Canon

4K

4K Broadcast Lens Series

4K Premium

UHD DIGISUPER 86

4K

UHD DIGISUPER 90

4K

CJ20ex7.8B

4K

CJ12ex4.3B

BEYOND 50 YEARS

INNOVATION

In TV Optics Since 1958

Toward 100 years anniversary

BCTV ZOOM LENSES FOR UHD CAMERAS

Telling new video narratives using a powerful sense of immersion —that's beyond past experience— and new powers of expression
Opening the door to limitless potential in next-generation image creation

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What are Canon's UHD lenses?

Canon's UHD lenses not only achieve the outstanding resolution and grayscale characteristics that UHD images require, they also minimize color blur and outline coloration and various other kinds of aberrations to a high degree of accuracy.
These lenses are designed to achieve superior balance between the high-grade resolution power and the contrast expected of UHD images from the center to the edges throughout the entire zoom range, besides offering high levels of both operability and applicability.

What is the "4K Premium"?

"4K Premium" refers to a top-quality Canon lens that features superior optical performance — typified by powers of resolution and contrast that surpass 4K — and that also supports the high-level specifications and operability that are optimally suited to 4K broadcast systems.
Featuring high contrast and power of resolution in a wide frequency band from HDTV to 4K and even higher, and over the entire wavelength range of the BGR channels throughout the entire zoom range even with an extender, these lenses offer impressive depiction performance that is unvaryingly consistent to the very edges of the screen and boasts a superior color reproduction.
Using these features, the lenses deliver heightened ambiance when displaying images on large screens.

Lens Type	Zoom Ratio	Focal Length (mm)
Field	86x	UJ86x9.3B (9.3–1620) with 2x Extender (18.6–1620)
Field	90x	UJ90x9B (9.3–1620) with 2x Extender (18.6–1620)
Portable	20x	CJ20ex7.8B (7.8–312) with 2x Extender (15.6–312)
Portable	12x	CJ12ex4.3B (4.3–52) with 2x Extender (8.6–104)

Focal Length (mm): 4.3 7.8 8.6 9 9.3 15.6 18 18.6 52 104 156 312 700 800 810 1600 1620

UHD Technologies

New BCTV lenses designed to accelerate the pace of 4K UHD content creation

As 4K continues its steady integration into mainstream television dramas, documentaries and movies, Canon has been at the technological forefront with our innovative Cinema EOS series and development of 4K Optics.

The needs of broadcast television producers to achieve the high image quality of 4K UHD and more powerful ways of expression are now spreading to live telecasts of sports, concerts, and events. The imperative for 4K lenses that can offer the long focal ranges that are central to contemporary sports coverage while maintaining the usability and ease of operation that the broadcast industry favors, is increasing at a rapid pace.

In response to these new marketplace needs, Canon is offering lenses whose performance neatly dovetails with the various new 2/3" small-format 4K UHD cameras as part of our onward drive to support this new movement.
By offering lenses that fit in with the applications and objectives of users, Canon is taking steps to actively open up new dimensions of potential in video performance. 4K images can convey such a sense of presence and an almost3-dimensional feeling that viewers sense they are actually involved in the action; through such images, these lenses can impart new values to user content and allow viewers to experience videos in new and fresh ways.

Canon's technologies that achieve 4K

Each 2/3" small-format 4K pixel is equivalent to approximately 2.5µm, which is one-half of the size of the 2/3" HD pixels. These are 1/2.7 times smaller that the pixel size of the 4K Super 35mm image sensor. This means that, for these lenses, it is extremely important to establish the high-grade design and production technologies that will ensure the requisite 4K UHD image sharpness while minimizing optical aberrations. Described below are the latest technologies Canon has developed and is now utilizing to achieve these goals.

Technology for correcting aberration

Use of a new zoom system and new floating focus has reduced the variations in the optical aberrations associated with zooming and focusing, thereby achieving a level of aberration correction commensurate with 4K. Furthermore, through the use of fluorite and UD glass and by means of optimal lens element groupings, longitudinal chromatic aberration and lateral chromatic aberration have been effectively minimized. This has resulted in visually pleasing images on large UHD screens with minimal loss of sharpness and minimized color fringing on high contrast edges.

Technology to achieve ultra-high-precision production

When it comes to 2/3" 4K, even the slightest dimensional errors or assembly errors in the components used can significantly affect the images obtained. Canon accordingly increased the precision of the key optical components and their individual mountings while simultaneously combining precision assembly tools and measuring equipment to improve the precision levels of assembly and adjustment.

Technology for processing ultra-high-precision lenses

In order to support the trend for 4K to offer ever-higher levels of definition, lens element surface precision higher than that for HD lenses is required. To this end, an advanced new lens processing technology and high-grade measuring technology that Canon had been developing were mobilized, enabling us to come up with the technology for mass-producing ultra-high-precision lenses that support large-aperture lenses in the 200 mm-diameter class.

Technology for minimizing ghosting

With the new emergence of high dynamic range (HDR) cameras the design of the associated lenses acquire a whole new importance. Very sophisticated multilayer optical coatings are deposited on every lens element surface to elevate the light transmission through the lens while curtailing the optical reflections that can contaminate scene black level with flare and veiling glare. The goal is to elevate the contrast level of the nominally exposed scene to the highest degree possible – a key aspect of increasing dynamic range. In addition, the lens must reproduce specular highlights within the scene as faithfully as possible without any attendant stimulation of optical ghosts. Here too, the optical anti-reflection coatings play a pivotal role. The separate optical ghosting that can be stimulated by off-axis highlights (from the sun and other excessive highlights) are carefully managed by a multi-strategic design entailing internal mechanical structures.

4K Premium
UHD DIGISUPER

UHD DIGISUPER 86

UJ86×9.3B 9.3-800mm 1:1.7

Our new, premium 4K flagship broadcast lens. As our most refined lens designed to support 4K UHD broadcast systems, it boasts extremely high optical performance that surpasses even 4K criteria and, at the same time, embodies the ease of operation that are ideally suited for use in broadcast television production.

4K OVER optical performance

This lens has outstanding optical performance that goes beyond 4K resolution, all the way from screen center to the edges. Image sharpness is maintained over the focal range of the lens and with changes in subject distance from the lens.

Applicability and ease of operation ideally suited to 4K shooting

Since the lens achieves the zoom ratio, long focal length and size as well as the servo speed and stability required for the telecasting of live sports events and other applications, it ensures the applicability and ease of operation ideally suited to 4K shooting.

Optical performance that goes beyond 4K even when using the built-in 2x extender and image stabilize

Thanks to the precision of its high-grade components and assembly, the lens achieves optical performance that goes beyond 4K even when the built-in 2x extender has been engaged. Also featured is an optical shift-type image stabilizing mechanism of Canon's highest grade, helping to achieve image-stabilizing performance commensurate with 4K.

High zoom ratio and long focal length

While displaying performance that surpasses 4K, the lens has the high zoom ratio (86x) and long focal length (800 mm) desired by many in television production.

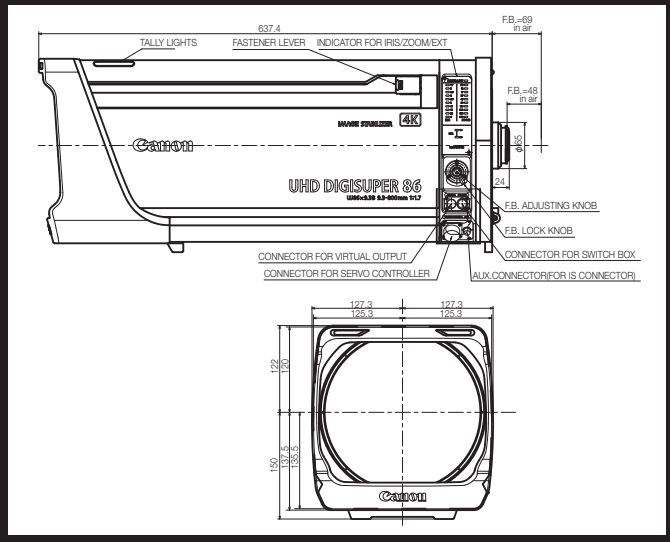
Compatibility with HD lens systems

The lens enables the use of the same Canon standard controllers for zoom and focus as well as servo modules currently used by HD equipment.
It comes with a 20-pin connector compatible with virtual units and that enables high-accuracy position information of the zoom, focus and iris to be read out.

SPECIFICATIONS

UJ86×9.3B		
Built-in extender	1.0×	2.0×
Focal Length	9.3-800mm	18.6-1600mm
Zoom Ratio	86x	
Maximum Relative Aperture	1:1.7 at 9.3-340mm 1:4.0 at 800mm	1:3.4 at 18.6-680mm 1:8.0 at 1600mm
Angular Field of View	54.6°×32.4°at 9.3mm 0.69°×0.39°at 800mm	28.9°×16.5°at 18.6mm 0.34°×0.19°at 1600mm
M.O.D	3.0m	
Object Dimensions at M.O.D.	271.9×152.9cm at 9.3mm 3.3×1.9cm at 800mm	136.0×76.5cm at 18.6mm 1.7×1.0cm at 1600mm
Approx. Size (W×H×L)	250.6×255.5×637.4mm	
Approx. Mass	27.0kg	

DIMENSIONS



4K UHD DIGISUPER

UHD DIGISUPER 90

UJ90×9B 9-810mm 1:2.4

This lens, designed for use in 4K broadcast systems, combines both an 810 mm long focal length and the superior optical performance and applicability that support 4K broadcast systems, thereby enabling a smooth transition to 4K.

High zoom ratio (90x) and long focal length (810 mm)

As a lens that supports 2/3" 4K cameras, this model boasts the world's highest zoom ratio* and world's longest focal length*.
(As a 2/3" 4K lens available as of September 7, 2015)*

Applicability and ease of operation ideally suited to 4K shooting

Since the lens achieves the zoom ratio, long focal length and size as well as the servo speed and stability required for the telecasting of live sports events and other applications, it ensures the applicability and ease of operation ideally suited to 4K shooting.

4K optical performance

The lens ensures optical performance that supports 4K cameras all the way from screen center to the edges.

Achieves 4K optical performance even when using the built-in 2x extender and image stabilizer

Thanks to the precision of its high-grade components and assembly, the lens achieves high 4K camera-compatible even when the built-in 2x extender has been engaged. Also featured is an optical shift-type image stabilizing mechanism of Canon's highest grade, helping to ensure the image-stabilizing performance commensurate with 4K.

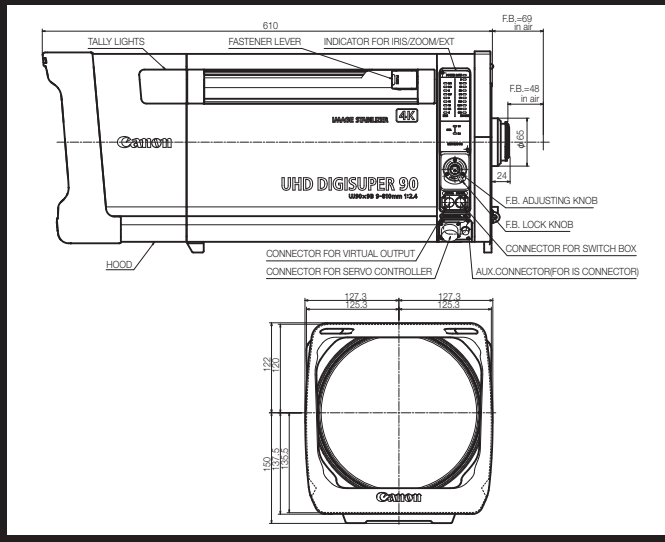
Compatibility with HD lens systems

The lens enables the use of the same Canon standard controllers for zoom and focus as well as servo modules currently used by HD equipment.
It comes with a 20-pin connector compatible with virtual units and that enables high-accuracy position information of the zoom, focus and iris to be read out.

SPECIFICATIONS

UJ90×9B		
Built-in extender	1.0×	2.0×
Focal Length	9-810mm	18-1620mm
Zoom Ratio	90x	
Maximum Relative Aperture	1:2.4 at 9-486mm 1:4.0 at 810mm	1:4.8 at 18-972mm 1:8.0 at 1620mm
Angular Field of View	56.1°×33.4°at 9mm 0.68°×0.38°at 810mm	29.9°×17.1°at 18mm 0.34°×0.19°at 1620mm
M.O.D	3.0m	
Object Dimensions at M.O.D.	287.9×161.9cm at 9mm 3.3×1.9cm at 810mm	144.0×81.0cm at 18mm 1.7×1.0cm at 1620mm
Approx. Size (W×H×L)	250.6×255.5×610mm	
Approx. Mass	23.2kg	

DIMENSIONS



4K UHDxs

CJ20e×7.8B

CJ20e×7.8B 7.8-312mm 1:1.8

**This portable 4K lens offers an overall optical performance that will support a broad spectrum of program production genres for UHD broadcast television.
Its compact size and low weight make it ideal for handheld coverage of sporting events, documentaries, news and all forms of EFP origination.**

Outstanding optical performance

The lens sports a consistently high-resolution capability and impressive depiction performance that excel in their ability to reproduce colors from the screen center all the way to the edges, enabling video productions with high definition and a distinctive sense of ambience.

High zoom ratio and frequently used focal length

While boasting 0.80 m as the closest possible shooting distance, the lens has a high zoom ratio of 20x that extends from the wide end of 7.8 mm to an impressive tele end of 156 mm, covering a zooming range that meets multiple applications.

Applicability and operability ideally suited to 4K shooting

This long 20x zoom lens has a remarkably low weight of 2.18 kg – a combination that greatly empowers all forms of field production. The now well-established digital drive unit adds to that empowerment by providing precision operational control and also programmability options for the same.
The focus rotation angle has been carefully designed to further support rapid focusing of distant subjects.

Outstanding 4K optical performance achieved even when using the built-in 2x extender

With its high-grade optical components and precision optomechanical assembly, the lens maintains 4K optical performance when the built-in 2x extender is switched in.

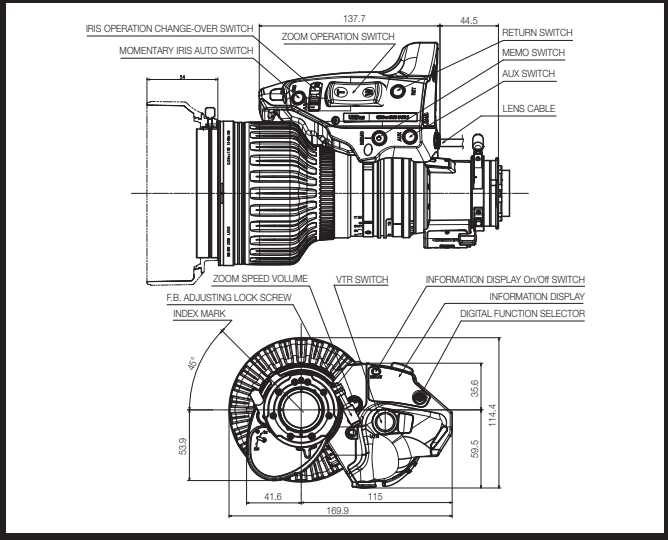
Compatibility with HD lens systems assured

The standard zoom and focus controller systems currently used with Canon HD lenses are compatible with this new 4K lens.
Note: The FPM-420D focus unit is not supported.
The latest digital drive units that have proven to be so popular with users of Canon HD lenses are deployed with this new lens. Three high-performance encoders, which read out high-accuracy positional information of zoom, focus and iris, are featured, and connectors are also provided on the digital drive unit to deliver the precision digital information to support virtual systems. When this 4K lens is used with a standard HDTV camera it ensures a higher image sharpness and minimized optical aberrations.

SPECIFICATIONS

CJ20e×7.8B IASE S		
Built-in extender	1.0×	2.0×
Focal Length	7.8-156mm	15.6-312mm
Zoom Ratio	20x	
Maximum Relative Aperture	1:1.8 at 7.8-108mm 1:2.6 at 156mm	1:3.6 at 15.6-216mm 1:5.2 at 312mm
Angular Field of View	63.2°×38.2° 3.5°×2.0°	34.2°×19.6° 1.8°×1.0°
M.O.D	0.80m	
Object Dimensions at M.O.D.	91.7×51.6cm [at 7.8mm] 4.8×2.7cm [at 156mm]	45.9×25.8cm [at 15.6mm] 2.4×1.4cm [at 312mm]
Approx. Size (W×H×L)	169.9×114.4×230.0mm	
Approx. Mass	2.18kg	

DIMENSIONS



4K UHDxs

CJ12ex4.3B

CJ12ex4.3B 4.3-104mm 1:1.8

This 4K portable wide-angle lens skillfully combines the ability to provide a superlative optical performance that supports 4K broadcast systems at 4.3 mm wide angle with an applicability ideally suited to 4K shooting.

World's first* 2/3" 4K wide-angle portable lens

This lens boasts the world's shortest focal length* of 4.3 mm and the world's shortest minimum object distance (MOD)* of 30 cm. This makes it possible to create images using wide view angles with the shortest focal length for a 2/3" 4K lens: as such, it is the wide-angle lens that is optimally suited for use in 4K systems for applications such as cropping from 4K to HD.
(As a 2/3" 4K lens available as of September 7, 2015)*

4K optical performance

This lens achieves optical performance that supports 4K cameras all the way from screen center to the edges.

4K optical performance achieved even when using the built-in 2x extender

Thanks to the precision of its high-grade components and assembly, the lens achieves high 4K camera-compatible even when the built-in 2x extender has been engaged.

Applicability and ease of operation ideally suited to 4K shooting

Since the lens achieves the zoom ratio, focal length, servo speed and stability required of wide-angle lenses, it meets the needs of a wide range of shooting conditions and ensures the applicability and ease of operation ideally suited to 4K shooting. Shooting with the lens supported on the user's shoulder is possible thanks to its compact size and 2.1 kg weight.

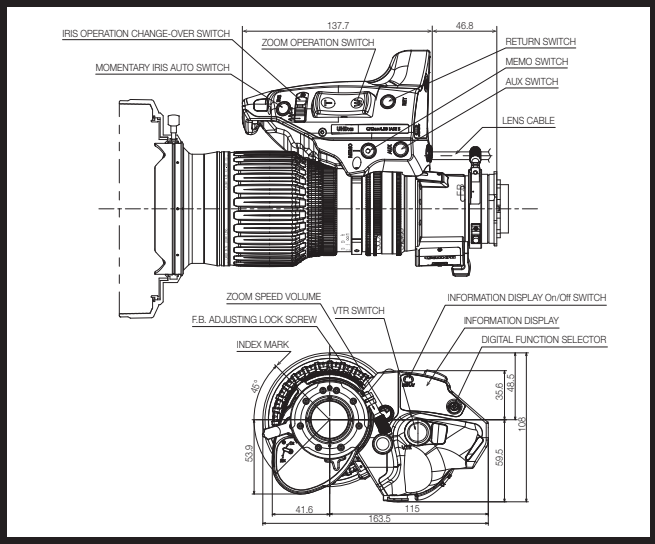
Compatibility with HD lens systems

The lens enables the use of the same Canon standard controllers for zoom and focus as well as servo modules currently used by HD equipment.
It comes with a 20-pin connector compatible with virtual units and that enables high-accuracy position information of the zoom, focus and iris to be read out.

SPECIFICATIONS

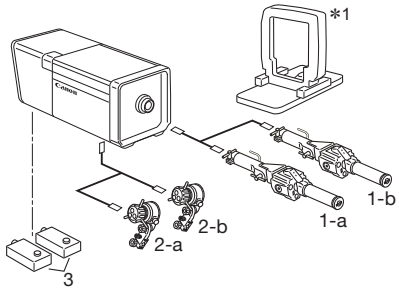
CJ12ex4.3B IRSE S/IASE S		
Built-in extender	1.0×	2.0×
Focal Length	4.3-52mm	8.6-104mm
Zoom Ratio	12×	
Maximum Relative Aperture	1:1.8 at 4.3-40mm 1:2.4 at 52mm	1:3.6 at 8.6-80mm 1:4.8 at 104mm
Angular Field of View	96.3°×64.2° 10.5°×5.9°	58.3°×34.9° 5.3°×3.0°
M.O.D	0.3.m	
Object Dimensions at M.O.D.	76.4×43.0cm at 4.3mm 6.0×3.4cm at 52mm	38.2×21.5cm at 8.6mm 3.0×1.7cm at 104mm
Approx. Size (W×H×L)	163.5×108×247.8mm	
Approx. Mass	2.1kg(IRSE S)	

DIMENSIONS



RECOMMENDED LENS SYSTEM / ACCESSORIES

UHD DIGISUPER

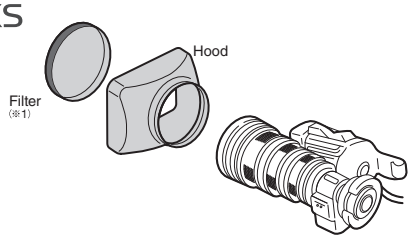


Compatibility of Accessories for UHD DIGISUPER

No.	Description	Model Name
1-a	Digital Zoom Demand	ZDJ-P01
1-b	Digital Zoom Demand	ZDJ-D02
2-a	Digital Focus Demand	FDJ-P01
2-b	Digital Focus Demand	FDJ-D02
3	Digital Servo Module	SMJ-E01
—	Protection Filter	PFJ-951(UJ90×9B)*2
—	IS Switch	SBJ-IS2

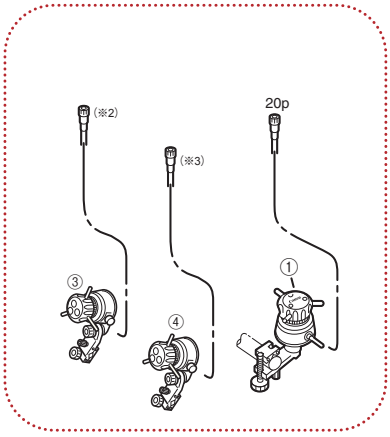
*1. Lens Supporter is necessary for portable camera mounting.
*2. A protection filter is incorporated as a standard feature of UJ86×9.3B.

UHDXS

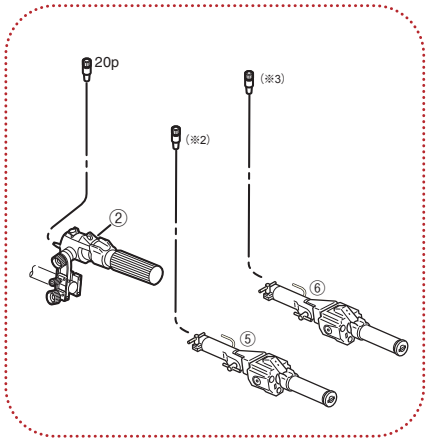


#	Unit	Description
①	FPD-400D	Focus Positional Demand
②	ZSD-300D	Zoom Servo Demand
③	FDJ-D02	Digital Focus Demand
④	FDJ-P01	Digital Focus Demand
⑤	ZDJ-D02	Digital Zoom Demand
⑥	ZDJ-P01	Digital Zoom Demand

Focus Servo Controllers (For IASE Lenses)



Zoom Servo Controllers



(※1) 127mm diameter P0.75 filters for CJ12ex,105mm diameter P1.0 filters for CJ20ex
The filters are to be attached to the threaded hood unit.
(UV/Clear/Cross/Snow Cross/Sunny Cross/Polarized Light/Softon/ ND8)
(※2) BDC-11 conversion cable is necessary to connect between New Digital Drive Lens and ZDJ-D02/FDJ-D02
(※3) BDC-21 conversion cable is necessary to connect between New Digital Drive Lens and ZDJ-P01/FDJ-P01

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