MOUNT |  |  |  |  | MENSIO |  |
| CANON CSC |  |  |  |  |  |  |  |  |  |  |  |  |
| EF-M 11-22mm f/4-5.6 IS STM | £355 |  | Ultra-wideangle lens with a compact, retractable lens design | - | - |  |  | 15 | 55 | 61 | 58.2 | 220 g |
| EF-M $15-45 \mathrm{~mm}$ f/3.5-6.3 IS STM | £249 |  | Collapsible standard zoom for EOS M-series cameras that's less bulky than the $18-55 \mathrm{~mm}$ | - | - |  |  | 25 | 49 | 60.9 | 44.5 | 130 g |
| EF-M $18-55 \mathrm{~mm} \mathrm{f} / 3.5-5.6$ IS STM | £269 |  | Compact and versatile zoom lens | - | - |  |  | 25 | 52 | 61 | 61 | 210 g |
| EF-M $18-150 \mathrm{~mm}$ f/3.5-6.3 IS STM | £399 |  | Wide-ranging 29-240mm equivalent superzoom with surprisingly good image quality | - | - |  |  | 25 | 55 | 60.9 | 86.5 | 300 g |
| EF-M 22mm f/2 STM | £220 |  | Small and bright wideangle pancake lens |  | - |  |  | 15 | 43 | 61 | 23.7 | 105 g |
| EF-M $28 \mathrm{~mm} \mathrm{f} / 3.5$ IS STM Macro | £294 |  | Small, retractable lens with built-in LED lights for illuminating close-up subjects | - | - |  |  | 9.7 | 43 | 60.9 | 45.5 | 130 g |
| EF-M $55-200 \mathrm{~mm}$ f/4.5-6.3 IS STM | £330 |  | Telephoto zoom that takes you closer to the action | - | - |  |  | 100 | 52 | 60.9 | 86.5 | 260 g |
| FUJF\|LM CSC |  |  |  |  |  |  |  |  |  |  |  |  |
| XF $10-24 \mathrm{~mm} \mathrm{f} / 4 \mathrm{R}$ OIS | £849 |  | Ultra-wideangle lens, minimal ghosting with Fuji's HT-EBC multi-layer coating | - |  |  | - | 24 | 72 | 78 | 87 | 410 |
| XF $14 \mathrm{~mm} \mathrm{f/2.8R}$ | €729 | 5* | Ultra-wideangle prime, high resolution to all corners, performance justifies price tag |  |  |  | - | 18 | 58 | 65 | 58.4 | 2359 |
| XF $16 \mathrm{~mm} \mathrm{f} / 1.4 \mathrm{R}$ WR | £729 | 5 | Weather-sealed fast prime for $X$-system users |  |  |  | - | 15 | 67 | 73.4 | 73 | 375 g |
| XC 16-50 f/3.5-5.6 0IS II | £359 |  | Lightweight lens for mirrorless $X$-series offers $24-75 \mathrm{~mm}$ equivalent zoom range | - |  |  | - | 30 | 58 | 62.6 | 98.3 | 195g |
| XF $16-55 \mathrm{~mm} \mathrm{f} / 2.8$ R LM WR | £899 | 5 | A flagship XF standard 200 m lens with a constant $\mathrm{f} / 2.8$ aperture and weather-resistance |  |  |  | - | 60 | 77 | 83.3 | 106 | 655g |
| XF $18 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ | £430 | 4* | A compact wideangle lens with a quick aperture |  |  |  | - | 18 | 52 | 64.5 | 40.6 | 116 g |
| XF $18-135 \mathrm{~mm} \mathrm{f} / 3.5-5.6$ R LM OIS WR | £699 | 4* | Weather-resistant zoom for Fujfifim X mount, designed to be the perfect partner for the Fujifilm X-T1 | - |  |  | - | 45 | 77 | 75.7 | 97.8 | 490 g |
| XF 18-55mm f/2.8-4 R LM OIS | £599 |  | Short zoom lens with optical image stabilisation | - |  |  | - | 18 | 58 | 65 | 70.4 | 310 g |
| XF $23 \mathrm{~mm} \mathrm{f/1.4R}$ | £649 |  | Premium wideangle prime lens with fast maximum aperture |  |  |  | - | 28 | 62 | 72 | 63 | 300 g |
| XF $23 \mathrm{~mm} \mathrm{f/2} \mathrm{R} \mathrm{WR}$ | £419 | 5* | Compact weather-resistant wideangle prime lens |  |  |  | - | 22 | 43 | 60 | 51.9 | 180 g |
| XF $27 \mathrm{~mm} \mathrm{f/2.8}$ | £270 |  | A high-performance single-focal-length lens |  |  |  | - | 60 | 39 | 23 | 61.2 | 789 |
| XF $35 \mathrm{~mm} \mathrm{f/1.4R}$ | £439 | 4* | Shallow depth of field and bokeh effects are simple to achieve with this lens |  |  |  | - | 28 | 52 | 65 | 54.9 | 187g |
| XF $35 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR | £299 | 5 | A powerful and weather-resistant lens that feels great and has the performance to match |  |  |  | - | 35 | 43 | 60 | 45.9 | 170 g |
| XF $50 \mathrm{~mm} \mathrm{f} / 2 \mathrm{R}$ WR | £449 | 5* | Lightweight weather-resistant short telephoto prime lens that's ideal for shooting portraits |  |  |  | - | 39 | 46 | 60 | 59.4 | 200 g |
| XF 50-140mm f/2.8 R LM OIS WR | £1249 |  | A telephoto zoom with a constant maximum aperture and weather-resistance | - |  |  | - | 100 | 72 | 82.9 | 175.9 | 995g |
| XC 50-230mm f/4.5-6.7 OIS II | £315 |  | The XC lens range is designed to suit Fuji's mid-range CSCs, and this lens has optical image stabilisation | - |  |  | - | 110 | 58 | 69.5 | 111 | tbc |
| XF 55-200mm f/3.5-4.8 R LM OIS | £599 | 4* | Telephoto with built-in optical image stabilisation plus aperture control ring | - |  |  | - | 110 | 62 | 118 | 75 | 580 g |
| XF $56 \mathrm{~mm} \mathrm{f/1.2R}$ | ¢899 | 4* | This wide-aperture portrait lens for $X$-series cameras has great sharpness and detail and is great value |  |  |  | - | 70 | 62 | 73.2 | 69.7 | 405g |
| XF $56 \mathrm{~mm} \mathrm{f} / 1.2 \mathrm{R} \mathrm{APD}$ | £1159 | 4* | Adds apodisation element of $56 \mathrm{~mm} / 1.2$ for even more attractive background blur |  |  |  | - | 70 | 62 | 73.2 | 69.7 | 405 g |
| XF $60 \mathrm{~mm} \mathrm{f} / 2.4$ XF R Macro | £599 |  | A short lens designed for macro work with half-life-size magnification |  |  |  | - | 26.7 | 39 | 64.1 | 70.9 | 215 g |
| XF $90 \mathrm{~mm} \mathrm{f/2} \mathrm{R} \mathrm{LM} \mathrm{WR}$ | £699 | 5* | A classic portrait lens that's sharp, with gorgeous bokeh |  |  |  | - | 60 | 62 | 75 | 105 | 540 g |
| XF $100-400 \mathrm{~mm} \mathrm{f} / 4.5-5.6$ R LM 0 OIS WR | £1399 | 5* | This superb zoom is both water and dust resistant, and can operate in $-10^{\circ} \mathrm{C}$ temperatures | - |  |  | - | 175 | 77 | 94.8 | 210.5 | 1375 g |
| LAOM/A CSC |  |  |  |  |  |  |  |  |  |  |  |  |
| $7.5 \mathrm{~mm} \mathrm{f/2} \mathrm{MFT}$ | £499 |  | Tiny wideangle prime for Micro Four Thirds featuring manual focus and aperture control |  | - |  |  | 12 | 46 | 50 | 55 | 170 g |
| LEICA CSC |  |  |  |  |  |  |  |  |  |  |  |  |
| $11-23 \mathrm{~mm} \mathrm{f} / 3.5-4.5 \mathrm{TL}$ | £1450 |  | Wideangle zoom lens for Leica's APS-C mirrorless system |  |  |  | $\bullet$ | 20 | 67 | 77 | 73 | 368 g |
| 18-56mm f/3.5-5.6 Vario-Elmar TL | £1280 |  | Relatively large, non-retractable zoom for APS-C mirrorless |  |  |  | - | 45 | 52 | 63.5 | 61 | 256 g |
| 23 mm f/2 Summicron TL | £1410 |  | Compact, lightweight fast prime that offers a classic 35mm equivalent view on Leica's APS-C CSCs |  |  |  | - | 30 | 52 | 63.5 | 38.1 | 153 g |
| $35 \mathrm{~mm} \mathrm{f} / 1.4$ Summilux TL | £1830 |  | High-end fast prime designed to give exceptional image quality |  |  |  | - | 30 | 60 | 70 | 77 | 428 g |
| $55-135 \mathrm{~mm} \mathrm{f/3.5-4.5} \mathrm{Apo-Vario-Elmar-TL}$ | £1450 |  | Telephoto zoom that eschews image stabilisation in a bid for maximal optical quality |  |  |  | - | 100 | 60 | 68 | 110 | 500 g |
| $60 \mathrm{~mm} \mathrm{f} / 2.8$ Apo-Macro-Elmarit TL | £1920 |  | Macro lens for Leica's APS-C mirrorless cameras offers 1:1 life-size magnification |  |  |  | - | 16 | 60 | 68 | 89 | 320 g |
| $24-90 \mathrm{~mm} \mathrm{f} / 2.8-4$ Vario-Elmarit-SL | £3790 |  | Large, but exceptional quality full-frame standard zoom with really useful zoom range |  |  |  | - | - 30 | 82 | 88 | 138 | 1140 g |
| $90-280 \mathrm{~mm} \mathrm{f} / 2.8-4$ Apo-Vario-Elmarit SL | £4930 |  | Premium telephoto zoom for the Leica SL brings longer-than-usual range |  |  |  | - | 60 | 82 | 88 | 238 | 1850 g |
| $50 \mathrm{~mm} \mathrm{f} / 1.4$ Summilux SL | £4080 |  | Complex 11-element 9-group design with internal focusing for this fast normal prime |  |  |  | - | 60 | 82 | 88 | 124 | 1065g |

OLYMPUS CSC
$7-14 \mathrm{~mm}$ f/2.8 ED Pro
$8 \mathrm{~mm} \mathrm{f} / 1.8$ Pro Fisheye
$9-18 \mathrm{~mm}$ f/4-5.6 ED
$9 \mathrm{~mm} \mathrm{f} / 8$ Fish-eye Body Cap Lens
12 mm f/2.0 ED
$12-40 \mathrm{~mm}$ f/2.8 ED Pro
$12-50 \mathrm{~mm}$ f/3.5-6.3 ED EZ
$12-100 \mathrm{~mm}$ f/4 IS ED Pro
15 mm f/8 Body Cap Lens


We offer a wide range of used cameras, lenses \& accessories all thoroughly quality checked, tested \& cleaned, including a full sensor clean on all cameras.

If you're looking to sell or part-exchange your equipment, contact us for a competitive quote!

CSC Lenses

17 mm f/ 1.8 MSC
$17 \mathrm{~mm} \mathrm{f} / 2.8$ Pancake
$14-42 \mathrm{~mm} / 7.5-5-5.6\| \| \mathrm{R}$
$14-42 \mathrm{~mm}$ f/3.5-5.6 EZ
$14-150 \mathrm{~mm} \mathrm{f} / 4-5.6$ II
25 mm f/1.2 ED Pro
25 mm f/1. 8
30 mm f/3.5 ED Macro
$40-150 \mathrm{~mm}$ f/2.8 ED Pro
40-150mm f/4-5.6R
45 mm f/1.8
$60 \mathrm{~mm} \mathrm{f} / 2.8$ Macro
$75-300 \mathrm{~mm} \mathrm{f} / 4.8-6.7$ ED II
75 mm f/1.8 ED
300 mm f/4 IS Pro

## PANASONIC CSC

G 7-14mm f/4

## G 8 mm Fisheye $\mathrm{f} / 3.5$

DG $8-18 \mathrm{~mm} \mathrm{f} / 2.8-4$ ASPH Leica
DG 12 mm f/1.4 Leica Summilux ASPH
G $12-32 \mathrm{~mm} / / 3.5-5.6$ MEGA OIS
$\mathrm{G} \times 12-35 \mathrm{~mm} / 2.801 \mathrm{~S}$
G $\times 12-35 \mathrm{~mm}$ f/2.8 $\mathbf{0 I S}$ II
G $12-60 \mathrm{~mm} \mathrm{f} / 3.5-5.6$ OIS ASPH
DG 12-60mm f/2.8-4 OIS Leica
G $14 \mathrm{~mm} \mathrm{f} / 2.5 \mathrm{II}$
G 14-42 mm II f/3.5-5.6 MEGA OIS
G X $14-42 \mathrm{~mm} \mathrm{f} / 3.5-5.6 \times$ PL POWER OIS
G 14-45mm f/3.5-5.6 MEGA OIS
G 14-140mm f/3.5-5.6 POWER OIS
DG 15 mm f/1.7 Leica SUMMILUX
G 20 mm f/1.7 ASPH II
G 25 mm f/1.7 ASPH
DG 25 mm f/1.4 Leica SUMMILUX
G $30 \mathrm{~mm} \mathrm{f} / 2.8$ Macro MEGA OIS
G $35-100 \mathrm{~mm}$ f/4-5.6 ASPH MEGA OIS
GX $35-100 \mathrm{~mm}$ f/2.8 Power OIS GX $35-100 \mathrm{~mm} / 2.2 .8$ Power OIS II DG 42.5mm f/1.2 Leica DG OIS G 42.5 mm f/1.7 Power OIS
DG $45 \mathrm{~mm} \mathrm{f} / 2.8$ OIS Macro Leica
G $45-150 \mathrm{~mm} \mathrm{f} / 4$-5.6 MEGA OIS
G X 45-175mm f/4-5.6 X PZ POWER OIS
G $45-200 \mathrm{~mm}$ f/4-5.6 MEGA OIS II
G $100-300 \mathrm{~mm} \mathrm{f} / 4-5.6$ MEGA OIS
G $100-300 \mathrm{~mm}$ f/4-5.6 MEGA OIS II
DG $100-400 \mathrm{~mm}$ f/4-6. 3 OIS Leica


## SAMYANG CSC

7.5 mm f/3.5 UMC fisheye MFT
$8 \mathrm{~mm} \mathrm{f} / 2.8$ UMC fisheye II
12 mm f/2 NCS CS
$14 \mathrm{~mm} \mathrm{f} / 2.8$ FE AF
21 mm f/1.4ED AS UMC CS
35 mm f/ 1.2 ED AS UMC CS
HEW 35 mm f/2.8 FE AF
50 mm f/1.2 AS UMC CS
50 mm f/1.4 FE AF
$300 \mathrm{~mm} / 6.6$ ED UMC CS Reflex

| CSC Lenses |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| LENS | RRP |  | summary |  |  | Mount |  |  |  |  | IMENSII |  |
| SIGMA CSC |  |  |  |  |  |  |  |  |  |  |  |  |
| $19 \mathrm{~mm} \mathrm{f/2.8} \mathrm{BN} / \mathrm{A}$ | f199 |  | Metal-odiedied high-peformanace widengle pine lens |  |  |  |  | 204 | 46 | 60.8 | 5.7 | ${ }^{1509}$ |
| $30 \mathrm{~mm} \mathrm{f/} 1.4 \mathrm{COCNIC}$ | ¢300 | 4* |  |  |  |  |  |  |  |  |  |  |
| $30 \mathrm{~mm} \mathrm{f/2.8} \mathrm{oN} / \mathrm{A}$ | f199 |  |  |  |  |  |  | 304 |  |  | 40.5 | 1409 |
| $60 \mathrm{mmf/2} .8 \mathrm{DN/A}$ | f189 |  |  |  |  |  |  | 504 |  |  | 65.5 | 190 |
| SONY CSC |  |  |  |  |  |  |  |  |  |  |  |  |
| E10-18mmf/4 0SS | ¢750 | 4* | Super-widengle zoom with Super ED glass and Optical Steadysiot image stabilisation |  |  |  |  | 25 |  |  | 6.5 | 2259 |
| FE 12-24mmf/4 | ¢1700 |  | Weather-resistant super-widengle zoom desinged fors Sony stull-fame nirotess cameas |  |  |  |  |  |  |  |  | 5659 |
| E16mm $/ 2.8$ | ¢220 | 4* |  |  | - |  |  | 244 | 49 | 62 | 22.5 | 679 |
| FE $16-35 \mathrm{~mm} \mathrm{f/} / 2.8 \mathrm{GM}$ | ¢2300 |  | Prenium 6 Mastersereies fast wideange zoom witi weatereresistant constuction |  |  |  |  | 288 |  |  |  | 6880 |
| FE 16-35mm f/4ZAA OSS Vario-Tessar T* | 1129 | 5* | 2eiss tul-fame wideangle coom lens |  | - |  |  | -28 |  |  |  | 518 g |
| E16-50mmf/3.5-5.6 PL OSS | ¢299 |  |  |  |  |  |  |  |  |  |  | ${ }^{1169}$ |
| E16-70mmf/4 TA OSS Vario-Tessar $\mathrm{T}^{*}$ | 639 |  | A lightweigt, versaile mid-ange zoom with constant //apeeture |  | - |  |  | 355 |  | 6.6 | 75 | 3089 |
| E 18-55mm $/ 3.5 .5-6.60$ OS | ¢270 |  | Optical Steadsfot, said to be sient during movie capulue, anda a cirular pepture |  | - |  |  | 25 |  |  |  | 149 |
| E18-105mmf/4 6 PL OSS | f499 |  | Sony 6 lens for E-munt cameas with constanti/l/ papetue |  | - |  |  | 45 |  |  |  | 4279 |
| E 18-200mm f/3.5-6.30SS LE | ¢499 |  | Smaler and lighter than comparable lenses, tisis sa i ideal ligh-magaification tavel lens |  |  |  |  | 506 |  |  |  | 4009 |
| E 18-200mm f/3.5-6.3PL OSS | ¢999 |  | Boasts poweed doom and image stabilistation with Active Mode, makigigitidel for movies | - | - |  |  | 306 |  | 93.2 |  | ${ }^{699}$ |
| E $20 \mathrm{~mm} \mathrm{f/2.8}$ | ¢39 |  | Pancake wideangle lens pronises tobe the eeferet walkround patree for E-mount cameas |  | - |  |  | 20 |  |  | 20.4 | ${ }^{69}$ |
|  | 639 |  | Top-qualit Carl zeiss ppici idealy suited to the NEX-7 |  | - |  |  | 164 |  |  |  | ${ }^{2259}$ |
| FE 24-240mmf/3.5-6.30SS | ¢99 |  |  |  |  |  |  |  |  |  |  | 7809 |
| FE $24.70 \mathrm{~mm} / 1.8 .8 \mathrm{GM}$ | f1799 | 5* | This pro-grades standard lens for te Sony full-fime PE munt gives exepetionaly stap pesults |  | - |  |  | 388 |  |  |  | ${ }^{8869}$ |
| FE 24-70mmf/4ZA OSS Vario-Tessar T* | 11049 |  |  | - | - |  |  | 406 |  |  |  | 4269 |
| FE 28mm f/2 | ¢49 |  |  |  | - |  |  | 294 |  |  | 60 | 2009 |
| FE 28-70mm f/3.5-5.6 0 OSS | f449 |  |  |  | - |  |  |  |  |  |  | 2559 |
| FE 28-135mm PZ $/ 4 \mathrm{G}$ OSS | ¢2379 |  |  | - | - |  |  | 95 |  |  | 15 | ${ }^{1215}$ |
| E $30 \mathrm{~mm} / 1 / 3.5 \mathrm{Macro}$ | ¢219 |  | A macol lens fort the NEX Connaat Sysien Cameas |  | - |  |  | 94 |  |  |  | 1389 |
| FE 35mmfl1.42A Distagon * $^{*}$ | f1559 |  | Full-fame 7 Elis Distagon lens with lage, bright ifl. 4 apeture |  | - |  |  | 30 |  | 73 | 94.5 | ${ }^{630} 9$ |
| E 35mm fl1. 80 SS | ¢399 |  | Ligtweight, vesastile pine with Opfical Steadyshot image stabilisation |  | - |  |  | 30 |  |  |  | ${ }^{155}$ |
| FE 35 mm f/2.82A Sonnar ${ }^{*}$ * | f699 |  | When coupled with full-fame Sony E-mount canea, thisp pine elesp ponnises todeliver |  | - |  |  | 354 |  | 61.5 | 5 | 1208 |
| E 50mm fl1. 8 OSS | ¢219 |  | A Amand, low-price portait ens fort the NXX Kange |  | - |  |  |  |  |  |  | 202 |
| FE50mm fl1.42A Planar ${ }^{*}$ | f1500 | 5* | Oprically stuming peremium fast pime, but huse and heay |  | - |  |  | 45 |  | 83.5 | 108 | 778 |
| FE 50mmfl 1.8 | ¢2\% |  | Features new opticald design with s ingle aspherical dement |  | - |  |  | - |  |  | 59.5 |  |
| FE 50 mm f/2.8 Macro | ¢500 |  | Sonys budget maco for full-fame CSScs offers deeent optics butis stowat fousing |  | - |  |  | 165 | 55 | 70.8 | 71 | ${ }^{2369}$ |
| FE 55mmfl1.8ZA Sonnar ${ }^{*}$ | ¢849 |  | 35 mm full-fame p pine lens with wide apeture alluwing good ingase indoors orin low light |  | - |  |  | 50 |  |  | 70.5 | 2819 |
| E 55-210mm $/ 4.5$-6.6.3 0 SS | ¢289 |  | Lightweight telephot zoom lens tor the NEX range |  | - |  |  | 100 | 49 | 63.8 | 108 | ${ }^{3659}$ |
| FE $70-200 \mathrm{~mm} \mathrm{f/460SS}$ | f1359 | 4* |  |  | - |  |  | - 100 |  | 80 | 175 | 8409 |
| FE $70-200 \mathrm{mmf} / 2.8 \mathrm{GM} \mathrm{OSS}$ | ¢2500 | 5* | Conpar, lightweight teephtot zoom lens for full-frame E-munt boties | - | - |  |  | -100 | 72 | , | 175 | 8409 |
| FE $70-300 \mathrm{~mm} \mathrm{f/4.5-5.660SS}$ | f1150 |  | Sony has added this ens to tois gowingrange |  | - |  |  | 90 |  | 84 |  | 854 |
| FE 85mmfl1. 8 | ¢550 | 4* | Relativy yiexpensive potrait lens incudes dust and mosisure essistart constuction |  | - |  |  | 806 | 67 | , | 82 | 371 |
| FE 85 mm f11.46M | ¢1889 |  | Stunning inage euality foon Sonys prenium' $¢$ Master portait lens |  | - |  |  | 80 |  | 89.5 | 107. | 820 |
| FE 90 mmf f/2.8 Macro OSS | f1049 | 4* | Opiticaly excellent dediciated macro lens for Sonys full-fame E-mount cameas | - | - |  |  | 28 | 62 | 79 | 130.5 | 602 |
| FE 100 mm f/2.8 STF GM OSS | ¢1700 |  |  | - | - |  |  | 57 |  | 85. | 118.1 | 700 |
| FE 100-400mm fl/. 5 -5.6 6M OSS | £2500 |  | Prenium optically stabilised, weathesseded teleroom designed to match the Apha? |  | - |  |  | 98 |  | 93.9 | 205 | 1395 |

TAMRON CSC

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$18-200 \mathrm{~mm}$ f/3.5-6.3 Dillive
TOKINA CSC
Firin $20 \mathrm{~mm} \mathrm{f} / 2 \mathrm{FE}$ MF
£370 4 4
Lightweight, compact, all-in-one zoom for mirrorless cameras, to cover practically any shooting situation
$\begin{array}{llllll}50 & 52 & 63.5 & 80.4 & 2859\end{array}$


| ¢800 | wideangle prime for full-frame Sony mirrorless cameras, with manual focus and aperture ring |
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Touit $12 \mathrm{~mm} \mathrm{f} / 2.8$ Distagon $\mathrm{T}^{*}$

## Batis $18 \mathrm{~mm} / 2.2$

Loxia 21 mm f/2
Batis 25 mm f/2
Touit $32 \mathrm{~mm} \mathrm{f} / 1.8$ Planar T*
Loxia 35 mm f/2
Loxia 50 mm f/2
Touit $50 \mathrm{~mm} \mathrm{f} / 2.8$ Planar $\mathrm{T}^{*}$
Batis $85 \mathrm{~mm} \mathrm{f} / 1.8$
Loxia 85 mm f/2.4
Batis $135 \mathrm{~mm} \mathrm{f} / 2.8$
£959 5ぇ

Designed specifically for Sony NEX and Fujifilm X-series SSC cameras. Very impressive performance The Batis range is for mirrorless full-frame system cameras from Sony Compact manual-focus wideangle prime purpose-designed for Sony Alpha 7 -series cameras A wideangle lens for Sony full-frame users offering univalled quality , imised for use with APS-C format sensors, a fast standard lens for Fujifilm X-series cameras Small wideangle manual-focus prime intended for Sony Alpha 7 users Manual-focus standard prime with premium optics and E mount for Sony Alpha 7 users Macro 1:1 lens for extreme close-ups, as well as shooting portraits or panoramas as a light tele-lens A high-quality medium prime for wedding and portrait shooters, developed for Sony's Alpha 7 series A compact, manual-focus, short telepphoto lens for the mirrorless Sony Alpha series Absolutely stunning, super-sharp image-stabilised portrait lens for Sony full-frame mirrorless


# Camtech 

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Contax＇G＇Compacts \＆SLR \＆Ricoh

 CONTAX TLA 140 FLASH FOR G1／G2．．．．． CONTAX TLLA 200 FLLA FOR CONTAX＂G＂，
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## Nikon Manual Focus



## Olympus Manual

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| OLYMPUS 28 mm F2．8 ZUIKO $\qquad$ MINT\＃E55．00 |  |
| OLYMPUS 28mm F3．5 ZUIK0．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．｜MINT－CASEDEE339．00 |  |
| OLYMPUS 35mm F2．8 ZUIKK ．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．MINT－\＃E69．00 |  |
| OLYMPUS 50mm F1．8 ZUIK0．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．MINT BOXEDEE55．00 |  |
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| OLYMPUS 50mm F3．5 MACRO．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．M1NT－\＃E129．00 |  |
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| OLYMPUS 28 －48mm F4 ZUK0．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．EXC＋＋BOXED\＃E69．00 |  |
| MPUS 35 －70mm F3．5／4．5 | 39.0 |
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| OLYMPUS $75-150 \mathrm{~mm}$ F4 ZUIK0．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．MINTHE66．00 |  |
| OLYMPUS EXT TUBE 14mm，25mm．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．MINT－\＃E55．00 |  |
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| 2x EF MkIl Extender ................................. E++\#£169 | 23mm F1.4 XF R...................E++ / Mint-\#£549-£589 |
| 2x EF MkIII Extender .................................E+\#£219 | 35mm F2 XF WR - Silver............................E+\#£269 |
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I
t's hard to believe this picture was taken in the last few years, but Xiomara Bender's book, North Korea: The Power of Dreams (Kehrer Verlag 2017) is illustrated across the course of three trips beginning in 2012. If someone told you it was taken in the 1950s, or even the 1920s, you would not be very surprised. Partly, of course, this is because of the strange time warp that is North Korea. For a biological parallel, albeit on a timescale a million times longer, consider the coelacanth. People call it a living fossil', but this is only a part truth. Today's coelacanths are not the same as the fish of 65 million years ago; which was when, until 1938, they were thought to have become extinct.
This 'time-warp evolution' is what gives her book its fascinating alien quality, and why I chose this picture as possibly the
strangest of them all. There is presumably some Korean cultural tradition that involves pretty girls wearing improbable hats, but in a sense it doesn't really matter what it is: the picture lives and dies by its own strangeness.
It's quite easy to criticise: the cropped figure on the left, the strange light on the older woman's face, the sprig-like object in the lower right-hand corner. But without its 'faults', it would be sterile: a crop would lose context, never mind charm. Likewise, the way the girl is looking away is an essential part of the picture. We see her the way the photographer saw her, the way we would have seen her if we had been there. It's very much the way we see; or at least, the way I see.
Which is an interesting question in itself. Of the 11 of Bender's pictures I could have used, this was the only one in black \&
white. Did I choose it because I 'see' in black \& white? I don't think so. Rather, I think, I chose it because it is outside time; because it is so unlike anything I have seen or can readily imagine seeing. Why, for that matter, did the photographer choose black \& white? Was it merely a practical consideration: avoiding, for example, the gaudy colours, verging on garish and gimcrack, that seem so popular in Korea? Or what?
It would be easy to persuade oneself that this picture didn't fit in the book; or perhaps, anywhere. Quite apart from the 'flaws' above, there is a popular and often justified prejudice against mixing black \& white and colour. But again, it doesn't matter. It's a question of (justified) self-confidence, of the photographer believing in her own work; which is something we all need.

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