

EXHIBIT 17

Exemplary Infringement Claim Chart for U.S. Patent No. 10,958,840

This exemplary claim chart shows how the following Insta360 products and systems (the “’840 Accused Products”) directly and indirectly infringe the independent claims of U.S. Patent No. 10,958,840 (“the ’840 patent”):

’840 Accused Products: Insta360 “One X,” “One R,” “One R 1-inch,” “One X2,” “One RS,” “One RS 1-inch 360,” “X3,” “Go 3,” “Ace,” and “Ace Pro.”

As shown in the exemplary claim chart, the Insta360 X3 meets each and every limitation of the ’840 Patent, literally or under the doctrine of equivalents. The other ’840 Accused Products infringe the ’840 Patent in substantially the same way and for substantially the same reasons.

Insta360 directly infringes the independent claims of the ’840 Patent under 35 U.S.C. § 271(a) by selling and offering for sale the ’840 Accused Products in the United States and importing those Systems into the United States. Insta360 further directly infringes the independent claims of the ’840 Patent by testing and using the claimed systems and performing the claimed methods in the United States. Insta360 further indirectly infringes the independent claims of the ’840 Patent under 35 U.S.C. § 271(b) and 35 U.S.C. § 271(c) by inducing and contributing to the infringement of its customers and users of the ’840 Accused Products.

This claim chart is exemplary in nature and based only on public information currently available. GoPro reserves the right to supplement this claim chart with additional information as necessary. GoPro reserves all rights to update and elaborate on its positions and to proffer additional and alternative theories.

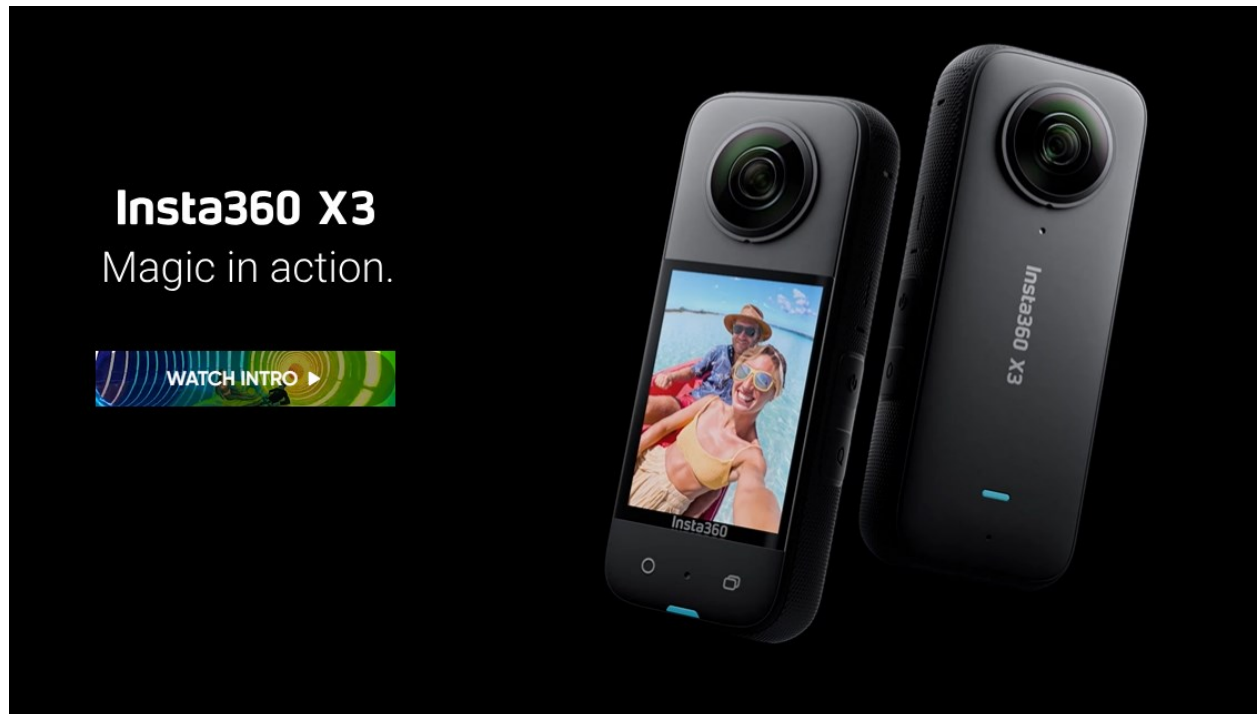
Claim 1

1[pre] An image capture system that stabilizes videos, the image capture system comprising:

To the extent the preamble is limiting, the '840 Accused Products include a system that stabilizes videos.

The X3, exemplary of the '840 Accused Products, is a camera system as shown, for example, below:

X3



<https://www.insta360.com/product/insta360-x3>

The X3, exemplary of the '840 Accused Products, implement a stabilization feature called FlowState Stabilization.



Insta360 X3

BUY



Insta360 Ace Pro
CO-ENGINEERED WITH Leica

BUY



Insta360 GO 3

BUY

HIGHLIGHTS

Uniqueness	• Compact 360 action camera • 5.7K 360 Video with Active HDR • Pocket-sized and convenient with a built-in 1/4" mount • Single-lens capture in 4K 30fps or 170° MaxView	• Flagship 1/1.3" sensor • Co-engineered with Leica • Low light excellence with AI noise reduction • 2.4" flip screen	• Lightweight and portable • Magnetic mounting system • Hands-free POV • Action Pod with flip touchscreen for charging, remote control and live preview
Photo	72MP (11968x5984) 18MP (5952x2976)	48MP	7MP
Video	5.7K 360 Active HDR 4K Single-Lens Mode	8K 4K Active HDR	2.7K
Invisible Selfie Stick	✓	(processed in app, AI Selfie Stick Eraser) ✓	—
Stabilization	FlowState Stabilization	FlowState Stabilization	FlowState Stabilization
360° Horizon Leveling	✓	(processed in app/Studio) ✓	✓

<https://www.insta360.com/product/compare>

The X3, exemplary of the '840 Accused Products, include camera software/firmware that Insta360 refers to as “Quick” FlowState and/or “FlowState 2.0” (hereafter, referred to simply as “FlowState”). FlowState is Insta360’s in-camera stabilization software that was first released on or about November 22, 2021 in version 2.0.0 of Insta360’s firmware, and it has been included in all subsequent updates or upgrades. *See* <https://www.insta360.com/blog/news/insta360-update-speeds-up-workflow.html>; https://www.insta360.com/support/supportcourse?post_id=7314.

When enabled, FlowState applies stabilization techniques, in camera, to captured videos.

See, e.g.,

Quick FlowState is an upgrade to the previous “Basic” in-camera stabilization algorithm, with greatly **improved stabilization straight out of the camera**. The level of in-camera stabilization is now comparable to Insta360’s stabilization algorithm applied in post.



Videos recorded in Quick FlowState mode don’t need to be processed in the Insta360 app or desktop Studio software, and are ready to share immediately. Eliminating this extra editing step also eliminates one step of compression, resulting in crisper videos. The mode is also now available for 4K 50fps standard video and loop recording modes, as well as the 4K 30fps, 25fps and 24fps modes previously supported under Basic stabilization.

<https://www.insta360.com/blog/news/insta360-update-speeds-up-workflow.html>

New FlowState™ stabilization is here. Upgrade for free today!



The latest update of the Insta360 ONE introduces hypnotically smooth FlowState stabilization, plus a range of new editing features that will let you easily create slick cinematic edits.

To start enjoying the new features, you'll need to update your ONE's software and firmware to the latest versions. Luckily, updating is ridiculously easy.

First, update your app to **version 3.0.1** or **above** by going to the app store or the about page of the ONE app (Settings —> About Insta360).

Once you've updated the app, open it, plug your Insta360 ONE into your phone, and follow the on-screen instructions to update the firmware to **version 2.0.0** or **above**. Then your camera will be equipped with powerful stabilization effect.

https://www.insta360.com/support/supportcourse?post_id=7314

1[a] a housing of an image capture device:

The '840 Accused Products comprise a housing of an image capture device.

The X3, exemplary of the '840 Accused Products, is a camera system that includes a housing as shown, for example, below:

X3

Insta360 X3
Magic in action.

WATCH INTRO ►

The image shows two views of the Insta360 X3 camera. On the left, the camera is shown from the front, displaying a selfie of a man and a woman on a beach on its screen. On the right, the camera is shown from the back, highlighting its black, textured housing and the large circular lens assembly at the top. The background is solid black.

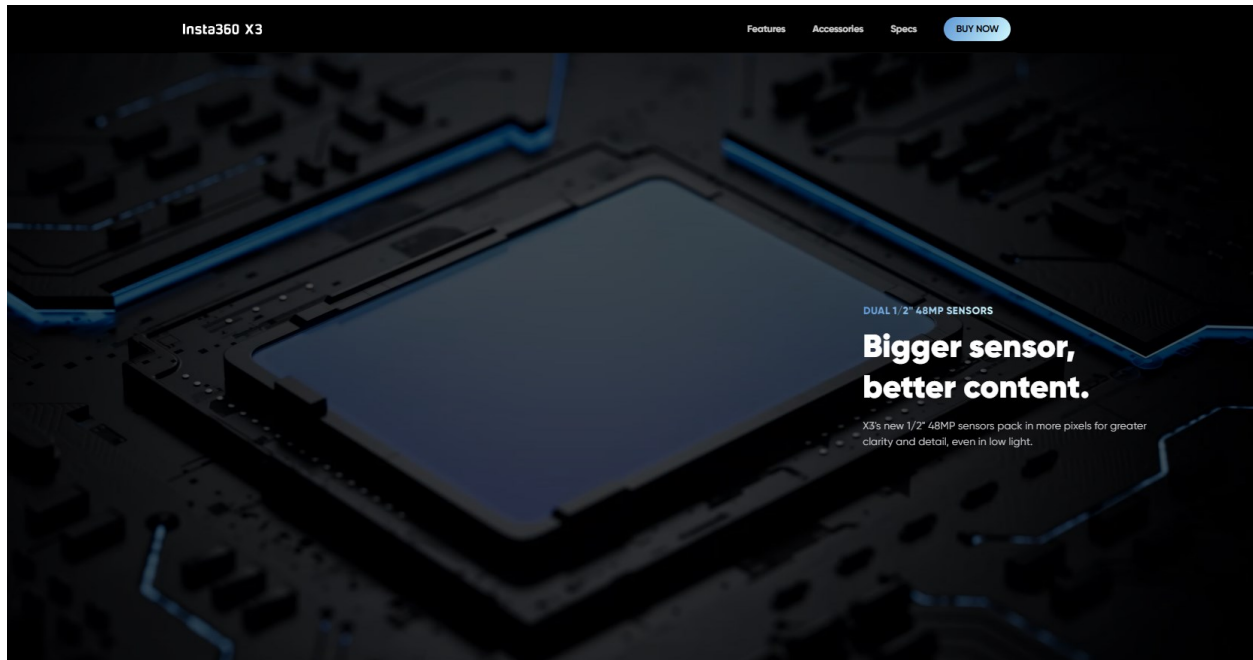
<https://www.insta360.com/product/insta360-x3>

1[b] an optical element carried by the housing and configured to guide light within a field of view to an image sensor:

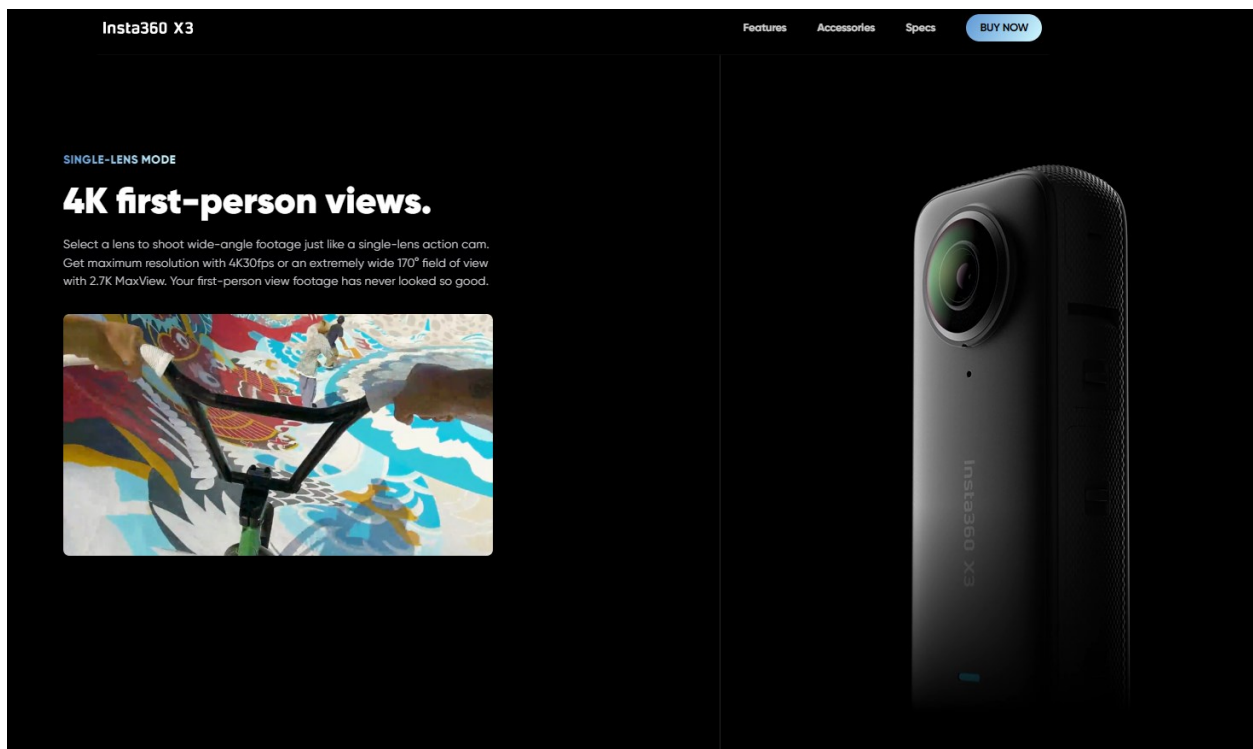
The '840 Accused Products comprise an optical element carried by the housing and configured to guide light within a field of view to an image sensor.

See, e.g.:

X3



https://www.insta360.com/product/insta360-x3#x3_features



https://www.insta360.com/product/insta360-x3#x3_features

Insta360 X3		Features	Accessories	Specs	BUY NOW
Specs					
Aperture		F1.9			
35mm Equivalent Focal Length		6.7mm			
Photo Resolution		72MP (11968x5984)			
		18MP (5952x2976)			

https://www.insta360.com/product/insta360-x3#x3_specs

The X3, exemplary of the '840 Accused Products, comprises an optical field of view ("FOV") that is greater than a capture field of view, including when the X3 captures images in different FOV modes. *See, e.g.,*

Q9 What field of views (FOV) does X3 support?

Single Lens Mode (Default FOV): UltraWide, ActionView, Wide, Linear

Single Lens Mode (FOV+): MaxView, UltraWide+, ActionView+, Wide+, Linear+

Me Mode (FOV+): MaxView, UltraWide+, ActionView+ (only in 9:16), Wide+, Linear+

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

You can toggle FOV between Ultra Wide, Wide, Linear and Narrow (16:9 30fps video also supports "POV+", optimized for POV shooting; HDR video not supported) after opening any video and then sliding the FOV setting at the bottom right of the editing interface. As the FOV gets narrower, stabilization accuracy will increase.

https://www.insta360.com/support/supportcourse?locale=zh-cn&post_id=16831

The FOV mode records video without device stabilization in 4 modes: Linear, Wide, UltraWide, and Action.

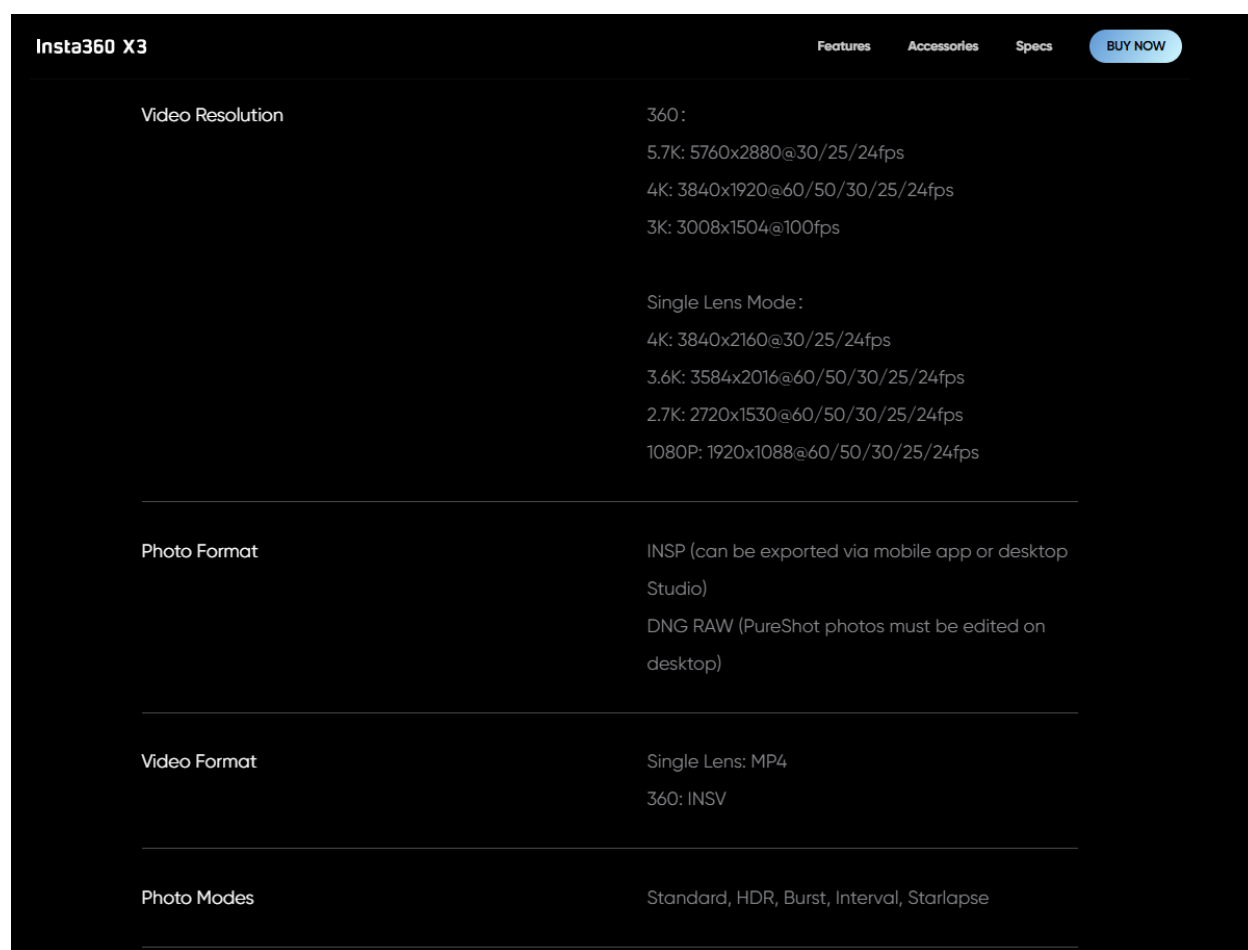
Changing sub-modes does not affect the visual field of the *raw* video stored on the microSD card.

1[c] the image sensor carried by the housing and configured to generate a visual output signal conveying visual information based on light that becomes incident thereon during a capture duration, the visual information defining visual content having the field of view, the field of view being larger than a size of a viewing window for generating stabilized visual content:

The '840 Accused Products comprise the image sensor carried by the housing and configured to generate a visual output signal conveying visual information based on light that becomes incident thereon during a capture duration, the visual information defining visual content having the field of view, the field of view being larger than a size of a viewing window for generating stabilized visual content.

See, e.g.:

X3



Insta360 X3		Features	Accessories	Specs	BUY NOW
Video Resolution		360: 5.7K: 5760x2880@30/25/24fps 4K: 3840x1920@60/50/30/25/24fps 3K: 3008x1504@100fps Single Lens Mode: 4K: 3840x2160@30/25/24fps 3.6K: 3584x2016@60/50/30/25/24fps 2.7K: 2720x1530@60/50/30/25/24fps 1080P: 1920x1088@60/50/30/25/24fps			
Photo Format		INSP (can be exported via mobile app or desktop Studio) DNG RAW (PureShot photos must be edited on desktop)			
Video Format		Single Lens: MP4 360: INSV			
Photo Modes		Standard, HDR, Burst, Interval, Starlapse			

https://www.insta360.com/product/insta360-x3#x3_specs

Insta360 X3		Features	Accessories	Specs	BUY NOW
Photo Format		INSP (can be exported via mobile app or desktop Studio) DNG RAW (PureShot photos must be edited on desktop)			
Video Format		Single Lens: MP4 360: INSV			
Photo Modes		Standard, HDR, Burst, Interval, Starlapse			
Video Modes		Standard, Active HDR, Timelapse, TimeShift, Bullet Time, Loop Recording, Pre-recording			

https://www.insta360.com/product/insta360-x3#x3_specs

1[d] a position sensor carried by the housing and configured to generate a position output signal based on positions of the housing during the capture duration, the position output signal conveying position information that characterizes rotational positions of the housing at different moments within the capture duration:

The '840 Accused Products comprise a position sensor carried by the housing and configured to generate a position output signal based on positions of the housing during the capture duration, the position output signal conveying position information that characterizes rotational positions of the housing at different moments within the capture duration.

For example, to enable FlowState Stabilization, the X3, exemplary of the '840 Accused Products, includes a six-axis gyroscope sensor. A six-axis gyroscope is a position sensor that can generate position output signals, including rotational positions of the camera housing, based on positions of the camera housing at specific moments throughout the capture duration.

X3

Insta360 X3		Features	Accessories	Specs	BUY NOW
Gyroscope		6-axis gyroscope			

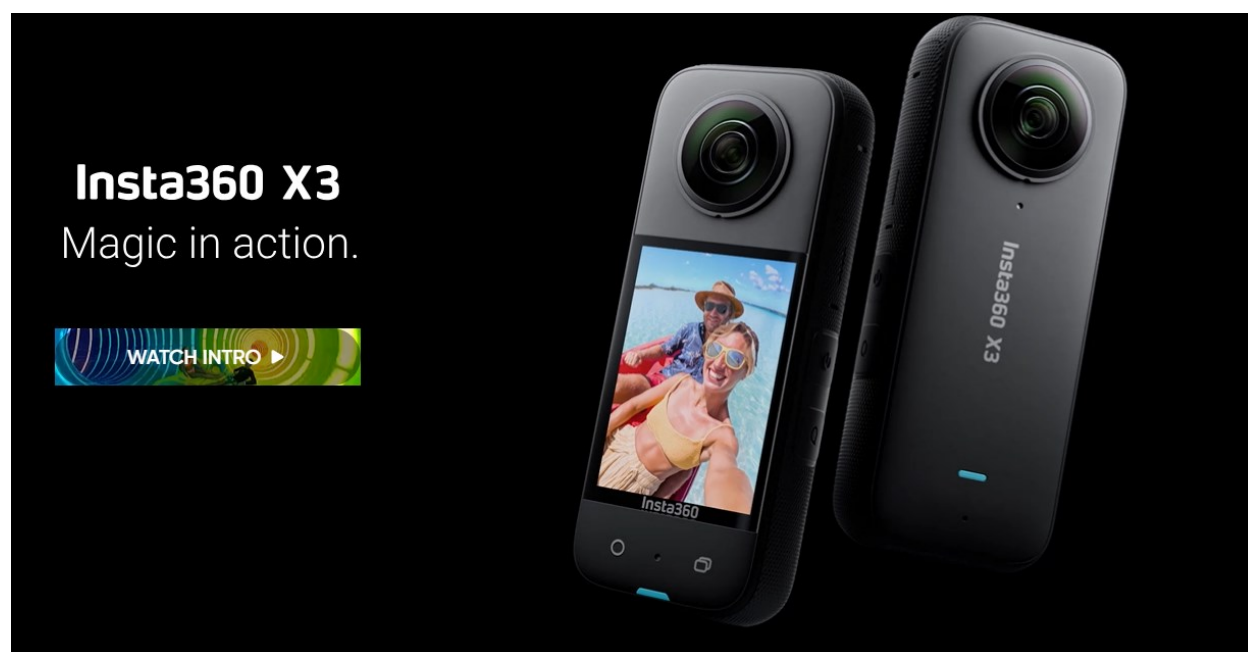
https://www.insta360.com/product/insta360-x3#x3_specs

1[e] One or more physical processors configured by machine-readable instructions to:

The '840 Accused Products comprise one or more physical processors configured by machine-readable instructions.

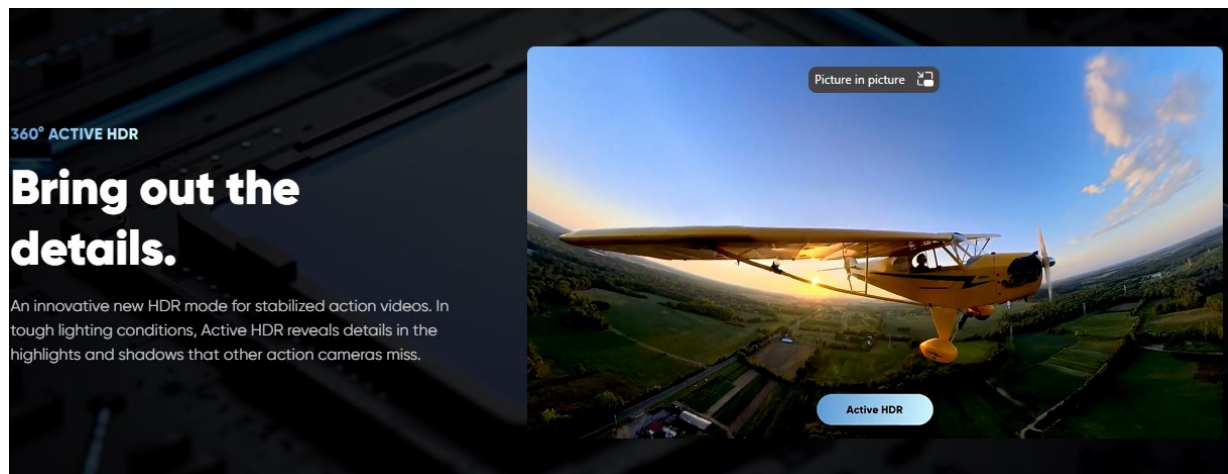
See, e.g.:

X3



Insta360 X3		Features	Accessories	Specs	BUY NOW
Wi-Fi	2.4GHz, 5GHz 802.11a/b/g/n/ac				
USB	Type-C * Note: This version only supports wired connection to Android devices (via Micro-USB or Type-C). It does not support wired connection to iOS devices. Full wireless support is available for both iOS and Android.				
MicroSD Card	UHS-I V30 speed class, exFAT format SD cards with a max storage of 1TB are recommended.				

<https://www.insta360.com/product/insta360-x3>



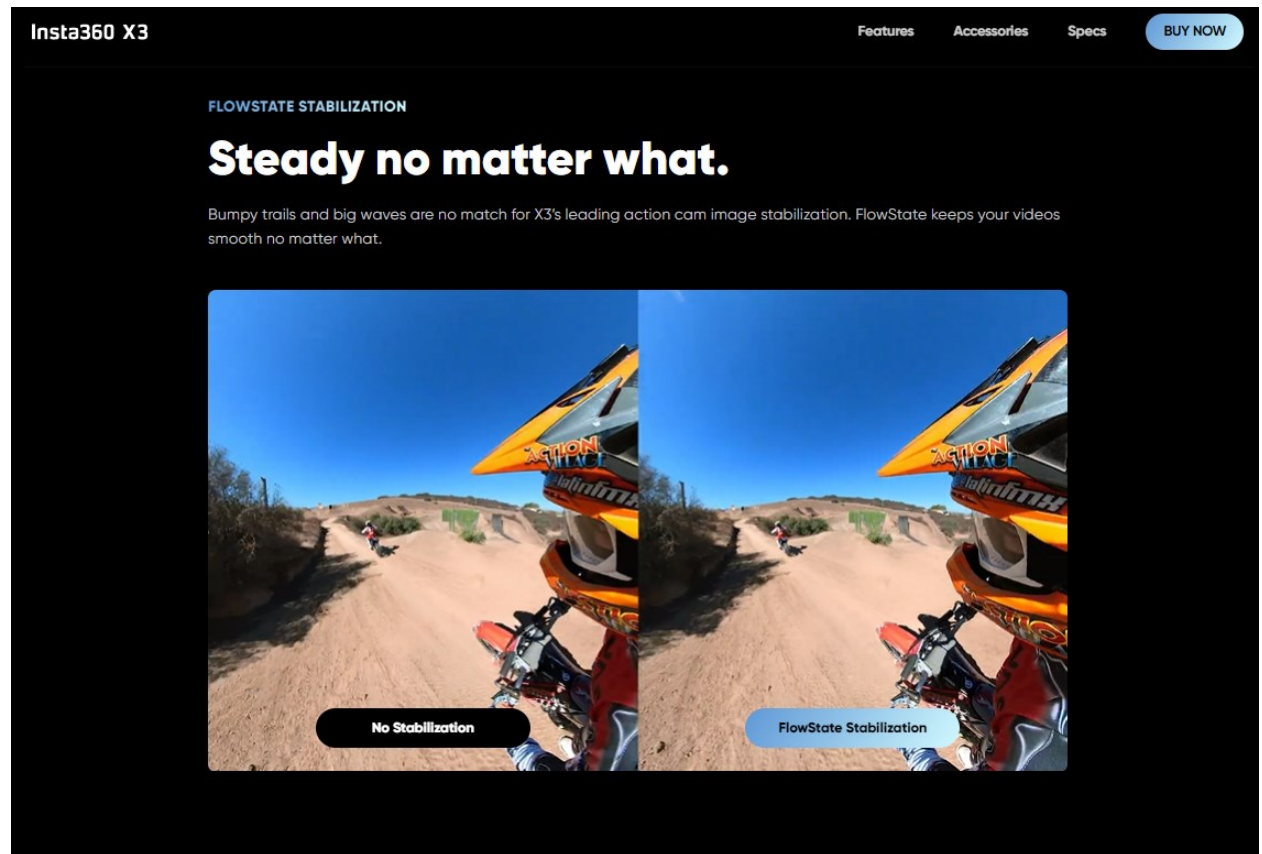
<https://www.insta360.com/product/insta360-x3>

1[f] determine a trajectory of the housing during the capture duration based on the position information, the trajectory reflecting the rotational positions of the housing at the different moments within the capture duration, the trajectory including a first portion corresponding to a first moment within the capture duration and a second portion corresponding to a second moment subsequent to the first moment within the capture duration:

The '840 Accused Products determine a trajectory of the housing during the capture duration based on the position information, the trajectory reflecting the rotational positions of the housing at the different moments within the capture duration, the trajectory including a first portion corresponding to a first moment within the capture duration and a second portion corresponding to a second moment subsequent to the first moment within the capture duration.

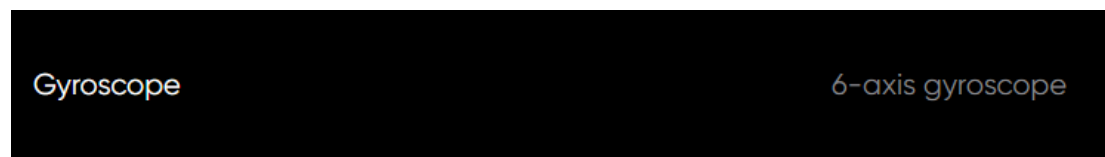
See, e.g.:

The X3, exemplary of the '840 Accused Products, monitors the position information gathered from the six-axis gyroscope in order to determine an observed trajectory of the housing. This information is used to enable FlowState stabilization.



https://www.insta360.com/product/insta360-x3#x3_features

The X3, exemplary of the '840 Accused Products, forms a moment-by-moment listing of the camera position based on the six-axis gyroscope generated position output signals to create an observed trajectory of the housing during the capture duration.



<https://www.insta360.com/product/insta360-x3>

Q11 How does X3 stabilization perform?

Insta360 X3's six-axis gyroscope and industry-leading FlowState stabilization ensure stable footage, even during action sports. Where other action cams tap out at 45°, 360° Horizon Lock keeps the horizon level even when you completely rotate the camera.

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

Single-Lens Mode

Shooting Mode	Ratio	Resolution/Frame Rate	Time	FOV
Photo	16:9 1:1 9:16	36MP 9MP	Shooting Countdown: Off/3s/5s/10s/15s	UltraWide (UW) / Wide (W) / Linear (L)
Video (Default FOV): FlowState can be applied in camera without being exported to the app or Studio	16:9 9:16	4K@30/25/24fps 3.6K@60/50/30/25/24fps 2.7K@60/50/30/25/24fps 1080P@60/50/30/25/24fps	/	UltraWide (UW) / Wide (W) / Linear (L)
Video (FOV+): FlowState, Aspect Ratio, and Horizon Lock can be applied with the app or Studio	16:9 9:16	2.7K@60/50/30/25/24fps 1080P@60/50/30/25/24fps	/	MaxView (MAX) / UltraWide+ (UW) / ActionView+ (ACT) / Wide+ (W) / Linear+ (L)

<https://onlinemanual.insta360.com/x3/en-us/camera/basicuse/parameter>

1[g(i)] determine a smoothed trajectory of the housing based on a look-ahead of the trajectory and one or more of a weight-balance parameter, a low-light high-pass parameter, and/or a stickiness parameter,

The '840 Accused Products determine a smoothed trajectory of the housing based on a look-ahead of the trajectory and one or more of a weight-balance parameter, a low-light high-pass parameter, and/or a stickiness parameter.

See, e.g.:

The X3, exemplary of the '840 Accused Products, implements FlowState stabilization by determining a capture trajectory based on a look ahead of the observed trajectory. For example, observation of the X3 in operation indicates that the capture trajectory of smoothed videos reflect intentional movement of the camera housing slightly in advance of when such intentional movement occurred within the video capture duration of the observed trajectory. In other words, smoothed videos produced by the X3 slightly “anticipate” intentional movement, which would only be possible if the capture trajectory was based on a “look ahead.”

Further, observation of the X3 in operation, including in connection with the Insta360 Android mobile application, indicates that angular velocity and angular acceleration are considered as part of the process for smoothing videos, which indicates use of at least a weight-balance parameter.

Insta360 X3

FeaturesAccessoriesSpecsBUY NOW

FLOWSTATE STABILIZATION

Steady no matter what.

Bumpy trails and big waves are no match for X3's leading action cam image stabilization. FlowState keeps your videos smooth no matter what.

The image shows a side-by-side comparison of a first-person view from a motorcycle on a dirt trail. The left side, labeled 'No Stabilization', shows a shaky and blurry video. The right side, labeled 'FlowState Stabilization', shows a smooth and clear video of the same scene. Both videos show a dirt trail winding through a hilly landscape under a clear blue sky, with a motorcycle helmet and handlebars visible in the foreground.

https://www.insta360.com/product/insta360-x3#x3_features

The X3, exemplary of the '840 Accused Products, determines a smoothed trajectory of the housing based on a look ahead of the trajectory formed using the six-axis gyroscope generated position output signals.

Gyroscope

6-axis gyroscope

<https://www.insta360.com/product/insta360-x3>

Q9 What field of views (FOV) does X3 support?

Single Lens Mode (Default FOV): UltraWide, ActionView, Wide, Linear

Single Lens Mode (FOV+): MaxView, UltraWide+, ActionView+, Wide+, Linear+

Me Mode (FOV+): MaxView, UltraWide+, ActionView+ (only in 9:16), Wide+, Linear+

Q10 What is the difference between the new 360 Active HDR and traditional HDR?

360 Active HDR is designed for recording in action scenes. Compared to the traditional HDR, 360 Active HDR provides superb stabilization while retaining details in highlights and shadows, and can be used in everyday action scenes.

Q11 How does X3 stabilization perform?

Insta360 X3's six-axis gyroscope and industry-leading FlowState stabilization ensure stable footage, even during action sports. Where other action cams tap out at 45°, 360° Horizon Lock keeps the horizon level even when you completely rotate the camera.

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

Shooting Modes

Q1 What shooting modes does X3 support?

360:

	Shooting Modes
Photo Modes	Standard, HDR, Burst, Interval, Starlapse
Video Modes	Standard, Active HDR, Timelapse, TimeShift, Bullet Time, Loop Recording

Single Lens:

	Shooting Modes
Photo Modes	Standard
Video Modes	Standard, Me mode, Loop Recording

Q2 What resolutions and frame rates does X3 support?

	Resolutions/Frame rates
Photo Resolution	72MP (11968×5984), 18MP(5952×2976)
Video Resolution	360 Mode: 5.7K: 5760*2880@30/25/24fps 4K: 3840*1920@60/50/30/25/24fps 3K: 3008*1504@100fps
	Single Lens Mode: 4K: 3840×2160@30/25/24fps 3.6K: 3584×2016@60/50/30/25/24fps 2.7K: 2720×1530@60/50/30/25/24fps 1080P: 1920×1088@60/50/30/25/24fps

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

ME MODE

See yourself at 60fps.

Try the all-new Me mode which fixes the frame to focus only on you. Capture yourself without the selfie stick at 60fps for epic slow mo. No need to reframe, just keep yourself in frame!



<https://www.insta360.com/product/insta360-x3>

Further, the X3, exemplary of the '840 Accused Products, determines a smoothed trajectory of the housing based on a look-ahead of the trajectory as described, for example, in Insta360's patent publication WO2023207899A1 to Sang et al., "Anti-shake processing method and apparatus for video, and storage medium and electronic device," at [103]:

"For each reference frame, each reference frame corresponds to a different number of jitter frames, and the jitter frames corresponding to each reference frame are video frames distributed near the reference frame. These video frames may include other reference frames or non-Reference frame. Therefore, for each jitter frame, each jitter frame can correspond to one reference frame or multiple reference frames, as shown in Figure 2. Figure 2 is a reference for the description of the video anti-shake processing method provided by the embodiment of the present application. Schematic diagram of the relationship between frames, jitter frames and video frames. In Figure 2, all video frames are divided into reference frames and non-reference frames, and the jitter frame corresponding to each reference frame can be another reference frame and/or non-reference frame. The following are examples:

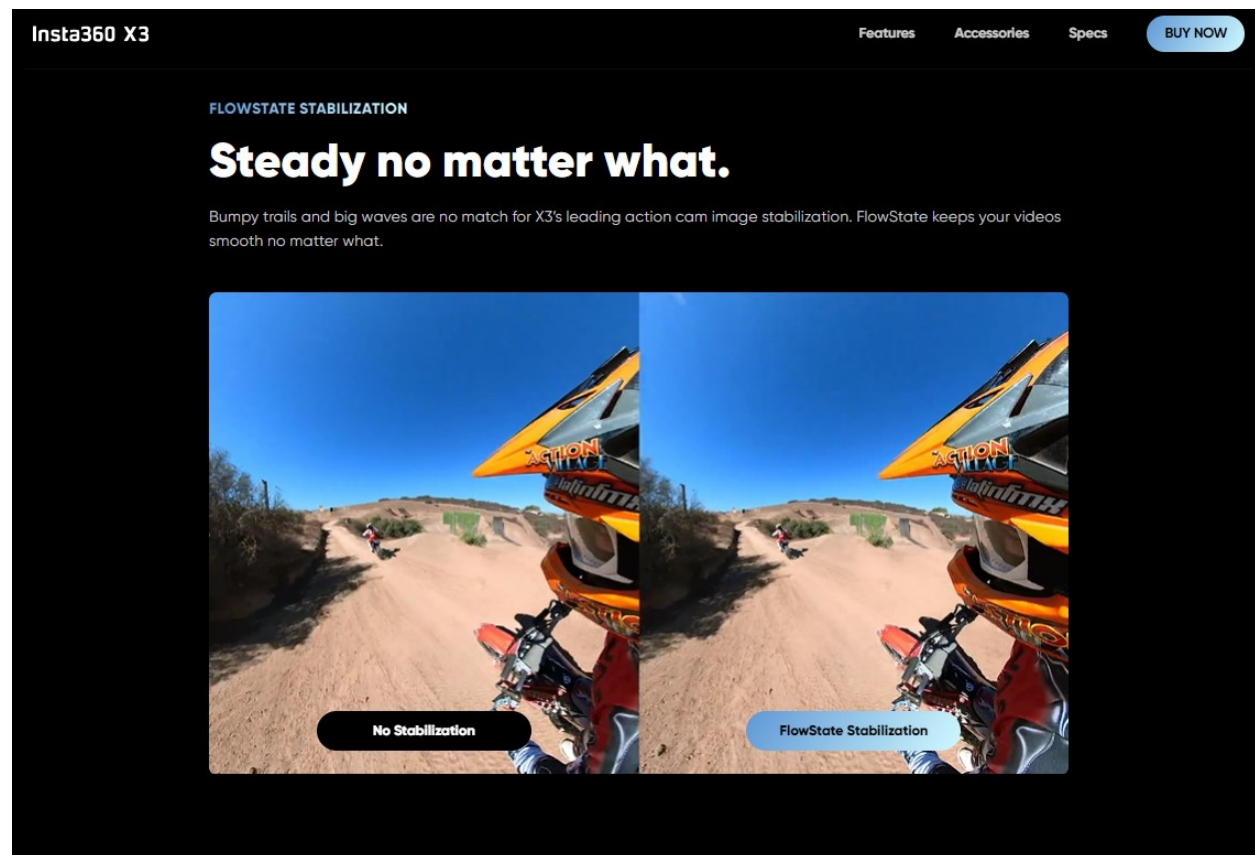
For example, the 10th video frame is a reference frame, the 15th video frame is also a reference frame, and the jitter frames corresponding to the 10th frame reference frame can be frames 5-9 and 11-15, and the 15th frame is a reference frame. The corresponding jitter frames may be frames 13-14 and 16-17. In this case, the reference frame corresponding to jitter frame 5 is frame 10, and the reference frames corresponding to jitter frame 13 are frames 10 and 15."

1[g(ii)] the look-ahead of the trajectory including use of a subsequent portion of the trajectory to determine a preceding portion of the smoothed trajectory such that a portion of the smoothed trajectory corresponding to the first portion of the trajectory is determined based on the second portion of the trajectory, the smoothed trajectory having smoother changes in the rotational positions of the housing than the trajectory,

The '840 Accused Products determine a look-ahead of the trajectory including use of a subsequent portion of the trajectory to determine a preceding portion of the smoothed trajectory such that a portion of the smoothed trajectory corresponding to the first portion of the trajectory is determined based on the second portion of the trajectory, the smoothed trajectory having smoother changes in the rotational positions of the housing than the trajectory.

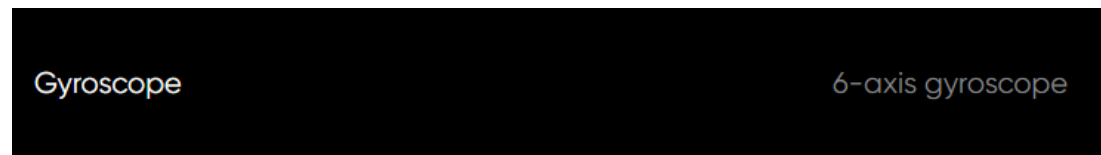
See, e.g.:

The X3, exemplary of the '840 Accused Products, implements FlowState stabilization by determining a capture trajectory based on a look ahead of the observed trajectory. For example, observation of the X3 in operation indicates that the capture trajectory of smoothed videos reflect intentional movement of the camera housing slightly in advance of when such intentional movement occurred within the video capture duration of the observed trajectory. In other words, smoothed videos produced by the X3 slightly “anticipate” intentional movement, which would only be possible if the capture trajectory was based on a “look ahead.”



https://www.insta360.com/product/insta360-x3#x3_features

The X3, exemplary of the '840 Accused Products, determines a look ahead of the trajectory including use of a subsequent portion of the trajectory using the six-axis gyroscope generated position output signals to determine a preceding portion of the capture trajectory.



<https://www.insta360.com/product/insta360-x3>

Q9 What field of views (FOV) does X3 support?

Single Lens Mode (Default FOV): UltraWide, ActionView, Wide, Linear

Single Lens Mode (FOV+): MaxView, UltraWide+, ActionView+, Wide+, Linear+

Me Mode (FOV+): MaxView, UltraWide+, ActionView+ (only in 9:16), Wide+, Linear+

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360 Active HDR is designed for recording in action scenes. Compared to the traditional HDR, 360 Active HDR provides superb stabilization while retaining details in highlights and shadows, and can be used in everyday action scenes.

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Insta360 X3's six-axis gyroscope and industry-leading FlowState stabilization ensure stable footage, even during action sports. Where other action cams tap out at 45°, 360° Horizon Lock keeps the horizon level even when you completely rotate the camera.

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

Shooting Modes

Q1 What shooting modes does X3 support?

360:

	Shooting Modes
Photo Modes	Standard, HDR, Burst, Interval, Starlapse
Video Modes	Standard, Active HDR, Timelapse, TimeShift, Bullet Time, Loop Recording

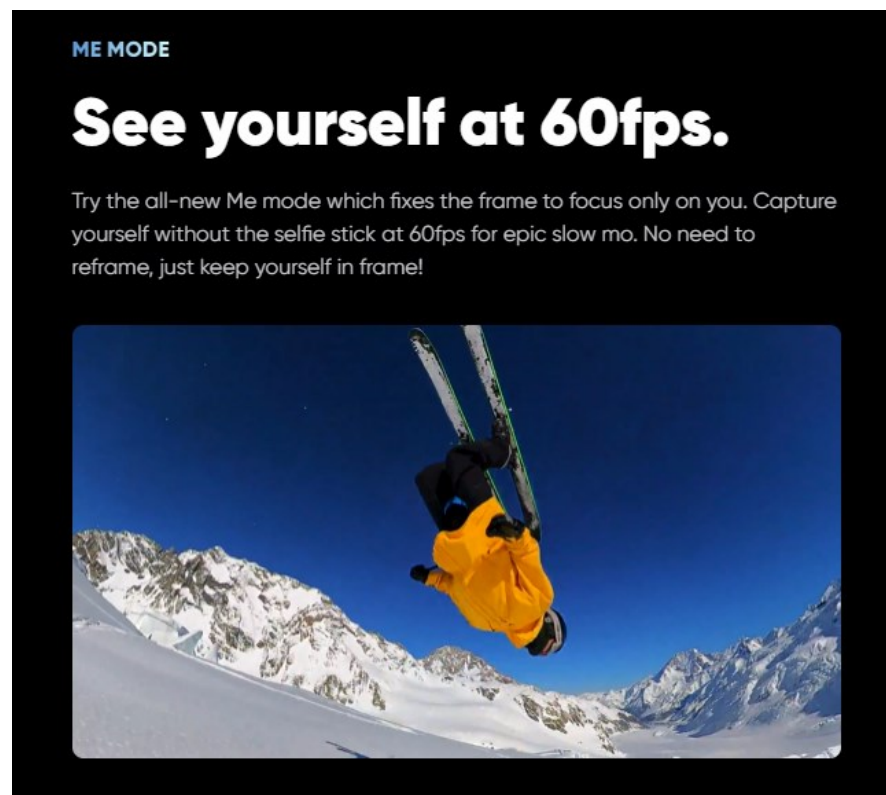
Single Lens:

	Shooting Modes
Photo Modes	Standard
Video Modes	Standard, Me mode, Loop Recording

Q2 What resolutions and frame rates does X3 support?

	Resolutions/Frame rates
Photo Resolution	72MP (11968×5984), 18MP(5952×2976)
Video Resolution	360 Mode: 5.7K: 5760*2880@30/25/24fps 4K: 3840*1920@60/50/30/25/24fps 3K: 3008*1504@100fps
	Single Lens Mode: 4K: 3840×2160@30/25/24fps 3.6K: 3584×2016@60/50/30/25/24fps 2.7K: 2720×1530@60/50/30/25/24fps 1080P: 1920×1088@60/50/30/25/24fps

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>



<https://www.insta360.com/product/insta360-x3>

The X3, exemplary of the '840 Accused Products, determines a look-ahead of the trajectory as described, for example, in Insta360's patent publication WO2023207899A1 to Sang et al., "Anti-shake processing method and apparatus for video, and storage medium and electronic device," at [103]:

"For each reference frame, each reference frame corresponds to a different number of jitter frames, and the jitter frames corresponding to each reference frame are video frames distributed near the reference frame. These video frames may include other reference frames or non-Reference frame. Therefore, for each jitter frame, each jitter frame can correspond to one reference frame or multiple reference frames, as shown in Figure 2. Figure 2 is a reference for the description of the video anti-shake processing method provided by the embodiment of the present application. Schematic diagram of the relationship between frames, jitter frames and video frames. In Figure 2, all video frames are divided into reference frames and non-reference frames, and the jitter frame corresponding to each reference frame can be another reference frame and/or non-reference frame. The following are examples:

For example, the 10th video frame is a reference frame, the 15th video frame is also a reference frame, and the jitter frames corresponding to the 10th frame reference frame can be frames 5-9 and 11-15, and the 15th frame is a reference frame. The corresponding jitter frames may be frames 13-14 and 16-17. In this case, the reference frame corresponding to jitter frame 5 is frame 10, and the reference frames corresponding to jitter frame 13 are frames 10 and 15."

1[g(iii)] wherein the determination of the smoothed trajectory based on the look-ahead of the trajectory includes use of a temporal horizon of motion experienced by the image capture device, the temporal horizon enabling approximation of intentional motion of the image capture device while causing a delay in the determination of the smoothed trajectory:

The '840 Accused Products determine a smoothed trajectory based on the look-ahead of the trajectory includes use of a temporal horizon of motion experienced by the image capture device, the temporal horizon enabling approximation of intentional motion of the image capture device while causing a delay in the determination of the smoothed trajectory.

See, e.g.:

Observation of the X3, exemplary of the '840 Accused Products, indicates the ability to approximate intentional motion of the image capture device causing a delay in the determination of the smoothed trajectory, which indicates the use of temporal horizon of motion experienced by the image capture device.

Insta360 X3

FeaturesAccessoriesSpecsBUY NOW

FLOWSTATE STABILIZATION

Steady no matter what.

Bumpy trails and big waves are no match for X3's leading action cam image stabilization. FlowState keeps your videos smooth no matter what.

The image shows a side-by-side comparison of two video frames from a first-person perspective of a motocross rider. The left frame, labeled 'No Stabilization', shows a very shaky and blurry view of a dirt trail ahead. The right frame, labeled 'FlowState Stabilization', shows the same scene but is extremely clear, sharp, and steady, with the horizon line perfectly level. Both frames show the rider's orange and black helmet and handlebars in the foreground.

https://www.insta360.com/product/insta360-x3#x3_features

The X3, exemplary of the '840 Accused Products, determines a smoothed trajectory by using the temporal horizon of motion experienced by the image capture device.

Q11 How does X3 stabilization perform?

Insta360 X3's six-axis gyroscope and industry-leading FlowState stabilization ensure stable footage, even during action sports. Where other action cams tap out at 45°, 360° Horizon Lock keeps the horizon level even when you completely rotate the camera.

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

Shooting Modes

Q1 What shooting modes does X3 support?

360:

	Shooting Modes
Photo Modes	Standard, HDR, Burst, Interval, Starlapse
Video Modes	Standard, Active HDR, Timelapse, TimeShift, Bullet Time, Loop Recording

Single Lens:

	Shooting Modes
Photo Modes	Standard
Video Modes	Standard, Me mode, Loop Recording

Q2 What resolutions and frame rates does X3 support?

	Resolutions/Frame rates
Photo Resolution	72MP (11968×5984), 18MP(5952×2976)
Video Resolution	360 Mode: 5.7K: 5760*2880@30/25/24fps 4K: 3840*1920@60/50/30/25/24fps 3K: 3008*1504@100fps
	Single Lens Mode: 4K: 3840×2160@30/25/24fps 3.6K: 3584×2016@60/50/30/25/24fps 2.7K: 2720×1530@60/50/30/25/24fps 1080P: 1920×1088@60/50/30/25/24fps

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

ME MODE

See yourself at 60fps.

Try the all-new Me mode which fixes the frame to focus only on you. Capture yourself without the selfie stick at 60fps for epic slow mo. No need to reframe, just keep yourself in frame!



<https://www.insta360.com/product/insta360-x3>

The X3, exemplary of the '840 Accused Products, determines a smoothed trajectory based on the look-ahead of the trajectory as described, for example, in Insta360's patent publication WO2023207899A1 to Sang et al., "Anti-shake processing method and apparatus for video, and storage medium and electronic device," at [103]:

"For each reference frame, each reference frame corresponds to a different number of jitter frames, and the jitter frames corresponding to each reference frame are video frames distributed near the reference frame. These video frames may include other reference frames or non-Reference frame. Therefore, for each jitter frame, each jitter frame can correspond to one reference frame or multiple reference frames, as shown in Figure 2. Figure 2 is a reference for the description of the video anti-shake processing method provided by the embodiment of the present application. Schematic diagram of the relationship between frames, jitter frames and video frames. In Figure 2, all video frames are divided into reference frames and non-reference frames, and the jitter frame corresponding to each reference frame can be another reference frame and/or non-reference frame. The following are examples:

For example, the 10th video frame is a reference frame, the 15th video frame is also a reference frame, and the jitter frames corresponding to the 10th frame reference frame can be frames 5-9 and 11-15, and the 15th frame is a reference frame. The corresponding jitter frames may be frames 13-14 and 16-17. In this case, the reference frame corresponding to jitter frame 5 is frame 10, and the reference frames corresponding to jitter frame 13 are frames 10 and 15."

1[h] determine placement of the viewing window for the visual content with respect to the field of view of the visual content based on the smoothed trajectory of the housing, the viewing window defining one or more extents of the visual content to be included within a punchout of the visual content:

The '840 Accused Products determine placement of the viewing window for the visual content with respect to the field of view of the visual content based on the smoothed trajectory of the housing, the viewing window defining one or more extents of the visual content to be included within a punchout of the visual content.

See, e.g.:

X3

The X3, exemplary of the '840 Accused Products, determines a "viewing window" to implement stabilization of visual content based on the smoothed trajectory of the housing. Stabilized videos in the X3 include a field of view less than the full, captured raw video image indicating the use of a "punchout."

360° Horizon Lock



Unlock the next level of action cam image stabilization. Whether you're flipping on your paraglider or riding a roller coaster, 360° Horizon Lock always keeps your video level.

<https://www.insta360.com/product/insta360-x3>

Q9 What field of views (FOV) does X3 support?

Single Lens Mode (Default FOV): UltraWide, ActionView, Wide, Linear

Single Lens Mode (FOV+): MaxView, UltraWide+, ActionView+, Wide+, Linear+

Me Mode (FOV+): MaxView, UltraWide+, ActionView+ (only in 9:16), Wide+, Linear+

Q10 What is the difference between the new 360 Active HDR and traditional HDR?

360 Active HDR is designed for recording in action scenes. Compared to the traditional HDR, 360 Active HDR provides superb stabilization while retaining details in highlights and shadows, and can be used in everyday action scenes.

Q11 How does X3 stabilization perform?

Insta360 X3's six-axis gyroscope and industry-leading FlowState stabilization ensure stable footage, even during action sports. Where other action cams tap out at 45°, 360° Horizon Lock keeps the horizon level even when you completely rotate the camera.

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

Shooting Modes

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<https://www.insta360.com/product/insta360-x3>

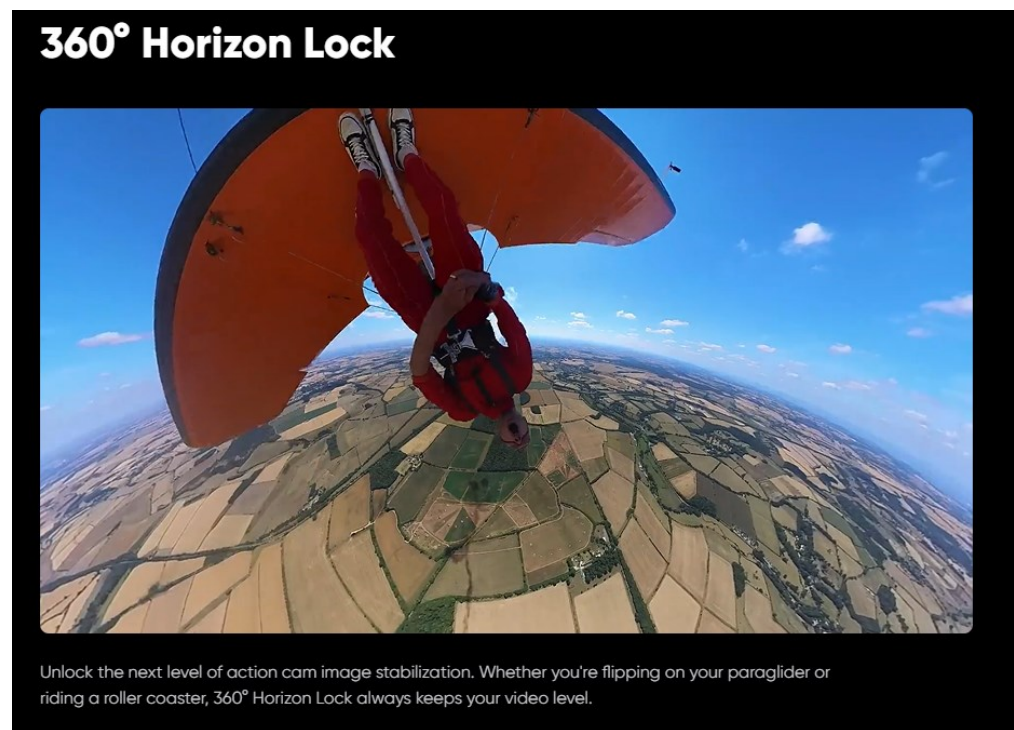
1[i] generate the stabilized visual content of a video based on the viewing window, the stabilized visual content including the punchout of the one or more extents of the visual content within the viewing window, wherein inclusion in the stabilized visual content of the one or more extents of the visual content within the viewing window effectuates stabilization of the visual content via selective cropping:

The '840 Accused Products generate the stabilized visual content of a video based on the viewing window, the stabilized visual content including the punchout of the one or more extents of the visual content within the viewing window, wherein inclusion in the stabilized visual content of the one or more extents of the visual content within the viewing window effectuates stabilization of the visual content via selective cropping.

See, e.g.:

X3

The X3, exemplary of the '840 Accused Products, provides stabilized visual content including a “punchout” of the extents of the visual content of the viewing window. Stabilized videos in the X3 include a field of view less than the full, captured raw video image indicating the use of a “viewing window” and a “punchout” of the visual content defined by the viewing window.



<https://www.insta360.com/product/insta360-x3>

Q9 What field of views (FOV) does X3 support?

Single Lens Mode (Default FOV): UltraWide, ActionView, Wide, Linear

Single Lens Mode (FOV+): MaxView, UltraWide+, ActionView+, Wide+, Linear+

Me Mode (FOV+): MaxView, UltraWide+, ActionView+ (only in 9:16), Wide+, Linear+

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Q11 How does X3 stabilization perform?

Insta360 X3's six-axis gyroscope and industry-leading FlowState stabilization ensure stable footage, even during action sports. Where other action cams tap out at 45°, 360° Horizon Lock keeps the horizon level even when you completely rotate the camera.

<https://onlinemanual.insta360.com/x3/en-us/faq/feature/shootingmode>

03

Horizon Lock

Shoot horizontally, vertically, or even spin and flip around.

No matter how much the lens rotates, the horizon always stays level. 🤖

In 360 mode, Horizon Lock is automatically on.

In Steady Cam mode, you must first turn on "Pro" mode ([here's how](#)) when shooting, and export clips through the Insta360 app or Studio.

1) **Insta360 app**: Open the clip in the app- "Album", tap the three-dotted button in the upper right corner to turn on "Horizon Lock"

2) **Insta360 Studio**: After importing the clip, in the "Basic Settings" tab on the right panel, select "Horizon Lock "



<https://forums.insta360.com/section/14/post/5921/>

REFRAMING

Shoot first, frame later.

Simply mount up, hit record and choose the best angles afterwards, using easy reframing tools in the AI-powered Insta360 app. Share to any social media platform in a tap without losing any quality.



<https://www.insta360.com/product/insta360-x3>

ME MODE

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<https://www.insta360.com/product/insta360-x3>

AUTO FRAME

Let AI find the best shots.

Not sure what to focus on? Auto Frame finds the best parts of your 360° videos for you, giving you a range of reframed clips to choose from.

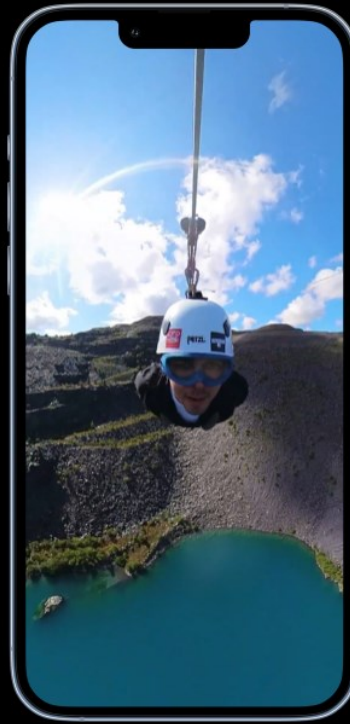


<https://www.insta360.com/product/insta360-x3>

SNAP WIZARD

The easiest way to reframe.

Simply move your phone to point the camera where
you want in your shot. Super easy, and pretty darn
cool!



<https://www.insta360.com/product/insta360-x3>

Feature	Insta360 Ace Pro Premium Image Quality	Insta360 X3 360° Action Camera	Insta360 GO 3 Tiny Vlogging Camera
Sensor	1/1.3" Sensor	Dual 1/2" Sensors	1/2.3" Sensor
360° Video	-	5.7K	-
Wide Angle Video Resolution	8K 4K Active HDR	4K	2.7K
Photo Resolution	48MP	72MP(11968x5984) 18MP(5952x2976)	7MP
Weight (Camera + Battery)	180g (6.4oz)	180g (6.4oz)	GO 3: 35.5g (1.25oz) Action Pod: 96.3g (3.40oz)
Max. Video Bitrate	170Mbps	120Mbps	80Mbps
Touchscreen	 (2.4" Flip Touchscreen)	 (2.29")	 (2.2" Flip Touchscreen)
Rugged + Waterproof	33ft (10m)	33ft (10m)	GO 3: 16ft (5m) Action Pod: IPX4 Splashproof
Invisible Selfie Stick	 (Processed in Insta360 app)		-
Active HDR			-
PureVideo		-	-
FreeFrame Video	4K:4032x3024@60/50/ 48/30/25/24fps	Aspect Ratio can be adjusted in the Insta360 app or Studio.	1440p:2560x1440@24/ 25/30/50fps 1080p:1920x1080@24/ 25/30/50fps

<https://www.insta360.com/blog/tips/insta360-ace-pro-x3-go-3-which-action-camera.html>

Single-Lens Mode

Shooting Mode	Ratio	Resolution/Frame Rate	Time	FOV
Photo	16:9 1:1 9:16	36MP 9MP	Shooting Countdown: Off/3s/5s/10s/15s	UltraWide (UW) / Wide (W) / Linear (L)
Video (Default FOV): FlowState can be applied in camera without being exported to the app or Studio	16:9 9:16	4K@30/25/24fps 3.6K@60/50/30/25/24fps 2.7K@60/50/30/25/24fps 1080P@60/50/30/25/24fps	/	UltraWide (UW) / Wide (W) / Linear (L)
Video (FOV+): FlowState, Aspect Ratio, and Horizon Lock can be applied with the app or Studio	16:9 9:16	2.7K@60/50/30/25/24fps 1080P@60/50/30/25/24fps	/	MaxView (MAX) / UltraWide+ (UW) / ActionView+ (ACT) / Wide+ (W) / Linear+ (L)

<https://onlinemanual.insta360.com/x3/en-us/camera/basicuse/parameter>

Claim 16

16[pre] A method for stabilizing videos, the method performed by an image capture system including one or more processors, an optical element, an image sensor, and a position sensor, the optical element carried by an image capture device and configured to guide light within a field of view to the image sensor, the method comprising:

To the extent the preamble is limiting, the X3, exemplary of the '840 Accused Products, includes a method for stabilizing videos, the method performed by an image capture system including one or more processors, an optical element, an image sensor, and a position sensor, the optical element carried by an image capture device and configured to guide light within a field of view to the image sensor.

See, e.g.: 1[pre], [a], [b], [c], [d], [e].

16[c] generating, by the image sensor, a visual output signal conveying visual information based on light that becomes incident thereon during a capture duration, the visual information defining visual content having the field of view, the field of view being larger than a size of a viewing window for generating stabilized visual content;

The X3, exemplary of the '840 Accused Products, generates, by the image sensor, a visual output signal conveying visual information based on light that becomes incident thereon during a capture duration, the visual information defining visual content having the field of view, the field of view being larger than a size of a viewing window for generating stabilized visual content.

See, e.g.: 1[c].

16[d] generating, by the position sensor, a position output signal based on positions of the image capture device during the capture duration, the position output signal conveying position information that characterizes rotational positions of the image capture device at different moments within the capture duration;

The X3, exemplary of the '840 Accused Products, generates, by the position sensor, a position output signal based on positions of the image capture device during the capture duration, the position output signal conveying position information that characterizes rotational positions of the image capture device at different moments within the capture duration.

See, e.g.: 1[d].

16[c] determining, by the one or more processors, a trajectory of the image capture device during the capture duration based on the position information, the trajectory reflecting the rotational positions of the image capture device at the different moments within the capture duration, the trajectory including a first portion corresponding to a first moment within the capture duration and a second portion corresponding to a second moment subsequent to the first moment within the capture duration;

The X3, exemplary of the '840 Accused Products, determines, by the one or more processors, a trajectory of the image capture device during the capture duration based on the position information, the trajectory reflecting the rotational positions of the image capture device at the different moments within the capture duration, the trajectory including a first portion corresponding to a first moment within the capture duration and a second portion corresponding to a second moment subsequent to the first moment within the capture duration.

See, e.g.: 1[e], [f].

16[d] determining, by the one or more processors, a smoothed trajectory of the image capture device based on a look-ahead of the trajectory and one or more of a weight-balance parameter, a low-light high-pass parameter, and/or a stickiness parameter, the look-ahead of the trajectory including use of a subsequent portion of the trajectory to determine a preceding portion of the smoothed trajectory such that a portion of the smoothed trajectory corresponding to the first portion of the trajectory is determined based on the second portion of the trajectory, the smoothed trajectory having smoother changes in the rotational positions of the image capture device than the trajectory, wherein the determination of the smoothed trajectory based on the look-ahead of the trajectory includes use of a temporal horizon of motion experienced by the image capture device, the temporal horizon enabling approximation of intentional motion of the image capture device while causing a delay in the determination of the smoothed trajectory;

The X3, exemplary of the '840 Accused Products, determines, by the one or more processors, a smoothed trajectory of the image capture device based on a look-ahead of the trajectory and one or more of a weight-balance parameter, a low-light high-pass parameter, and/or a stickiness parameter, the look-ahead of the trajectory including use of a subsequent portion of the trajectory to determine a preceding portion of the smoothed trajectory such that a portion of the smoothed trajectory corresponding to the first portion of the trajectory is determined based on the second portion of the trajectory, the smoothed trajectory having smoother changes in the rotational

positions of the image capture device than the trajectory, wherein the determination of the smoothed trajectory based on the look-ahead of the trajectory includes use of a temporal horizon of motion experienced by the image capture device, the temporal horizon enabling approximation of intentional motion of the image capture device while causing a delay in the determination of the smoothed trajectory.

See, e.g.: 1[e], [g(i)], [g(ii)], [g(iii)].

16[e] determining, by the one or more processors, placement of the viewing window for the visual content with respect to the field of view of the visual content based on the smoothed trajectory of the image capture device, the viewing window defining one or more extents of the visual content to be included within a punchout of the visual content; and

The X3, exemplary of the '840 Accused Products, determines, by the one or more processors, placement of the viewing window for the visual content with respect to the field of view of the visual content based on the smoothed trajectory of the image capture device, the viewing window defining one or more extents of the visual content to be included within a punchout of the visual content.

See, e.g.: 1[e], [h].

16[f] generating, by the one or more processors, the stabilized visual content of a video based on the viewing window, the stabilized visual content including the punchout of the one or more extents of the visual content within the viewing window, wherein inclusion in the stabilized visual content of the one or more extents of the visual content within the viewing window effectuates stabilization of the visual content via selective cropping.

The X3, exemplary of the '840 Accused Products, generates, by the one or more processors, the stabilized visual content of a video based on the viewing window, the stabilized visual content including the punchout of the one or more extents of the visual content within the viewing window, wherein inclusion in the stabilized visual content of the one or more extents of the visual content within the viewing window effectuates stabilization of the visual content via selective cropping.

See, e.g.: 1[e], [i].