

Canon

Broadcast Television Lens





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Canon

- The size and weight of all lenses within this brochure may vary according to the applicable camera models.
- Specifications subject to change without notice

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Understanding The Lens Model Number

(ENG/EFP Lens)

HJ 40x 10 B I A S D -V

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

XJ 100x 9.3 B IE -D

(STUDIO/FIELD Lens)

① Image Size	J	ENG/EFP Lens for 2/3"
	YJ	Pro-video Lens for 2/3"
	H	ENG/EFP Lens for 1/2"
	YH	Pro-video Lens for 1/2"
	HJ	High Definition Portable Lens for 2/3"
	PV	Studio/Field Lens for 1"
	PI	Studio/Field Lens for 2/3"
	PH	Studio/Field Lens for 1/2"
	UJ/XJ	High Definition Studio/Field Lens for 2/3"
② Zoom Ratio		
③ Focal Length at Wide-End		
④ Optical Compensation for Prism Cameras	B	with Optical Compensation (not shown with 1/2" models)
⑤ Built-in Extender	IE	Built-in Extender
	I	Built-in Extender
	K	No Extender
	V	Built-in 0.8X Shrinker
	W	Built-in 0.8X Shrinker and 2X Extender
⑥ Zoom/Focus Control	R	Zoom:Servo/Manual Focus:Manual
	A	Zoom:Servo/Manual Focus:Servo/Manual
	T	Zoom:Servo Focus:Servo
	L	Zoom:Manual Focus:Manual
⑦ Iris Control	S	Iris Servo
	L	Iris Manual
⑧ Special Function(1)	D	Digital Servo Drive for Portable Lens
	E	Digital Servo Drive With Rotary Encoder
	(Blank)	Analog Servo Drive for Portable Lens
⑨ Special Function(2)	V	Built-in Image Stabilizer for Portable Lens
	SC	Cine Style Lens
	D	DIGISUPER Series for Studio/Field Lens
	AF	Auto Focus Function for Portable Lens



Customer Satisfaction

Canon is committed to total C.S. (Customer Satisfaction).

In order to optimize C.S., our aim is to support users by development of new lens technologies, high quality assurance systems, and other sales support.

The ISO-9001/ISO-14001 Certification and Emmy Award are just two examples of our C.S. Activities.



ISO-9001



ISO-14001

ISO-9001/ISO-14001

The Canon Broadcast Equipment Group acquired ISO-9001 Certification from Lloyd's of Britain in 1997. It is proof that our design and production system have a high quality assurance system that meets the international standard "ISO-9001".

Canon placed priority on obtaining ISO-14001 certification for manufacturing bases, since these facilities have greater environmental impact.

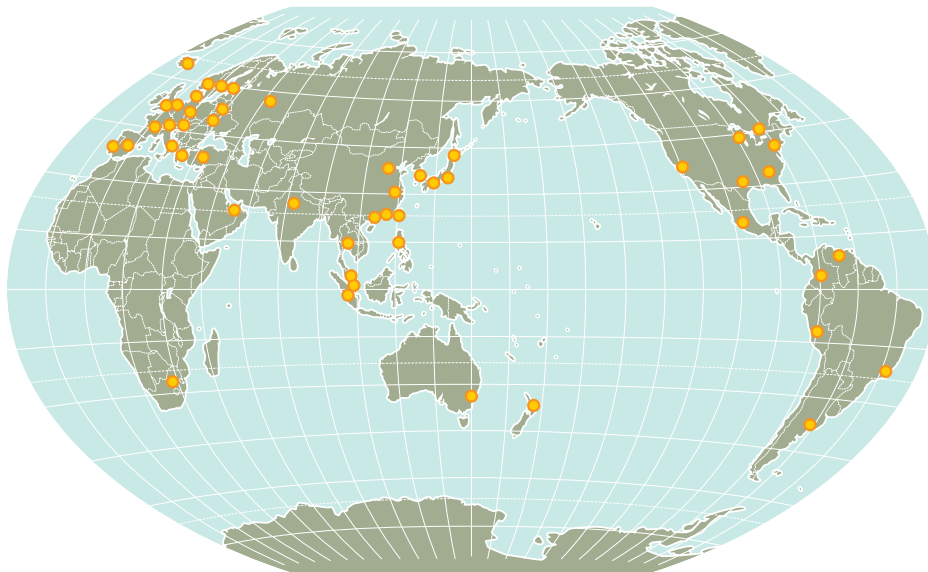
The Canon Broadcast Equipment Group manufacturing bases obtained ISO-14001 certification in 1997.



Emmy Award

The National Academy of Television Arts and Sciences awarded Canon an EMMY® in recognition for its engineering creativity in Lens Technology Developments for Solid State Imager Cameras in High Definition Formats in 2005. Canon was also given an EMMY® for "Implementation In Lens Technology to Achieve Compatibility with CCD Sensors" in 1996.

CANON'S WORLDWIDE SUPPORT NETWORK



Well trained sales people and/or service technicians are ready to support you at these locations.

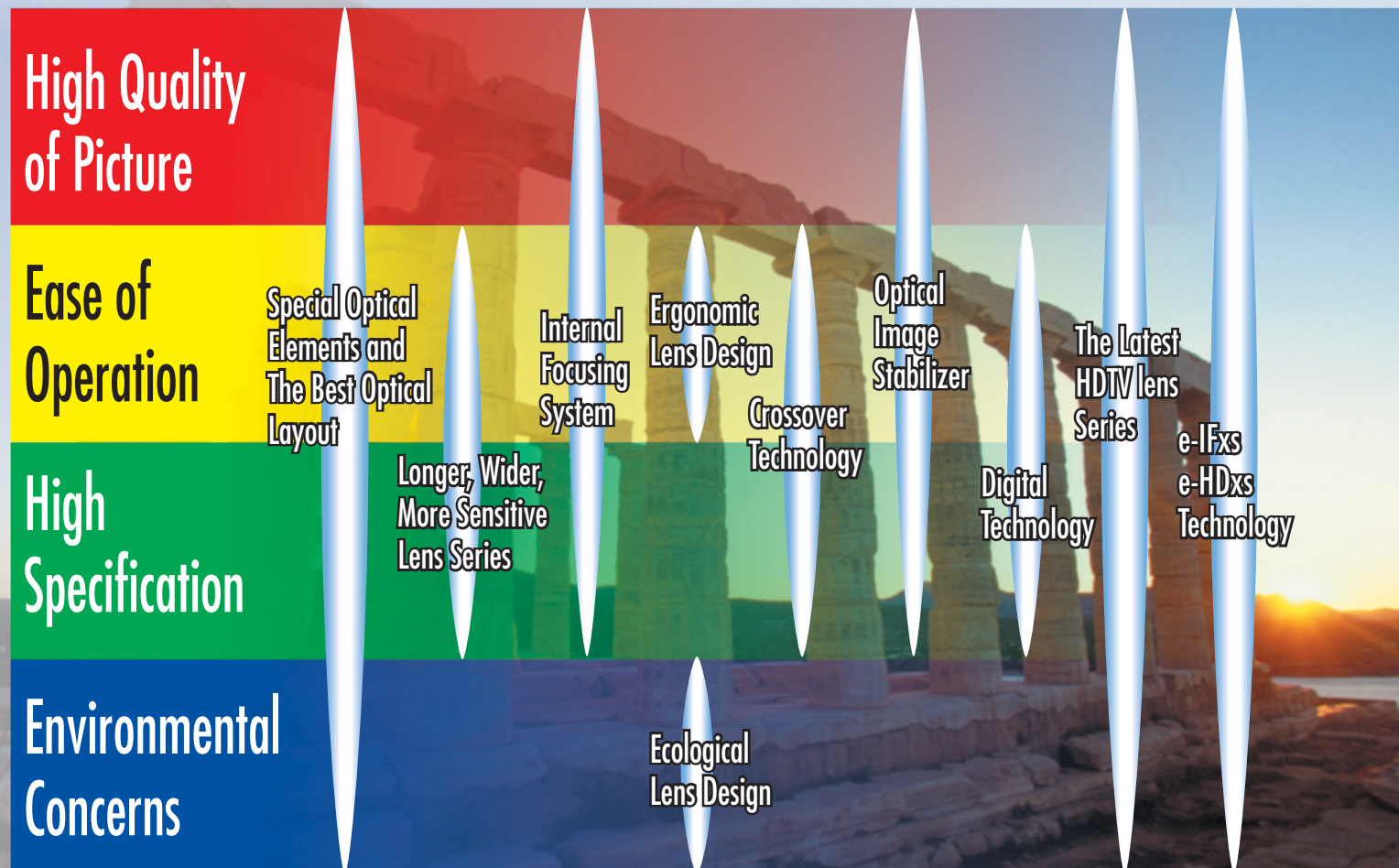
What are Canon's objectives...

Canon has always developed new technologies while remaining consistent with three main points; "High Quality of Picture", "Ease of Operation" and "High Specifications".

Now, Canon adds a new important fourth point: "Minimize Environmental Impact" products. It is Canon's policy to not pollute the earth and through research we are quickly reaching this goal.

These principles are upheld whenever we introduce our TV lenses. As an example, we will not say a product is in development nor will we accept the production of a high specification and high quality lens if it does not offer ease of operation, especially in terms of its size and weight. On the other hand, it would be impossible to keep our great ease of operation and quality of picture while offering our present zoom ratio and wide angle without new technologies. Canon has always developed the world's most advanced technologies, and now keeping in mind our four "Objectives". Additionally, Canon's philosophy of technology leadership would be meaningless without also optimizing Customer Satisfaction.

The next pages demonstrate Canon's history of lens development and our adherence to the objectives.



e-IFxs and e-HDxs Technology

e-IFxs / e-HDxs

Recently, Canon introduced a new broadcast lens technology, **e-IFxs**, by launching the J22ex7.6B. Canon is pleased to offer complete series of **e-IFxs** and **e-HDxs** lenses.

The **e-IFxs / e-HDxs** technology consists of two meanings that start with the letter “e”. One is the “ecological design”, a design harmless to the environment. The other is the “enhanced digital” technology, which improves the performance of the digital drive unit. Of course, the new technology inherits all of the advantages of their predecessors, the IFxs and HDxs lenses.

Enhanced Digital Drive

The **e-IFxs** and **e-HDxs** series are equipped with an information display and a digital function selector, an X-Y axis switch, so that the user can customize the enhanced digital functions much more easily and precisely. The new design enables the user to fully bring out the digital functions.

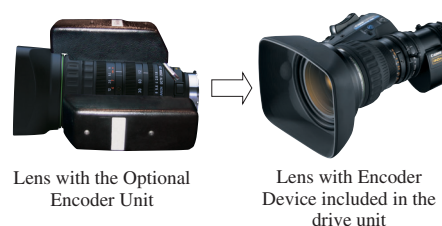
- User settings are both simple and easy to operate. User settings included: speed preset, framing presets (now 2 memory positions), shuttle shot, zoom track, new focus preset with IASD/IASE lens.
- Follow signal display for iris, zoom and focus (IASD/IASE only) for virtual reality, robotic control and other uses.
- User settings for zoom and focus curve mode for precise control based upon the users requirement.
- AUX 1 and AUX 2 switches can be assigned for basic functions giving enhanced memory capability.
- A precise movement mode can be memorized for the zoom seesaw control, zoom demand control and preset control.
- The drive unit can memorize 9 patterns of user-customized settings and also transmit the data between different drive units.
- The self diagnostic mode provides error message, if necessary.



Informational Display

Rotary Encoder

Canon offers a series of **e-IFxs / e-HDxs** lenses, which are equipped with an enhanced digital drive unit. Conventional potentiometers are analog positional sensors capable of only 8-10 bit equivalent resolution. Thus virtual ENG studio systems called for an optional Encoder Unit to be put on the zoom and focus ring of the lens. With the introduction of 16 bit resolution Rotary Encoder Devices built into the new enhanced digital drive unit, the lens can simply be integrated into a virtual digital studio system without any additions. The encoders also enable superior precise control. The zoom servo provides a dynamic range of 0.5 sec. to over a 5 min. super slow zoom. Repeatability in focus and iris control are also much more precise. Canon’s unique technology has made the Encoder Device surprisingly small to be installed in the existing drive unit without changes in size or weight.



Lens with the Optional Encoder Unit

Lens with Encoder Device included in the drive unit

Ecological Design

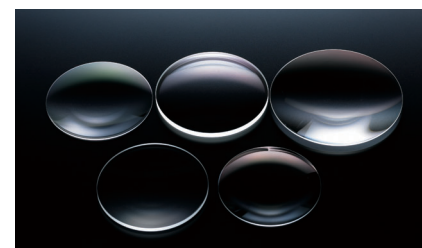
It is Canon’s policy to not pollute the earth and through research, we are quickly reaching the goal.

The **e-IFxs / e-HDxs** series have avoided using any materials or substances that could pollute the environment.

The optical parts, featuring lead free glass, are designed to be completely non-polluting and the mechanical parts are virtually free of all harmful products to the earth, such as cadmium, PBBS*, PBDPE* or mercury.

*PBBS: Poly Bromo Bi Phenyls

*PBDPE: Poly Bromo Di Phenyl Ethers

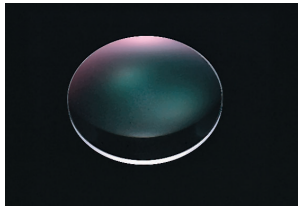


Lead Free Glass

Special Optical Elements and The Best Optical Layout (X-Element and The Power Optical System)

eIFxs / eHDxs

The XS-series lenses are shown with either of these legends on page 12-14 and 21-24.



Hi-UD Glass



Green Ring

Canon has always made an effort to research special elements since our beginnings in this industry with the goal of minimizing chromatic aberration. These efforts have included an artificially re-crystallized “Fluorite”, with extraordinary dispersion characteristics and the newly developed “Hi-UD” (high index ultra low dispersion) glass. Canon has succeeded in the practical use of special elements along with advanced design techniques like “separate achromatism”. Canon TV zoom lenses carry a “Green Ring” on the focus barrel, a symbol of our high quality.

Canon has developed a break through in optical design technology known as the “Power Optical System” whose heart is the “X-Element”. By using the “X-Element” to its maximum power in the specially designed optical layout, higher specifications and quality can be achieved in smaller and lighter lenses. The lenses designed using the “Power Optical System” are known as the “XS-series”.

Internal Focusing System/Ergonomic Lens Design

eIFxs / eHDxs / IFpro

The lenses with the “Internal Focusing System” are shown with one of these legends on page 12-14, 21-24 and 35, 36 and 38, 39.



Canon was the first manufacturer to apply IF (Internal Focus) technology for use in high quality broadcast ENG/EFP zoom lenses, first with the J8x6B wide-angle zoom lens and then with the world’s bestseller, the J14x8.5B standard lens. The advantages include lower distortion, minimized chromatic aberration and strong protection from dust and condensation in a compact and lightweight package. At the same time, we created ease of operation with the introduction of a fixed front element, square hood and an ergonomic grip angled at 12.5°. Since those first IF lenses, Canon has developed a complete series of IF zoom lenses. The original IF technology evolved into the IF+ (plus) series and then into the IFxs series. Simultaneously, the High Definition lens series, HDxs, and the Pro-video lens series, IFpro were developed. Now we introduce the new e-IFxs/e-HDxs series.

Auto Focus Technology



Lens with the “Auto Focusing System” is shown on page 39.

In response to requests from markets around the world, Canon offers the YH16x7 KTS-AF lens equipped with our exclusive “Self Contained Auto Focus System”. Needless to be concerned about camera compatibility, the system enables the lens to focus on an object automatically by analyzing the video signal from the camera wholly within the lens unit, independent of the camera. Canon has developed the advanced auto focusing system by exploiting Canon’s original “Auto Focus Algorithm”, which made the auto focus function the most suitable for the diverse applications of the lens. The Auto Focusing System also contains various functions, which makes the operation easy to use and accurate.

Deployment of Longer, Wider, More Sensitive Lens Series

Canon previously released several lenses in succession, the J13x9BII in the early 80's, which became the world's standard ENG/EFP lens, the J18x9B in 1984 and in 1985, the J8x6B. These lenses became the first example of what is today the standard series of ENG/EFP lenses composed of a Telephoto, Standard and Wide zoom lens. This SDTV standard series has been repeated several times as new lenses were developed and today it consists of the J22x7.6B, the J17x7.7B and the J11x4.5B. With the current SDTV series as well as with the HDTV series, Canon has developed longer, wider and more sensitive lenses that are approximately the same size and weight as the very first series with vastly improved specifications.

In Studio/Field category lenses, Canon developed the first 40x high zoom ratio lens in 1982 and since then has cleared hurdle after hurdle, breaking new ground by introducing the world's first 50x and world's first 70x lenses.

Then, we introduced our highest achievement to date, the DIGISUPER 86 xs and DIGISUPER 86 TELE xs, the world's first lens in the 80x range. Typical of Canon, this lens has solved the problem of image shake that would have limited the 86x zoom ratio with our unique built-in "Optical Image Stabilizer". Amazingly, the 86x exhibits improved specifications and employs the "Optical Image Stabilizer" in a package the same size and weight as previous lenses.

Recently, Canon proudly introduced the world's first triple digit zoom lens, the DIGISUPER 100 xs, with "Optical Image Stabilizer" and a 100 times zoom ratio.

Our goal at Canon is to pursue our philosophy with unique ideas and the most advanced technologies thus allowing us to contribute to the expansion of our ever-changing industry.



DIGISUPER 100 xs
Launched in 2002



DIGISUPER 70
(The first lens in the 70x range was launched in 1995.)



SUPER 55
(The first lens in the 50x range was launched in 1987.)



PV40x13.5B
Launched in 1982

Digital Technology

DIGI SUPER The Studio/Field lenses with the "DIGISUPER" system are shown with this legend on page 12, 13 and 14. Also the unique features are explained on page 15 and 16.

eIFxs / eHDxs / DIGITAL DRIVE DD The broadcast ENG/EFP lenses with the Digital System are shown with this legend on page 21, 22, 23 and 24. Also the unique features are explained on page 26 and 27.

In 1995, Canon released the DIGISUPER 70 for Studio/Field applications and at the same time introduced digital technology for broadcast zoom lens control to the television industry thus opening up new possibilities for the future. Digital control technology offered improvements by more precise control of lens groups, personalized lens control and the ability to interface with other digital devices. Since then, digital technology has experienced a big evolution and today, Canon offers the most advanced second generation DIGISUPER lens series and the newly developed zoom/focus demands.

Canon's newest advancement in digital technology, "enhanced e-IFxs/e-HDxs", features have been applied to the e-IFxs/e-HDxs series of ENG/EFP zoom lenses, while "Digital Drive" continues to be used on other models. With e-IFxs/e-HDxs and "Digital Drive", the lens servo unit is now digital and offers such unique new "Useful" features as: Shuttle Shot, Speed Preset and Framing Preset.



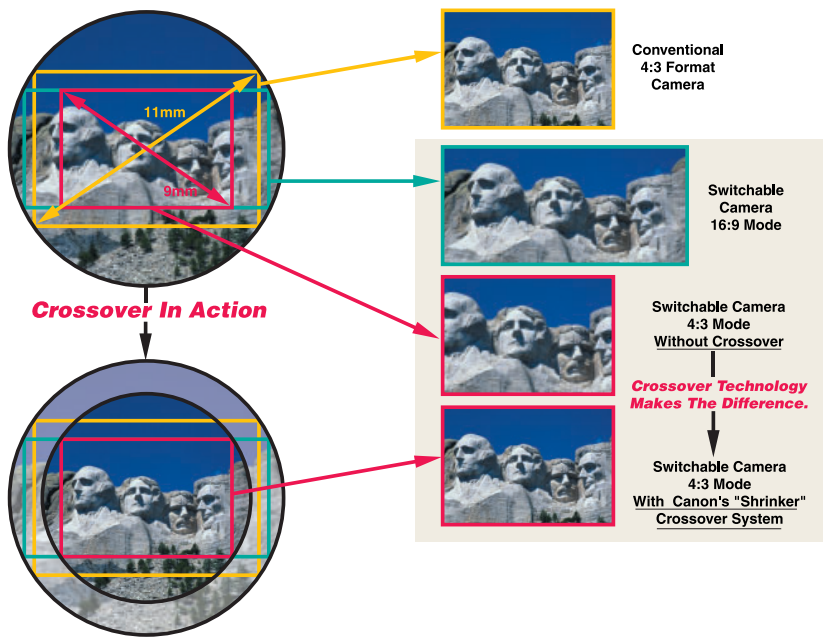
Crossover Technology



The optional application of the "Crossover Technology" to each lens is indicated on specification pages of each product category.

CROSSOVER

Switchable CCD Cameras that can switch between the two aspect ratios have become increasingly popular, since they allow the user to maintain both formats during transition. However, when the switch is made from 16:9 to 4:3, both sides of the image projected on the CCD are cut off, thereby shortening the diagonal of the picture from the conventional 4:3 norm of 11mm to 9mm as the diagram below illustrates. To compensate for this loss, Canon has developed Crossover Technology and incorporated it into a line of ENG and Studio/Field lenses that restore the 4:3 image of a switchable camera to that of a conventional 4:3 format camera. Crossover Technology utilized a built-in "Shrinker" which is a lens group to be inserted into the relay section of the master lens in order to shrink the image circle diameter by a factor of 0.8x.



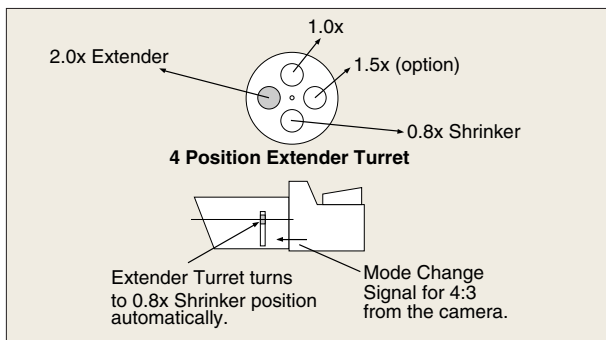
The diagram shows how Canon's exclusive Crossover Technology uses a 0.8x "Shrinker" to restore the loss of diagonal and return the 4:3 image of a Switchable Camera to the same as a Standard Camera.

How the Shrinker is adapted to lenses;

With Studio/Field Lenses



DIGISUPER 25 xs



With ENG/EFP Lenses



Extender Position * (Element Factor)	Normal (1x)	Shrinker (0.8x)	Extender (2x)
Relative Magnifications			
16:9 Mode	1x		2x
4:3 Mode **		1x	2.4x

Two types of Crossover ENG/EFP lenses are available. The WRSE/WASE versions incorporate a 0.8x Shrinker in addition to 2x extender. The VRSE/VASE versions have a 0.8x Shrinker instead of 2x extender.

Optical Image Stabilizer

IMAGE STABILIZER

The products with the "Optical Image Stabilizer" technologies are shown with this legend on page 12, 21, and 25.

Employment of Vari-angle Prism Image Stabilizer (VAP-IS)

Canon introduces the "Vari-angle Prism" image stabilizer (VAP-IS), our patented breakthrough technology, the world's first, Optical Image Stabilization solution provided for broadcast ENG/EFP lenses. For the details on how VAP-IS works, please refer to page 25. The VAP-IS covers a wide bandwidth of frequencies including high frequencies that are often encountered with moving vehicles, helicopters etc. The VAP-IS has been improving the video quality in such environments.



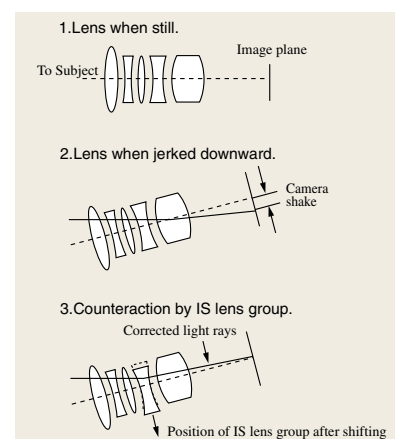
Another Epoch-making Technology; Optical Shift Image Stabilizer (Shift-IS)

The history of field lenses is a history of zoom ratio/focal length extension. It came to a point where the industry thought it would be impossible to push the envelope any further. The telephoto focal lengths of the lens got so long that even the slightest amount of wind or operator movement would cause image shake and viewing the picture became intolerable, this was before Canon announced the incredible magnification DIGISUPER 86 xs zoom lens. Canon, renowned for its optical image stabilization technologies, developed another new stabilization solution for the broadcast field lens, a built-in Optical Shift Image Stabilizer (Shift-IS) to overcome image shaking at telephoto focal length. Now the Shift-IS is employed in the DIGISUPER 100 xs, DIGISUPER 86II TELE xs, DIGISUPER 86II xs, DIGISUPER 75 xs, HJ40x10B IASD-V and HJ40x14B IASD-V.



How the Optical Shift Image Stabilizer (Shift-IS) Works

When the lens moves, the light rays from the subject are bent relative to the optical axis, resulting in an unsteady image because the light rays are deflected. By shifting the IS lens group on a plane perpendicular to the optical axis to counter the degree of image shake, the light rays reaching the image plane can be steadied. Since image shake occurs in both horizontal and vertical directions, two shake-detecting sensors for yaw and pitch, detect the angle and speed of movement and send this information to a high-speed 32-bit microcomputer, which converts the information into drive signals for the IS lens group. Then the actuator moves the IS lens group horizontally and vertically thus counteracting the image shake and maintaining the stable picture. The Shift-IS component is located within the lens group and is most effective for lower frequency movements caused by platform vibration or wind effect without increasing the overall size and weight of the master lens.



The Latest HDTV Lens Series



The lenses designed for HDTV system are shown with this legend on page 12, 13, 14, 21 and 22. These lenses also perform excellently with SDTV cameras.

Canon began developing lenses for the "HDTV System" more than 20 years ago. Canon was the first manufacturer to complete a standard series consisting of five basic models of practical 2/3" HDTV lenses by launching the HJ15x8B (in 1997) in addition to four existing lenses, Standard, Tele, Wide portable as well as Studio/Field. Canon continues to lead the broadcast industry in the 21st century "DTV" era with the next generation family of the following 19 HDTV models.



Adding to the e-HDxs/HDxs series, Canon has HD lenses for Digital Electronic Cinematography, ideal for film style shooting with HD-EC format cameras such as 1080/24P and 720P. The lenses are shown with this legend on page 32 and 33.

Overall Comparison between the SDTV and the HDTV System

Whereas one frame of the conventional SDTV (ie NTSC) system consists of 480 scanning lines, the number of scanning lines is more than 1.5 times that for the HDTV system. Furthermore the density of the scanning lines are even higher because the HDTV system has an aspect ratio of 16:9, which is wider and shorter in height than that of the normal SDTV (4:3 aspect ratio) system. The spatial frequency required for the HDTV system is about twice that required for the NTSC system.

Overall, the resolution of the HDTV system is about twice that of the NTSC system and therefore, the lens requires much higher performance than the conventional lenses.

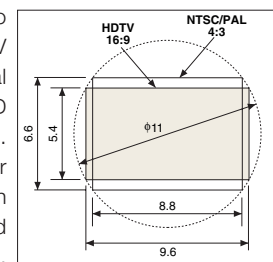
2/3"	HDTV	NTSC
Image format	9.6 x 5.4	8.8 x 6.6
Nominal frequency	600TVL	400TVL
Spatial frequency	55Line pairs/mm	30Line pairs/mm

Depth of Field for HDTV System

As the HDTV system has high resolution, even a small out-of-focus area can be detected. Since the radius of the permissible circle of confusion is about half that of the conventional system, the depth of field becomes proportionately smaller. Therefore, the focusing has to be done with great care.

Sensitivity of the HDTV System

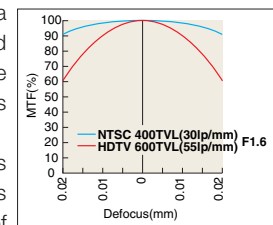
Two factors have to be considered to compare the sensitivity of the HDTV system with that of the conventional system. The first factor is that the HD camera has an aspect ratio of 16:9. This makes the sensitive area smaller and causes a 10% difference in sensitivity. The second factor is related to the HDTV system's depth of field, which is half of the conventional system. Therefore, on HD cameras, the lenses must be stopped down until their F-number becomes double in order to get the same depth of field as that in the conventional system. This reduces the sensitivity to one fourth (1/4).



Aberration Correction for HDTV Lenses

The pixel size is about half in the HDTV system, and therefore the spread of a point image caused by a spherical aberration, coma, etc. should be diminished to about half. Even if the image is slightly out of focus, MTF is greatly influenced.

The graph shows how MTF varies when the focus changes. Canon HDxs series lenses employ the HD version of the Power Optical System, which incorporates the X-Element. HDxs greatly contributes to correcting and minimizing these aberrations in a compact lightweight lens body.



Studio/ Field Lenses

- Please refer to page 10 regarding the difference between HDTV and SDTV lenses. Please note that the HDTV lenses perform excellently when they are used on SDTV cameras.
- The DIGISUPER series lenses are controlled by Canon's ground breaking Digital Servo System (refer to page 15 & 16).
- The DIGISUPER 22 xs is a studio lens based on a new concept to be used with portable cameras. Please refer to page 14 for the specification.



*DIGISUPER Series
for HDTV / SDTV
System*

*DIGISUPER 22 xs
for Portable Camera*

Studio/Field Lenses

HDTV/SDTV



	DIGISUPER 100 xs	DIGISUPER 86II TELE xs	DIGISUPER 86II xs	DIGISUPER 75 xs
Model Number	XJ100x9.3B IE-D	XJ86x13.5B IE II -D	XJ86x9.3B IE II -D	XJ75x9.3B IE-D
Zoom Ratio	100x	86x	86x	75x
Built-in Extender	2.0x	2.0x	2.0x	2.0x
Range of Focal Length (with Extender)	9.3~930mm 18.6~1860mm (2.0x)	13.5~1161mm 27~2322mm (2.0x)	9.3~800mm 18.6~1600mm (2.0x)	9.3~700mm 18.6~1400mm (2.0x)
Maximum Relative Aperture (with Extender)	1:1.7 at 9.3~296mm 1:4.7 at 930mm 1:3.4 at 18.6~592mm (2.0x) 1:9.4 at 1860mm	1:2.4 at 13.5~480mm 1:5.8 at 1161mm 1:4.8 at 27~960mm (2.0x) 1:11.6 at 2322mm	1:1.7 at 9.3~340mm 1:4.0 at 800mm 1:3.4 at 18.6~680mm (2.0x) 1:8.0 at 1600mm	1:1.7 at 9.3~331mm 1:3.6 at 700mm 1:3.4 at 18.6~662mm (2.0x) 1:7.2 at 1400mm
Angular Field of View (with Extender)	4:3 Aspect Ratio (8.8x6.6mm) 50.6°x39.1° at 9.3mm 0.54°x0.41° at 930mm 26.6°x20.1° at 18.6mm (2.0x) 0.27°x0.20° at 1860mm	4:3 Aspect Ratio (8.8x6.6mm) 36.1°x27.5° at 13.5mm 0.43°x0.33° at 1161mm 18.5°x13.9° at 27mm (2.0x) 0.22°x0.16° at 2322mm	4:3 Aspect Ratio (8.8x6.6mm) 50.6°x39.1° at 9.3mm 0.63°x0.47° at 800mm 26.6°x20.1° at 18.6mm (2.0x) 0.32°x0.24° at 1600mm	4:3 Aspect Ratio (8.8x6.6mm) 50.6°x39.1° at 9.3mm 0.72°x0.54° at 700mm 26.6°x20.1° at 18.6mm (2.0x) 0.36°x0.27° at 1400mm
Angular Field of View (with Extender)	16:9 Aspect Ratio (9.6x5.4mm) 54.6°x32.4° at 9.3mm 0.59°x0.33° at 930mm 28.9°x16.5° at 18.6mm (2.0x) 0.30°x0.17° at 1860mm	16:9 Aspect Ratio (9.6x5.4mm) 39.1°x22.6° at 13.5mm 0.47°x0.27° at 1161mm 20.2°x11.4° at 27mm (2.0x) 0.24°x0.13° at 2322mm	16:9 Aspect Ratio (9.6x5.4mm) 54.6°x32.4° at 9.3mm 0.69°x0.39° at 800mm 28.9°x16.5° at 18.6mm (2.0x) 0.34°x0.19° at 1600mm	16:9 Aspect Ratio (9.6x5.4mm) 54.6°x32.4° at 9.3mm 0.79°x0.44° at 700mm 28.9°x16.5° at 18.6mm (2.0x) 0.39°x0.22° at 1400mm
M.O.D. from Lens Front	3.0m	3.0m	3.0m	2.8m
Object Dimensions at M.O.D. (with Extender)	4:3 Aspect Ratio (8.8x6.6mm) 253.9x190.4cm at 9.3mm 2.54x1.90cm at 930mm 127.0x95.2cm at 18.6mm (2.0x) 1.27x0.95cm at 1860mm	4:3 Aspect Ratio (8.8x6.6mm) 181.7x136.3cm at 13.5mm 2.1x1.6cm at 1161mm 90.9x68.2cm at 27mm (2.0x) 1.1x0.8cm at 2322mm	4:3 Aspect Ratio (8.8x6.6mm) 253.9x190.4cm at 9.3mm 2.96x2.22cm at 800mm 127.0x95.2cm at 18.6mm (2.0x) 1.48x1.11cm at 1600mm	4:3 Aspect Ratio (8.8x6.6mm) 234.3x175.7cm at 9.3mm 3.2x2.4cm at 700mm 117.2x87.9cm at 18.6mm (2.0x) 1.6x1.2cm at 1400mm
Object Dimensions at M.O.D. (with Extender)	16:9 Aspect Ratio (9.6x5.4mm) 276.4x155.5cm at 9.3mm 2.76x1.56cm at 930mm 138.2x77.8cm at 18.6mm (2.0x) 1.38x0.78cm at 1860mm	16:9 Aspect Ratio (9.6x5.4mm) 198.2x111.5cm at 13.5mm 2.3x1.3cm at 1161mm 99.1x55.7cm at 27mm (2.0x) 1.2x0.7cm at 2322mm	16:9 Aspect Ratio (9.6x5.4mm) 276.4x155.5cm at 9.3mm 3.22x1.81cm at 800mm 138.2x77.8cm at 18.6mm (2.0x) 1.61x0.91cm at 1600mm	16:9 Aspect Ratio (9.6x5.4mm) 255.6x143.8cm at 9.3mm 3.4x1.9cm at 700mm 127.9x71.9cm at 18.6mm (2.0x) 1.8x1.0cm at 1400mm
Approx. Size (WxHxL)	250.6x255.5x591.5mm	250.6x255.5x618.4mm	250.6x255.5x591.5mm	250.6x255.5x591.5mm
Approx. Mass	23.5kg (51.8lbs)	24.3kg (53.6lbs)	23.5kg (51.8lbs)	22.0kg (48.5lbs)
Macro	—	—	—	—
Protection Filter	Standard	Standard	Standard	Option
Built-in Optical Image Stabilizer	Yes	Yes	Yes	Yes
Crossover Type	Option	Option	Option	Option

Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.

Angular Field of View (with Extender)	4:3 mode of Most Switchable Cameras (7.2x5.4mm)	42.3°x32.4° at 9.3mm 0.44°x0.33° at 930mm 21.9°x16.5° at 18.6mm (2.0x) 0.22°x0.27° at 1860mm	29.9°x22.6° at 13.5mm 0.36°x0.27° at 1161mm 15.2°x11.4° at 27mm (2.0x) 0.18°x0.13° at 2322mm	42.3°x32.4° at 9.3mm 0.52°x0.39° at 800mm 21.9°x16.5° at 18.6mm (2.0x) 0.26°x0.19° at 1600mm	42.3°x32.4° at 9.3mm 0.59°x0.44° at 700mm 21.9°x16.5° at 18.6mm (2.0x) 0.29°x0.22° at 1400mm

•Refer to page 10, regarding the difference between HDTV and SDTV lenses. Please note that HDTV lenses also perform excellently when they are adopted to SDTV cameras.
•M.O.D. = Minimum Object Distance

HD XS DIGI SUPER

DIGISUPER 72 xs*

XJ72x9.3B IE-D

72x

2.0x

 9.3~675mm
 18.6~1350mm (2.0x)

 1:1.7 at 9.3~333mm
 1:3.45 at 675mm
 1:3.4 at 18.6~666mm (2.0x)
 1:6.9 at 1350mm

 50.6°x39.1° at 9.3mm
 0.75°x0.56° at 675mm
 26.6°x20.1° at 18.6mm (2.0x)
 0.37°x0.28° at 1350mm

 54.6°x32.4° at 9.3mm
 0.81°x0.46° at 675mm
 28.9°x16.5° at 18.6mm (2.0x)
 0.41°x0.23° at 1350mm

2.8m

 234.3x175.7cm at 9.3mm
 3.3x2.5cm at 675mm
 117.2x87.9cm at 18.6mm (2.0x)
 1.7x1.3cm at 1350mm

 255.6x143.8cm at 9.3mm
 3.6x2.0cm at 675mm
 127.9x71.9cm at 18.6mm (2.0x)
 1.8x1.0cm at 1350mm

250.6x255.5x591.5mm

21.8kg (48.1lbs)

—

Option

—

Option

HD XS DIGI SUPER

DIGISUPER 60 xs

XJ60x9B IE-D

60x

2.0x

 9~540mm
 18~1080mm (2.0x)

 1:1.7 at 9~306mm
 1:3.0 at 540mm
 1:3.4 at 18~612mm (2.0x)
 1:6.0 at 1080mm

 52.1°x40.3° at 9mm
 0.93°x0.70° at 540mm
 27.5°x20.8° at 18mm (2.0x)
 0.47°x0.35° at 1080mm

 56.1°x33.4° at 9mm
 1.02°x0.57° at 540mm
 29.9°x17.1° at 18mm (2.0x)
 0.51°x0.29° at 1080mm

2.8m

 243.8x182.9cm at 9mm
 4.1x3.1cm at 540mm
 121.9x91.5cm at 18mm (2.0x)
 2.1 x 1.6cm at 1080mm

 265.1x149.1cm at 9mm
 4.5x2.5cm at 540mm
 132.6x74.6cm at 18mm (2.0x)
 2.3x1.3cm at 1080mm

250.6x255.5x547.8mm

19.9kg(43.8lbs)

—

Option

—

Option

HD XS DIGI SUPER

DIGISUPER 25 xs

XJ25x6.8B IE-D

25x

2.0x

 6.8~170mm
 13.6~340mm (2.0x)

 1:1.5 at 6.8~122mm
 1:2.1 at 170mm
 1:3.0 at 13.6~244mm (2.0x)
 1:4.2 at 340mm

 65.8°x51.8° at 6.8mm
 3.0°x2.2° at 170mm
 35.9°x27.3° at 13.6mm (2.0x)
 1.5°x1.1° at 340mm

 70.4°x43.3° at 6.8mm
 3.2°x1.8° at 170mm
 38.9°x22.5° at 13.6mm (2.0x)
 1.6°x0.91° at 340mm

0.6m

 93.3x70.0cm at 6.8mm
 3.6x2.7cm at 170mm
 46.1x34.6cm at 13.6mm (2.0x)
 1.8x1.4cm at 340mm

 102.2x57.5cm at 6.8mm
 3.9x2.2cm at 170mm
 50.4x28.4cm at 13.6mm (2.0x)
 2.1x1.2cm at 340mm

250.6x255.5x557.8mm

21.5kg (47.4lbs)

Option

Option

—

Option

HD XS DIGI SUPER

DIGISUPER 23 xs

XJ23x7B IE-D

23x

2.0x

 7~161mm
 14~322mm (2.0x)

 1:1.6 at 7~132mm
 1:1.95 at 161mm
 1:3.2 at 14~223mm (2.0x)
 1:3.9 at 322mm

 64.3°x50.5° at 7mm
 3.1°x2.3° at 161mm
 34.9°x26.5° at 14mm (2.0x)
 1.6°x1.2° at 322mm

 68.8°x42.1° at 7mm
 3.4°x1.9° at 161mm
 37.8°x21.8° at 14mm (2.0x)
 1.7°x1.0° at 322mm

0.6m

 90.6x68.0cm at 7mm
 3.8x2.9cm at 161mm
 45.3x34.0cm at 14mm (2.0x)
 1.9x1.5cm at 322mm

 99.0x55.7cm at 7mm
 4.2x2.4cm at 161mm
 49.5x27.9cm at 14mm (2.0x)
 2.1x1.2cm at 322mm

250.6x255.5x525mm

19.5kg (42.5lbs)

Option

Option

—

Option

Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.

 42.3°x32.4° at 9.3mm
 0.61°x0.46° at 675mm
 21.9°x16.5° at 18.6mm (2.0x)
 0.31°x0.23° at 1350mm

 43.6°x33.4° at 9mm
 0.76°x0.57° at 540mm
 22.6°x17.1° at 18mm (2.0x)
 0.38°x0.29° at 1080mm

 55.8°x43.3° at 6.8mm
 2.4°x1.8° at 170mm
 29.7°x22.5° at 13.6mm (2.0x)
 1.2°x0.91° at 340mm

 54.3°x42.1° at 7mm
 2.5°x1.9° at 161mm
 27.9°x21.1° at 14mm (2.0x)
 1.3°x1.0° at 322mm

* Note : In the United States the XJ72x9.3B IE-D is available by special order only. Please contact a Canon USA Sales Office for further details.

Studio/Field Lenses

COMPACT STUDIO LENS

HDXS DIGI SUPER



DIGISUPER 22 xs

SDTV

DIGI SUPER



DIGISUPER 62 TELE

DIGI SUPER



DIGISUPER 62

Model Number	XJ22x7.3B IE-D	PJ62x13.5B IE-D	PJ62x9B IE-D
Zoom Ratio	22x	62x	62x
Built-in Extender	2.0x	2.0x	2.0x
Range of Focal Length (with Extender)	7.3~161mm 14.6~322mm (2.0x)	13.5~840mm 27~1680mm (2.0x)	9~560mm 18~1120mm (2.0x)
Maximum Relative Aperture (with Extender)	1:1.8 at 7.3~111.5mm 1:2.6 at 161mm 1:3.6 at 14.6~223mm 1:5.2 at 322mm (2.0x)	1:2.2 at 13.5~411mm 1:4.5 at 840mm 1:4.4 at 27~822mm 1:9 at 1680mm (2.0x)	1:1.5 at 9~271mm 1:3.1 at 560mm 1:3 at 18~542mm 1:6.2 at 1120mm (2.0x)
Angular Field of View (with Extender)			
4:3 Aspect Ratio (8.8x6.6mm)	62.2°x48.7° at 7.3mm 3.1°x2.3° at 161mm 33.5°x25.5° at 14.6mm 1.6°x1.2° at 322mm (2.0x)	36.1°x27.5° at 13.5mm 0.60°x0.45° at 840mm 18.5°x13.9° at 27mm 0.30°x0.23° at 1680mm (2.0x)	52.1°x40.3° at 9mm 0.90°x0.68° at 560mm 27.5°x20.8° at 18mm 0.45°x0.34° at 1120mm (2.0x)
16:9 Aspect Ratio (9.6x5.4mm)	66.7°x40.6° at 7.3mm 3.4°x1.9° at 161mm 36.4°x21.0° at 14.6mm 1.7°x1.0° at 322mm (2.0x)	39.1°x22.6° at 13.5mm 0.65°x0.37° at 840mm 20.2°x11.4° at 27mm 0.33°x0.18° at 1680mm (2.0x)	56.1°x33.4° at 9mm 0.98°x0.55° at 560mm 29.9°x17.1° at 18mm 0.49°x0.28° at 1120mm (2.0x)
M.O.D. from Lens Front	0.8m (10mm with Macro)	2.4m	2.4m
Object Dimensions at M.O.D. (with Extender)			
4:3 Aspect Ratio (8.8x6.6mm)	107.8x80.9cm at 7.3mm 4.8 x 3.6cm at 161mm 53.9 x 40.5cm at 14.6mm 2.4 x 1.8cm at 322mm (2.0x)	144.0x108.0cm at 13.5mm 2.3x1.7cm at 840mm 72.0x54.0cm at 27mm 1.2x0.9cm at 1680mm (2.0x)	204.3x153.2cm at 9mm 3.3x2.5cm at 560mm 102.2x76.6cm at 18mm 1.7x1.3 at 1120mm (2.0x)
16:9 Aspect Ratio (9.6x5.4mm)	118.1x66.4cm at 7.3mm 5.2 x 2.9cm at 161mm 59.1 x 33.2cm at 14.6mm 2.6 x 1.5cm at 322mm (2.0x)	157.0x88.3cm at 13.5mm 2.5x1.4cm at 840mm 78.5x44.2cm at 27mm 1.3x0.7cm at 1680mm (2.0x)	222.3x125.0cm at 9mm 3.6x2.0cm at 560mm 111.2x62.5cm at 18mm 1.8x1.0cm at 1120mm (2.0x)
Approx.Size(WxHxL)	165x175x336mm	250.6x255.5x574.7mm	250.6x255.5x547.8mm
Approx.Mass	6.1kg (13.42lbs)	21.3kg(46.9lbs)	20.7kg(45.6lbs)
Macro	Standard	—	—
Protection Filter	—	Option	Option
Built-in Optical Image Stabilizer	—	—	—
Crossover Type	Option	Option	Option

Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.

Angular Field of View (with Extender)	4:3 mode of Most Switchable Cameras (7.2x5.4mm)	52.5°x40.6° at 7.3mm 2.6°x1.9° at 161mm 27.7°x21.0° at 14.6mm 1.3°x1.0° at 322mm (2.0x)	29.9°x22.6° at 13.5mm 0.49°x0.37° at 840mm 15.2°x11.4° at 27mm 0.25°x0.18° at 1680mm (2.0x)	43.6°x33.4° at 9mm 0.74°x0.55° at 560mm 22.6°x17.1° at 18mm 0.37°x0.28° at 1120mm (2.0x)
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- Refer to page 10, regarding the difference between HDTV and SDTV lenses. Please note that HDTV lenses also perform excellently when they are adapted to SDTV cameras.
- M.O.D. = Minimum Object Distance
- Please refer to page 18 for the compatible control accessories.
- The SUP-400 supporter is included as a standard component with the lens.

Features; DIGISUPER Studio/Field Lenses



The latest version of the DIGISUPER series Studio/Field lenses are developed with the most advanced technologies, keeping in mind possible future production style. In the DIGISUPER series, the focus and the zoom servo systems are digital using a 32-bit CPU as opposed to the conventional analog system. The second generation of Digital Servo offers functions that were not possible before and the ability to upgrade the CPU for new features and unlimited possibilities in the future. The main features are as follows.

(Digital Servo System is available for DIGISUPER 100 xs, DIGISUPER 86II TELE xs, DIGISUPER 86II xs, DIGISUPER 75 xs, DIGISUPER 72 xs, DIGISUPER 62 TELE, DIGISUPER 62, DIGISUPER 60 xs, DIGISUPER 25 xs and DIGISUPER 23 xs .)

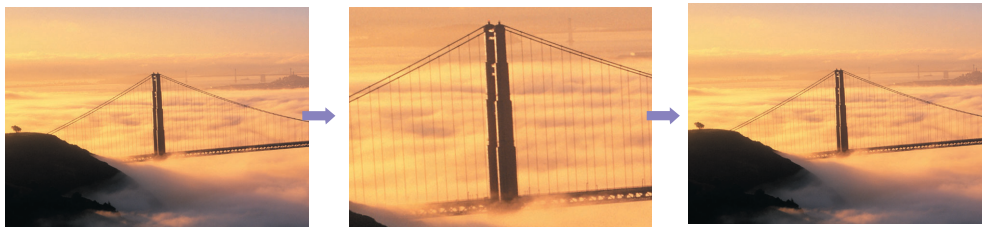
1. Unique Features of the latest DIGISUPER Series Lens and the ZDJ-D02, Digital Servo Zoom Demand

a) Shuttle Shot and Framing Preset

Unlike Digital Drive in the portable lenses, two preset memories are available in any combination of Shuttle Shot and Framing Preset.

Shuttle Shot

At the touch of a button, this feature allows the operator to zoom back and forth instantly between any two positions at the maximum speed or at any desired speed memorized in the speed preset function in either direction. It can be used for zooming to either the tele-side or wider focal length from any starting point to check the picture, then return instantly to the original focal length. You can “shuttle” between any two zoom positions as you like.



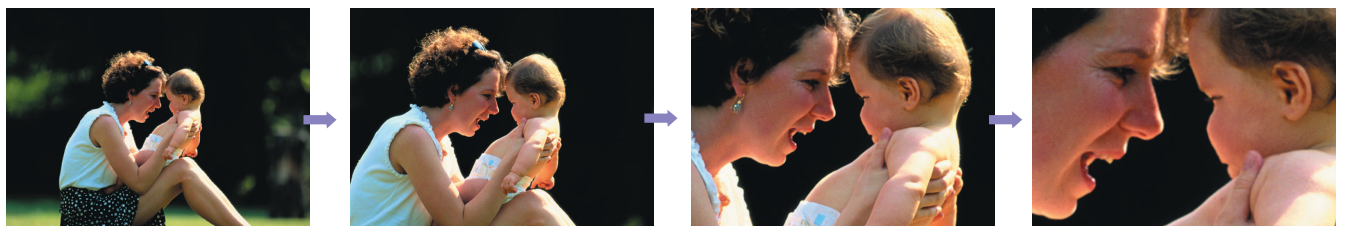
Framing Preset

A movement to a preset position can, again, be repeated multiple times. The preset memory is not automatically cleared and the agreed-on framings from rehearsal can be duplicated over and over in an actual production at the maximum speed or at any desired speed memorized in the speed preset function.



b) Speed Preset

A zoom speed agreed on during rehearsal can be reproduced accurately. The preset memory is not automatically cleared and can be repeated as many times as needed.

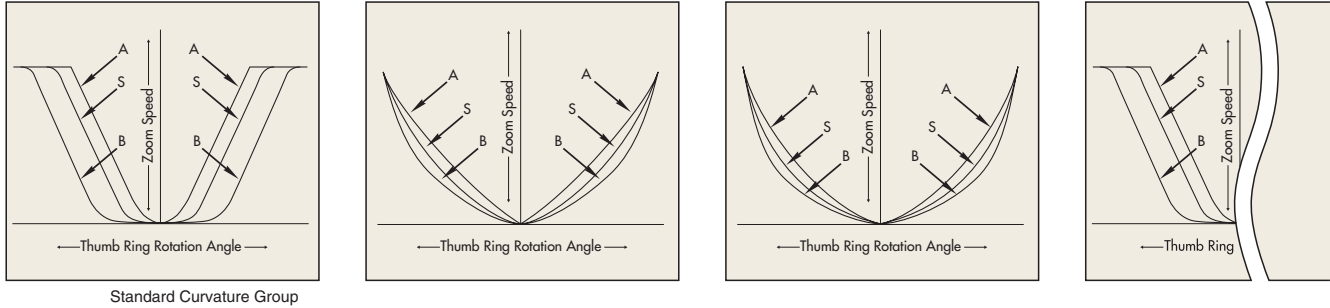


c) Zoom Track

The zoom control range can be restricted. In a conventional analog system, the same function can be set within a limited range. (Both the Tele and Wide ends are within a limited area). With the latest DIGISUPER series and the ZDJ-D02 system, the range can be virtually set at any position used in a production. If desired, this function can be used to memorize an additional preset zoom position to be used during a production.

d) Zoom Servo Characteristics Selection

Zoom servo characteristics can be selected from several groups of provided curvatures by setting the mode from the ZDJ-D02 operation panel. Within each group, one of three specific curvatures can be easily chosen by a toggle switch located near the zoom handle.



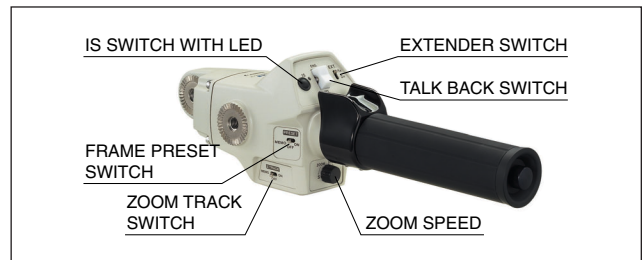
e) "AUX" Switch Function Assignment

One of following functions can be assigned to the AUX switch on the ZDJ-D02.

- 1) Image Stabilizer (for DIGISUPER 75 xs / 86II xs / 86II TELE xs / 100 xs): To active/stop the built-in Shift-IS function. (Ref: page 9)
- 2) F. Hold: To limit the zoom range to a consistent F-number and to stop at the point of F-drop (Ramping).
- 3) Video Return Off: If desired, the "AUX" switch can be assigned the function of disabling the video return switch on the demand.

2. Unique Features of the ZDJ-P01 Digital Servo Zoom Demand For The Latest DIGISUPER Series Zoom Lenses.

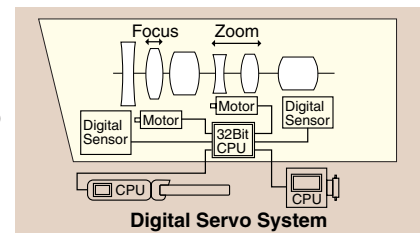
In addition to Canon's ZDJ-D02, there is an introduction of a new zoom demand, the ZDJ-P01. In comparison, the ZDJ-P01 is smaller in size and designed to enhance usability and heighten ease of operation. When used with the latest DIGISUPER series zoom lens, it allows for creative use of the digital zoom functions, such as the Frame Preset Function and Zoom Track Function, to name a few. As well as these great features, the ZDJ-P01 is a more affordable option and allows for a cost effective control system.



3. CAFS

Constant Angle Focusing System

The zooming effect of focus is the phenomenon where the picture size (angle of view) changes when focusing. However, a 32-bit CPU calculates and controls the zoom when focusing in order to counteract this phenomenon. Thus the DIGISUPER series has ZERO zooming effect of focus.



4. Other Features

a) Interface to other digital technology

The Digital Servo System is capable of providing high-speed interactive communication with a virtual studio computer or robotics without D/A or A/D conversion to allow accurate control.

b) PC Connection

By using the digital communication interface on the lens and optional software, a personal computer system can be connected to the lens and used for lens condition.

c) CPU Upgrade

When new additional features are available through updated software, the lens will be updated to the latest version simply by overwriting the software in the 32bit CPU.

d) High speed (zoom:0.6sec, focus:0.7sec in case of the DIGISUPER 25 xs), and high repeatability.

Control Accessories for Studio/Field Lenses

Applicable Lenses

DIGITAL

DIGISUPER Series

DIGISUPER 100 xs / DIGISUPER 86II TELE xs

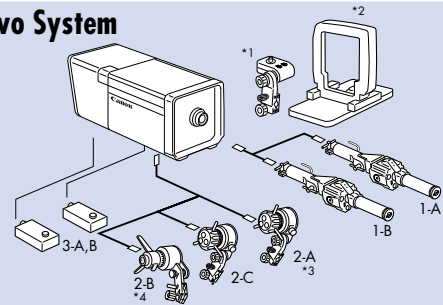
DIGISUPER 86II xs / DIGISUPER 75 xs

DIGISUPER 72 xs / DIGISUPER 62 TELE

DIGISUPER 62 / DIGISUPER 60 xs

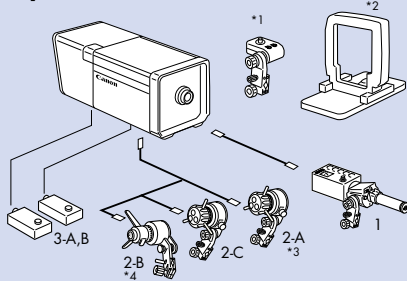
DIGISUPER 25 xs / DIGISUPER 23 xs

Full Servo System



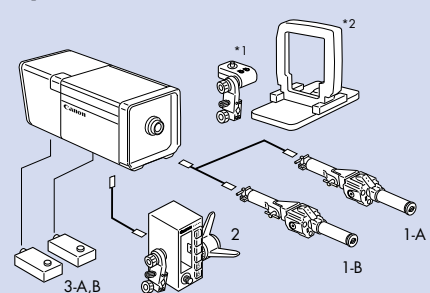
1-A. Zoom Demand ZDJ-D02(Digital Servo)	1822A066
1-B. Zoom Demand ZDJ-P01(Digital Servo)	—
2-A. Focus Demand FDJ-D02(Digital Servo)	1822A065
2-B. Focus Demand FDJ-D12(Digital Servo)	1822A071AA
2-C. Focus Demand FDJ-P01(Digital Servo)	—
3-A. Servo Module SMJ-D02(x2pcs)	1822A070
3-B. Servo Module SMJ-E01(x2pcs)*6	—

Full Servo System(Zoom Demand w/Pre-set Box)



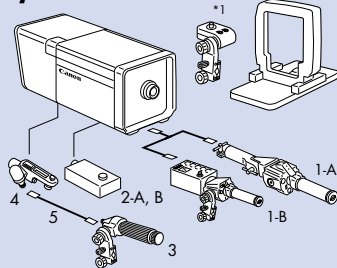
1. Zoom Demand ZPJ-D02(Digital Servo)	—
2-A. Focus Demand FDJ-D02(Digital Servo)	1822A065
2-B. Focus Demand FDJ-D12(Digital Servo)	1822A071AA
2-C. Focus Demand FDJ-P01(Digital Servo)	—
3-A. Servo Module SMJ-D02(x2pcs)	1822A070
3-B. Servo Module SMJ-E01(x2pcs)*6	—

Full Servo System(Focus Demand w/Pre-set Box)



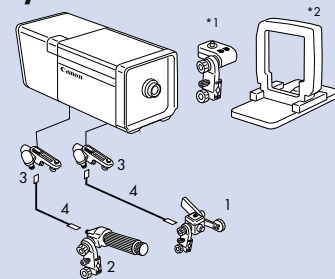
1-A. Zoom Demand ZDJ-D02(Digital Servo)	1822A066
1-B. Zoom Demand ZDJ-P01(Digital Servo)	—
2. Focus Demand FPJ-D12(Digital Servo)	—
3-A. Servo Module SMJ-D02(x2pcs)	1822A070
3-B. Servo Module SMJ-E01(x2pcs)*6	—

Semi-Servo System



1-A. Zoom Demand ZDJ-D02(Digital Servo)	1822A066
1-B. Zoom Demand ZPJ-D02(Digital Servo)	—
2-A. Servo Module SMJ-D02	1822A070
2-B. Servo Module SMJ-E01*6	—
3. Flexible Focus Controller FFP-T61	1822A007
4. Flexible Module FMJ-702	1822A072AA
5. Flexible Cable 36" *5	—

Full Manual System



1. Flexible Zoom Controller FZP-T61	1822A005
2. Flexible Focus Controller FFP-T61	1822A007
3. Flexible Module FMJ-702 (x2pcs)	1822A072AA
4. Flexible Cable 36" (x2pcs) *5	—

*Please refer to page 18 for the DIGISUPER 22 xs accessories.

*1 Switch Box is optionally available. The equivalent switches are integrated into Zoom Demands. It is recommended to have the Switch Box with Full Manual System.

*2 Lens Supporter is necessary for portable camera mounting. Some cameras need separate power supply for zoom and focus servo operation.

*3 "Endless" Digital Focus Demand FDJ-E02 is optionally available.

*4 "Endless" Digital Focus Demand FDJ-E12 is optionally available.

*5 Flexible Cable 33" is optionally available.

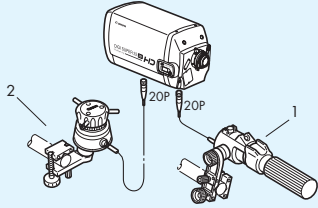
*6 The Servo Module SMJ-E01 can only be used with DIGISUPER 62 TELE, DIGISUPER 62, DIGISUPER 60 xs and DIGISUPER 23 xs.

• For detail information, please contact a Canon Sales Office.

DIGISUPER 22 xs

The DIGISUPER 22 xs can be used with our current Studio/Field lens controllers as well as those for our ENG lenses. At the same time, the lens also offers compatibility with our new digital demands by use of a conversion cable.

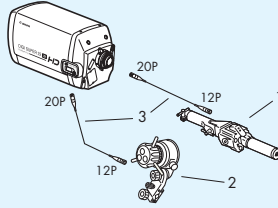
With Current ENG Demand (Standard)



Kit Detail

No.	DESCRIPTION	
1	Digital Zoom Demand	ZSD-300D
2	Digital Focus Demand	FPD-400D

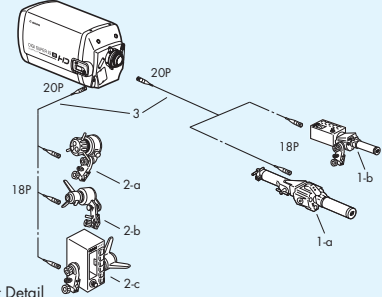
With New Digital Demand



Kit Detail

No.	DESCRIPTION	
1	Digital Zoom Demand	ZDJ-P01
2	Digital Focus Demand	FDJ-P01
3	Conversion Cable	BDC-20

With Current Field/Studio Demand



Kit Detail

No.	DESCRIPTION	
1-a	Digital Zoom Demand	ZDJ-D02
1-b	Digital Zoom Demand W Pre-set Box	ZPJ-D02
2-a	Digital Focus Demand	FDJ-D02
2-b	Digital Focus Demand Propeller Type	FDJ-D12
2-c	Digital Focus Demand W Pre-set Box	FPJ-D12
3	Conversion Cable	BDC-10

* The SUP-400 SUPPORTER is included as a standard component with the lens.

Applicable Lenses

ANALOG SUPER/SUPER-E Series

TELE SUPER 55

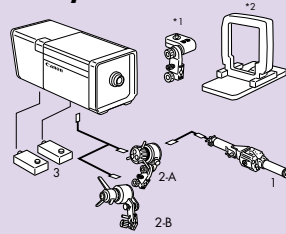
SUPER 55

SUPER E47

SUPER 21

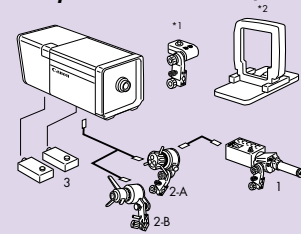
SUPER 20/SUPER E20

Full Servo System



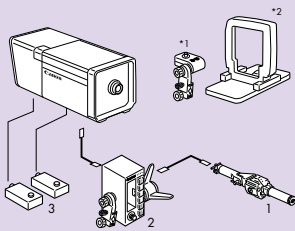
1.	Zoom Demand ZDJ-A01 (Analog Servo)	1822A053
2-A.	Focus Demand FDJ-H01 (Analog Servo)	1822A010
2-B.	Focus Demand FDJ-H01 (Analog Servo)	1822A012
3.	Servo Module SMJ-N02 (x2pcs)	1822A038

Full Servo System (Zoom Demand w/Pre-set Box)



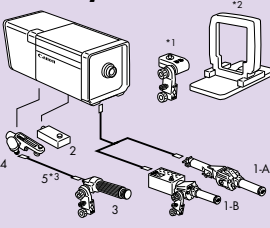
1.	Zoom Demand ZPJ-A01 (Analog Servo)	1822A057
2-A.	Focus Demand FDJ-H01 (Analog Servo)	1822A010
2-B.	Focus Demand FDJ-H01 (Analog Servo)	1822A012
3.	Servo Module SMJ-N02 (x2pcs)	1822A038

Full Servo System (Focus Demand w/Pre-set Box)



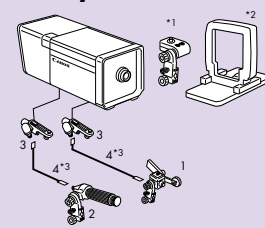
1.	Zoom Demand ZDJ-A01 (Analog Servo)	1822A053
2.	Focus Demand FPJ-K01 (Analog Servo)	1822A022
3.	Servo Module SMJ-N02 (x2pcs)	1822A038

Semi-Servo System



1-A.	Zoom Demand ZDJ-A01 (Analog Servo)	1822A053
1-B.	Zoom Demand ZPJ-A01 (Analog Servo)	1822A057
2.	Servo Module SMJ-N02	1822A038
3.	Flexible Focus Controller FFP-T61	1822A007
4.	Flexible Module FMJ-702	1822A072AA
5.	Flexible Cable 36" *3	—

Full Manual System



1.	Flexible Zoom Controller FZP-T61	1822A005
2.	Flexible Focus Controller FFP-T61	1822A007
3.	Flexible Module FMJ-702 (x2pcs)	1822A072AA
4.	Flexible Cable 36" (x2pcs) *3	—

*1 Switch Box is optionally available. The equivalent switches are integrated into Zoom Demands. It is recommended to have the Switch Box with Full Manual System.

*2 Lens Supporter is necessary for portable camera mounting. Some cameras need separate power supply for zoom and focus servo operation.

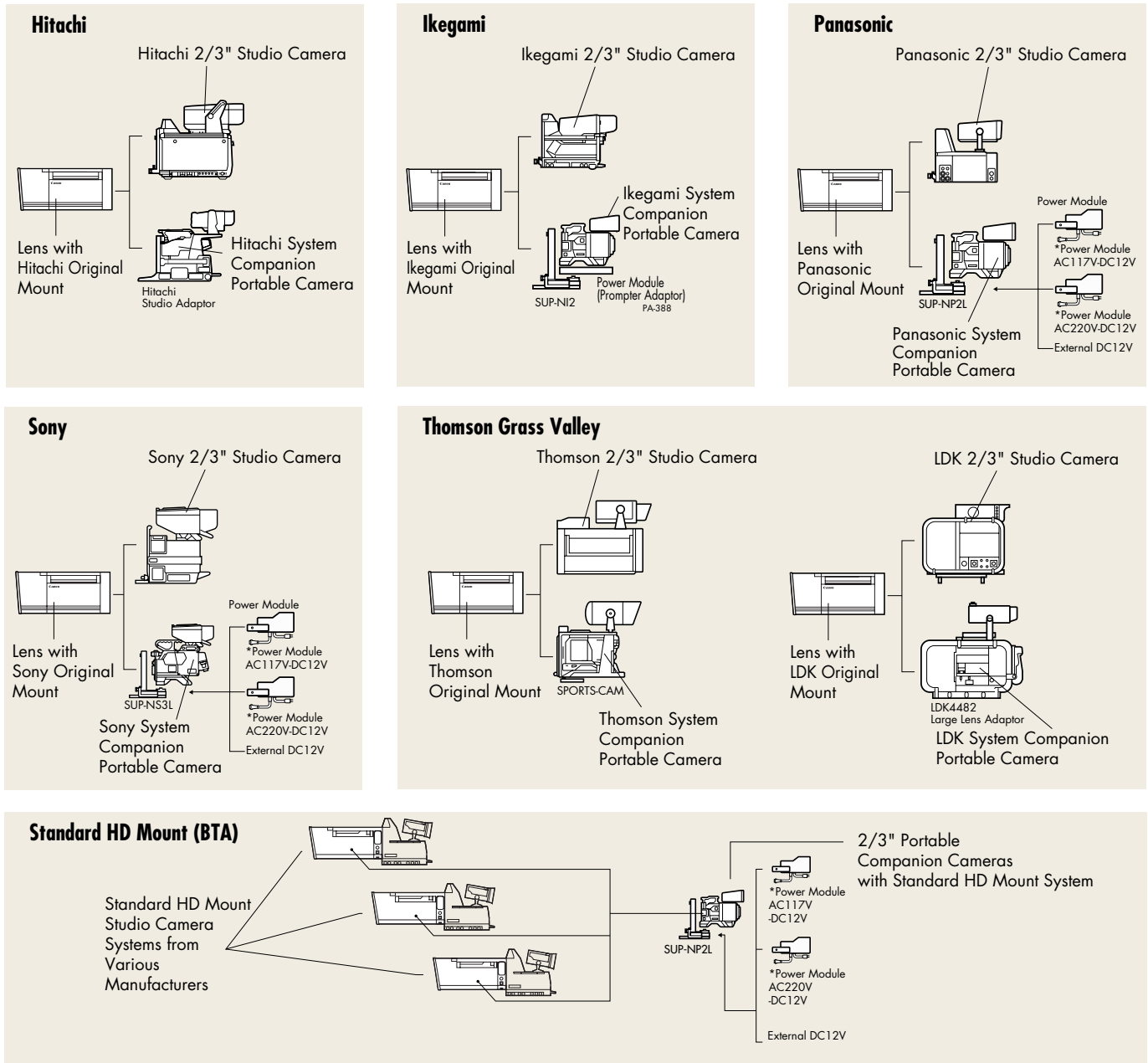
*3 Flexible Cable 33" is optionally available.

• For detail information, please contact a Canon Sales Office.

Studio/Field Lenses Mount Compatibility

1. To Use Camera Manufacturer's Original Mount Lens

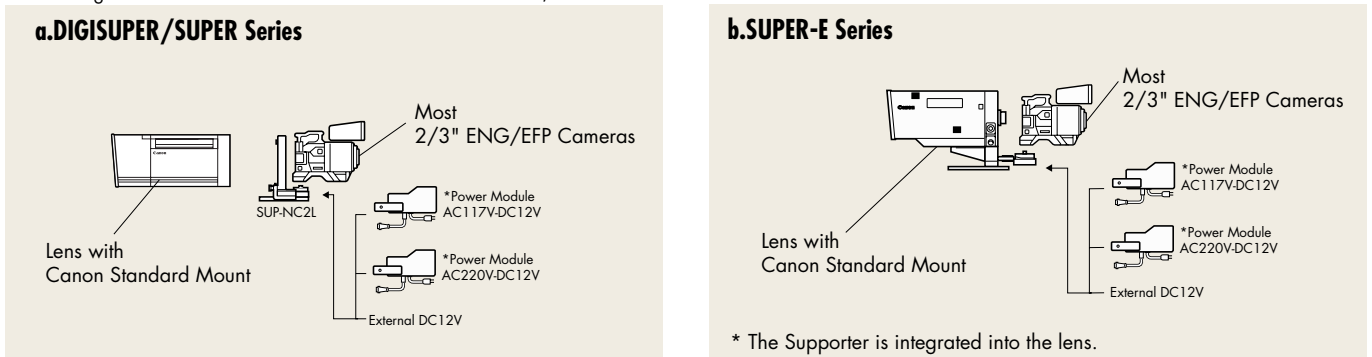
Studio/Field lenses are made with unique mounts corresponding to each manufacturer's Studio/Field cameras. To make the lenses compatible with Portable Studio/Field Companion cameras, the correct lens Support System must be chosen from the following.



Studio/Field Lenses

2. To Use Canon Standard Mount Lens

Canon's Standard Mount is specially designed to fit most 2/3" ENG/EFP cameras via the Canon Universal Supporter SUP-NC2L without mechanical interference. Lenses using the Canon Standard Mount cannot be used with Studio/Field cameras.



*Please contact a Canon Sales Office for the model name of the power module.

Broadcast ENG/EFP Lenses

- Canon offers a variety of Broadcast ENG/EFP lenses, including both HDTV and SDTV versions. Please refer to page 10 regarding the difference between HDTV and SDTV lenses. Please note that the HDTV lenses perform excellently when they are used on SDTV cameras.
- Please refer to page 5,6 & 7 regarding e-IFxs, e-HDxs, HDxs, and IFxs series lenses. All Broadcast ENG/EFP lens are equipped with Canon's "xs" technology as well as our enhanced "Digital Drive" which is explained on page 26 & 27. Canon offers a series of new control accessories designed to operate the unique digital functions. The digital as well as the standard series of control accessories have full compatibility with each other except for the digital functions. (A conversion cable may be required.)
- Canon's Vari-angle Prism Image Stabilizer Adaptor is also shown in the following section.
- Canon's Electronic Cinematography lenses, which satisfy the special requirements of film camera operators, are shown in the following section.



For HDTV / SDTV System



For SDTV System



Vari-angle Prism Image Stabilizer Product



For Electronic Cinematography

Compact Studio Lens

DIGISUPER 22 xs

"Meet Canon's epoch-making DIGISUPER 22 xs.
A Studio Lens for Portable HD/SD Cameras."

The DIGISUPER 22 xs is a studio lens based on a completely new concept. It is a box type lens developed to be used with a portable camera. The lens provides higher optical performance compared with the HD portable lenses and at the same time, owing to the compact size, it offers higher versatility when used with a portable camera as opposed to the large box type lenses.

Also, the lens is equipped with an informational display that will enable you to fully use Canon's unique digital functions. Please refer to page 14 for the specification.



ENG/EFP Lenses

HDTV/SDTV

HJXS DIGITAL DRIVE **DD**



IMAGE STABILIZER

HJ40x14B IASD-V

HJXS DIGITAL DRIVE **DD**



IMAGE STABILIZER

HJ40x10B IASD-V

HJXS

NEW



HJ18ex28B IRSE/IASE

Zoom Ratio	40x	40x	18x
Built-in Extender	2.0x	2.0x	2.0x
Range of Focal Length (with Extender)	14~560mm 28~1120mm (2.0x)	10~400mm 20~800mm (2.0x)	28~500mm 56~1000mm
Maximum Relative Aperture (with Extender)	1:2.8 at 14~307mm 1:5.1 at 560mm 1:5.6 at 28~614mm (2.0x) 1:10.2 at 1120mm	1:2.0 at 10~220mm 1:3.65 at 400mm 1:4.0 at 20~440mm (2.0x) 1:7.3 at 800mm	1:2.8 at 28~286mm 1:4.9 at 500mm 1:5.6 at 56~572mm (2.0x) 1:9.8 at 1000mm
Angular Field of View (with Extender)			
4:3 Aspect Ratio (8.8x6.6mm)	34.9°x26.5° at 14mm 0.9°x0.7° at 560mm 17.9°x13.4° at 28mm (2.0x) 0.5°x0.3° at 1120mm	47.5°x36.5° at 10mm 1.3°x0.9° at 400mm 24.8°x18.7° at 20mm (2.0x) 0.6°x0.5° at 800mm	18.0°x13.5° at 28mm 1.0°x0.8° at 500mm 9.0°x6.8° at 56mm (2.0x) 0.5°x0.4° at 1000mm
16:9 Aspect Ratio (9.6x5.4mm)	37.8°x21.8° at 14mm 1.0°x0.6° at 560mm 19.4°x11.0° at 28mm (2.0x) 0.5°x0.3° at 1120mm	51.3°x30.2° at 10mm 1.4°x0.8° at 400mm 27.0°x15.4° at 20mm (2.0x) 0.7°x0.4° at 800mm	19.6°x11.1° at 28mm 1.1°x0.6° at 500mm 9.9°x5.6° at 56mm (2.0x) 0.6°x0.3° at 1000mm
M.O.D. from Lens Front	2.8m (10mm with Macro)	2.8m (10mm with Macro)	2.2m (10mm with Macro)
M.O.D. from Image Plane	3.20m	3.18m	2.52m
Object Dimensions at M.O.D. (with Extender)			
4:3 Aspect Ratio (8.8x6.6mm)	162.3x121.7cm at 14mm 4.1x3.1cm at 560mm 81.2x60.9cm at 28mm (2.0x) 2.1x1.6cm at 1120mm	227.7x170.8cm at 10mm 5.7x4.3cm at 400mm 113.9x85.4cm at 20mm (2.0x) 2.9x2.2cm at 800mm	65.4x49.1cm at 28mm 3.8x2.9cm at 500mm 32.7x24.6cm at 56mm (2.0x) 1.9x1.5cm at 1000mm
16:9 Aspect Ratio (9.6x5.4mm)	177.1x99.5cm at 14mm 4.5x2.5cm at 560mm 88.6x49.8cm at 28mm (2.0x) 2.3x1.3cm at 1120mm	248.4x139.7cm at 10mm 6.2x3.5cm at 400mm 124.2x69.9cm at 20mm (2.0x) 3.1x1.8cm at 800mm	71.1x40.0cm at 28mm 4.1x2.3cm at 500mm 35.6x20.0cm at 56mm (2.0x) 2.1x1.2cm at 1000mm
Approx. Size (WxHxL)	174.1x133x355.5mm	174.1x133x335.4mm	182.8x123.7x268.3mm
Approx. Mass (IRSE/IASE)	5.45kg (12.02lbs)	5.40kg (11.90lbs)	2.50kg (5.52lbs)/2.60kg (5.74lbs)
Crossover Type	—	—	—
Clutchless Type	—	—	—

Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.

Angular Field of View (with Extender)	4:3 mode of Most Switchable Cameras (7.2x5.4mm)	28.8°x21.8° at 14mm 0.7°x0.6° at 560mm 14.7°x11.0° at 28mm (2.0x) 0.4°x0.3° at 1120mm	39.6°x30.2° at 10mm 1.0°x0.8° at 400mm 20.4°x15.4° at 20mm (2.0x) 0.5°x0.4° at 800mm	14.7°x11.1° at 28mm 0.8°x0.6° at 500mm 7.4°x5.6° at 56mm (2.0x) 0.4°x0.3° at 1000mm
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- Refer to page 10, regarding the difference between HDTV and SDTV lenses. Please note that HDTV lenses also perform excellently when they are adopted to SDTV cameras.
- Please refer to page 28 for explanation about IRSE/IASE (IASD).
- M.O.D. = Minimum Object Distance
- IRSE, VRSE and WRSE Digital Drive Units come equipped with Zoom and Iris Encoders only. A Focus Encoder is available as an option in these units. IAASE, VAASE and WAASE Digital Drive Units come equipped with Zoom, Iris and Focus Encoders.

ENG/EFP Lenses

HDTV/SDTV

eHDxs



EFP

HJ21ex7.5B IRSE/IASE

eHDxs



ENG

HJ22ex7.6B IRSE/IASE

eHDxs



EFP

HJ17ex7.7B IRSE/IASE

Zoom Ratio	21x	22x	17x
Built-in Extender	2.0x	2.0x	2.0x
Range of Focal Length (with Extender)	7.5~158mm 15~316mm (2.0x)	7.6~168mm 15.2~336mm (2.0x)	7.7~131mm 15.4~262mm (2.0x)
Maximum Relative Aperture (with Extender)	1:1.9 at 7.5~116mm 1:2.6 at 158mm 1:3.8 at 15~232mm 1:5.2 at 316mm (2.0x)	1:1.8 at 7.6~114.1mm 1:2.65 at 168mm 1:3.6 at 15.2~228.2mm 1:5.3 at 336mm (2.0x)	1:1.8 at 7.7~100.3mm 1:2.3 at 131mm 1:3.6 at 15.4~200.6mm 1:4.7 at 262mm (2.0x)
Angular Field of View (with Extender)			
4:3 Aspect Ratio (8.8x6.6mm)	60.8°x47.5° at 7.5mm 3.2°x2.4° at 158mm 32.7°x24.8° at 15mm 1.6°x1.2° at 316mm (2.0x)	60.1°x46.9° at 7.6mm 3.0°x2.25° at 168mm 32.3°x24.5° at 15.2mm 1.5°x1.13° at 336mm (2.0x)	59.5°x46.4° at 7.7mm 3.85°x2.9° at 131mm 31.9°x24.2° at 15.4mm 1.9°x1.4° at 262mm (2.0x)
16:9 Aspect Ratio (9.6x5.4mm)	65.2°x39.6° at 7.5mm 3.5°x2.0° at 158mm 35.5°x20.4° at 15mm 1.7°x1.0° at 316mm (2.0x)	64.6°x39.1° at 7.6mm 3.27°x1.84° at 168mm 35.1°x20.1° at 15.2mm 1.64°x0.92° at 336mm (2.0x)	63.9°x38.7° at 7.7mm 4.20°x2.4° at 131mm 34.6°x19.9° at 15.4mm 2.1°x1.2° at 262mm (2.0x)
M.O.D. from Lens Front	0.85m (10mm with Macro)	0.85m (10mm with Macro)	0.75m (10mm with Macro)
M.O.D. from Image Plane	1.16m	1.11m	0.94m
Object Dimensions at M.O.D. (with Extender)			
4:3 Aspect Ratio (8.8x6.6mm)	110.1x82.6cm at 7.5mm 5.1x3.8cm at 158mm 55.1x41.3cm at 15mm 2.6x1.9cm at 316mm (2.0x)	92.5x69.4cm at 7.6mm 4.25x3.19cm at 168mm 46.3x34.7cm at 15.26mm 2.13x1.6cm at 336mm (2.0x)	80.4x60.3cm at 7.7mm 4.8x3.6cm at 131mm 40.2x30.2cm at 15.4mm 2.4x1.8cm at 262mm (2.0x)
16:9 Aspect Ratio (9.6x5.4mm)	120.4x67.7cm at 7.5mm 5.6x3.2cm at 158mm 60.2x33.9cm at 15mm 2.8x1.6cm at 316mm (2.0x)	100.6x56.6cm at 7.6mm 4.60x2.60cm at 168mm 50.3x28.4cm at 15.2mm 2.30x1.30cm at 336mm (2.0x)	87.4x49.2cm at 7.7mm 5.3x3.0cm at 131mm 43.7x24.6cm at 15.4mm 2.7x1.5cm at 262mm (2.0x)
Approx. Size (WxHxL)	179.9x122.3x260.1mm	169.4x111.9x221.4mm	169.4x111.9x211.0mm
Approx. Mass (IRSE/IASE)	2.63kg (5.81lbs)/2.73kg (6.03lbs)	1.83kg(4.04lbs)/1.93kg(4.27lbs)	1.74kg (3.83lbs)/1.84kg (4.05lbs)
Crossover Type	WRSE/WASE, VRSE/VASE	WRSE/WASE, VRSE/VASE	WRSE/WASE, VRSE/VASE
Clutchless Type	Option	Option	Option



Regarding a detailed application of the "CROSSOVER" option on HDTV ENG/EFP lenses, please contact a Canon Sales Office. For detail about "CROSSOVER Technology", please refer to page 8.

Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.

Angular Field of View (with Extender)	4:3 mode of Most Switchable Cameras (7.2x5.4mm)	51.3°x39.6° at 7.5mm 2.6°x2.0° at 158mm 27.0°x20.4° at 15mm 1.3°x1.0° at 316mm (2.0x)	50.7°x39.1° at 7.6mm 2.46°x1.84° at 168mm 26.6°x20.1° at 15.2mm 1.22°x0.92° at 336mm (2.0x)	50.1°x38.6° at 7.7mm 3.15°x2.36° at 131mm 26.3°x19.9° at 15.4mm 57°x1.18° at 262mm (2.0x)
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- Refer to page 10, regarding the difference between HDTV and SDTV lenses. Please note that HDTV lenses also perform excellently when they are adopted to SDTV cameras.
- Please refer to page 28 for explanation about IRSE/IASE.
- M.O.D. = Minimum Object Distance
- IRSE, VRSE and WRSE Digital Drive Units come equipped with Zoom and Iris Encoders only. A Focus Encoder is available as an option in these units. IAASE, VASE and WASE Digital Drive Units come equipped with Zoom, Iris and Focus Encoders.

SDTV

HDxs



ENG

HJ17ex7.6B IRSE/IASE

HDxs



WIDE

HJ11ex4.7B IRSE/IASE

IFxs DIGITAL DRIVE DD



J35ex15B IASD

IFxs DIGITAL DRIVE DD



J35ex11B IASD

17x	11x	35x	35x
2.0x	2.0x	2.0x	2.0x
7.6~130mm 15.2~260mm (2.0x)	4.7~52mm 9.4~104mm (2.0x)	15~525mm 30~1050mm (2.0x)	11~385mm 22~770mm (2.0x)
1:1.8 at 7.6~97.5mm 1:2.4 at 130mm 1:3.6 at 15.2~195mm 1:4.8 at 260mm (2.0x)	1:1.9 at 4.7~40.3mm 1:2.45 at 52mm 1:3.8 at 9.4~80.6mm 1:4.9 at 104mm (2.0x)	1:2.7 at 15~301.5mm 1:4.7 at 525mm 1:5.4 at 30~602mm 1:9.4 at 1050mm (2.0x)	1:2.0 at 11~226.5mm 1:3.4 at 385mm 1:4.0 at 22~453mm 1:6.8 at 770mm (2.0x)
60.1°x46.9° at 7.6mm 3.9°x2.9° at 130mm 32.3°x24.5° at 15.2mm 1.9°x1.5° at 260mm (2.0x)	86.2°x70.1° at 4.7mm 9.7°x7.3° at 52mm 50.2°x38.7° at 9.4mm 4.8°x3.6° at 104mm (2.0x)	32.7°x24.8° at 15mm 0.96°x0.72° at 525mm 16.7°x12.6° at 30mm 0.48°x0.36° at 1050mm (2.0x)	43.6°x33.4° at 11mm 1.31°x0.98° at 385mm 22.6°x17.1° at 22mm 0.65°x0.49° at 770mm (2.0x)
64.6°x39.1° at 7.6mm 4.2°x2.4° at 130mm 35.1°x20.1° at 15.2mm 2.1°x1.2° at 260mm (2.0x)	91.2°x59.8° at 4.7mm 10.5°x5.9° at 52mm 54.1°x32.1° at 9.4mm 5.3°x3.0° at 104mm (2.0x)	35.5°x20.4° at 15mm 1.05°x0.59° at 525mm 18.2°x10.3° at 30mm 0.52°x0.29° at 1050mm (2.0x)	47.1°x27.6° at 11mm 1.43°x0.80° at 385mm 24.6°x14.0° at 22mm 0.71°x0.40° at 770mm (2.0x)
0.56m (10mm with Macro)	0.3m(10mm with Macro)	2.2m(50mm with Macro)	2.2m(50mm with Macro)
0.81m	0.59m	2.57m	2.56m
59.9x44.9cm at 7.6mm 3.7x2.8cm at 130mm 30.0x22.5cm at 15.2mm 1.9x1.4cm at 260mm (2.0x)	65.3x49.0cm at 4.7mm 5.7x4.3cm at 52mm 32.7x24.5cm at 9.4mm 2.9x2.2cm at 104mm (2.0x)	118.3x88.7cm at 15mm 3.5x2.6cm at 525mm 59.2x44.4cm at 30mm 1.8x1.4cm at 1050mm (2.0x)	161.9x121.4cm at 11mm 4.7x3.5cm at 385mm 81.0x61.0cm at 22mm 2.4x1.8cm at 770mm (2.0x)
65.4x36.8cm at 7.6mm 4.0x2.3cm at 130mm 32.7x18.4cm at 15.2mm 2.0x1.2cm at 260mm	71.4x40.2cm at 4.7mm 6.2x3.5cm at 52mm 35.7x20.1cm at 9.4mm 3.1x1.8cm at 104mm (2.0x)	129.2x72.7cm at 15mm 3.8x2.1cm at 525mm 64.6x36.4cm at 30mm 1.9x1.1cm at 1050mm (2.0x)	176.8x99.5cm at 11mm 5.1x2.9cm at 385mm 88.4x49.8cm at 22mm 2.6x1.5cm at 770mm (2.0x)
164x106.5x206.4mm	168.2x110.6x241.0mm	169.5x143x330mm	169.5X143X316mm
1.62kg (3.56lbs)/1.72kg (3.78lbs)	1.94kg (4.29lbs)/2.04kg (4.51lbs)	— / 4.5kg (9.94lbs)	— / 4.5kg (9.83lbs)
WRSE/WASE, VRSE/VASE	WRSE/WASE, VRSE/VASE	—	—
Option	Option	—	—

Broadcast ENG/EFP Lenses

Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.

50.7°x39.1° at 7.6mm 3.2°x2.4° at 130mm 26.6°x20.1° at 15.2mm 1.6°x1.2° at 260mm (2.0x)	74.9°x59.8° at 4.7mm 7.9°x5.9° at 52mm 41.9°x32.1° at 9.4mm 4.0°x3.0° at 104mm (2.0x)	27.0°x20.4° at 15mm 0.79°x0.59° at 525mm 13.7°x10.3° at 30mm 0.39°x0.29° at 1050mm (2.0x)	36.3°x27.6° at 11mm 1.07°x0.80° at 385mm 18.6°x14.0° at 22mm 0.53°x0.40° at 770mm (2.0x)
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ENG/EFP Lenses

SDTV




J22ex7.6B IRSE/IASE




J17ex7.7B IRSE/IASE




J11ex4.5B IRSE/IASE

Zoom Ratio	22x	17x	11x	
Built-in Extender	2.0x	2.0x	2.0x	
Range of Focal Length (with Extender)	7.6~168mm 15.2~336mm	7.7~131mm 15.4~262mm	4.5~50mm 9~100mm (2.0x)	
Maximum Relative Aperture (with Extender)	1:1.8 at 7.6~118.6mm 1:2.55 at 168mm 1:3.6 at 15.2~237.2mm (2.0x) 1:5.1 at 336mm	1:1.8 at 7.7~102.5mm 1:2.3 at 131mm 1:3.6 at 15.4~205mm (2.0x) 1:4.6 at 262mm	1:1.8 at 4.5~36mm 1:2.35 at 50mm 1:3.6 at 9~72mm (2.0x) 1:4.7 at 100mm (2.0x)	
Angular Field of View (with Extender)	4:3 Aspect Ratio (8.8x6.6mm)	60.1°x46.9° at 7.6mm 3.0°x2.3° at 168mm 32.3°x24.5° at 15.2mm (2.0x) 1.5°x1.1° at 336mm	59.5°x46.4° at 7.7mm 3.85°x2.89° at 131mm 31.9°x24.2° at 15.4mm (2.0x) 1.92°x1.44° at 262mm	88.7°x72.5° at 4.5mm 10.1°x7.6° at 50mm 52.1°x40.3° at 9mm (2.0x) 5.0°x3.8° at 100mm (2.0x)
	16:9 Aspect Ratio (9.6x5.4mm)	64.6°x39.1° at 7.6mm 3.3°x1.8° at 168mm 35.1°x20.1° at 15.2mm (2.0x) 1.6°x0.9° at 336mm	63.9°x38.6° at 7.7mm 4.20°x2.36° at 131mm 34.6°x19.9° at 15.4mm (2.0x) 2.10°x1.18° at 262mm	93.7°x61.9° at 4.5mm 11.0°x6.2° at 50mm 56.1°x33.4° at 9mm (2.0x) 5.5°x3.1° at 100mm (2.0x)
M.O.D. from Lens Front	0.8m (10mm with Macro)	0.6m (10mm with Macro)	0.3m (10mm with Macro)	
M.O.D. from Image Plane	1.06m	0.84m	0.58m	
Object Dimensions at M.O.D. (with Extender)	4:3 Aspect Ratio (8.8x6.6mm)	87.4x65.6cm at 7.6mm 4.0x3.0cm at 168mm 43.7x32.8cm at 15.2mm (2.0x) 2.0x1.5cm at 336mm	63.1x47.3cm at 7.7mm 3.8x2.9cm at 131mm 31.6x23.7cm at 15.4mm (2.0x) 1.9x1.5cm at 262mm	67.9x50.9cm at 4.5mm 5.9x4.4cm at 50mm 34.0x25.5cm at 9mm (2.0x) 3.0x2.2cm at 100mm (2.0x)
	16:9 Aspect Ratio (9.6x5.4mm)	95.0x53.4cm at 7.6mm 4.4x2.5cm at 168mm 47.5x26.7cm at 15.2mm (2.0x) 2.2x1.2cm at 336mm	68.5x38.5cm at 7.7mm 4.2x2.4cm at 131mm 34.3x19.3cm at 15.4mm (2.0x) 2.1x1.2cm at 262mm	74.4x41.7cm at 4.5mm 6.4x3.6cm at 50mm 37.0x20.8cm at 9mm (2.0x) 3.2x1.8cm at 100mm (2.0x)
Approx. Size (WxHxL)	169.4x111.9x218.6mm	163.9x106.3x197.4mm	168.2x110.6x237.7mm	
Approx. Mass (IRSD/IASD)	1.79kg (3.95lbs)/1.89kg (4.17lbs)	1.47kg (3.24lbs)/1.57kg (3.46lbs)	1.83kg (4.03lbs)/1.93kg (4.25lbs)	
Crossover Type	WRSE/WASE, VRSE/VASE	WRSE/WASE, VRSE/VASE	WRSE/WASE, VRSE/VASE	
Clutchless Type	Option	Option	Option	

Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.



For detail about "CROSSOVER" option, please refer to page 8.

Angular Field of View (with Extender)	4:3 mode of Most Switchable Cameras (7.2x5.4mm)	50.7°x39.1° at 7.6mm 2.5°x1.8° at 168mm 26.6°x20.1° at 15.2mm (2.0x) 1.2°x0.9° at 336mm	50.1°x38.6° at 7.7mm 3.15°x2.36° at 131mm 26.3°x19.9° at 15.4mm (2.0x) 1.57°x1.18° at 262mm	77.3°x61.9° at 4.5mm 8.24°x6.18° at 50mm 43.6°x33.4° at 9mm (2.0x) 4.12°x3.09° at 100mm (2.0x)
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• Refer to page 10, regarding the difference between HDTV and SDTV lenses. Please note that HDTV lenses also perform excellently when they are adopted to SDTV cameras.

• Please refer to page 28 for explanation about IRSE/IASE.

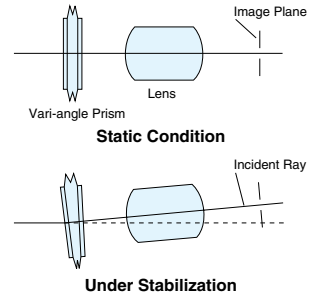
• M.O.D. = Minimum Object Distance

• IRSE, VRSE and WRSE Digital Drive Units come equipped with Zoom and Iris Encoders only. A Focus Encoder is available as an option in these units. IAASE, VASE and WASE Digital Drive Units come equipped with Zoom, Iris and Focus Encoders.

Vari-angle Prism Optical Image Stabilizer

IMAGE STABILIZER

Canon introduces the “Vari-angle Prism” image stabilizer (VAP-IS), our patented breakthrough technology, the world’s first Optical Image Stabilization solution provided for broadcast ENG/EFP lenses. Normally light rays from a subject pass through the lens to the image plane. However, a vibration given to the camera causes image shaking, resulting in an unsteady image. The VAP-IS component is composed of two pieces of flat glass joined by a flexible bellows that can expand and contract as required. The space between the glass planes is filled with a special liquid, which exhibits a high refractive index. When the VAP-IS component is placed between the subject and the optical system, the angle of the component can be changed according to the vibration angle related to the axis of light in the lens. This controls the angle of refraction of the light ray so that it reaches the image plane, free of shake. The VAP-IS covers a wide bandwidth of frequencies, which include high frequencies that are often encountered with moving vehicles, helicopters as well as other unsteady platforms and will dramatically improve the video quality in such environments. The VAP-IS technology is available in the “IS-20BII” Adaptor which is capable of operating on many Canon lenses.



IS-20B II

The IS-20BII Image Stabilizer Adaptor is designed to be front mounted on Canon’s range of J22ex7.6B, J21ax7.8B, J20ax8B, J17ex7.7B, J17ax7.7B, J16ax8B, J15ax8B and their 1/2” counterpart ENG lenses. The full specifications of the lens including the 2x extender can be used with the IS-20BII and the adaptor does not cause any light loss. An additional 12V power supply is necessary to power the IS-20BII (not included).



IS-20BII

IMAGE STABILIZER

APPLICATION

Style	System		Applicable Lenses					
	Description	Model name	J15ax	J16ax J17ax(1) J17ex(1)	J20ax	J21ax	J22ex	
ENG USE	image stabilizer unit		IS-20BII	●	●	●	●	●
	Parts for IS-20BII	Mini-supporter	SUP-15B	●				
			SUP-16B		●			
			SUP-20B			●		
			SUP-21B				●	
	Adaptor Ring	ADR-85	●	●(2)			●	
EFP USE	Supporter	SUP-200	●	●	●	●	●	
DIGITAL DRIVE USE	conv.cable(20pM-12pF)	CC-2012		●(3)		●(3)	●(3)	

SPECIFICATIONS

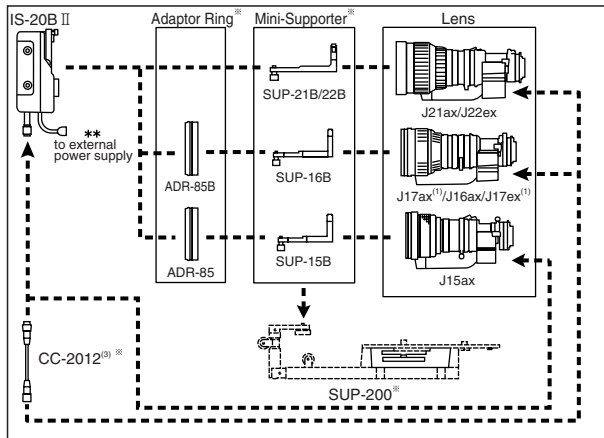
Applicable Lens ★ J22ex, J21ax, J20ax, J17ex, J17ax, J16ax, J15ax

Power External DC12V/3Ah minimum with a 4 pin XLR connector.
The power supply is not included.

Size 178.5x150.5x68.5mm
Mass 1.6kg (3.53lbs)

★The 1/2” counterpart ENG lenses are also applicable.

System Configuration



- (1)The picture corners are slightly eclipsed at wide angle.
- (2)ADR-85B is required for the J16ax, J17ax and the J17ex.
- (3)Please contact a Canon office for information.

※Optional items

※※ Note

Pin assignment of the battery cable is as follows :

Type of connector : XLR-4-12C
Pin assignment : No.1 0V(Ground)
No.2 No connection
No.3 No connection
No.4 +12V DC

Features: **e-IFxs / e-HDxs** and Digital Drive **ENG/EFP** Lenses

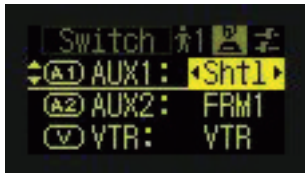
With the introduction of e-IFxs and the e-HDxs series that has enhanced our well known “Digital Drive”, all of our broadcast SDTV and HDTV lenses offer many features.

The concept of enhanced “Digital Drive” is based on “Ease of Operation” for our customers.

1. Three Preset Functions

e-HDxs, e-IFxs and “Digital Drive” provide the following “three preset functions” that have become possible with digital technology.

Shuttle Shot



By memorizing any two focal lengths, the Digital Drive can automatically “shuttle” between the two points, moving in either direction.



Framing Preset



An angle of view can be preset in either of two memories (DD: one memory) and the lens will zoom to that position by pushing a simple button. During a performance, framing preset will reproduce the zoom position decided upon at the rehearsal. It’s easy to repeat the same zoom as often as you like at the highest speed or in a preset zoom speed.



Speed Preset



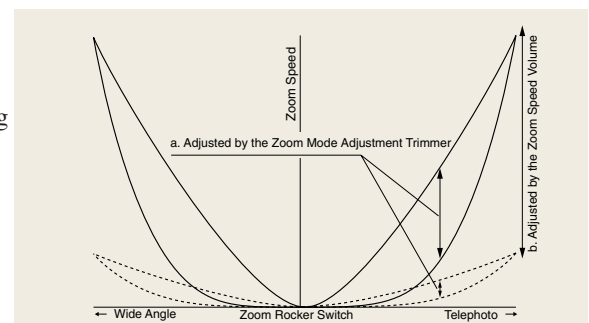
A specific zoom speed can be preset in memory and it is possible to repeat the zoom speed as often as you like by pushing a simple button.



2. Zoom Mode Select



One of several operational curves can be chosen which will allow different zoom movement characteristics when operating the seesaw switch. This is accomplished as a linear adjustment as opposed to an adjustment done in steps.

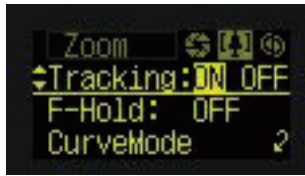


3. User-Customized Setting



The drive unit can memorize 9 patterns of user-customized settings and also transmit the data between different drive units.

4. Zoom Track



“Zoom Track” allows the camera operator to adjust the electronic focal length to their desired range by memorizing zoom positions at both the tele and the wide side of the zoom.



5. Ergonomic Drive Unit

The e-IFxs/e-HDxs Ergonomic Drive Unit is tilted at an ideal angle of 12.5° to realize good balance and comfort.

A new informational display has been added which now allows the user to customize the enhanced digital functions easily, precisely and fully.

The enhanced digital functions are easily accessed and set via the Digital Function Selector, an X-Y axis switch located next to the display.



6. Improved Maximum Zoom and Focus Servo Speed

Zoom: 0.5 sec., Focus: 1.5 sec.

7. Demand Series to Support Digital Function

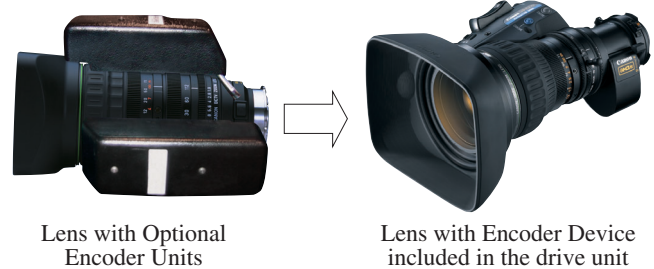
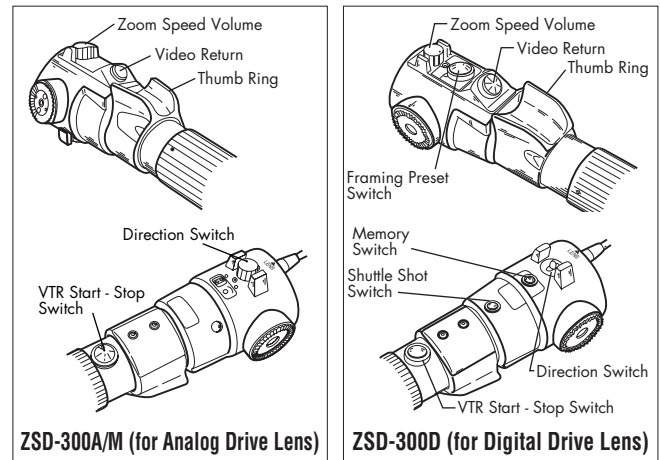
Canon offers a series of servo controllers for Digital Drive lenses. The ZSD-300D (zoom demand), FPD-400D (focus demand) and FPM-420D (focus servo module) to support the Digital Drive's unique functions. These demands are connected to the “Digital Drive” via a 20pin one-touch type connector, which makes the connecting and disconnecting easier and quicker. Also with the FPD-400D, focus servo operational curve can be selected unlike the conventional focus demand. The digital series of demands and the conventional demands have complete compatibility with each other, except for the unique digital functions. (A conversion cable may be required. Please refer to page 29 and 31.)

8. PC Connection

PC connection for remote control or lens condition check can be accomplished via a communication interface on the lens and personal computer with optional software.

9. Compatibility with Virtual Studio System

Canon has a series of **e-IFxs / e-HDxs** lenses, which are equipped with an enhanced digital drive unit. Conventional potentiometers are analog positional sensors capable of only 8-10 bit equivalent resolution. Thus virtual studio systems with portable lenses called for an optional Encoder Unit to be put on the zoom and focus ring of the lens. With the introduction of 16 bit resolution Rotary Encoder Devices built into the enhanced digital drive unit, the lens can be simply integrated into a virtual digital studio system without any additions. The encoders also enable superior precise control. The zoom servo provides a dynamic range of 0.5 sec. quick zooms to over a 5 min. super slow zoom. Repeatability in focus and iris control are also much more precise. Canon's unique technology has made the Encoder Device surprisingly small to be installed in the existing drive unit without changes in size or weight.



DIGITAL

Control Accessories of Digital Drive ENG/EFP Lenses

J11ex4.5B/J17ex7.7B/J22ex7.6B/J35ex11B/J35ex15B/HJ11ex4.7B/HJ17ex7.7B/HJ17ex7.6B/HJ18ex28B/HJ21ex7.5B/HJ22ex7.6B/HJ40x10B/HJ40x14B

Recommended Kit Configuration

ZR-1D
for all listed IRSE/IASD/IASE lenses

ZOOM SERVO ONLY

OHDS
OIFXS
DIGITAL DRIVE
DD

ZSD-300D

MS-210D
for all listed IRSE lenses

SEMI-SERVO KIT

OHDS
OIFXS

ZSD-300D

SS-41-D
for all listed IRSE lenses

FULL SERVO KIT

OHDS
OIFXS

ZSD-300D

SS-41-IASD
for all listed IASD/IASE lenses

FULL SERVO KIT

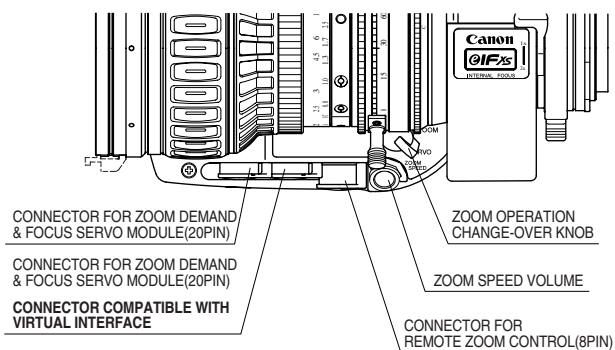
OHDS
OIFXS
DIGITAL DRIVE
DD

ZSD-300D

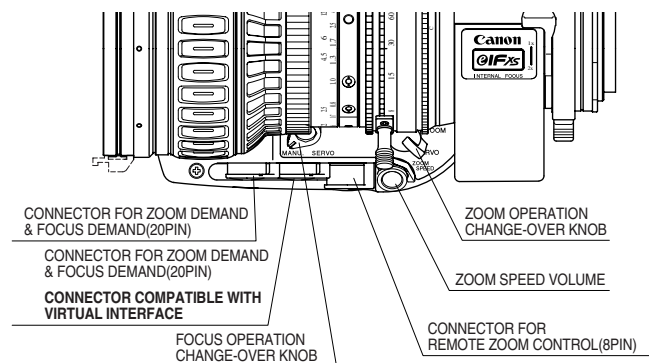
The Difference between IRSE and IASE (IASD) type lenses (Also for Crossover Models)

The IRSE lenses are the standard type of Portable lens with a Servo Zoom Digital Drive Unit. For Servo Focus operation, IRSE lenses require both a Servo Focus Module and a Servo Focus Demand. The IASE (IASD) lenses are a special type of Portable lens equipped with a Digital Drive Unit offering both Servo Zoom and Focus. For Servo Focus operation, IASE (IASD) lenses only require a Servo Focus Demand. The IASE (IASD) lenses can be used in both the Studio and the Field.

IRSE TYPE

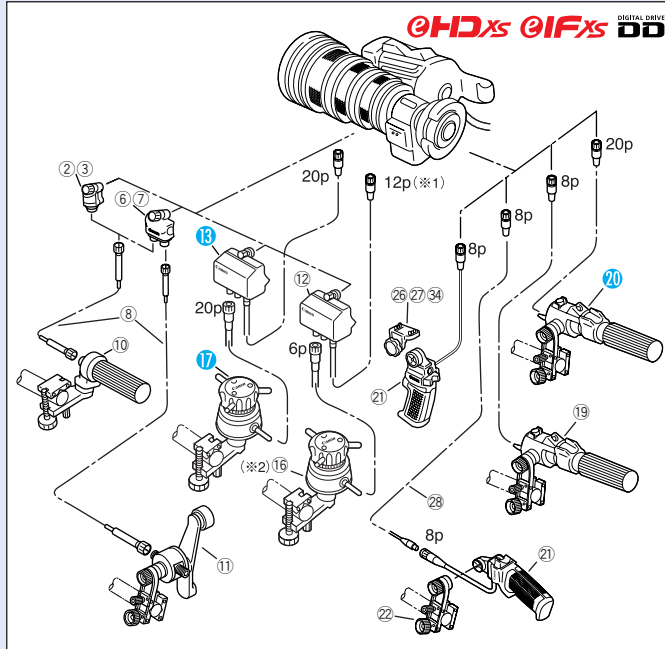


IASE (IASD) TYPE



• The telephoto lenses (HJ40x, J35ex) are not compatible with virtual interfaces.

Applicable Component Detail



(※1) CC-2012 conversion cable is necessary to connect between IRSE Digital Drive Lens and FPM-420.
 (※2) CC-2006 conversion cable is necessary to connect between IASD/IAS E Digital Drive Lens and FPD-400.

#	Unit	Description	CODE
②	FFM-100	Flex Focus Module	1824A015
③	FFM-300	Flex Focus Module	1824A016
⑥	FFM-200	Flex Dual Module	1824A013
⑦	FFM-400	Flex Dual Module	-
⑧	FC-40	Flex Cable	1824A010
⑩	FFC-200	Flex Focus Controller	1824A014
⑪	FZC-100	Flex Zoom Controller	1824A021
⑫	FPM-420	Focus Positional Servo Module	1824A026
⑬	FPM-420D	Focus Positional Servo Module	1824A129
⑯	FPD-400	Focus Positional Demand	1824A018
⑰	FPD-400D	Focus Positional Demand	1824A124
⑲	ZSD-300A*/M	Zoom Demand (A or M types, depends on applicable camera)	A 1824A066 M 1824A067
⑳	ZSD-300D	Zoom Demand	1824A123
㉑	ZSG-200A*/M	Zoom Servo Grip (A or M types, depends on applicable camera)	A 1824A068 M 1824A069
㉒	CR-10	Clamper	1824A007
㉔	ZGA-400**	Grip Adapter	0025T616
㉕	ZGA-500**	Grip Adapter	0043T088
㉖	ZGA-600**	Grip Adapter	
㉘	EC-80	Zoom Extension Cable (8P)	1824A009
㉚	CC-2006	Conv. Cable (20pM-6pF)	1824A125
㉛	CC-2012	Conv. Cable (20pM-12pF)	1824A126

Applicable Kit Detail

	Kit Name	Zoom		Focus	
		System	Component	System	Component

For IRSE/VRSE/WRSE Type Lenses (Except HJ40x, J35ex)

Zoom Servo Only	--	ZR-1	⑰*	--	--
	(ZR-1D)	ZR-1D	㉒	--	--
	--	ZR-2(A)	㉑* ㉒ ㉘	--	--
	--	ZR-2(B)	㉑*(㉔ or ㉕)**	--	--
Semi-Servo	MS-210	ZR-1	⑰*	FR-2	② ⑧ ⑩
	MS-210D	ZR-1D	㉒	FR-2	② ⑧ ⑩
	MS-220	ZR-2(A)	㉑* ㉒ ㉘	FR-2	② ⑧ ⑩
Full Servo	SS-41-20	ZR-1	⑰*	FPS-4	⑫ ⑯ ㉓
	SS-41-D	ZR-1D	㉒	FPS-4D	⑬ ⑰
	SS-420	ZR-2(A)	㉑* ㉒ ㉘	FPS-4	⑫ ⑯ ㉓
Full Manual	--	FZC-1	⑥ ⑧ ⑪	FR-2(w/o ②)	⑧ ⑩

	Kit Name	Zoom		Focus	
		System	Component	System	Component

For HJ40x14B, HJ40x10B, J35ex15B, J35ex11B

Zoom Servo Only	--	ZR-1	⑰*	--	--
	--	ZR-1D	㉒	--	--
	--	ZR-2(A)	㉑* ㉒ ㉘	--	--
Semi-Servo	--	ZR-1	⑰*	FR-2	③ ⑧ ⑩
	--	ZR-1D	㉒	FR-2	③ ⑧ ⑩
	--	ZR-2(A)	㉑* ㉒ ㉘	FR-2	③ ⑧ ⑩
Full Servo	SS-41-IAS	ZR-1	⑰*	FPS-4	⑯ ㉔
	SS-41-IASD	ZR-1D	㉒	FPS-4D	⑰
	SS-42-IAS	ZR-2(A)	㉑* ㉒ ㉘	FPS-4	⑯ ㉔
Full Manual	--	FZC-1	⑦ ⑧ ⑪	FR-2(w/o ③)	⑧ ⑩

For IASE/VASE/WASE Type Lenses (Except HJ40x, J35ex)

Zoom Servo Only	--	ZR-1	⑰*	--	--
	(ZR-1D)	ZR-1D	㉒	--	--
	--	ZR-2(A)	㉑* ㉒ ㉘	--	--
	--	ZR-2(B)	㉑*(㉔ or ㉕)**	--	--
Semi-Servo	MS-210	ZR-1	⑰*	FR-2	② ⑧ ⑩
	MS-210D	ZR-1D	㉒	FR-2	② ⑧ ⑩
	MS-220	ZR-2(A)	㉑* ㉒ ㉘	FR-2	② ⑧ ⑩
Full Servo	SS-41-IAS	ZR-1	⑰*	FPS-4	⑯ ㉔
	SS-41-IASD	ZR-1D	㉒	FPS-4D	⑬ ⑰
	SS-42-IAS	ZR-2(A)	㉑* ㉒ ㉘	FPS-4	⑯ ㉔
Full Manual	--	FZC-1	⑥ ⑧ ⑪	FR-2(w/o ②)	⑧ ⑩

* If a ZSD-300A Demand or ZSG-200A Grip will be used with a DD (Digital Drive) B3 mount lens, please contact a Canon office for special operating instructions.

** ㉔ is for J21ax7.8B/HJ21x7.8B/HJ21x7.5B/HJ18x7.8B II J22ex7.6B/HJ22ex7.6B
 ㉕ is for J11ax4.5B/J16ax8B/J17ax7.7B/HJ11x4.7B/HJ9x5.5B II HJ16x8B/HJ17ex7.7B/HJ17ex7.6B
 ㉖ is for HJ18ex28B

Recommended Kit Configuration for the listed lenses. (See Previous Page)

Recommended Kit Configuration for the Digital lenses.

● The controllers support the new DD functions.

ANALOG

Control Accessories of Analog Drive ENG/EFP Lenses

J9ax5.2B/J15ax8B/J16ax8B/J20ax8B/J21ax7.8B/HJ9x5.5B(I)/HJ15x8B/HJ18x7.8B(I)

Recommended Kit Configuration

ZR-1 ZOOM SERVO ONLY

for all listed **IRS/IAS** lenses

ANALOG

ZSD-300A/M*

MS-210 SEMI-SERVO KIT

for all listed **IRS** lenses

ANALOG

ZSD-300A/M*

SS-41-20 FULL SERVO KIT

for J16ax8B **IRS**
J20ax8B **IRS**
HJ18x7.8B **IRS(I)**
J21ax7.8B **IRS**

ANALOG

ZSD-300A/M*

SS-410 FULL SERVO KIT

for J9ax5.2B **IRS**
HJ9x5.5B **IRS(I)**
J15ax8B **IRS**
HJ15x8B **IRS**

ANALOG

ZSD-300A/M*

SS-41-IAS FULL SERVO KIT

for all listed **IAS** lenses

ANALOG

ZSD-300A/M*

SS-42-IAS FULL SERVO KIT

for all listed **IAS** lenses

ANALOG

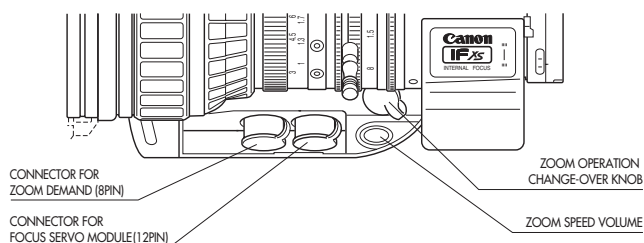
ZSG-200A/M*

*A or M types, depends on applicable camera

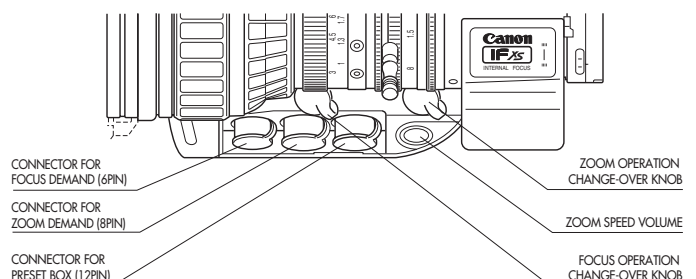
The Difference between IRS and IAS type lenses (Also for Crossover Models)

The IRS lenses are the standard type of portable lens with a Servo Zoom Drive Unit. For Servo Focus operation, IRS lenses require both a Servo Focus Module and a Servo Focus Demand. The IAS lenses are a special type of portable lens equipped with a Drive Unit offering both Servo Zoom and Focus. For Servo Focus operation, IAS lenses only require a Servo Focus Demand. The IAS lenses can be used in both the Studio and the Field.

IRS TYPE

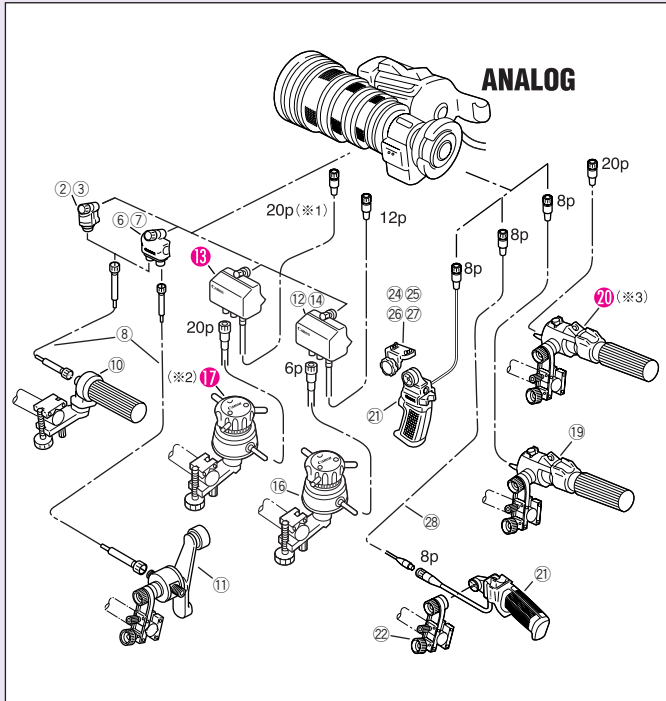


IAS TYPE



ANALOG

Applicable Component Detail



(※1) CC-1220 conversion cable is necessary to connect between IRS Analog Drive Lens and FPM-420D.

(※2) CC-0620 conversion cable is necessary to connect between FPM-420, FPM-500 or IAS Analog Drive Lens and FPD-400D.

(※3) CC-0820 conversion cable is necessary to connect between IRS or IAS Analog Drive Lens and ZSD-300D.

Applicable Kit Detail

	Kit Name	Zoom		Focus	
		System	Component	System	Component

For IRS/VRS/WRS Type Lenses (Except HJ40x, J33ax)

Zoom Servo Only	Kit Name	System	Component	Zoom System	Zoom Component	Focus System	Focus Component
Zoom Servo Only	ZR-1	ZR-1	19	--	--	--	--
	--	ZR-1D	20* 30	--	--	--	--
	--	ZR-2(A)	21 22 28	--	--	--	--
	--	ZR-2(B)	21(24,25,26)or(27)**	--	--	--	--
Semi-Servo	MS-210	ZR-1	19	FR-2	2 8 10	--	--
	MS-210D	ZR-1D	20* 30	FR-2	2 8 10	--	--
	MS-220	ZR-2(A)	21 22 28	FR-2	2 8 10	--	--
Full Servo	SS-41-20	ZR-1	19	FPS-4	12 16	--	--
	SS-410	ZR-1	19	FPS-4	14 16	--	--
	--	ZR-1D	20* 30	FPS-4D	12 17 29***	--	--
	--	ZR-1D	20* 30	FPS-4D	13 17 31***	--	--
	--	ZR-1D	20* 30	FPS-4D	14 17 29****	--	--
	SS-420	ZR-2(A)	21 22 28	FPS-4	12 16	--	--
SS-42-20	ZR-2(A)	21 22 28	FPS-4	14 16	--	--	
Full Manual	--	FZC-1	6 8 11	FR-2(w/o 2)	8 10	--	--

For IAS/VAS/WAS Type Lenses (Except HJ40x, J33ax)

Zoom Servo Only	Kit Name	System	Component	Zoom System	Zoom Component	Focus System	Focus Component
Zoom Servo Only	ZR-1	ZR-1	19	--	--	--	--
	--	ZR-1D	20* 30	--	--	--	--
	--	ZR-2(A)	21 22 28	--	--	--	--
	--	ZR-2(B)	21(24,25,26)or(27)**	--	--	--	--
Semi-Servo	MS-210	ZR-1	19	FR-2	2 8 10	--	--
	MS-210D	ZR-1D	20* 30	FR-2	2 8 10	--	--
	MS-220	ZR-2(A)	21 22 28	FR-2	2 8 10	--	--
Full Servo	SS-41-IAS	ZR-1	19	FPS-4	16	--	--
	--	ZR-1D	20* 30	FPS-4D	17 29	--	--
	SS-42-IAS	ZR-2(A)	21 22 28	FPS-4	16	--	--
Full Manual	--	FZC-1	6 8 11	FR-2(w/o 2)	8 10	--	--

#	Unit	Description	CODE
2	FFM-100	Flex Focus Module	1824A015
3	FFM-300	Flex Focus Module	1824A016
6	FFM-200	Flex Dual Module	1824A013
7	FFM-400	Flex Dual Module	-
8	FC-40	Flex Cable	1824A010
10	FFC-200	Flex Focus Controller	1824A014
11	FZC-100	Flex Zoom Controller	1824A021
12	FPM-420	Focus Positional Servo Module	1824A026
13	FPM-420D	Focus Positional Servo Module	1824A129
14	FPM-500	Focus Positional Servo Module	1824A027
16	FPD-400	Focus Positional Demand	1824A018
17	FPD-400D	Focus Positional Demand	1824A124
19	ZSD-300A/M	Zoom Demand (A or M types, depends on applicable camera)	A 1824A066 M 1824A067
20	ZSD-300D*	Zoom Demand	1824A123
21	ZSG-200A/M	Zoom Servo Grip (A or M types, depends on applicable camera)	A 1824A068 M 1824A069
22	CR-10	Clamper	1824A007
24	ZGA-200**	Grip Adapter	1824A017
25	ZGA-300**	Grip Adapter	1824A064
26	ZGA-400**	Grip Adapter	0025T616
27	ZGA-500**	Grip Adapter	0043T088
28	EC-80	Zoom Extension Cable (8P)	1824A009
29	CC-0620	Conv. Cable (6pM-20pF)	1824A128
30	CC-0820	Conv. Cable (8pM-20pF)	1824A127
31	CC-1220	Conv. Cable (12pM-20pF)	0024T789

	Kit Name	Zoom		Focus	
		System	Component	System	Component

For J33ax15B IAS, J33ax11B IAS

Zoom Servo Only	Kit Name	System	Component	Zoom System	Zoom Component	Focus System	Focus Component
Zoom Servo Only	--	ZR-1	19	--	--	--	--
	--	ZR-1D	20** 30	--	--	--	--
	--	ZR-2(A)	21 22 28	--	--	--	--
Semi-Servo	--	ZR-1	19	FR-2	3 8 10	--	--
	--	ZR-1D	20** 30	FR-2	3 8 10	--	--
	--	ZR-2(A)	21 22 28	FR-2	3 8 10	--	--
Full Servo	SS-41-IAS	ZR-1	19	FPS-4	16	--	--
	SS-41-IASD	ZR-1D	20** 30	FPS-4D	17 29	--	--
	SS-42-IAS	ZR-2(A)	21 22 28	FPS-4	16	--	--
Full Manual	--	FZC-1	7 8 11	FR-2(w/o 3)	8 10	--	--

* VTR SW of ZSD-300D does not work with B3 mount Analog Drive Lenses.

** 24 is for J9ax5.2B/HJ9x5.5B(I)/J15ax8B/HJ15x8B,

25 is for J20ax8B/HJ18x7.8B(I),

26 is for J21ax7.8B,

27 is for J16ax8B/HJ16x8B

*** This configuration refers to IRS version of J16ax8B/J20ax8B/J21ax7.8B/HJ18x7.8(I).

**** This configuration refers to IRS version of J9ax5.2B/HJ9x5.5B(I)/J15ax8B/HJ15x8B.

Recommended Kit Configuration for the listed lenses. (See previous page.)

Recommended Kit Configuration for the Analog lenses.

Although the controllers have DD special function switches, these switches do not perform a function when used with Analog Drive lenses. All standard functions will operate as usual.

Lenses for Digital Electronic Cinematography

Canon proudly offers our EC line of zoom and prime lenses, "essential tools" that combine outstanding performance and greater function for our customers. All of the EC lenses utilize Hi-UD (Hi-Index, Ultra Low Dispersion) glass and Fluorite to achieve lower aberrations, while exhibiting very high MTF.

HD-EC Zoom Lens Series

The HD-EC zoom lenses have been refined using Canon's exclusive Power Optical System featuring the "X-Element", a unique system that combines exceptional performance with enhanced specifications. Our latest wide-angle HD-EC zoom lens offers both high specifications and affordability, the HJ8x5.5B KLL-SC.



HD-EC Zoom Lens	HJ21x7.5B-III KLL-SC	HJ11x4.7B-III KLL-SC	HJ8x5.5B KLL-SC
Model Number	HJ21x7.5B-III KLL-SC	HJ11x4.7B-III KLL-SC	HJ8x5.5B KLL-SC
Zoom Ratio	21x	11x	8x
Range of Focal Length	7.5~158mm	4.7~52mm	5.5~44mm
T-Stop	T/2.1	T/2.1	T / 2.1
Angular Field of View	65.2°x 39.6° at 7.5mm	91.2°x 59.8° at 4.7mm	82.2°x 53.1° at 5.5mm
16:9 Aspect Ratio (9.6x5.4mm)	3.5°x 2.0° at 158mm	10.5°x 5.9° at 52mm	12.5°x 7.0° at 44mm
M.O.D. from image plane	1.16m	0.59m	0.59m
Object Dimensions at M.O.D.	120.4 x 67.7cm at 7.5mm	71.4 x 40.2cm at 4.7mm	59.7 x 33.6cm at 5.5mm
16:9 Aspect Ratio 9.6x5.4mm	5.6 x 3.2cm at 158mm	6.2 x 3.5cm at 52mm	7.4 x 4.2cm at 44mm
Size (WxHxL)	130 x 130 x 260mm	95 x 95 x 242mm	95 x 95 x 245.2mm
Weight (Approx)	2.7kg (5.94lbs)	2.0kg (4.4lbs)	2.0kg (4.4lbs)
Macro	Standard	Standard	Standard
Focus Rotation Angle	270°	270°	270°

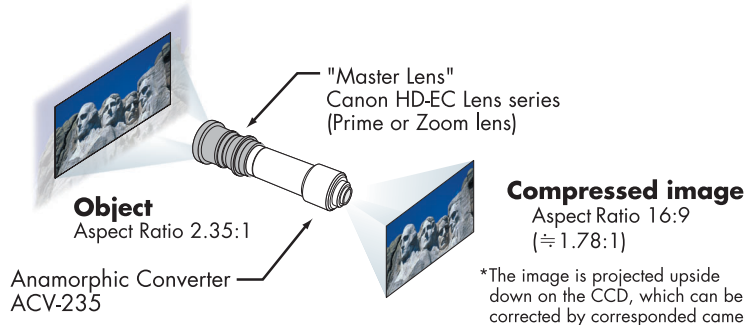
•M.O.D. = Minimum Object Distance

Revolutionary Anamorphic Converter, ACV-235

The ACV-235 is the world's first Anamorphic Converter developed for the 2/3" image size HDTV format. An Anamorphic Converter is a tool that optically compress a CinemaScope® size image (2.35:1 aspect ratio) to the HD-EC 16:9 aspect ratio (1.78:1). This allows for a CinemaScope® (2.35:1) size image to be recorded by an HD Electronic Cinematography camera.

*CinemaScope® is copyrighted by TWENTIETH CENTURY FOX FILM CORPORATION

ACV-235 SYSTEM



HD-EC Prime Lens Series

Recently, Canon keeps a line of HD-EC Prime Lenses by improving its existing 5 lenses in both optical and mechanical performance and at the same time, having added the FJs55. The HD-EC Prime Lenses exhibit high MTF, high resolution and high contrast from the center of the image to its extreme edges, an important benefit of Canon's proprietary design techniques. All lenses have traditional film style feel and operation. This includes dual large luminous scales for the focus and iris and industry compatible gear rings.



HD-EC Prime Lens	FJs5	FJs9	FJs14
Focal Length	5mm	9mm	14mm
T-Stop	T/1.7	T/1.5	T/1.5
Image Format Covered	—	9.6 x 5.4mm (16:9)	—
Angular Field of View (16:9)	87.7°x 56.7°	56.1°x 33.4°	37.8°x 21.8°
Angular Field of View (4:3)	82.7°x 66.8°	52.1°x 40.3°	34.9°x 26.5°
M.O.D. from image plane	0.5m	0.45m	0.4m
Object Dimensions at M.O.D. (16:9)	59.8cm x 33.6cm	32.5cm x 18.3cm	18.9cm x 10.6cm
Object Dimensions at M.O.D. (4:3)	54.8cm x 41.1cm	29.8cm x 22.4cm	17.3cm x 13.0cm
Size (WxHxL)	95.0x95.0x177.0 mm	95.0x95.0x134.5 mm	95.0x95.0x134.5 mm
Weight(approx)	1.5kg (3.3lbs)	1.1kg (2.42lbs)	1.1kg (2.42lbs)
Focus Rotation Angle	280°	280°	280°

•M.O.D. = Minimum Object Distance



HD-EC Prime Lens	FJs24	FJs35	FJs55
Focal Length	24mm	35mm	55mm
T-Stop	T/1.5	T/1.5	T/1.6
Image Format Covered	—	9.6 x 5.4mm (16:9)	—
Angular Field of View (16:9)	22.6°x 12.8°	15.6°x 8.8°	10.0°x 5.6°
Angular Field of View (4:3)	20.8°x 15.7°	14.3°x 10.8°	9.1°x 6.9°
M.O.D. from image plane	0.45m	0.5m	0.5m
Object Dimensions at M.O.D. (16:9)	13.6cm x 7.7cm	10.8cm x 6.1cm	6.8cm x 3.8cm
Object Dimensions at M.O.D. (4:3)	12.5cm x 9.4cm	9.9cm x 7.4cm	6.2cm x 4.7cm
Size (WxHxL)	95.0 x 95.0 x 134.5mm	95.0 x 95.0 x 134.5mm	95.0 x 95.0 x 134.5mm
Approx. Mass	1.1kg (2.42lbs)	1.1kg (2.42lbs)	1.1kg (2.42lbs)
Focus Rotation Angle	280°	280°	280°

•M.O.D. = Minimum Object Distance

Features of the New FJs Prime Lens Series

● Design

Responding to requests from the market, Canon has standardized the diameter of the front lens of all six FJs prime lenses at 95mm, which enables the same matte box or filters to be used with all of the lenses.

● Accurate Operation

One of the most remarkable features of the FJs series is the dramatically increased range of the Focus Rotation Angle. In order to provide the highest focusing accuracy possible, the rotation angle of the focus ring has been increased to 280°. Another important feature of the FJs series is the adjustable back focus (F.B.). The back focus of the lenses can be adjusted in a range of +/-0.3mm, allowing for increased focus accuracy in all circumstances.

● High Optical Performance

By making the best use of the latest computer simulating system, the FJs prime lens series has reduced distortions and brought chromatic flare to a zero level, at the same time maintaining color balance throughout the complete series to avoid picture inconsistency.

Pro-video Lenses & Remote Control Lenses



■ Canon offers a variety of Pro-video ENG lenses including the YJ20x8.5B(2/3"), YH19x6.7(1/2"), YJ13x6B(2/3") and the YH12x4.8(1/2") that incorporate Canon's original IFpro, internal focusing system (refer to page 6). The affordable yet high quality YH16x7 KRS Pro-video lens for 1/2" cameras is also available.

■ The Canon Remote Control Series offers a wide variety of lenses and accessories that have been designed for various applications such as broadcasting, teleconference, distance learning and other remote control purposes. The lenses provide quiet and fast servo control of Zoom, Focus and Iris.

■ The YH16x7 KTS-AF is Canon's first remote control lens adopting the "Self Contained Auto Focus System", an exclusive system that will broadly expand the lens' applications.

■ Now, all IFpro ENG lenses are equipped with Canon's exclusive shuttle shot function and have become even more useful.



2/3" Pro-video ENG Lenses



1/2" Pro-video ENG Lenses



Remote Control Lens for Pro-video use



Remote Control Lens for Broadcast Use



Remote Control Auto Focus Lens

2/3" Pro-video ENG Lenses



	YJ20x8.5B KRS	YJ20x8.5B IRS	YJ19x9B IRS	YJ13x6B KRS	YJ13x6B IRS
Zoom Ratio	20x	20x	19x	13x	13x
Built-in Extender	—	2.0x	2.0x	—	2.0x
Range of Focal Length (with Extender)	8.5~170mm	8.5~170mm 17~340mm	9~171mm 18~342mm (2.0x)	6~78mm	6~78mm 12~156mm (2.0x)
Maximum Relative Aperture (with Extender)	1:1.8 at 8.5~113.3mm 1:2.7 at 170mm	1:1.8 at 8.5~113.3mm 1:2.7 at 170mm 1:3.6 at 17~226.7mm (2.0x) 1:5.4 at 340mm	1:1.8 at 9~114mm 1:2.7 at 171mm 1:3.6 at 18~228mm (2.0x) 1:5.4 at 342mm (2.0x)	1:2.0 at 6~58mm 1:2.7 at 78mm	1:2.0 at 6~58mm 1:2.7 at 78mm 1:4.0 at 12~116mm (2.0x) 1:5.4 at 156mm (2.0x)
Angular Field of View (with Extender) 4:3 Aspect Ratio (8.8x6.6mm)	54.7°x42.4° at 8.5mm 3.0°x2.2° at 170mm	54.7°x42.4° at 8.5mm 3.0°x2.2° at 170mm 29.0°x22.0° at 17mm 1.5°x1.1° at 340mm (2.0x)	52.1°x40.3° at 9mm 2.97°x2.22° at 171mm 27.5°x20.8° at 18mm 1.47°x1.11° at 342mm (2.0x)	72.5°x57.6° at 6mm 6.5°x4.8° at 78mm	72.5°x57.6° at 6mm 6.5°x4.8° at 78mm 40.3°x30.8° at 12mm 3.2°x2.4° at 156mm (2.0x)
M.O.D from Lens Front	0.9m(10mm with Macro)	0.9m(10mm with Macro)	0.9m(50mm with Macro)	0.4m(10mm with Macro)	0.4m(10mm with Macro)
Object Dimensions at M.O.D (with Extender) 4:3 Aspect Ratio (8.8x6.6mm)	85.2x63.9cm at 8.5mm 4.4x3.3cm at 170mm	85.2x63.9cm at 8.5mm 4.4x3.3cm at 170mm 42.6x32.0cm at 17.0mm 2.2x1.7cm at 340mm (2.0x)	78.9x59.2cm at 9mm 4.3x3.2cm at 171mm 39.5x29.6cm at 18mm 2.2x1.6cm at 342mm (2.0x)	68.1x51.1cm at 6mm 5.0x3.8cm at 78mm	68.1x51.1cm at 6mm 5.0x3.8cm at 78mm 34.1x25.6cm at 12mm 2.5x1.9cm at 156mm (2.0x)
Approx.Size(WxHxL)	163.3x103x170.4mm	163.3x103.0x195.4mm	160.6x99.5x198.8mm	165.4x105.1x211.7mm	165.4x105.1x234.8mm
Approx.Mass	1.17kg (2.58lbs)	1.39kg (3.06lbs)	1.53kg (3.37lbs)	1.54kg (3.39lbs)	1.74kg (3.83lbs)
Macro	Yes	Yes	Yes	Yes	Yes
SHUTTLES HOT	Yes	Yes	Yes	Yes	Yes
Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras as explained on page 8.					
Angular Field of View (with Extender) 4:3 mode of Most Switchable Cameras (7.2x5.4mm)	45.9°x35.2° at 8.5mm 2.43°x1.82° at 170mm	45.9°x35.2° at 8.5mm 2.4°x1.8° at 170mm 23.9°x18.0° at 17.0mm 1.2°x0.9° at 340mm (2.0x)	43.6°x33.4° at 9mm 2.41°x1.81° at 171mm 22.6°x17.1° at 18mm 1.21°x0.90° at 342mm (2.0x)	61.9°x48.5° at 6mm 5.29°x3.97° at 78mm	61.9°x48.5° at 6mm 5.29°x3.97° at 78mm 33.4°x25.4° at 12mm 2.64°x1.98° at 156mm (2.0x)

Crossover Solutions for 2/3" Pro-video YJ20x8.5B/YJ19x9B

(Please refer to page 8 for details about Switchable cameras and Crossover technology.)

Canon has developed two affordable optical solutions to accommodate the increasing number of 16:9/4:3 switchable 2/3" Pro-video cameras.

The first solution is the W80Y-85 Crossover Adaptor, a specially designed compact front mounted wide converter for the YJ20x8.5B/YJ19x9B, which makes the master lens wider by a factor of 0.8x. When you use the W80Y-85 on the YJ20x8.5B/YJ19x9B in the 4:3 mode of a switchable camera, it performs the Crossover function restoring the tele-side shifted image to a normal field of view as would be found on a conventional 4:3 camera. There is no light loss when using the W80Y-85. (The M.O.D becomes 0.58m)



W80Y-85

The second solution is the YJ20x8.5B VRS/YJ19x9B VRS which has a built-in "Shrinker". When the "Shrinker" is in place, the tele-side shifted image is restored to the normal field of view as would be found on a conventional 4:3 camera. The VRS "Shrinker" performs no function in the 16:9 mode while the W80Y-85 is usable in both the switchable 4:3 mode and the 16:9 mode.



YJ20x8.5B VRS



YJ19x9B VRS



CROSSOVER

1/2" Pro-video ENG Lenses

IF pro



YH19x6.7 KRS

IF pro



YH19x6.7 IRS

Zoom Ratio		19x	19x
Built-in Extender		—	2.0x
Range of Focal Length (with Extender)		6.7~127mm	6.7~127mm 13.4~254mm (2.0x)
Maximum Relative Aperture (with Extender)		1:1.4 at 6.7~89mm 1:2.0 at 127mm	1:1.4 at 6.7~89mm 1:2.0 at 127mm 1:2.8 at 13.4~178mm 1:4.0 at 254mm (2.0x)
Angular Field of View (with Extender)	4:3 Aspect Ratio (6.4x4.8mm)	51.1°x39.4° at 6.7mm 2.89°x2.17° at 127mm	51.1°x39.4° at 6.7mm 2.89°x2.17° at 127mm 26.9°x20.3° at 13.4mm 1.44°x1.08° at 254mm (2.0x)
M.O.D. from Lens Front		0.9m(50mm with Macro)	0.9m(50mm with Macro)
Object Dimensions at M.O.D. (with Extender)	4:3 Aspect Ratio (6.4x4.8mm)	77.2x57.9cm at 6.7mm 4.2x3.2cm at 127mm	77.2x57.9cm at 6.7mm 4.2x3.2cm at 127mm 38.6x29.0cm at 13.4mm 2.1x1.6cm at 254mm (2.0x)
Approx. Size(WxHxL)		160.6x99.5x181.6mm	160.6x99.5x199.5mm
Approx. Mass		1.33kg (2.93lbs)	1.53kg (3.37lbs)
Macro		Yes	Yes
SHUTTLESHOT		Yes	Yes

IF pro



YH12x4.8 KRS-A

IF pro



YH12x4.8 IRS-A

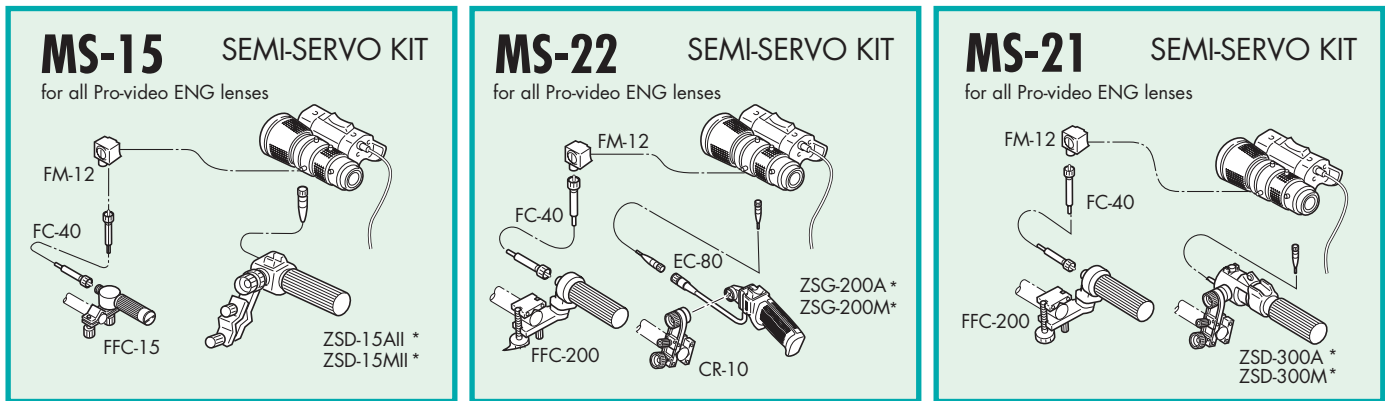


YH16x7 KRS

Zoom Ratio		12x	12x	16x
Built-in Extender		—	2.0x	—
Range of Focal Length (with Extender)		4.8~58mm	4.8~58mm 9.6~116mm (2.0x)	7~112mm
Maximum Relative Aperture (with Extender)		1:1.5 at 4.8~44.6mm 1:1.95 at 58mm	1:1.5 at 4.8~44.6mm 1:1.95 at 58mm 1:3.0 at 9.6~89.2mm 1:3.9 at 116mm (2.0x)	1:1.9 at 7~106.4mm 1:2.0 at 112mm
Angular Field of View (with Extender)	4:3 Aspect Ratio (6.4x4.8mm)	67.4°x53.1° at 4.8mm 6.3°x4.7° at 58mm	67.4°x53.1° at 4.8mm 6.3°x4.7° at 58mm 36.9°x28.1° at 9.6mm 3.2°x2.4° at 116mm (2.0x)	49.1°x37.8° at 7mm 3.3°x2.5° at 112mm
M.O.D. from Lens Front		0.4m(50mm with Macro)	0.4m(50mm with Macro)	1.0m(10mm with Macro)
Object Dimensions at M.O.D. (with Extender)	4:3 Aspect Ratio (6.4x4.8mm)	62.3x46.7cm at 4.8mm 5.0x3.8cm at 58mm	62.3x46.7cm at 4.8mm 5.0x3.8cm at 58mm 31.2x23.4cm at 9.6mm 2.5x1.9cm at 116mm (2.0x)	83.3x62.5cm at 7mm 5.3x4.0cm at 112mm
Approx. Size(WxHxL)		162.2x101.0x215.6mm	162.2x101.0x233.5mm	148.9x95.4x151.9mm
Approx. Mass		1.73kg (3.81lbs)	1.90kg (4.19lbs)	0.9kg (1.98lbs)
Macro		Yes	Yes	Yes
SHUTTLESHOT		Yes	Yes	—

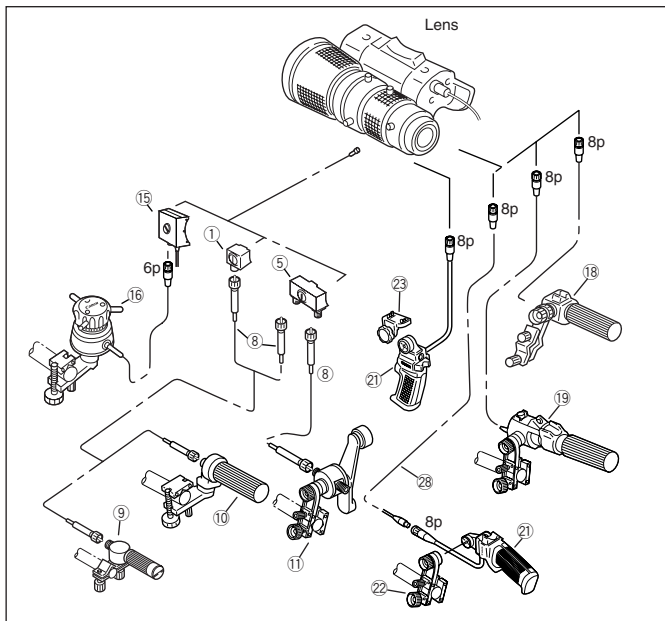
Control Accessories for Pro-video ENG Lenses

Recommended Kit Configuration



*A or M types, depends on applicable camera.

Applicable Component Detail



#	Unit	Description	CODE
①	FM-12	Flex Focus Module	1824A012
⑤	FM-70	Flex Dual Module	0002T071
⑧	FC-40	Flex Cable	1824A010
⑨	FFC-15	Flex Focus Controller	1824A024
⑩	FFC-200	Flex Focus Controller	1824A014
⑪	FZC-100	Flex Zoom Controller	1824A021
⑮	FPM-77	Focus Positional Servo Module	1824A020
⑯	FPD-400	Focus Positional Demand	1824A018
⑱	ZSD-15A II / M II	Zoom Demand [A or M types, depends on applicable camera]	A 1824A070 M 1824A071
⑲	ZSD-300A/M	Zoom Demand [A or M types, depends on applicable camera]	A 1824A066 M 1824A067
㉑	ZSG-200A/M	Zoom Servo Grip [A or M types, depends on applicable camera]	A 1824A068 M 1824A069
㉒	CR-10	Clamper	1824A007
㉓	GA-70	Grip Adapter	0018T531
㉔	EC-80	Zoom Extension Cable (8P)	1824A009

Applicable Kit Detail

	Kit Name	Zoom		Focus	
		System	Component	System	Component

for KRS/IRS/VRS Type of Pro-video ENG Lenses

Zoom Servo Only	--	ZSD-15	⑩**	--	--
	--	ZR-1	⑱	--	--
	--	ZR-2(A)	㉑ ㉒ ㉔	--	--
	--	ZR-2(B)	㉑ ㉓*	--	--
Semi-Servo	MS-15	ZSD-15	⑩**	FRC-15	① ⑧ ⑨**
	MS-21	ZR-1	⑱	FR-2	① ⑧ ⑩
	MS-22	ZR-2(A)	㉑ ㉒ ㉔	FR-2	① ⑧ ⑩
Full Servo	--	ZR-1	⑱	FPS-4	⑮ ⑯*
	--	ZR-2(A)	㉑ ㉒ ㉔	FPS-4	⑮ ⑯*
Full Manual	FZC-1	FZC-1	⑤* ⑧ ⑪	FR-2(w/o ①)	⑧ ⑩

*⑤ ⑯ & ㉓ are not applicable to YH14x7.3 and YH16x7.

**In USA, ⑩ & ⑨ are available only as MS-15 kit configuration and not as individual product.

Recommended Kit Configuration for the Pro-video ENG lenses.

Remote Control Lens Series

The Canon Remote Control Series offers a wide variety of lenses and accessories that have been designed for various applications such as broadcasting, teleconference, distance learning and other remote control purposes. The lenses provide quiet and fast servo control of Zoom, Focus and Iris.

Broadcast Applications :

HDTV/SDTV



HJ18ex28B ITS-ME

HJ22ex7.6B ITS-ME

HJ17ex7.7B ITS-ME

HJ17ex7.6B ITS-ME

Zoom Ratio	18x	22x	17x	17x
Built-in Extender	2.0x	2.0x	2.0x	2.0x
Range of Focal Length (with Extender)	28~500mm 56~1000mm (2.0x)	7.6~168mm 15.2~336mm (2.0x)	7.7~131mm 15.4~262mm (2.0x)	7.6~130mm 15.2~260mm (2.0x)



HJ11ex4.7B ITS-ME

J22ex7.6B ITS-ME

J17ex7.7B ITS-ME

J11ex4.5B ITS-ME

Zoom Ratio	11x	22x	17x	11x
Built-in Extender	2.0x	2.0x	2.0x	2.0x
Range of Focal Length (with Extender)	4.7~52mm 9.4~104mm (2.0x)	7.6~168mm 15.2~336mm (2.0x)	7.7~131mm 15.4~262mm (2.0x)	4.5~50mm 9~100mm (2.0x)

•Please refer to page 22-24 for more detailed specifications.

*The 2X extender of ITS-ME model is manually operated. ITS-RE model which has a motorized 2X extender is also available and will look like YJ19x9B ITS on page 39.

Close-up Lens (not available for HJ18ex/HJ11ex/J11ex)

Four types (82CL-UP800H / 82CL-UP1300H / 105CL-UP900H / 105CL-UP800HD) are available.

*Please refer to page 42 for the applications

Remote Controller

Three types (TCR-101F, TCR-201F, TCR-301F) are available.

*The controllers are also applicable to remote control pro-video lenses.

Connecting Cable

5m, 10m, 20m, 50m and 100m cables are available. Maximum cable length is 150m by connection of these cables.

Controller

Speed Servo Controller



TCR-101F

Positional Servo Controller

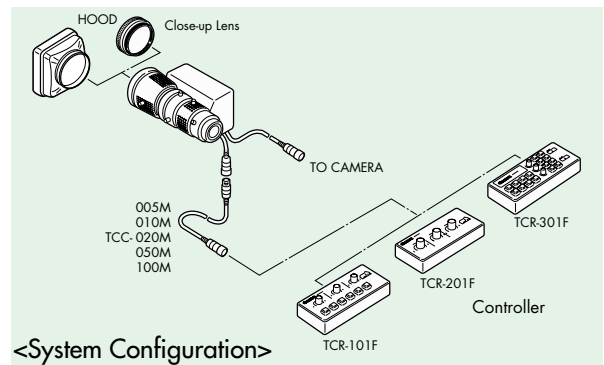


TCR-201F

8 Position Preset Controller



TCR-301F



*For extender remote control interface, please inquire to Canon Sales Office.

Remote Control Lens Series

Pro-video Applications :



YJ19x9B ITS



YJ20x8.5B KTS



YJ13x6B KTS

2/3" Series

Zoom Ratio	19x	20x	13x
Built-in Extender	2.0x	—	—
Range of Focal Length (with Extender)	9~171mm 18~342mm (2.0x)	8.5~170mm	6~78mm



YH19x6.7 KTS



YH12x4.8 KTS



YH16x7 KTS

1/2" Series

Zoom Ratio	19x	12x	16x
Range of Focal Length	6.7~127mm	4.8~58mm	7~112mm

●External Extender (For 2/3" Lens Only)

A 2X extender is available for telephoto shooting. The YJ19x9B ITS 2X extender is motorized and can be remote controlled.

●Close up Lens

Two types (82CL-UP800H/82CL-UP1300H) are available. Thread size is 82mm PO.75.

Auto Focus Remote Control Lens

The YH16x7 KTS-AF lens is equipped with our exclusive "Self Contained Auto Focus System".

Needless to be concerned about camera compatibility, the system will enable the lens to focus on an object automatically by analyzing the video signal from the camera wholly within the lens unit, independent of the camera. Canon has developed the advanced auto focusing system by exploiting Canon's original "Auto Focus Algorithm", which made the auto focus function the most suitable for the diverse applications of the lens. The Auto Focusing System also contains various functions, which makes the operation easy to use and accurate.



●Follow Focus Function

Although the lens will focus on an object automatically, you will be able to choose an object to be focused on by changing the position of the focus.

●High Speed Focus, Low Noise

The lens features a focusing of 1.5sec.(when controlled by remote manual) while at the same time, decreasing the noise of the lens.

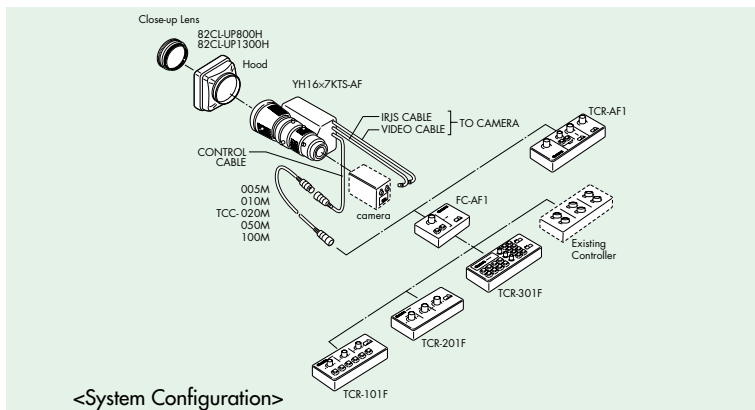
●Auto-adjustment of Back Focus

By simply pressing the switch located at the front side of the lens drive unit, you will be able to adjust the position of the F.B. automatically and accurately.

1/2" Auto Focus Lens

YH16x7 KTS-AF

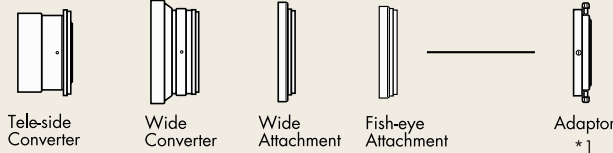
Zoom Ratio	16x
Range of Focal Length	7~112mm
Maximum Relative Aperture	1:1.9 at 7~106.4mm 1:2.0 at 112mm
Angular Field of View	49.1°x37.8° at 7mm
4:3 Aspect Ratio (8.8x6.6mm)	3.3°x2.5° at 112mm
M.O.D. from Lens Front	1.0m
Object Dimensions at M.O.D.	83.3x62.5cm at 7mm
4:3 Aspect Ratio (8.8x6.6mm)	5.3x4.0cm at 112mm
Size(WxHxL)	148.8x95.0x131.5mm
Approx.Mass	0.9kg (1.98lbs)



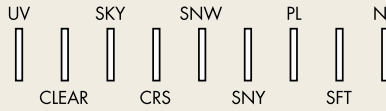
Optical Accessories for SDTV and HDTV ENG/EFP Lenses

SYSTEM

1. CONVERTERS/ATTACHMENTS



2. FILTERS

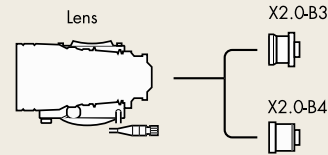


3. CLOSE UP LENSES



Hood Unit *2

4. EXTENDERS



*1: Most Canon Converters and Attachments use a separate adaptor ring as shown in the table on page 41, which allow compatibility between several lens models. The W80Y-85 is special Wide Converter and is exclusive to certain lens models as shown in the table on page 41.

*2: Some lens models allow for the filter to be attached to the threaded lens barrel, in other models, the filter is attached to the threaded hood unit. For lens model filter size compatibility, please refer to page 43.

1. CONVERTERS/ATTACHMENTS

TELE-SIDE CONVERTER



- Focal length is shifted to the telephoto side by a factor of 1.5x.
- F No. of the original lens is not affected.
- Only the telephoto side of the lens can be used, the picture corners are eclipsed at wide angle.
- The minimum object distance becomes 2.25 times that of the original lens.



	M.O.D	Eclipse Point
J22ex7.6B	1.75m	f:70mm
J17ex7.7B	1.35m	f:60mm
YJ20x8.5B	2.00m	f:80mm

WIDE CONVERTER



- Focal length becomes wider by a factor of 0.8x that of the original lens with the W80 / W80Y-85.
- F No. of the original lens is not affected.
- The minimum object distance becomes 0.64 times with the W80 / W80Y-85.



Change in focal length

	Master Lens	With Wide Con.
J22ex7.6B	7.6-168mm	6.1-134mm
J17ex7.7B	7.7-131mm	6.2-104.8mm
YJ20x8.5B	8.5-170mm	6.8-136mm

WIDE ATTACHMENT



- The zoom lens becomes a wider fixed focal length lens with the wide attachment.
- The focal length is widened by a factor of 0.75x that of the original lens.
- Focus is adjusted by use of the macro lever.



Change in focal length

	Master Lens	With Wide Attach.
J22ex7.6B	7.6-168mm	5.7mm
J17ex7.7B	7.7-131mm	5.8mm
YJ20x8.5B	8.5-170mm	6.4mm

FISH-EYE ATTACHMENT



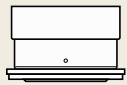
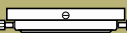
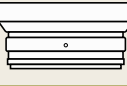
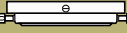



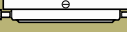
- The zoom lens becomes a fish-eye fixed focal length lens (distorted image) with the fish-eye attachment.
- The focal length is widened by a factor of approximately 0.6x that of the original lens.
- Focus is adjusted by use of the macro lever.



Change in focal length


	Master Lens	With Fish-Eye
J22ex7.6B	7.6-168mm	4.6mm
J17ex7.7B	7.7-131mm	4.6mm
YJ20x8.5B	8.5-170mm	5.1mm

[Applications of SDTV and HDTV Adaptor Type Converters / Attachments]

CONVERTER/ ATTACHMENT TYPE	MODEL NAME	CODE	APPLICABLE LENS				
			J17ex7.7B J17ax7.7B J16ax8B J15ax8B YJ20x8.5B YJ19x9B YJ18x9B YH19x6.7 YH18x6.7	HJ16x8B HJ17ex7.6B	J22ex7.6B J21ax7.8B H21ax5.8	HJ22ex7.6B HJ21ex7.8B HJ21x7.8B HJ17ex7.7B HJ15x8B	
Front Lens Diameter			φ 85mm		φ 98mm		
Tele-side Converter		T15-II	1823A005				
		T15HD	0025T799				
		Adaptor85II	1824A002				
		Adaptor98II	1824A004				
Wide Converter		W80-III B	1823A006				
		W80HD	1823A094				
		Adaptor85II	1824A002				
		Adaptor98II	1824A004				
Wide Attachment		WA75-II	1823A008				
		WA75HD	1823A095				
		Adaptor85II	1824A002				
		Adaptor98II	1824A004				
Fish-eye Attachment		FEA-III B	1823A011				
		Adaptor85II	1824A002				
		Adaptor98II	1824A004				

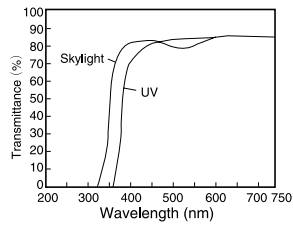
- When purchasing, please specify model name of both Body and Adaptor.
- It is possible to use Body and Adaptor in different combinations. But it is impossible to use in combinations not shown in above table.
- Focus servo operation is possible with IF lenses only.

[Applications of Exclusive Wide Converter]

Wide Converter	 *1 W80Y-85	W80Y-85	1823A009	Exclusively designed for YJ18x9B/YJ19x9B/YJ20x8.5B/YH18x6.7/YH19x6.7. The adaptor parts are integrated into the main body. (Also known as the Crossover Adaptor, see page 35)			
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2. FILTERS

UV/CLEAR/SKY LIGHT FILTER



- A UV (ultraviolet) filter is nearly colorless. It absorbs short-wavelength ultraviolet rays that the naked eye cannot see.
- A Skylight Filter has a light pinkish color. Used when shooting on clear days, it removes ultraviolet, and prevents natural light from giving a bluish-green cast to shaded foliage etc.
- These filters are also advisable to protect the front lens surface.

CROSS/SNOW CROSS/SUNNY CROSS FILTER



- A Cross Filter creates a cross or star of light by scattering rays from a strong light source in the subject in a radial pattern. The brighter and more pointlike the subject is, the better the effect is. Cross Filters are often used to enhance night scenery or stage show broadcasts.

<Types of Cross Filter>

- Cross Filter ; Scatters light in a four-pointed cross.
- Snow Cross Filter ; Scatters light in a six-pointed star.
- Sunny Cross Filter ; Scatters light in an eight-pointed star.

POLARIZED LIGHT FILTER



- A polarizer is used to intercept light reflected from the surface of water or glass.
- A polarizer is screwed into the threads of the hood, turned, and stopped in the position in which the reflected light is removed.

SOFTON FILTER



- A Soft-focus Filter has a mat-like surface that imparts a soft, misty effect to the entire picture.
- Soft-focus Filters are frequently used for lyric scenery shots.

ND4/ND8 FILTER



- A ND (neutral density) Filter uniformly reduces light of all wavelengths which enters a lens.
- It is used when the subject is too bright for the light to be adjusted by the diaphragm alone.
- A ND Filter is also effective to create a shallow depth of field.

ND filter type	Transmittance	Density
ND4	25%	0.6
ND8	12.5%	0.9

3. CLOSE-UP LENSES

CLOSE-UP LENS



- A close-up lens is used to shorten the M.O.D. of the master lens for close-up shooting.
- The maximum object distance becomes the focal length of the close-up lens.
- The minimum object distance is calculated by the following formula.
New minimum object distance = $fc \times S / (fc + S)$
fc = Focal length of the close-up lens
S = M.O.D. of the master lens

Imaging range for J17ex7.7B, and YJ20x8.5B with close-up lenses

	82CL-UP800H				82CL-UP1300H				
	Tele end : 131mm		Wide end : 7.7mm		Tele end : 131mm		Wide end : 7.7mm		
J17ex7.7B	Focusing Scale(mm)	∞	0.6	∞	0.6	∞	0.6	∞	0.6
	Object Distance(mm)	800	340	800	340	1300	407	1300	407
	Object Dimensions(mm)	53x40	21x16	908x681	341x256	87x65	25x19	1499x1124	411x308
YJ20x8.5B	Tele end : 170mm		Wide end : 8.5mm		Tele end : 170mm		Wide end : 8.5mm		
	Focusing Scale(mm)	∞	0.9	∞	0.9	∞	0.9	∞	0.9
	Object Distance(mm)	800	420	800	420	1300	530	1300	530
Object Dimensions(mm)	41x31	20x15	816x609	390x293	67x50	26x20	1341x1006	494x371	

Model	Code	APPLICABLE LENSES
82CL-UP800H	1823A041	J17ex7.7B, J17ax7.7B, J16ax8B, J15ax8B, YJ20x8.5B, YJ19x9B, YJ18x9B, YH19x6.7, YH18x6.7
82CL-UP1300H	1823A042	J17ex7.7B, J17ax7.7B, J16ax8B, J15ax8B, H15ax6, YJ20x8.5B, YJ19x9B, YJ18x9B, YH19x6.7, YH18x6.7
105CL-UP900H	1823A043	J22ex7.6B, J21ax7.8B, J20ax8B, J18x8.5B, H21ax5.8, H20ax6, PH18x6.2B
105CL-UP800HD	1823A096	HJ22ex7.6B, HJ21ex7.8B, HJ21x7.8B, HJ17ex7.7B, HJ15x8B

[Application of Filters]

FILTER TYPE	MODEL NAME	CODE	APPLICABLE LENSES						
			HJ18ex28B HJ21ex7.5B HJ21x7.5B HJ11ex4.7B HJ11x4.7B J11ex4.5B J11ax4.5B	HJ40x14B HJ40x10B	J35ex15B J35ex11B J33ax15B J33ax11B H33ax11 PH33ax8.5B	HJ18x7.8B HJ15x8B HJ9x5.5B J18x8.5B J9ax5.2B YJ13x6B YJ12x6.5B YH12x4.8	HJ22ex7.6B HJ21ex7.8B HJ21x7.8B HJ17ex7.7B J22ex7.6B J21ax7.8B H21ax5.8	HJ17ex7.6B HJ16x8B J17ex7.7B J17ax7.7B J16ax8B YJ20x8.5B YJ19x9B YJ18x9B YH19x6.7 YH18x6.7	YH16x7 YH14x7.3 YH13x7.5
Hood Unit Thread Size			127mm P0.75	—	—	105mm P1	105mm P1	—	82mm P0.75
Lens Barrel Thread Size			—	127mm P0.75	125mm P1	—	94mm P1	82mm P0.75	72mm P0.75
UV	UV/127P0.75	1823A083	●	●					
	UV/105P1	1823A022				●	●		
	UV/94P1	1823A021					●		
	UV/82P0.75	1823A030						●	●
Clear	CL/127	1823A093	●	●					
	CL/125	1823A044			●				
Sky Light	SKY/105P1	1823A023				●	●		
	SKY/82P0.75	1823A031						●	●
Cross	CRS/127P0.75	1823A085	●	●					
	CRS/105P1	1823A024				●	●		
	CRS/82P0.75	1823A032						●	●
Snow Cross	SNW/127P0.75	1823A087	●	●					
	SNW/105P1	1823A047				●	●		
	SNW/82P0.75	1823A034						●	●
Sunny Cross	SNY/127P0.75	1823A088	●	●					
	SNY/105P1	1823A025				●	●		
	SNY/82P0.75	1823A033						●	●
Polarized Light	PL/127P0.75	1823A090	●	●					
	PL/105P1	1823A028				●	●		
	PL/82P0.75	1823A038						●	●
Softon	SFT/127P0.75	1823A089	●	●					
	SFT/105P1	1823A027				●	●		
	SFT/82P0.75	1823A037						●	●
ND	ND8/127P0.75	1823A086	●	●					
	ND4/82P0.75	1823A035						●	●
	ND8/105P1	1823A026				●	●		
	ND8/82P0.75	1823A036						●	●

●Note; Hood Unit Thread Filter and Lens Barrel Thread Filter cannot be mounted together because of mechanical interference.

4. EXTENDERS



- An extender X2.0-B3/B4 is mounted between the camera and the lens to enlarge the image of the subject.
- It doubles the focal length of the master lens, making it into a more telephoto lens.
- The 2.0x Extender also doubles the F-number.

	Master Lens	With Extender
YJ20x8.5B	Focal length 8.5-170mm	17-340mm
	F-number 1.8-2.7	3.6-5.4

*Only for 2/3" lenses

Model	Code	APPLICABLE LENSES
X2.0-B3	1823A001	Applicable to all B3 type mount Canon 2/3" lenses.
X2.0-B4	1823A002	Applicable to all B4 type mount Canon 2/3" lenses.