



A FIRST CLASS OF DSLR LENS

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TABLE OF CONTENTS

- FEATURES
- DESIGNATIONS
- WHICH TO BUY
- WHICH TO USE
- HOW TO TAKE CARE

FEATURES

- Hood
- Focus ring
- Zoom ring
- Distance scale
- Focus mode and other switches
- Front and rear caps



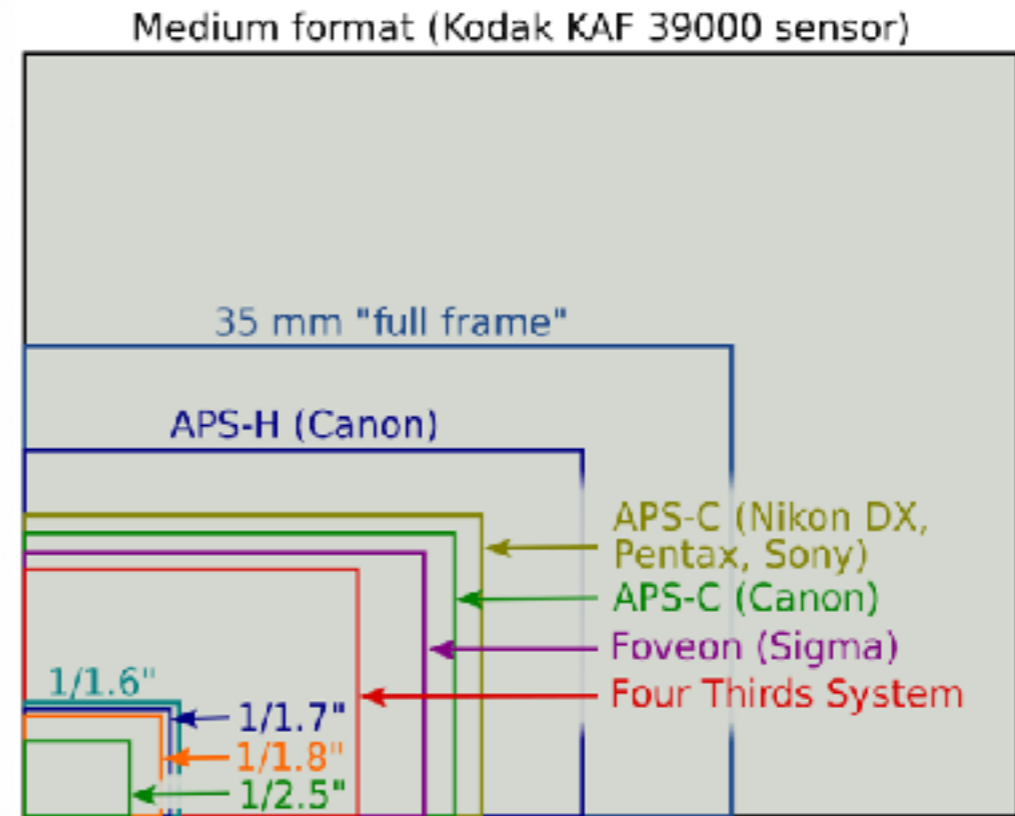
UGLY NAMES

- Nikon AF-S DX 24-85mm f/3.5-4.5G ED VR
- Canon EF 24-70mm f/2.8L II
- Sigma 50mm f/1.4 EX DG HSM
- Tamron AF 28-300mm f/3.5-6.3 XR Di LD VC IF Micro

DESIGNATIONS

Brand	Autofocus	Lens format	Focal length	Maximum Aperture	Optical Design	Image Stabilization
Nikon Nikkor	AF-S / AF SWM (Silent Wave Motor)	DX / FX	A range of or a single number between 8mm - 600mm	A range of or a single number between f/ 1.2 - f/5.6	N, ED, IF, Micro	VR (Vibration Reduction)
Canon	USM (UltraSonic Motor)	EF-S / EF			L, Macro	IS (Image Stabilization)
Sigma	HSM (Hyper Sonic Motor)	DC / DG			EX, IF, APO, Macro	OS (Optical Stabilizer)
Tamron	AF USD (Ultrasonic Silent Drive)	Di II / Di			SP, IF, LD, XR, Macro	VC (Vibration Compensation)

DSLR SENSOR



	APS-C				Full-frame		
Nikon	D3300	D5500	D7200		D610 / D750	D810	D4
Canon	SL1	T5/T6	60D/70D	7D II	6D	5D III	1D
Sony	a5100	a6000			a7 II		

*The illustrated figure is copied from *Wikipedia*

FOCAL LENGTH



28mm

50mm

70mm

210mm

- Distance between the lens and the sensor in mm
- Prime (fixed) and zoom (variable)
- Wide-angle ($< 35\text{mm}$), standard, telephoto ($> 85\text{mm}$)
- Nikon ASP-C: $f^*1.5$ and Canon ASP-C: $f^*1.6$

*The illustrated figure is copied from *Wikipedia*

FOCAL LENGTH

- Increasing the focal length make less depth of field



- Decreasing the focal length widen field of view
- 35-50mm is the most comfortable for human

APERTURE



f/22

f/8

f/4

f/2.8

f/1.4

f/2

f/2.8

f/4

f/5.6

f/8

f/11

f/16



- Measure of the size of the lens opening
- Fixed or variable aperture

APERTURE

- Increasing the aperture makes less depth of field



- Increasing the aperture makes faster shutter speed
- $f/8 - f/11$ is the best for photo quality

IMAGE STABILIZATION

- Nikon VR: Vibration Reduction
- Canon IS: Image Stabilization
- Sigma OS: Optical Stabilizer
- Tamron VC: Vibration Compensation
- Compensate for image blur caused by shake
- Most zoom lens have this technique

WHICH ONE TO BUY?

APS-C VS FULL-FRAME

- Camera body
- Future upgrade
- APS-C body + APS-C lens: no problem
- Full-frame body + full-frame lens: no problem
- APS-C body + full-frame lens: no problem
- Full-frame body + APS-C lens: dark corners



ZOOM VS PRIME

- A range of focal length (e.g., 18-300mm) vs a fixed focal length (e.g., 24mm, 35mm, 50mm, 85mm)
- Variable maximum apertures (e.g., f/2.8, f/4, f/3.5 - f/5.6) vs a constant and larger maximum aperture (e.g., f/1.4, f/1.8)
- Heavy vs light weight
- Slow vs fast shutter speed

WIDE-ANGLE

- Focal length: 8mm (fisheye) $< f < 35$ mm
- Less magnification of the object
- Wider field of view
- Greater depth of field
- Distortion at the edges



AF-S 16-35mm f/4G ED, ISO 100, 16mm, f/8, 1/60



AF-S 18-35mm f/3.5-4.5G ED, ISO 100, 18mm, f/8, 1/320



Standard

- Focal length: 35mm (human eye) $< f < 85\text{mm}$
- Natural to human observer



Sigma 35mm f/1.4 DG HSM A, ISO 400, 35mm, f/2.8, 1/4000



AF-S DX 35mm f/1.8G ED, ISO 800, 35mm, f/1.8, 1/200 AF-S DX 35mm f/1.8G ED, ISO 100, 35mm, f/2.8, 1/500

TELEPHOTO

- Telephoto lens: $85\text{mm} < f < 200\text{mm}$
- Great magnification of the object
- Narrower field of view
- Less depth of field



AF-S 70-200mm f/4G ED VR, ISO 1600, 400mm, f/8, 1/50



AF-S 70-200mm f/4G ED VR, ISO 100, 200mm, f/4, 1/500



AF-S 70-200mm f/4G ED VR, ISO 200, 200mm, f/4, 1/640

ZOOM LENS SET (F/2.8)

- Nikkor AF-S 14-24mm f/2.8G ED
- Nikkor AF-S 24-70mm f/2.8G ED
- Nikkor AF-S 70-200mm f/2.8G ED VR II
- Average weight: 2.56 lb
- Total price: \$6,290



ZOOM LENS SET (F/4)

- Nikkor AF-S 16-35mm f/4G ED VR
- Nikkor AF-S 24-120mm f/4G ED VR
- Nikkor AF-S 70-200mm f/4G ED VR
- Average weight: 1.62 lb
- Total price: \$3,960





AF-S 70-200mm f/4G ED, ISO 200, 200mm, f/4, 1/1000



AF-S 16-35mm f/4G ED, ISO 100, 16mm, f/4, 1/800



AF-S 24-120mm f/4G ED, ISO 100, 30mm, f/8, 1/80

PRIME LENS SET (F/1.4)

- Nikkor AF-S 24mm f/1.4G ED
- Nikkor AF-S 35mm f/1.4G
- Nikkor AF-S 50mm f/1.4G
- Nikkor AF-S 85mm f/1.4G
- Average weight: 1.15 lb
- Total price: \$6,185



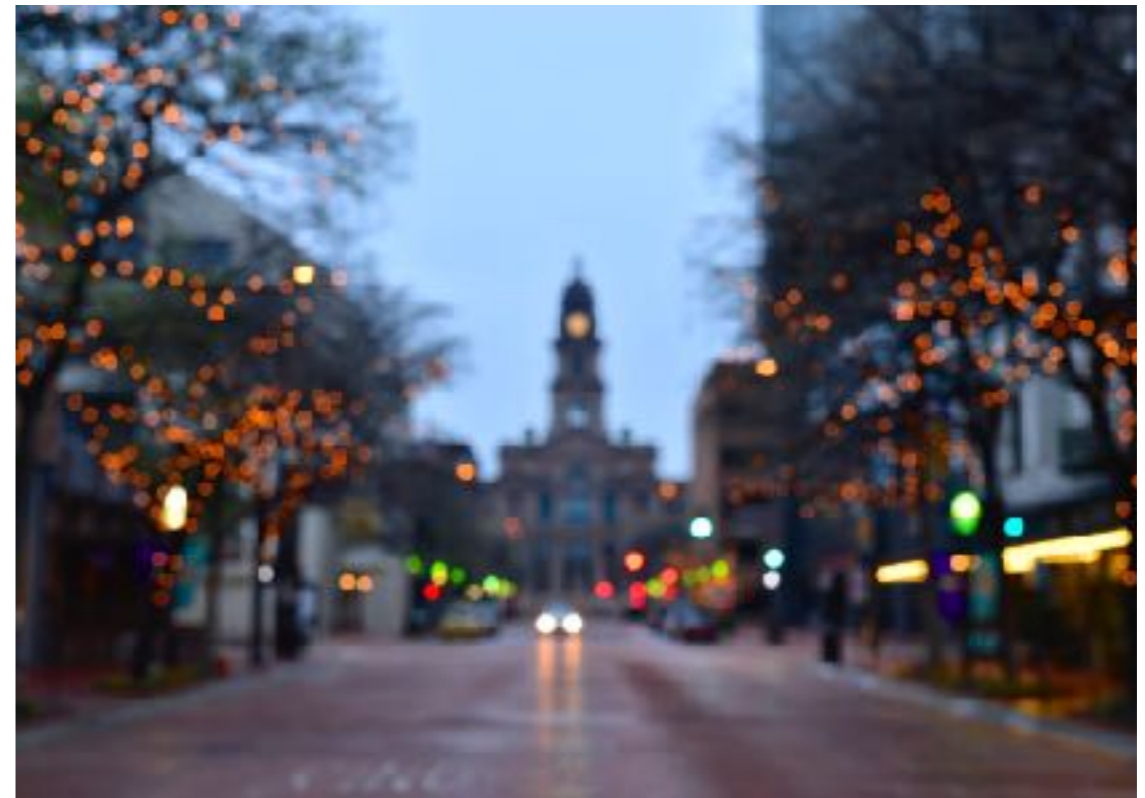
PRIME LENS SET (F/1.8)

- Nikkor AF-S 28mm f/1.8G
- Nikkor AF-S 35mm f/1.8G ED
- Nikkor AF-S 50mm f/1.8G
- Nikkor AF-S 85mm f/1.8G
- Average weight: 0.64 lb
- Total price: \$2,020





Sigma 50mm f/1.4 DG HSM A, ISO 1600, 50mm, f/1.8, 1/60



Sigma 50mm f/1.4 DG HSM A, ISO 200, 50mm, f/4, 1/50



Sigma 35mm f/1.4 DG HSM A, ISO 800, 35mm, f/1.4, 1/200

ALL-IN-ONE ZOOM LENS

- Nikkor AF-S DX18-300mm f/3.5-5.6G ED VR
 - Weight: 1.83 lb
 - Price: \$1,000
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- Nikkor AF-S 28-300mm f/3.5-5.6G ED VR
- Weight: 1.76 lb
- Price: \$1,050



ALL-IN-ONE ZOOM LENS



*The illustrated figure is copied from internet

WHERE & WHEN TO BUY

- Nikon, Canon, Sigma, Tamron store: new
 - Amazon, Adorama, B&H: new or refurbished
 - eBay, Craigslist: grey market or used
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- Black Friday
- Nikon: rebate every spring
- Canon: promotion frequently

WHICH ONE TO USE?

Rodeo

- Where: NRG Stadium
- Subject: fairground, stock
- Lens: standard zoom and prime
- Recommended settings (outdoor): aperture (f/8), shutter speed ($< 1/125\text{s}$), ISO (< 200)
- Recommended settings (indoor): aperture ($> f/4$), shutter speed ($< 1/30\text{s}$), ISO (> 800)

Zoo

- Where: Houston Zoo, Bayou Wildlife Zoo, Fort Worth Zoo
- Subject: animal
- Lens: telephoto zoom
- Recommended settings: aperture ($> f/4$), shutter speed ($< 1/500s$), ISO (> 800)

Portrait

- Where: anywhere
- Subject: human
- Lens: wide-angle and prime
- Recommended settings: aperture ($> f/4$), shutter speed ($< 1/125s$), ISO (< 800)

HOW TO TAKE CARE?

UV FILTER

- Suffer scratches and breakage
- Keep the lens surface and coatings away from abrasion
- Complete weather sealing
- Reduce the level of ultraviolet light
- Cheap but depends on the size



DRY BOX

- Keep at a low level of humidity
- Electronic dry box: contains a small Peltier cooler that removes moisture from the air by condensing it out
- Desiccant box: a sealed, airtight box that contains a desiccant (e.g., silica gel)





ALWAYS BE TENDER

DMC Photogears - Nikon

- D3300 with AF-S 18-55mm f/3.5-5.6G VR II
- *D610
- *Nikkor AF-S 50mm f/1.8G: portrait, indoor
- *Nikkor AF-S 85mm f/1.8G: portrait
- *Nikkor AF-S 24-85mm f/3.5-4.5G ED VR: travel, events

DMC Photogears - Canon

- 7 * T3i with EF-S 18-55mm f/3.5-5.6 IS
- EF 28mm f/1.8 USM: landscape, indoor
- EF 50mm f/1.8 II: portrait, indoor
- EF-S 15-85mm f/3.5-5.6 IS USM: travel, events
- EF-S 55-250mm f/4-5.6 IS II: sports, bird
- Speedlite 430EX II

“The heart and mind are the true lens of the camera.”

–Yousuf Karsh (a Turkish born Canadian Photographer and Journalist)