DRONE PHOTOGRAPHY

AGENDA

- Basic photography automatic mode
- Basic Photography Manual Mode
- How the "DJI Go 4" app works
- Camera Settings / Shooting Modes
- Recording Formats and General Settings
- Location, Medium and Close-Up Shots
- Types of Drone Shots
- Basic tips
- 360 Photography
- Types of Drones and types of cameras for each

BASIC PHOTOGRAPHY AUTO MODE

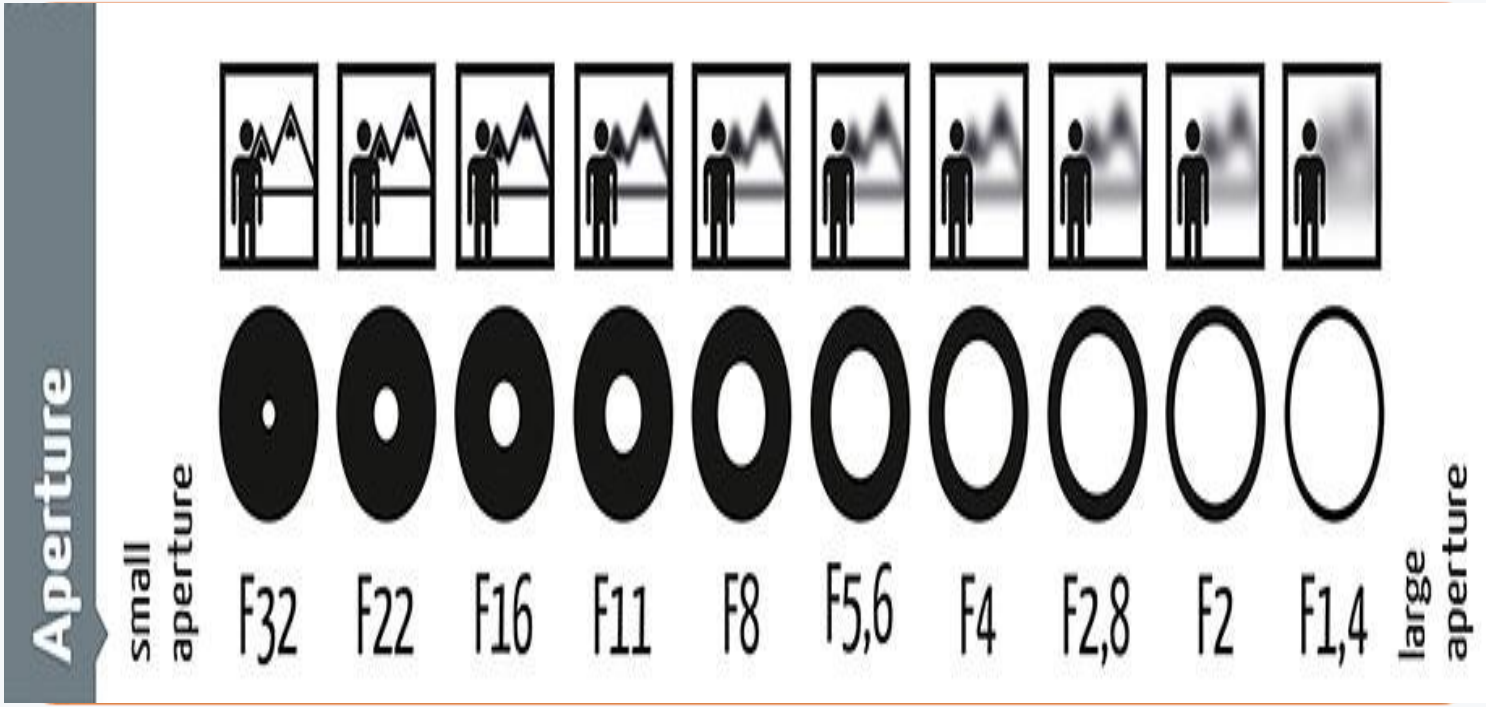
For correct exposure there is an interplay between aperture aperture, shutter speed and ISO (film sensitivity).
The camera is able to calculate the optimal values (or what it understands as optimal) for each of these 3 parameters in automatic mode

Subexpuesta

Exposición correcta

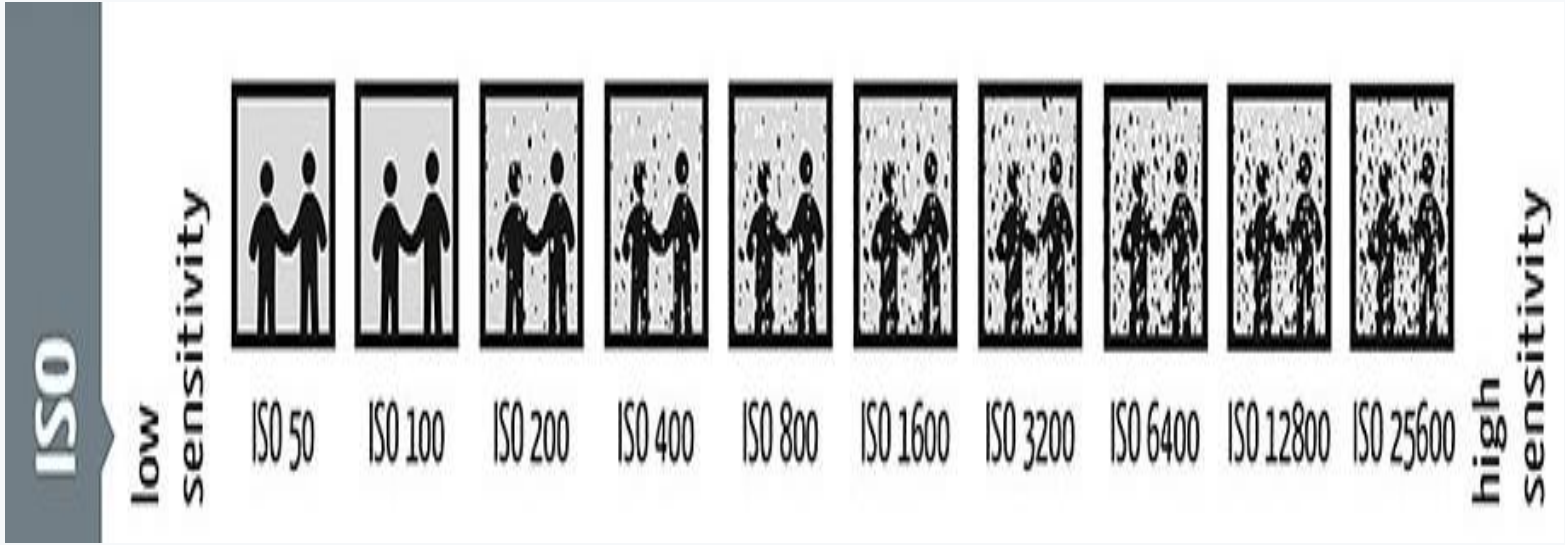
Sobrexpuesta

BASIC PHOTOGRAPHY MANUAL MODE

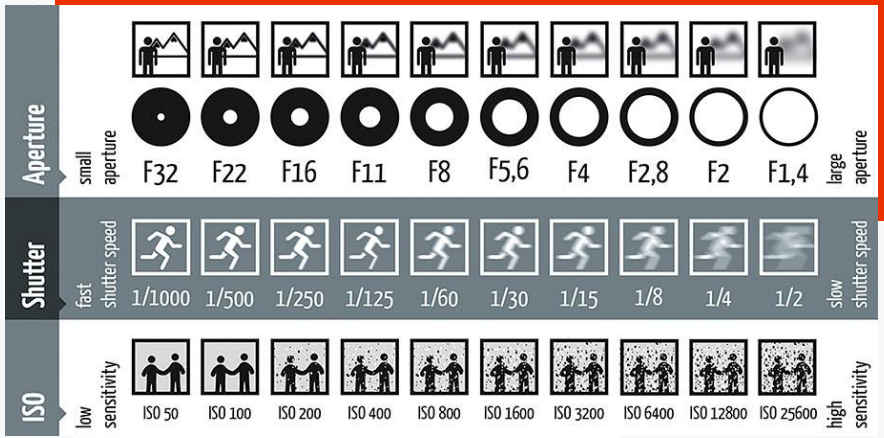


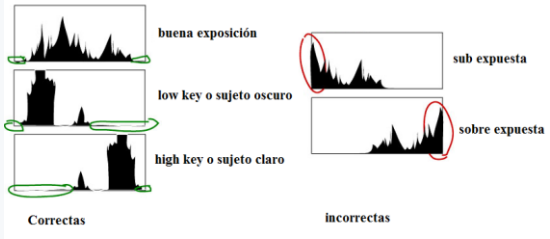
BASIC PHOTOGRAPHY MANUAL MODE

BASIC PHOTOGRAPHY MANUAL MODE



SUMMARY OF CORRECT EXPOSITION



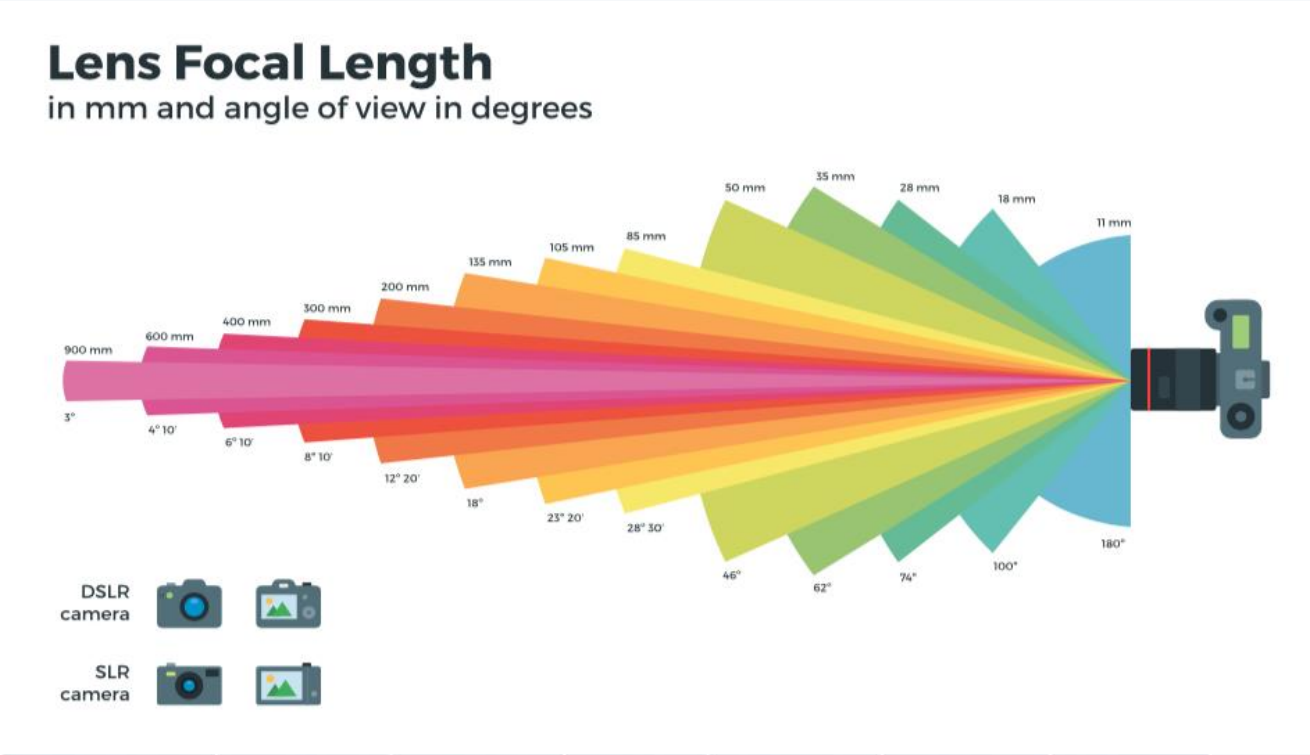


EXPOSITION:

The exposure of a photo is the balance between the aperture, the exposure time (shutter speed) and the sensitivity of the sensor to correctly capture the existing light that the photometer has measured.

The camera measures how much light there is thanks to the photometer. With this measurement we adjust how much light we let pass through the lens with the aperture of the diaphragm. We adjust the time that the light will be reaching the sensor with the exposure time or shutter speed. Finally, we adjust how much light the sensor is able to absorb by adjusting its sensitivity

LENSES, THEIR VIEWING ANGLES



DJI GO 4 PHOTO MODE APP

ISO

Shot Speed

Expousure

White Balance

Recording format

Remaining photo capacity on the card

Exposure Lock

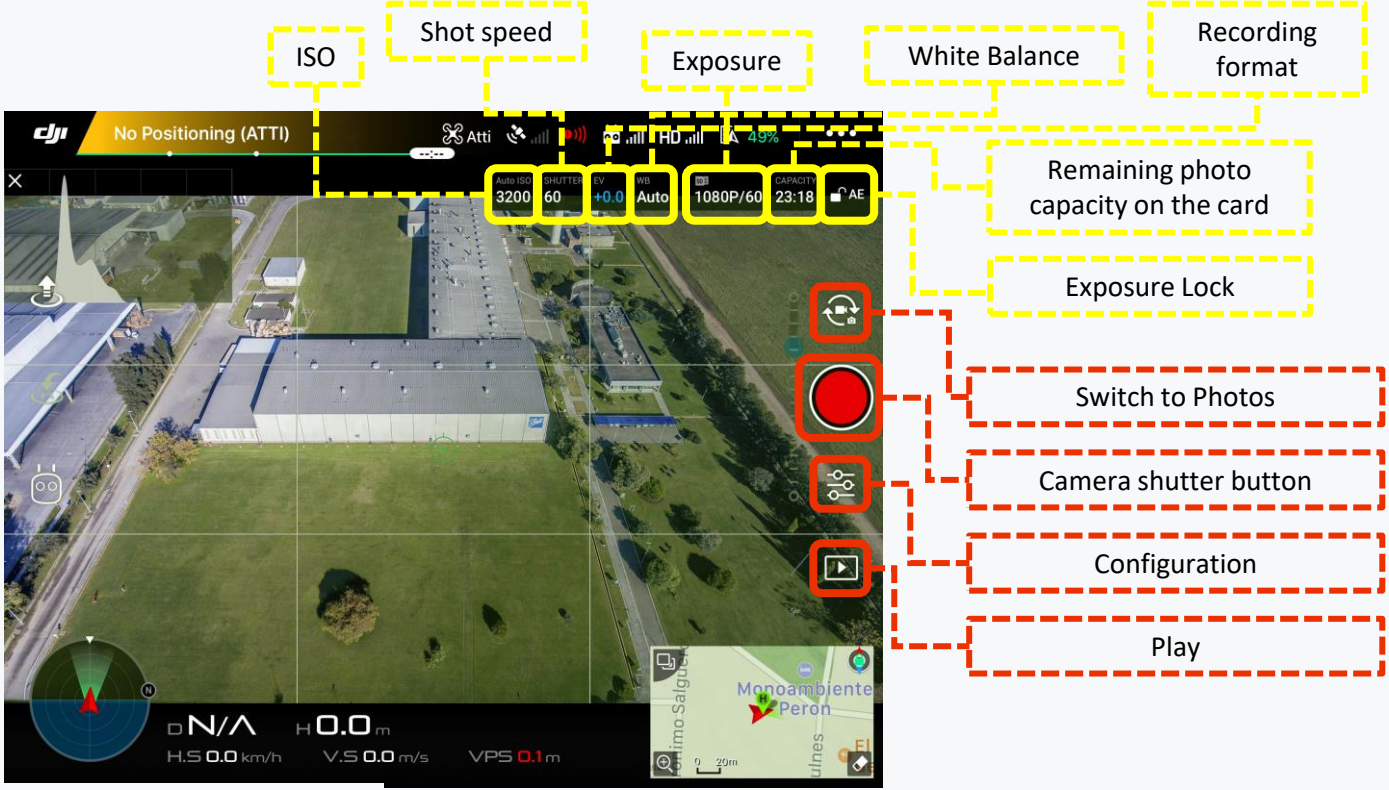
Switch to video

Camera shutter button

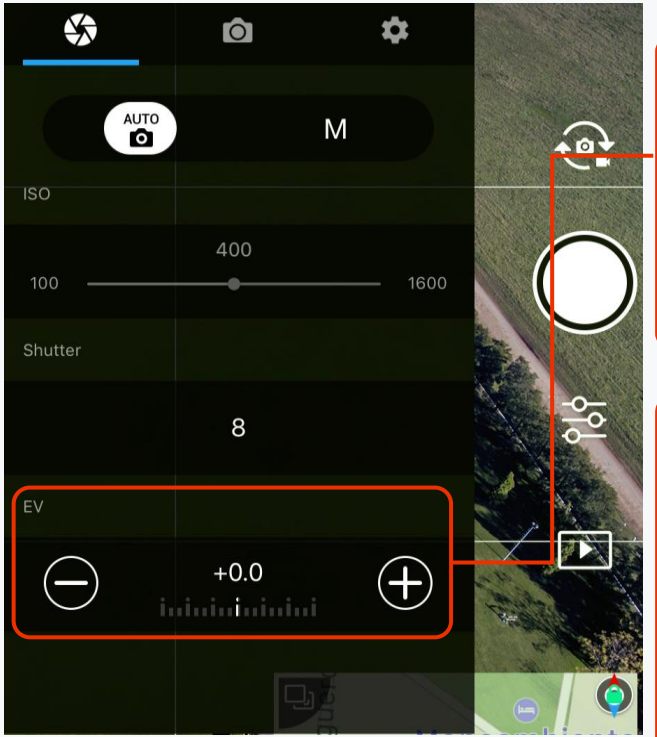
Configuration

Play

DJI GO 4 VIDEO MODE APP

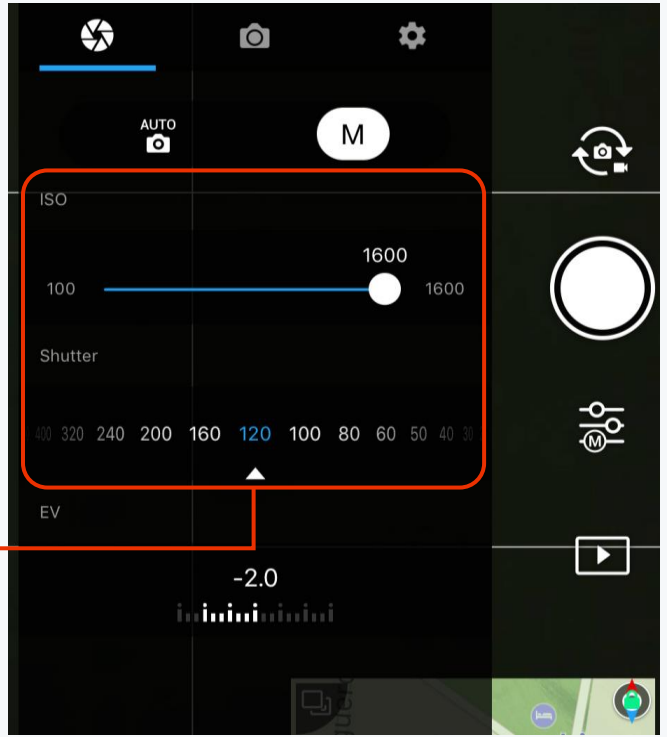


CAMERA SETTINGS, SHOOTING MODES



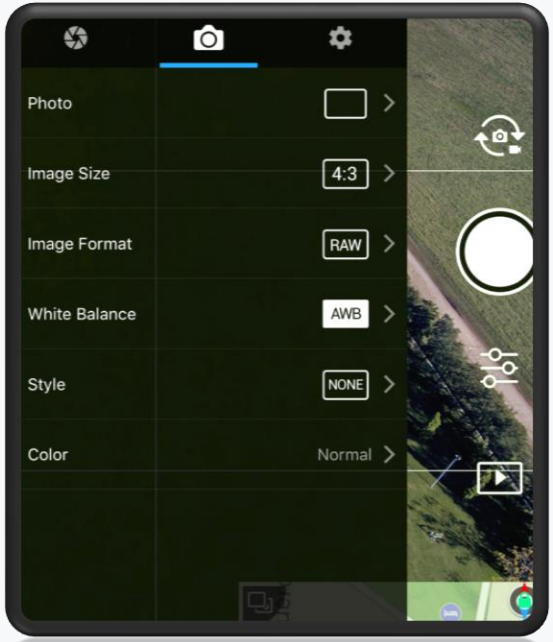
In Auto Mode the setting is about exposure. And the app sets the Shutter Speed and ISO

In Manual Mode the adjustment can be made by modifying the ISO and shutter speed, resulting in how the exposure will be

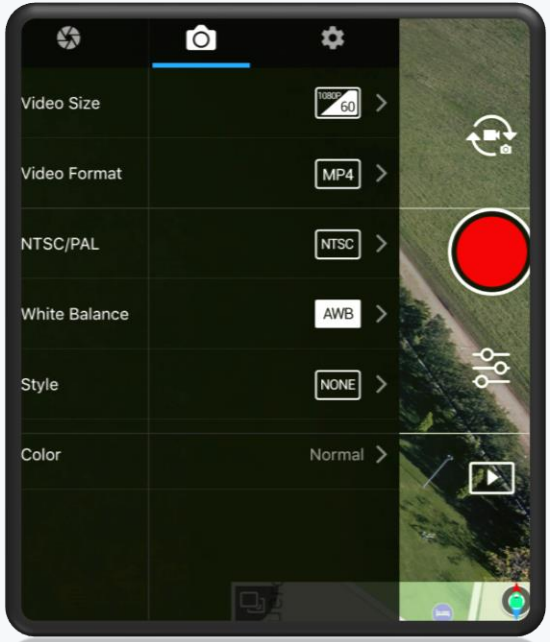


RECORDING FORMATS AND GENERAL SETTINGS

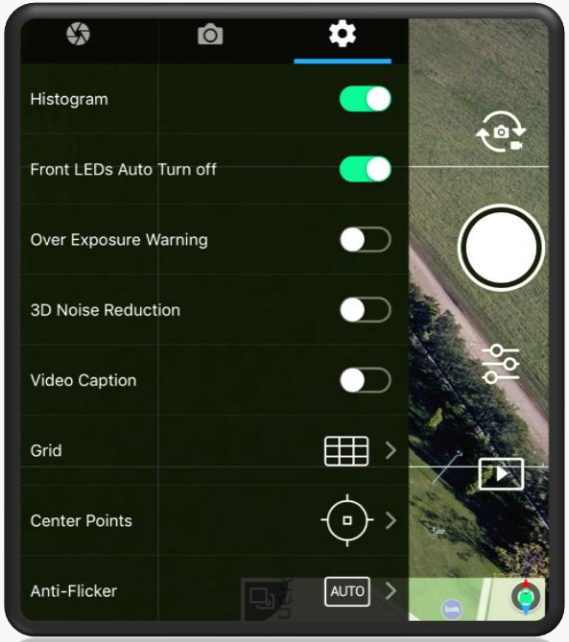
Photography



Video



General Settings



LOCATION SHOTS

Location shots are wide shots. They allow the observer to receive the whole scene; It is usually the first take of a scene.

Source: Skypixel, 雁 海

MEDIUM SHOTS

Medium shots can be a smaller shot of a scene that, unlike a wide or location shot, does not include the entirety of the surroundings.

Source: Skypixel, Jose Gomez

CLOSE-UP SHOTS

Close-up shots are heavily cropped shots that show fine detail. Close-up shots can be about a person, an action that is important to the story of your film, or simply a heavily cropped shot that shows the details of an object.

Source: Pinterest

TYPES OF DRONE SHOTS

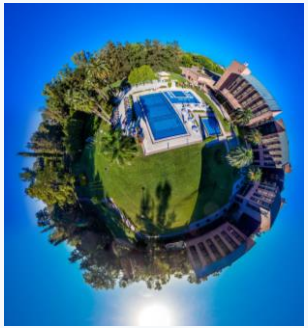
- Disclose
- Two situations at one
- The crane
- Bird's eye view

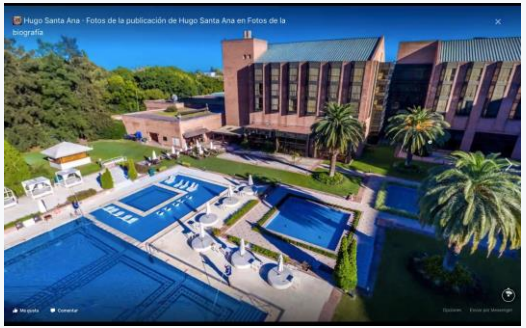
BASIC TIPS

- Planning before flying (schedules, shots, etc.)
- Best time to film and take photos (magic hours).
- Horizon correction.
- Make sure that the propellers do not appear in the photo or video
- Preferably that the shadow of the drone is not visible in the shot.
- Do not make sudden movements, video shots are preferably smooth and slow movements.
- Choose music according to what is shown.
- Editing and post-production for color correction and effects greatly improve the result.
- To read and know the rules of composition, to know them, apply them or break them.
- Knowing and practicing intelligent flight modes of the drone often help in certain situations.

360 PHOTOGRAPHY

This type of 360-degree photography is being used more and more regularly since generated from drones immersive images are achieved that perfectly show landscapes or certain locations





TYPES OF DRONES

Mavic Pro

Phantom 4

Phantom 4 Pro

Inspire 1

Matrice 600

TYPES OF DRONES, MAVIC PRO

4K VIDEO	12 MP	28 MM f 2.2	SENSOR 1/2.3”

Camera

Sensor	1/2.3” (CMOS), Effective pixels:12.35 M (Total pixels:12.71M)
Lens	FOV 78.8° 26 mm (35 mm format equivalent) f/2.2 Distortion < 1.5% Focus from 0.5 m to ∞
ISO Range	video: 100-3200 photo: 100-1600
Electronic Shutter Speed	8s -1/8000 s
Image Size	4000×3000
Still Photography Modes	Single shot Burst shooting: 3/5/7 frames Auto Exposure Bracketing (AEB): 3/5 bracketed frames at 0.7 EV Bias Interval
Video Recording Modes	C4K: 4096×2160 24p 4K: 3840×2160 24/25/30p 2.7K: 2720x1530 24/25/30p FHD: 1920×1080 24/25/30/48/50/60/96p HD: 1280×720 24/25/30/48/50/60/120p
Max Video Bitrate	60 Mbps
Supported File Systems	FAT32 (≤ 32 GB); exFAT (> 32 GB)
Photo	JPEG, DNG
Video	MP4, MOV (MPEG-4 AVC/H.264)
Supported SD Cards	Micro SD™ Max capacity: 128 GB. Class 10 or UHS-1 rating required
Operating Temperature Range	32° to 104° F (0° to 40° C)

TYPES OF DRONES, PHANTOM 4

4K VIDEO	12 MP	22 MM f 2.8	SENSOR 1/2.3”

Camera

Sensor	1/2.3” CMOS Effective pixels:12.4 M
Lens	FOV 94° 20 mm (35 mm format equivalent) f/2.8 focus at ∞
ISO Range	100-3200 (video) 100-1600 (photo)
Electronic Shutter Speed	8 - 1/8000 s
Image Size	4000×3000
Still Photography Modes	Single shot Burst shooting: 3/5/7 frames Auto Exposure Bracketing (AEB): 3/5 bracketed frames at 0.7 EV Bias Timelapse HDR

Video Recording Modes	UHD: 4096×2160 (4K) 24 / 25p 3840×2160 (4K) 24 / 25 / 30p 2704×1520 (2.7K) 24 / 25 / 30p FHD: 1920×1080 24 / 25 / 30 / 48 / 50 / 60 / 120p HD: 1280×720 24 / 25 / 30 / 48 / 50 / 60p
Max Video Bitrate	60 Mbps
Supported File Systems	FAT32 (≤32 GB); exFAT (>32 GB)
Photo	JPEG, DNG (RAW)
Video	MP4, MOV (MPEG-4 AVC/H.264)
Supported SD Cards	Micro SD Max capacity: 64 GB Class 10 or UHS-1 rating required
Operating Temperature Range	32° to 104°F (0° to 40°C)

TYPES OF DRONES, PHANTOM 4 PRO

4K VIDEO	20 MP	24 MM f2.8 / f11	SENSOR 1”

Camera		
	Sensor	1" CMOS Effective pixels: 20M
	Lens	FOV 84° 8.8 mm/24 mm (35 mm format equivalent) f/2.8 - f/11 auto focus at 1 m - ∞
	ISO Range	Video: 100 - 3200 (Auto) 100 - 6400 (Manual) Photo: 100 - 3200 (Auto) 100- 12800 (Manual)
	Mechanical Shutter Speed	8 - 1/2000 s
	Electronic Shutter Speed	8 - 1/8000 s
	Image Size	3:2 Aspect Ratio: 5472 × 3648 4:3 Aspect Ratio: 4864 × 3648 16:9 Aspect Ratio: 5472 × 3078
	PIV Image Size	4096×2160(4096×2160 24/25/30/48/50p) 3840×2160(3840×2160 24/25/30/48/50/60p) 2720×1530(2720×1530 24/25/30/48/50/60p) 1920×1080(1920×1080 24/25/30/48/50/60/120p) 1280×720(1280×720 24/25/30/48/50/60/120p)
	Still Photography Modes	Single Shot Burst Shooting: 3/5/7/10/14 frames Auto Exposure Bracketing (AEB): 3/5 bracketed frames at 0.7 EV Bias Interval: 2/3/5/7/10/15/20/30/60 s

Video Recording Modes	
	H.265 C4K:4096×2160 24/25/30p @100Mbps 4K:3840×2160 24/25/30p @100Mbps 2.7K:2720×1530 24/25/30p @65Mbps 2.7K:2720×1530 48/50/60p @80Mbps FHD:1920×1080 24/25/30p @50Mbps FHD:1920×1080 48/50/60p @65Mbps FHD:1920×1080 120p @100Mbps HD:1280×720 24/25/30p @25Mbps HD:1280×720 48/50/60p @35Mbps HD:1280×720 120p @60Mbps H.264 C4K:4096×2160 24/25/30/48/50/60p @100Mbps 4K:3840×2160 24/25/30/48/50/60p @100Mbps 2.7K:2720×1530 24/25/30p @80Mbps 2.7K:2720×1530 48/50/60p @100Mbps FHD:1920×1080 24/25/30p @60Mbps FHD:1920×1080 48/50/60 @80Mbps FHD:1920×1080 120p @100Mbps HD:1280×720 24/25/30p @30Mbps HD:1280×720 48/50/60p @45Mbps HD:1280×720 120p @80Mbps

TYPES OF CAMERAS, INSPIRE 1

ZENMUSE X3 Specs

Home / Products / Zenmuse X3 / Specs

SENSOR

Size	1/2.3"
Type	CMOS
Effective Pixels	12.4M
ISO Range	100~3200

MAX-PIXELS

Max-Pixels	12.4M
Burst Shooting	Full pixels 7fps
Shutter Speed	8~1/8000 sec
EV Range	-3~+3, 1/3
AEB	Support
Interval	Support
Time Lapsed	Support, 5/7/10/20/30 sec
DNG	Support

LENS

Optics	20mm (35mm format equivalent)f/2.8 focus at ∞
Iris	F/2.8
Diagonal FOV	94 degree
Equivalent	20mm
Distortion	0.90%
Focus Range	Infinite
Auto-Focus	N/A

VIDEO

Resolution	4096x2160(25/24P) 3840x2160(30/25P) 1920x1080(60/50/48/30/25/24P) 1280x720(60/50/48/30/25/24P)
Encoder	MPEG4/AVC/H.264
Max-Bitrate	60Mbps@4096x2160(25/24P) 60Mbps@3840x2160(30/25P) 45Mbps@1920x1080(60/50/48/30/25/24P) 15Mbps@1280x720(60/50/48/30/25/24P)
Format	MP4/MOV

TYPES OF CAMERAS, INSPIRE 1

ZENMUSE X5

AERIAL IMAGING EVOLVED

4K VIDEO | 16.0 MP | 4/3 MFT | 3-AXIS GIMBAL

SENSOR

Size	4/3"
Type	CMOS
16.0M	Effective Pixels
ISO Range	100~25600

MAX-PIXELS

Max-Pixels	16.0M
Burst Shooting	Full pixels 7fps
Shutter Speed	8~1/8000 sec
EV Range	-3~+3, 1/3
AEB	Support
Interval	Support
Time Lapsed	Support, 5/7/10/20/30 sec
DNG	Support

LENS

Optics	User Selectable (default DJI MFT 15mm F/1.7 ASPH)
Iris	F/1.7-F/16 (default DJI lens)
Diagonal FOV	72 degree (default DJI lens)
Equivalent	30mm (default DJI lens)
Distortion	0.40%
Focus Range	20cm-infinite (default DJI lens)
Auto-Focus	Support (default DJI lens)

VIDEO

Resolution	4096x2160(23.98p) 3840x2160(29.97/23.98p) 2704x1520(30/25P) 1920x1080(59.94/29.97p)
Encoder	MPEG4/AVC/H.264
Max-Bitrate	60Mbps@4096x2160(23.98p) 60Mbps@3840x2160(29.97/23.98p) 45Mbps@2704x1520(30/25p) 40Mbps@1920x1080(59.94p) 25Mbps@1920x1080(29.97p)

TYPES OF CAMERAS, INSPIRE 1

ZENMUSE X5R

AERIAL IMAGING EVOLVED

4K	Cinema DNG	12-Bit RAW	M43 Mount
24-30 FPS	12.8 Stops	512GB SSD	ProRes

TYPES OF CAMERAS, INSPIRE 1

ZENMUSE XT Specs

Home / Products / Zenmuse XT / Specs

General

Model	Zenmuse XT
Dimensions	103 mm x 74 mm x 102 mm
Weight	270 g

Camera

Thermal Imager	Uncooled VOx Microbolometer
FPA/Digital Video Display Formats	• 640 × 512 • 336 × 256
Analog Video Display Formats	720 × 480 (NTSC); 720 × 576 (PAL)
Pixel Pitch	17 µm
Spectral Band	7.5 - 13.5 µm
Full Frame Rates	• 640 × 512：30 Hz (NTSC) 25 Hz (PAL) • 336 × 256：30 Hz (NTSC) 25 Hz (PAL)
Exportable Frame Rates	7.5 Hz NTSC; 8.3 Hz PAL
Sensitivity (NEDT)	<50 mK at f/1.0
Scene Range (High Gain)	• 640 × 512：-13° to 275°F (-25° to 135°C) • 336 × 256：-13° to 212°F (-25° to 100°C)

Gimbal

Angular Vibration Range	±0.03°
Mount	Detachable
Controllable Range	Tilt：+35° to -90°; Pan：±320°; Roll：±
Mechanical Range	Tilt：+45° to -135° Pan：±320° Roll：±
Max Controllable Speed	120°/s

Image Processing & Display Controls

NTSC/PAL (field switchable)	yes
Image Optimization	yes
Digital Detail Enhancement	yes
Polarity Control (black hot/white hot)	yes
Color & Monochrome Palettes (LUTs)	yes
Digital Zoom	**640 × 512:** 2x, 4x, 8x **336 × 256:** 2x, 4x

TIPOS DE CÁMARAS, INSPIRE 1

ZENMUSE Z3 Specs

Home / Products / Zenmuse Z3 / Specs

General

Name	Zenmuse Z3
Dimensions	105×115×85 mm
Weight	262 g

Camera

Sensor	CMOS, 1/2.3" Max Pixels: 12.76 M, Effective Pixels: 12.4M
Lens	3.5x Optical Zoom, 22–77mm Equivalent F2.8 (Wide) - F5.2 (Tele), FOV 92° (Wide) - 35° (Tele)
Photo Resolutions	4:3 • L: 12M, 4000×3000 16:9 • L: 9M, 4000×2250
Video Resolutions	UHD: 4K (4096×2160) 24/25p 4K (3840×2160) 24/25/30p 2.7K (2704×1520) 24/25/30p FHD: 1920×1080 24/25/30/48/50/60p
Video Quality	Superfine, Fine, Normal
Photo Formats	JPEG, DNG, JPEG+DNG
Video Formats	MOV, MP4

Gimbal

Angular Vibration Range	±0.02°
Mount	Detachable
Controllable Range	Tilt: +30° to -90°, Pan: ±320°, Roll: ±15°
Mechanical Range	Tilt: +50° to -140°, Pan: ±330°, Roll: +90° to -50°
Max Controllable Speed	120°/s

Environmental

Operating Temperature	14 to 104°F (-10 to 40°C)
Non-Operating Temperature	14 to 140°F (-10 to 60°C)

TYPES OF CAMERAS, MATRICE 600

QUESTION TIME!

DRONESVIP
CAPACITATION