

4K Broadcast Lens Series

4K Premium
UHD DIGISUPER 86



4K
UHD DIGISUPER 90



4K UHD xS
CJ20e×7.8B



4K UHD xS
CJ12e×4.3B



INNOVATION
In TV Optics Since 1958

Toward 100 years anniversary



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 worked to be 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 need 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 almost 3-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 2.5 μ m, which is one-half of the size of the 2/3" HD pixels. These are approximately 1/2.7 smaller than 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 help ensure the requisite 4K UHD image sharpness while minimizing optical aberrations. Described below are the latest technologies Canon has developed and is utilizing to achieve these goals.

TECHNOLOGY FOR CORRECTING ABERRATION

Use of a zoom system and 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 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 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 86

UJ86 × 9.3B 9.3-800mm 1:1.7



CANON 4K UHD UJ86×9.3B BROADCAST LENS

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 various 4K criteria and, at the same time, embodies the ease of operation ideally suited for use in outside broadcast (OB) television production.

OPTICAL PERFORMANCE THAT EXCEEDS 4K RESOLUTION

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 FOR 4K SHOOTING

While producing full 4K imagery, the lens offers the same highly extended focal range established over the years of HDTV evolution, and preserves the same ease of operation as the latest generation of Canon's HDTV long-zoom field lenses.

HIGH ZOOM RATIO AND LONG FOCAL LENGTH

While providing performance that surpasses 4K, the lens has the high zoom ratio (86x) and long focal length (800mm, 1600mm with 2x extender) desired by many in outside broadcast television production.

SPECIFICATIONS

BUILT-IN EXTENDER	1.0x	2.0x
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° x 32.4° at 9.3mm 0.69° x 0.39° at 800mm	28.9° x 16.5° at 18.6mm 0.34° x 0.19° at 1600mm
M.O.D.	3.0m	
OBJECT DIMENSIONS AT M.O.D.	271.9 x 152.9cm at 9.3mm 3.3 x 1.9cm at 800mm	136.0 x 76.5cm at 18.6mm 1.7 x 1.0cm at 1600mm
APPROX. SIZE (W x H x L)	9.9 x 10 x 25in (250.6 x 255.5 x 637.4mm)	
APPROX. MASS	59.5 lbs (27.0kg)	

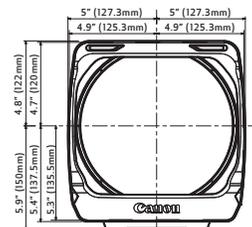
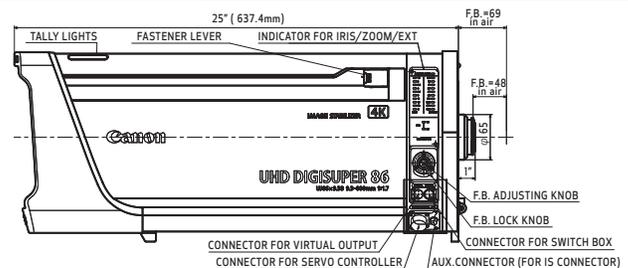
OPTICAL PERFORMANCE BEYOND 4K EVEN WITH THE BUILT-IN 2X EXTENDER AND IMAGE STABILIZER

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 Canon's latest generation optical shift-type image stabilizing mechanism, helping to achieve the degree of image-stabilizing performance commensurate with 4K.

COMPATIBLE WITH HD LENS SYSTEMS

The lens employs the same Canon standard controllers for zoom and focus as well as servo modules currently used by HDTV equipment. It comes with a 20-pin connector that enables high-accuracy digital positional information of the zoom, focus and iris to be interfaced to virtual systems.

DIMENSIONS



4K UHDxS CJ20eX7.8B

7.8-312mm 1:1.8
7.8-312mm 1:1.8



CANON 4K UHDxS CJ20eX7.8B ZOOM LENS

This portable 4K lens offers an overall optical performance that will support a broad spectrum of program production genres for UHD broadcast television. Featuring a 20x zoom ratio, the CJ20eX7.8B 4K lens can achieve panoramic vistas and finely detailed close-ups that are central to evocative image making and powerful storytelling when captured in 4K UHD.

SUPERB OPTICAL PERFORMANCE

The lens optimizes all of the optical parameters that combine to produce amazing overall image performance – namely, sharpness, contrast, color and tonal reproduction. At the same time the optical design significantly minimizes the various monochromatic and chromatic optical aberrations that can mar an image.

HIGH ZOOM RATIO AND FREQUENTLY USED FOCAL LENGTH

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 popular zooming range that meets multiple applications.

SUPERB 4K OPTICAL PERFORMANCE, EVEN WITH 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.

SPECIFICATIONS

BUILT-IN EXTENDER	1.0x	2.0x
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° at 7.8mm 3.5°× 2.0° at 156mm	34.2°× 19.6° at 15.6mm 1.8°× 1.0° at 312mm
M.O.D.	0.80 Meter (10mm with Macro)	
OBJECT DIMENSIONS AT M.O.D.	91.7×51.6cm at 7.8mm 4.8×2.7cm at 156mm	45.9×25.9cm at 15.6mm 2.4×1.4cm at 312mm
APPROX. SIZE (W x H x L)	6.7 x 4.5 x 9.1 in (169.9 x 114.4 x 230 mm)	
APPROX. MASS	4.81 lbs (2.18kg)	

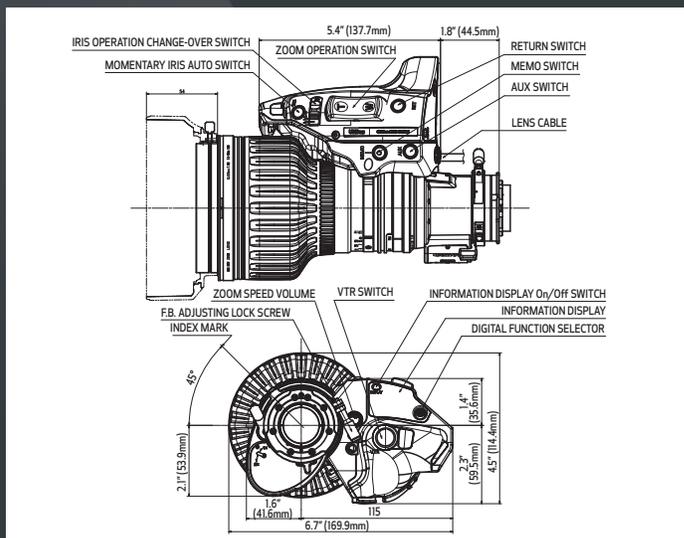
APPLICABILITY AND OPERABILITY IDEALLY SUITED TO 4K SHOOTING

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 wby 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.

COMPATIBILITY WITH HD LENS SYSTEMS

The standard zoom and focus controller systems currently used with Canon HD lenses are fully compatible with this new 4K lens*. 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 provided on the digital drive unit deliver precision digital information to support virtual systems. When this 4K lens is used with standard HDTV cameras, there is higher image sharpness and minimized optical aberrations.

DIMENSIONS



*The FPM-420D focus unit is not supported.

4K UHDxs CJ12eX4.3B

4.3-104mm 1:1.8



CANON 4K UHDxs CJ12eX4.3B WIDE-ANGLE LENS

This 4K portable wide-angle lens combines the ability to provide superb optical performance that supports 4K UHD broadcast production with an amazing 4.3mm wide angle capability that is ideally suited to creating panoramic 4K imagery.

WORLD'S FIRST* 2/3-INCH 4K WIDE-ANGLE PORTABLE LENS

This lens boasts the world's shortest focal length of 4.3mm* and the world's shortest minimum object distance (MOD) of 30cm*. This makes it possible to create images having very wide angles of view with the shortest focal length for a 2/3-inch 4K lens: as such, this supports subsequent 1920 x 1080 cropping from the 3840 x 2160 camera output providing full HDTV quality. Alternatively, the camera output can be downsampled to provide an even higher HDTV image sharpness.

ACHIEVES 4K OPTICAL PERFORMANCE EVEN WITH THE BUILT-IN 2X EXTENDER

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

4K OPTICAL PERFORMANCE

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

APPLICABILITY AND EASE OF OPERATION IDEALLY SUITED FOR 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 provides the applicability and ease of operation ideally suited to 4K shooting. Shoulder mount lens-camera operation is facilitated by the remarkably low 4.63 lbs. (2.1kg) weight of the lens.

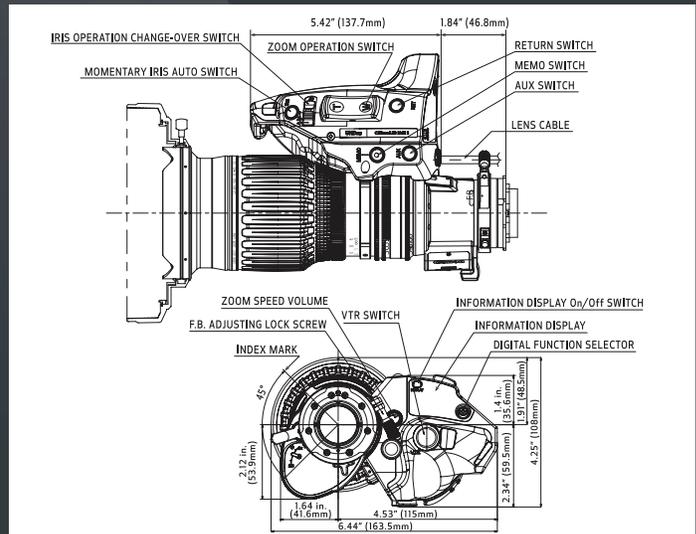
COMPATIBILITY WITH HD LENS SYSTEMS

The lens enables the use of the same Canon standard controllers for zoom and focus as well as servo modules currently used by HD portable lenses. It comes with a 20-pin connector that enables high accuracy digital positional information of zoom, focus, and iris to interface with external virtual systems.

SPECIFICATIONS

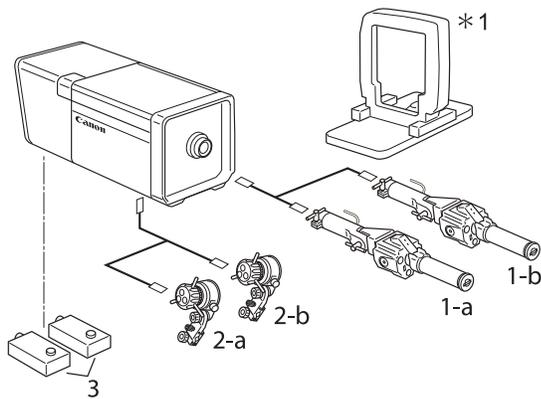
BUILT-IN EXTENDER	1.0x	2.0x
FOCAL LENGTH	4.3-52mm	8.6-104mm
ZOOM RATIO	12x	
MAXIMUM RELATIVE APERTURE	1:1.8 at 4.3-40mm 1:2.4 at 52mm	1:3.6 at 8.6-80mm 1:4.8 at 104mm
ANGULAR FIELD OF VIEW	96.3° x 64.2° at 4.3mm 10.5° x 5.9° at 52mm	58.3° x 34.9° at 8.6mm 5.3° x 3.0° at 104mm
M.O.D.	0.3m	
OBJECT DIMENSIONS AT M.O.D.	76.4 x 43.0cm at 4.3mm 6.0 x 3.4cm at 52mm	38.2 x 21.5cm at 8.6mm 3.0 x 1.7cm at 104mm
APPROX. SIZE (W x H x L)	6.4 x 4.3 x 9.8 in (163.5 x 108 x 247.8mm)	
APPROX. MASS	4.63 lbs (2.1kg)	

DIMENSIONS



*Among compatible 2/3-inch 4K broadcast lenses available as of August 25th, 2015.

UHD DIGISUPER



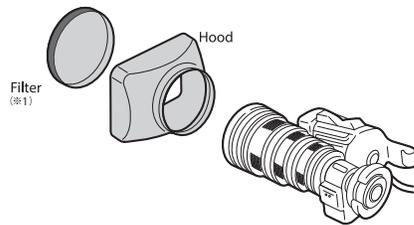
Compatibility of Accessories for UHD DIGISUPER

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.

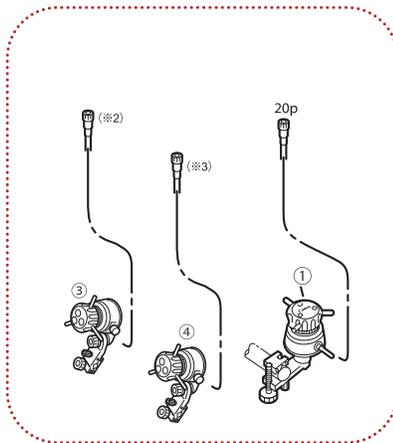
*2. A protection filter is incorporated as a standard feature of UJ86×9.3B.

UHDxs

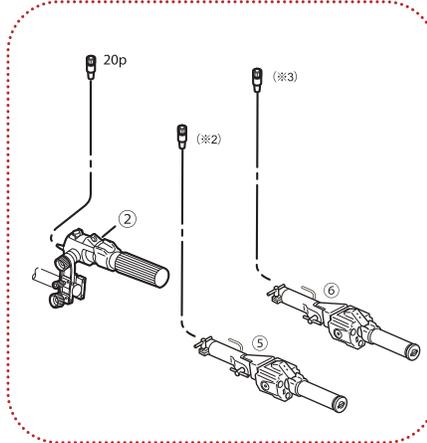


#	Unit	Description
①	FPD-400D	Focus Positional Demand
②	ZSD-300D	Zoom Servo Demand
③	FDJ-D02	Digital Focus Demand
④	FDJ-P01	Digital Focus Demand
⑤	ZDJ-D02	Digital Zoom Demand
⑥	ZDJ-P01	Digital Zoom Demand

Focus Servo Controllers (For IASE Lenses)



Zoom Servo Controllers



- (※1) 127mm diameter P0.75 filters for C.J12ex, 105mm diameter P1.0 filters for C.J20ex
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

Specifications subject to change without notice.

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