

# Accessories for GoPro® HERO3/3+

INON INC. is pleased to announce official release of 「cage」 「semi-fisheye conversion lens」 and 「wide close-up lens」 for GoPro® HERO3/3+ genuine dive housing (depth rating: 60m/197ft) on September 25th, 2014.

・「SD Mount Cage HERO3/3+」(\*1)(\*2)

- Release date : September 25th, 2014
- Retail in Japan : JPY16,000
- JAN code : 456212143 774 6

・「UFL-G140 SD」 Underwater Semi-fisheye Conversion Lens (\*3)(\*5)

- Release date : September 25th, 2014
- Retail in Japan : JPY39,000
- JAN code : 456212143 773 9

・「UCL-G165 SD」 Underwater Wide Close-up Lens (\*4)(\*5)

- Release date : September 25th, 2014
- Retail in Japan : JPY23,000
- JAN code : 456212143 772 2

- (\*1) Compatible housing is genuine “Dive Housing (60m/197ft)”. The “Standard Housing (40m/131ft)” packaged with “GoPro® HERO3+” is not compatible. (“GoPro® HERO3” is packaged with the “Dive Housing”)
- (\*2) When using on land, set FOV mode other than 「Wide」 or use without the SD Mount Cage to prevent vignetting observed mainly in Ultra Wide mode even without an attachment lens. (No vignetting underwater)
- (\*3) Designed only for underwater use. (When using on land, distant subject is not in focus and angle of view is not as wide as rated)
- (\*4) Designed only for underwater use. (When using on land with FOV setting “WIDE”, vignetting will be observed)
- (\*5) Not usable for “SuperView mode” of 「GoPro® HERO3+ Black Edition」 as this mode adds software-based deformation effect enhancing more aberrations when using an attachment lens.



「SD Mount Cage HERO3/3+」



GoPro® HERO3/3+ and dive housing installed in 「SD Mount Cage HERO3/3+」(left)  
「SD Mount Cage HERO3/3+」 (right)



「UFL-G140 SD」(left)

「UFL-G140 SD」 installed on 「SD Mount Cage HERO3/3+」 (right)



「UCL-G165 SD」 (left)

「UCL-G165 SD」 installed on 「SD Mount Cage HERO3/3+」 (right)

## ● Background ●

GoPro® 「HERO3」「HERO3+」 is ultra compact and high quality video camera capturing dominant market share in wearable camera segment thanks to wide range of accessories and handy video editing application 「GoPro® Studio」 in addition to camera's performance.

However, when we bring GoPro® camera underwater, angle of view narrows down dramatically due to different refraction ratio and subjects in close range (within approx. 60cm/2ft) are out of focus since GoPro® camera is a deep focus camera (fixed focal length) which prevents it from using for macro imaging. So we have been studying, developing and finally released dedicated accessories including a semi-fisheye wet lens to deliver nearly same angle of view as on land, a wide close-up wet lens to deliver deep depth of field by slightly increasing angle of view and cage to hold these lenses and arm products.

These newly released products are designed to use mainly for GoPro® cameras with enormously minimized body size to achieve unparalleled portability well beyond conventional camera system. Also GoPro® camera is a deep focus camera thus users do not have to struggle on focusing through dive mask underwater but concentrate on composition for unique shooting style.

Everyone can enjoy to edit their contents by 「GoPro® Studio」 without any special technique.

## ● Features ●

### ■ SD Mount Cage HERO3/3+ ■

- INON “SD Mount” bayonet system compatible. With 「SD Mount」, INON 「UFL-G140 SD」 underwater semi-fisheye conversion lens (\*7) or 「UCL-G165 SD」 underwater wide close-up lens(\*7) exclusively designed for an action camera like GoPro® camera can be easily and securely mounted /detached underwater. Off course you can use the SD Mount Cage without any attachment lens (\*6).
- This cage can hold INON「Direct Base III」,「Z Joint」or「Z Adapter MV」at its top/bottom surface.
- Packaged “Male Adapter (GoPro®)” can be attached on top/bottom of the cage to use GoPro® compatible accessories.
- Affordable INON「D Holder」can be directly attached on both sides of the bottom of this cage at different angles in addition to「Grip Base D4」.
- The tripod screw hole (1/4 inch) on the bottom enables to use tripod/monopod (\*8).
- Durable construction machined from an aluminum block protects combined housing.
- Compatible with LCD BackPac, Battery BackPac (\*9).

**『SD Mount Cage HERO3/3+』 specifications (\*10)**

- Size(excluding protruded parts): 88.5mm/3.5in.(W)×79.9mm/3.1in.(H)×51.3mm/2.0in.(D)
- Weight: 207g/7.3oz (air) / approx.128g/4.5oz (underwater)
- Material/finishing: Corrosion-resistant aluminum alloy/rigid alumite, POM etc.

- (\*6) When using on land, set FOV mode other than『Wide』or use without the SD Mount Cage to prevent vignetting observed mainly in Ultra Wide mode even without an attachment lens. (No vignetting underwater)
- (\*7) 『UFL-G140 SD』and『UCL-G165 SD』are designed for underwater use only and not usable on land.
- (\*8) Depending on tripod head design, some tripod/monopod may not fit to this product. Check if your tripod head can hold this product before actual use.
- (\*9) An optional LCD BacPac is recommended to check live view even it will shorten battery life. When using an LCD BacPac, it is recommended to prepare spare battery and use fully charged battery for every tank.
- (\*10) Subject to change without prior notice.



Front/rear/bottom



Combination with 『Direct Base III』/『Z Joint』/『Z Adapter MV』/『Male Adapter(second piece is an option)』



Combination with tripod



Without LCD BacPac/with LCD BacPac/bottom

### ■「UFL-G140 SD」 Underwater Semi-fisheye Conversion Lens ■

- Measured maximum angle of view of GoPro® HERO3/HERO3+ Black Edition is「approx. 151° (\*11) on land」which will narrow down to「approx. 94° (\*11)」when we put the camera in genuine dive housing and bring it underwater due to different refraction index. The INON UFL-G140 SD provides ultra wide semi-fisheye imaging with angle of view 140° underwater enabling wild underwater video work as like using the camera on land.
- Theoretically the depth of field (DoF) of the GoPro® HERO3/HERO3+ Black Edition on land is「approx. 60cm/2ft $\sim\infty$ 」based on focal length/aperture of camera lens and pixel pitch of the image sensor. With the INON UFL-G140 SD, DoF underwater will be extended to「10cm/3.9in. $\sim\infty$ (\*12)」/ GoPro® HERO3 or「4cm/1.6in $\sim\infty$ (\*12)」/GoPro® HERO3+ enabling you to shoot at close range to benefit deformed result. (Other Edition has not been tested)
- No vignetting even at FOV setting WIDE (Not compatible with GoPro® HERO3+ Black Edition “SuperView” mode)
- Bayonet INON SD Mount compatible to support friendly and speedy lens exchange underwater.
- Optics is constructed of 4 elements in 4 groups. Rear element is made from high refractive index glass lens to minimize whole size dramatically without sacrificing performance.
- The inner surface of the front acrylic dome has 5 layers multi-coating to deliver quality footage as like a glass dome at budget price.
- M55 screw mount version will be released later.

### 『UFL-G140 SD』 specifications (\*10)

•Size (including lens hood):	φ 93.4mm (3.7in) x 41.8mm(1.6in)
•Weight (including lens hood):	U/W: approx.153g (5.4oz) Air: 300g (10.6oz)
•Mount system:	INON SD Mount
•Depth rating:	60m (196.9ft)
•Material/surface finishing:	Corrosion-resistant aluminum alloy/rigid black alumite, PC etc.
•Lens material/coating:	Optical glass/both side coating Optical plastic/both side hard coating, inner multi-coating
•Depth of field(*13):	10cm/3.9in $\sim\infty$ (GoPro® HERO3 Black Edition) 4cm/1.6in $\sim\infty$ (GoPro® HERO3+ Black Edition)
•Lens construction:	4 groups 4 elements
•Max. view angle(*14):	140.0°(underwater)

(\*11) Measured angle of view by INON or calculated angle of view underwater based on the measured angle of view. Not confirmed by camera manufacture. The measured angle of view of “Silver Edition” is「approx. 142° (air)」which is less wide than the “Black Edition”. So angle of view underwater with this lens is less than 140° . (The “White Edition” has not been tested)

(\*12) Measured from “the forefront of the lens” as rated DoF data of GoPro®HERO series is not available preventing to calculate theoretical DoF of this lens.

(\*13) Measured distance underwater for GoPro® HERO3/HERO3+「Black Edition」. Divide by 1.33 for visual distance underwater. Other Edition has not been tested.

(\*14) Actual angle of view (actual field of view) varies among different shooting modes.

## ■「UCL-G165 SD」 Underwater Wide Close-up Lens■

- A GoPro® is a deep focus camera preventing a subject gets in focus within 60cm/2ft range in theory thus not usable for underwater macro shooting. By using this lens, minimum focus distance underwater will be shorten; the depth of field (DoF) of camera will be「7cm/2.8in $\sim\infty$ (\*15)」for GoPro® HERO3 or「5cm/2.0in $\sim$ 35cm/1.1ft(\*15)」for GoPro® HERO3+ enabling high magnification/close-up imaging.
- Measured maximum angle of view of GoPro® HERO3/HERO3+ Black Edition is「approx. 151°(\*16) on land」which will narrow down to「approx. 94°(\*16)」when we put the camera in genuine dive housing and bring it underwater due to different refraction index. The INON UCL-G165 SD is a unique close-up lens providing slightly wide angle of view「underwater 110°」to have deeper DoF benefitting you with less out-of-focus close range clip which is not possible with standard close-up lens.
- Bayonet INON SD Mount compatible to support friendly and speedy lens exchange underwater.
- Optics is constructed of 2 elements in 2 groups. All elements are made from high refractive index glass lens to minimize whole size dramatically without sacrificing performance.
- Both lens elements have anti-reflection coating on all surfaces to elicit combined master lens performance with less ghost/flare.
- M55 screw mount version will be released later.

### 『UCL-G165 SD』 specifications (\*10)

•Size :	$\phi$ 77mm (3.0in) x 25.2mm(1.0in)
•Weight :	U/W: approx.121g (4.3oz) Air: 200g (7.1oz)
•Mount system:	INON SD Mount
•Depth rating:	60m (196.9ft)
•Material/surface finishing:	Corrosion-resistant aluminum alloy/rigid black alumite, PC etc.
•Lens material/coating:	Optical glass/both side coating
•Depth of field(*17):	7cm/2.8in $\sim\infty$ (GoPro® HERO3 Black Edition) 5cm/2.0in $\sim$ 35cm/1.1ft (GoPro®HERO3+ Black Edition)
•Lens construction:	2 groups 2 elements
•Focal length(*18):	165mm(underwater)

(\*15) Measured from “the forefront of the lens” as rated DoF data of GoPro® HERO series is not available preventing to calculate theoretical DoF of this lens.

(\*16) Measured angle of view by INON or calculated angle of view underwater based on the measured angle of view on land. Not confirmed by camera manufacture. The measured angle of view of “Silver Edition” is「approx. 142° (air)」which is less wide than the “Black Edition”. So angle of view underwater with this lens is less than 110° . (The “White Edition” has not been tested)

(\*17) Measured distance underwater for「GoPro® HERO3/3+ Black Edition」. Divide by 1.33 for visual distance underwater. Other Edition has not been tested.

(\*18) Standalone focal length of UCL-G165 SD and not combined focal length with camera’s master lens.

● Set-up Example ●



- GoPro®「HERO3/HERO3+」, GoPro® dive housing
- 「SD Mount Cage HERO3/3+」
- 「UCL-G165 SD」
- 「D Holder」
- 「Direct Arm YS-MV Set」
- 「Single Light Holder LE」
- 「LE700-W」



- GoPro®「HERO3/HERO3+」, GoPro® dive housing
- 「SD Mount Cage HERO3/3+」
- 「UFL-G140 SD」
- 「Direct Base III」
- 「Multi Ball Arm S」
- 「Clamp III」×3
- 「YS Adapter MV」×2
- 「Single Light Holder LE」×2
- 「LE700-W」×2



- GoPro®「HERO3/HERO3+」, GoPro® dive housing
- 「SD Mount Cage HERO3/3+」
- 「UFL-G140 SD」
- 「D Holder」×2
- 「Direct Arm YS-MV Set」×2
- 「Single Light Holder LF」×2
- 「LF1100-W」×2(\*prototype)



- GoPro®「HERO3/HERO3+」, GoPro® dive housing
- 「SD Mount Cage HERO3/3+」
- 「UFL-G140 SD」
- 「Male Adapter(packaged accessory)」
- GoPro®「3-Way」



- GoPro®「HERO3/HERO3+」, GoPro® dive housing
- 「SD Mount Cage HERO3/3+」
- 「UCL-G165 SD」
- 「Direct Base III」
- 「Clamp III」×2
- 「Multi Ball Arm XL」
- 「Stick Arm S」
- 「Stick Arm Float S」



- GoPro®「HERO3/HERO3+」, GoPro® dive housing
- 「SD Mount Cage HERO3/3+」
- 「UCL-G165 SD」
- 「Grip Base D4」
- 「D Holder」
- 「Direct Arm YS-MV Set」×3
- 「Single Light Holder LE」×2
- 「LE700-W」×2
- 「Single Light Holder LF」
- 「LF1100-W」(\*prototype)



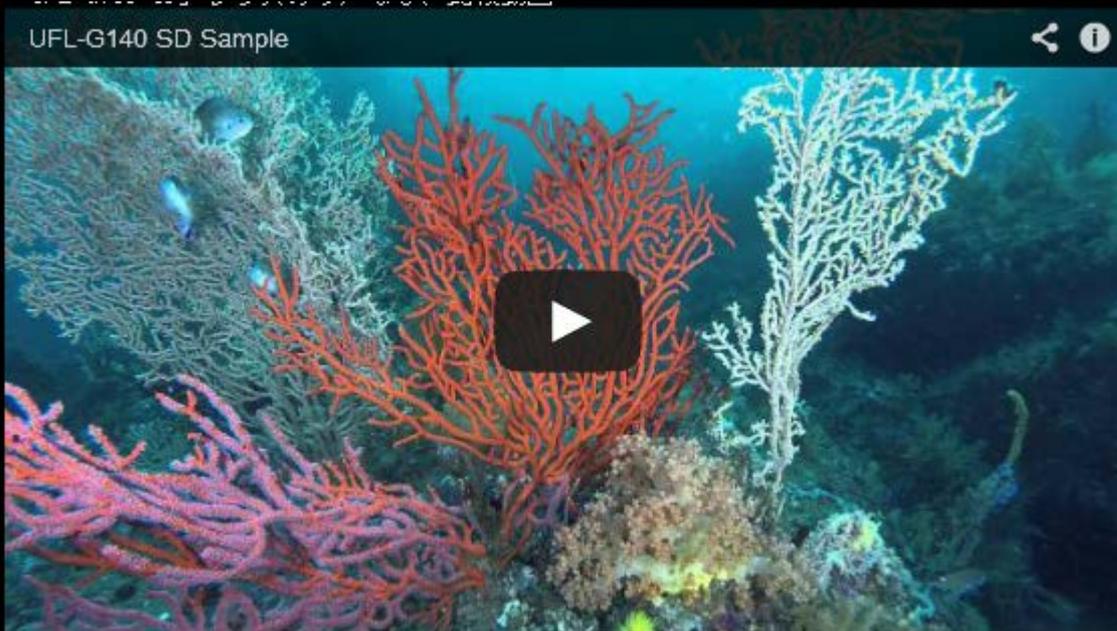
- GoPro®「HERO3/HERO3+」 x 2, GoPro® dive housing x 2
- 「SD Mount Cage HERO3/3+」 x 2
- 「Male Adapter(packaged accessory)」×2
- GoPro®「Tripod Adapter」×2
- 「UFL-G140 SD」
- 「UCL-G165 SD」
- 「Holder II Grip Set」
- 「Multi Direct Base IIa」
- 「Multi Direct Base II Long」
- 「Stick Arm XS」×2
- 「Clamp III」×4
- 「YS Adapter MV」×2
- 「Single Light Holder LF」×2
- 「LF1100-W」×2(\*prototype)

● Sample movie ●

「UFL-G140 SD」/「UCL-G165 SD」



「UFL-G140 SD」 comparison



「UCL-G165 SD」 comparison



● Underwater 360° panoramic movie ●

Underwater 360°panoramic movie with 「UFL-G140 SD」by Makoto Hirose/SeaPics Japan. Six GoPro® cameras with INON 「UFL-G140 SD」 lenses are mounted on a customized mount called “rig”. The movie is created by stitching all clips by using specific editing application for 360°panoramic movie.

Without INON 「UFL-G140 SD」, it is not possible to create such a natural panoramic movie as angle of view of GoPro® camera underwater is not as wide as on land showing up seams between clips. You can move viewpoint anywhere you like by dragging your mouse over the movie.

■ 360° Panorama Video ■ (\*Leaving INON web site)

<http://e-photography.co.jp/360panoramavideo/201408/underwater/underwater1.html>

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INON INC.

\*Press release information is as of September 22th, 2014 and subject to change without prior notice.

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