Canon

BROADCAST TELEVISION LENS
CINEMA LENS
& HD PTZ CAMERAS

BEYOND 50 YEARS

INNOVATION

In TV Optics Since 1958

Toward 100 years anniversary

Towards the 100th Anniversary

BEYOND 50 YEARS
INNOVATION
In TV Optics Since 1958
Toward 100 years anniversary

It was more than 50 years ago that Canon introduced the first BCTV lens. Labeled the “Field Zoom IF-1,” this lens featured a 6.7x zoom range, which was the highest in the industry at the time. Since that time, Canon has energetically advanced the art of high-end optical design on many fronts in close collaboration with international broadcasters and producers in an unceasing pursuit of product innovation and customer satisfaction. While celebrating the 50th anniversary of servicing the broadcast industry, Canon has been expanding its BCTV manufacturing and working diligently to develop exciting new products for high-end imaging in the 21st century.

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Broadcast Television Lens & HD PTZ Cameras

Product Lineup

Throughout the over 50 years history, Canon has developped it's know-hows and technologies to produce products that can suit various shooting situations which meets each user's demands.
The great variety of lenses as listed below are compilations of what Canon has constructed through it's long history in the broadcast industry.

Studio / Field Lenses (2/3") P.16

Field Lenses 	**DIGISUPER 100AF**	9.3-930mm / F1.7-4.7	P.16
	DIGISUPER 100	9.3-930mm / F1.7-4.7	P.16
	DIGISUPER 95	8.6-820mm / F1.7-4.1	P.16
	DIGISUPER 86AF	9.3-800mm / F1.7-4.0	P.17
	DIGISUPER 80	8.8-710mm / F1.7-3.55	P.17
	DIGISUPER 76	9.0-690mm / F1.7-3.45	P.17
	DIGISUPER 60 xs	9-540mm / F1.7-3.0	P.17
Studio Lenses 	**DIGISUPER 27AF**	6.5-180mm / F1.5-2.2	P.18
	DIGISUPER 27	6.5-180mm / F1.5-2.2	P.18
	DIGISUPER 23 xs	7-161mm / F1.6-1.95	P.18
	DIGISUPER 22 xs	7.3-161mm / F1.8-2.6	P.19

Broadcast ENG/EFP Lenses (2/3") P.25

HDxs Series 	**HJ40x14B IASD-V**	14-560mm / F2.8-5.1	P.25
	HJ40x10B IASD-V	10-400mm / F2.0-3.65	P.25
	HJ18ex28B IASE A	28-500mm / F2.8-4.9	P.25
	HJ22ex7.6B IRSE A / IASE A	7.6-168mm / F1.8-2.65	P.26
	HJ21ex7.5B IASE A	7.5-158mm / F1.9-2.6	P.26
	HJ18ex7.6B IRSE S / IASE A	7.6-137mm / F1.8-2.4	P.26
	HJ17ex6.2B IRSE / IASE	6.2-106mm / F1.8-2.9	P.26
	HJ14ex4.3B IRSE / IASE	4.3-60mm / F1.8-2.7	P.27
	HJ15ex8.5B KRSE-V	8.5-128mm / F2.5-4.7	P.27
SDTV Series	**J35ex15B IASD**	15-525mm / F2.7-4.7	P.27
	J35ex11B IASD	11-385mm / F2.0-3.4	P.27

Understanding The Lens Model Names

(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"
HJ	High Definition Portable Lens for 2/3"
KJ	High Definition Portable Lens for 2/3" (HDgc Series)
KH	High Definition Portable Lens for 1/2" (HDgc Series)
KT	High Definition Portable Lens for 1/3" (HDgc Series)
XJ	High Definition Studio/Field Lens for 2/3"
CN	Cinema Style Lens for S35mm (Full Size for specific models)

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

HDgc Series ENG Lenses P.30

2/3" 	(With 2.0x Ext)	KJ22ex7.6B IRSE / IASE	7.6-168mm / F1.8-2.6	P.30
		KJ17ex7.7B IRSE / IASE	7.7-131mm / F1.8-2.3	P.30
		KJ10ex4.5B IRSE A / IASE A	4.5-45mm / F1.8-2.35	P.30
	(Without Ext)	KJ20x8.2B IRSD	8.2-164mm / F1.9-2.7	P.32
		KJ20x8.2B KRSD	8.2-164mm / F1.9-2.7	P.32
		KJ13x6B KRSD	6-78mm / F2.0-2.7	P.32
1/2" 	(With 2.0x Ext)	KH21ex5.7 IRSE	5.7-120mm / F1.4-1.95	P.31
		KH16ex5.7 IRSE	5.7-92mm / F1.4-1.8	P.31
		KH10ex3.6 IRSE	3.6-36mm / F1.45-1.9	P.31
	(Without Ext)	KH20x6.4 KRSD SY14	6.4-128mm / F1.4-2.0	P.33
		KH13x4.5 KRSD SY14	4.5-59mm / F1.5-2.0	P.33
1/3"	(With 2.0x Ext)	KT17ex4.3B IRSE	4.3-73mm / F1.4	P.31
	(Without Ext)	KT20x5B KRSD A	5-100mm / F1.4-1.55	P.33

Pro-Video ENG Lenses & Remote Control Lenses P.40

2/3" 	YJ20x8.5B KRS / IRS	8.5-170mm / F1.8-2.7	P.40
	YJ13x6B KRS / IRS	6-78mm / F2.0-2.7	P.40

Digital Cinema Lenses P.50

Zoom (PL / EF) 	CN-E14.5-60mm T2.6 L S / SP	14.5-60mm / T2.6	P.50
	CN-E30-300mm T2.95-3.7 L S / SP	30-300mm / T2.95-3.7	P.50
	CN-E15.5-47mm T2.8 L S / SP	15.5-47mm / T2.8	P.50
	CN-E30-105mm T2.8 L S / SP	30-105mm / T2.8	P.50
Prime (EF only) 	CN-E14mm T3.1 L F	14mm / T3.1	P.50
	CN-E24mm T1.5 L F	24mm / T1.5	P.50
	CN-E 35mm T1.5 L F	35mm / T1.5	P.50
	CN-E50mm T1.3 L F	50mm / T1.3	P.50
	CN-E85mm T1.3 L F	85mm / T1.3	P.50
	CN-E135mm T2.2 L F	135mm / T2.2	P.50
CINE-SERVO (PL /EF)	CINE-SERVO CN7x17 KAS	17-120mm / T2.95-3.9	P.51

High Definition PTZ Products P.55

	BU-47H	Pan: 340° Tilt: + 30°~-50°	P.55
	EVERCAM XU-81	Pan: ±180° Tilt: +220°~-40°	P.55
	EVERCAM XU-81W	Pan: ±180° Tilt: +220°~-40°	P.55

Canon's Epoch-making Technology

Customer Satisfaction

Canon is committed to total C.S. (Customer Satisfaction). In order to optimize C.S., our aim is to support users by developing of new lens technologies, high-quality technical service systems, and other sales support.

CANON'S WORLDWIDE SUPPORT NETWORK

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

DIGISUPER 100AF
DIGISUPER 86AF
DIGISUPER 27AF

This article refers to Auto Focus Technology for DIGISUPER HDTV Zoom Lenses employed in the listed lenses. The specification of the listed lenses are shown in page 16, 17 and 18.

Recently there has been a greater demand for broadcast HDTV production and the requirement for accuracy in focusing has risen in response to this demand. Canon has been and continues to be a pioneer in the design of broadcast lenses and meets this demand with the introduction of a revolutionary HDTV Auto Focus System. This technology assists professional camera operators in concentrating on the action/ beauty shots while maintaining the images in focus. Canon's advanced Auto Focusing for the DIGISUPER HDTV Zoom Lens employs the TTL-Secondary Image Registration Phase-detection system, originally developed for single-lens reflex still cameras, in order to pursue both high accuracy and a high tracking capability for broadcast HDTV.

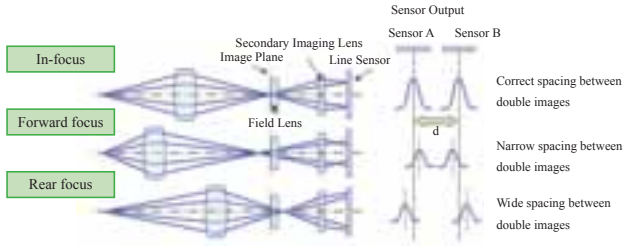
DIGISUPER 100AF

DIGISUPER 27AF

DIGISUPER 86AF

【TTL-Secondary Image Registration Phase-detection System】

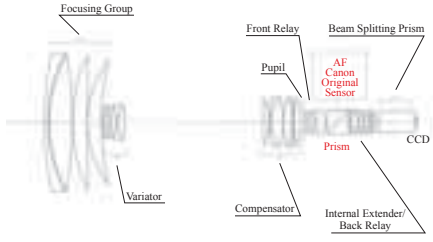
The light transmitting through a pair of the secondary imaging lenses focuses on separate sensors. The following figure illustrates this state of focusing. The TTL-Secondary Image Registration Phase-detection System determines the positional relationship between the two images (Refer to "d" in figure) to detect the amount and direction of defocusing.



Features

- Extremely high focusing accuracy in full HDTV specifications
- Ability to focus from a completely de-focused status without hunting
- Ability to focus on a high speed moving object
- Size and position of the AF frame (target area) in the camera VF can be changed from the Focus Demand FDJ-P31/P41.
  (The size of the AF Frame can be changed in 3 steps)
  * Please confirm the AF camera-lens interface with your camera manufacturer of choice
- The AF system's two operation modes is the answer to a professional camera operator's various demands.

【Layout of the elements】



【Changeable AF frame】

【2 kinds of AF Operation Modes with ACTIVE/HOLD switch】		
Mode	FULL TIME AF	PART TIME AF
How AF works	Usually activated Focus position is locked while the SW is pushed.	Usually off. Activated while the SW is pushed.
Recommended Application	Sporting event etc. To follow a moving object.	Studio production etc. To confirm the best focus position.

HDXS / e-IFxs / HDGC

In 2004, Canon introduced a new broadcast lens technology, e-IFxs, by launching the J22ex7.6B.
The e-IFxs technology consists of two applicable meanings for the letter "e". One is the "ecological design", as these lenses are harmless to the environment. The other is the "enhanced digital" technology, which improves the performance of the digital drive unit. Also, all of these advantages are inherited to the HDGC (IRSE / IASE model) and the HDXS lenses.

Enhanced Digital Drive

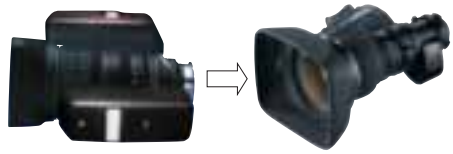
The HDXS, e-IFxs and the HDGC (IRSE / IASE model) series are equipped with an information display and a digital function selector, an X-Y axis switch, so that the user can customize the enhanced digital functions much more easily and precisely. The new design enables the user to fully bring out the digital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

- User settings are both simple and easy to operate. User settings included: speed preset, frame 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 user's 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.

Information Display

Rotary Encoder

Canon offers a series of HDXS / e-IFxs / HDGC (IRSE / IASE model) 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

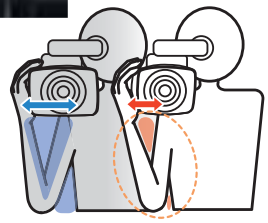
It is Canon's policy to not pollute the Earth and, through research, we are quickly reducing our impact on the environment even further.
The HDXS / e-IFxs / HDGC series have avoided using any materials or substances that could pollute the environment.
The optical parts, featuring lead free glass, are 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.

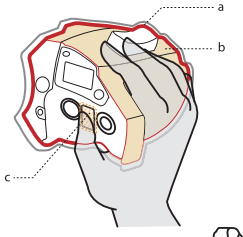
*PBBS:Poly Bromo Bi Phenyls
*PBDPE:Poly Bromo Di Phenyl Ethers

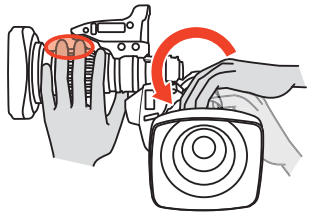

Lead Free Glass

New Ergonomic Drive Unit

With the launch of the HJ14ex4.3B, Canon introduced a totally new design of the digital drive unit. Refined by long-term market research and worldwide experience, Canon mobilized the latest in 3D CAD-CAM design to significantly improve the human tactile interface to the control of zoom, iris, and focus. Here are some results of Canon's research:







Reduced Physical Stress
By reducing the width of the drive unit, the palm of the camera operator's hand is positioned closer to the optical axis, thus reducing the degree of arm bend which in turn lessens physical stress during prolonged shooting.

Ergonomic Design
The size and curvature size have been optimized to more comfortably fit in the palm of the operator's hand (a). Newly developed coatings improve the tactile interface between the user and the drive unit (b) together with the new Rubber Grip Support (c).

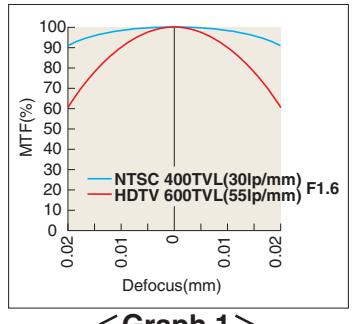
Improved Ease of Operation
The spacing between the focus ring and drive unit has been changed to avoid accidental interference with the drive unit while manipulating the focus control.

HDgc Series

HDGC The details of the HDgc Series Lenses are shown on Page 29-33.

Concept of the HDgc Series
Corresponding to the popularity of digital High Definition broadcasting and diversity of HDTV equipment, Canon has added a new series to its HDTV lens lineup, the HDgc series. The new HDgc series supports the emergence of an important new generation of cost-effective HD acquisition systems. Adopting the advantages created by Canon's unique technology, the new HDgc lenses exhibit high MTF, high resolution and high contrast from the center of the image to its extreme edges, meanwhile maintaining its compact size and weight.

Compared to the SDTV Lenses, the HDgc Series are...
In the HDTV system the pixel size is about half. Therefore, the spread of a point image caused by a spherical aberration, coma etc. should be diminished to about half. The MTF varies as the focus changes and even if the image is slightly out of focus, the MTF is greatly influenced as shown in Graph 1. The HDgc Lenses are specially designed to use optical elements that are effective in further minimizing chromatic aberrations, such as "Hi UD Glass", "Aspherical Elements" and other special elements. The HDgc lenses greatly contribute to correcting and minimizing these aberrations at the same time maintaining high MTF throughout the edge of the picture.



＜Graph 1＞

Quality of the HDgc Series
The HDgc Series lenses are based upon Canon's latest design concepts which support the new generation of cost-effective HD acquisition systems. The HDgc lenses are designed to meet the specific bandwidth frequency (or the number of scanning lines) of these new HD camera systems and at the same time to offer an excellent performance-cost optimization.

	SD		HDgc
Test Frequency of Broadcast Camera	320TV Lines / 4MHz	up to 640TV Lines / 8MHz	up to 800TV Lines
Test Frequency of Broadcast Lens	24Lines / mm	up to 48Lines / mm	up to 74Lines / mm
Actual Canon Resolution of Broadcast Lens	up to 75Lines / mm		up to 100Lines / mm

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

HDxs / HDXS / eIFxs

The XS-series lenses are shown with either of these legends on page 16-19 and 25-27.

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-crystalized “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 breakthrough 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

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. We now offer the e-IFxs/e-HDxs series, as well as with the HDxs and HDgc series.

Digital Technology

DIGI SUPER

The Studio/Field lenses with the “DIGISUPER” system are shown with this legend on page 16-19. Also the unique features are explained on page 20 and 21.

HDXS / eIFxs / HDGC / DIGITAL DRIVE DD

The broadcast ENG/EFP lenses with the Digital System are shown with this legend on page 25-27. Also the unique features are explained on page 34 and 35.

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 HDxs/e-IFxs/HDgc (IRSE / IASE model) series of ENG/EFP zoom lenses, while “Digital Drive” continues to be used on other models. With HDxs/e-IFxs/HDgc (IRSE / IASE model) and “Digital Drive”, the lens servo unit is now digital and offers such unique new “Useful” features as: Shuttle Shot, Speed Preset and Frame Preset.

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. 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.

In 2002, Canon proudly introduced the world's first triple digit zoom lens, the DIGISUPER 100, 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
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

Wireless Control Solution

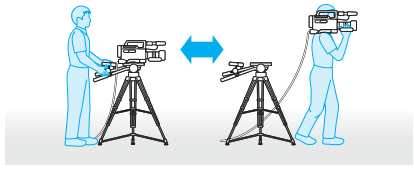
Canon offers a new wireless system as an alternative to the cumbersome control cabling that is often required between the lens controllers and the lens-camera systems. This consists of a Transmitter Unit that is connected to the lens controllers, and a Receiver Unit that is mounted close to, and is connected to, the lens drive unit. These two units can be separated by up to ten meters distance, and the wireless connection between them provides precisely the same degree and quality of controllability as afforded by the cabling system they replace.

Application Examples

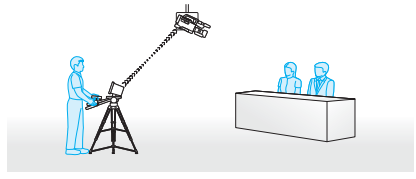
- Easy set-up of lens-camera control system
- Facilitates easy transfer between shoulder-mount shooting and tripod use
- Considerably simplifies control of lens-cameras on jib-arm or crane
- Allows remote control when camera operator is denied entry
- Easy construction of lens-camera control system in complicated environments

The Transmitter/Receiver Box can only be used in limited countries due to restrictions of Radio Law.
Please ask a Canon office for the availability.

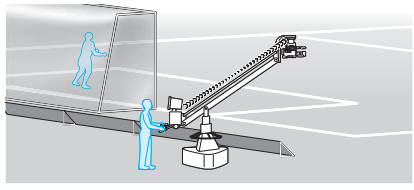
Please see P.36 for further information.



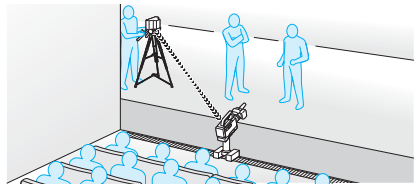
Easy transfer between shoulder-mount shooting and tripod use



Easy construction of control system in complicated environments



Simplifies control of lens-cameras on jib-arm or crane



Remote control when camera operator is denied entry

Optical Image Stabilizer

IMAGE STABILIZER

The products with the "Optical Image Stabilizer" technologies are shown with this legend on page 16, 17, 25, 27 and 28.

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

Canon introduces an important new HD production portable lens, the HJ15ex8.5B KRSE-V. This lens incorporates an innovation intended to significantly enhance HD motion imaging on location shoots of many forms. The lens has a built-in optical image stabilization system that employs Canon's patented Vari-Angle Prism Image Stabilizer (VAP-IS). Canon's IS technology has been dramatically improved since it's earlier deployment in a standard definition lens, and produces highly stable HD imagery when the lens-camera system is subjected to a wide range of disturbance frequencies encountered in many shooting environments. These can range from very low frequencies in handheld or shoulder-mount shooting by a walking or running camera operator, to higher vibration frequencies associated with operation on motorbikes, moving vehicles, and helicopters. Various stabilization modes of operation are selectable to address diverse shooting operations.

P.28

HJ15ex8.5B KRSE-V

P.16

DIGISUPER 100AF
DIGISUPER 100
DIGISUPER 95

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, DIGISUPER 100AF, DIGISUPER 95, DIGISUPER 86AF, DIGISUPER 80, HJ40x10B IASD-V and HJ40x14B IASD-V.

P.17

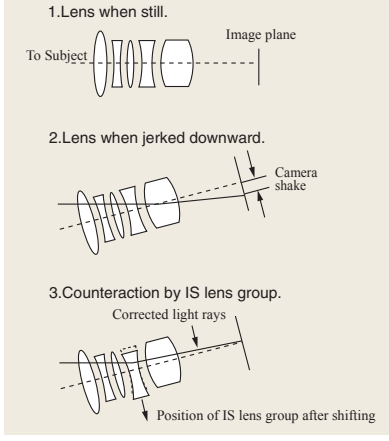
DIGISUPER 86AF
DIGISUPER 80

P.25

HJ40x10B IASD-V
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

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 and Wide portable, as well as Studio/Field. Canon continues to lead the broadcast industry into the 21st century "DTV" era with the next generation of lens families, consisting of the following four HDTV Lens Series:

HDxs Series
Shown on Page 16-19, and 25.

Studio/Field Lenses

Compact Studio Lens

EFP Lenses

Portable HDxs Series
Shown on Page 25-27.

ENG/EFP Lenses

Built-in Optical Image Stabilizer Lens

HDgc Series
Shown on Page 30-33.

ENG Lenses for 2/3" Cameras

ENG Lenses for 1/2" Cameras

ENG Lenses for 1/3" Cameras

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.

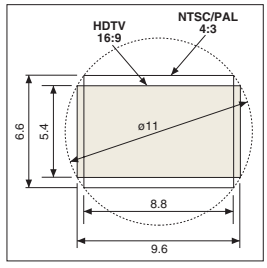
Overall, the resolution of the HDTV system is about twice that of the NTSC system and therefore, the lens requires much higher performance than the conventional lenses.

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

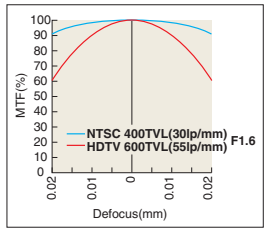
As the HDTV system has high resolution, even a small out-of-focus area can be detected. Since the radius of the permissible circle of confusion is about half that of the conventional system, the depth of field becomes proportionately smaller. Therefore, the focusing has to be done with great care.

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.

Canon 3D Solution

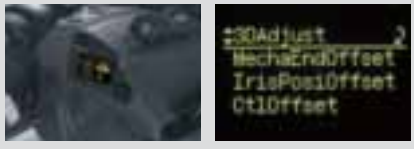
Recognizing the importance of 3D program origination, Canon gave priority to adoption of most of the standard HD lens series for 3D production systems. This entailed use of Canon's original 16bit resolution encoders, while at the same time allowing off sets of zoom, focus and iris positions to compensate the tracking of each positions. Canon is now introducing a new solution to construct a simpler 3D production system with increased interoperability at a low cost.

3D Lens Lineups

A pioneer in the development of Digital Drive Units for its portable lenses, Canon's new ergonomic Digital Drive Unit incorporates Canon-developed, ultracompact rotary encoders capable of 0.1µm position detection which produces 16-bit resolution of the positions of zoom, iris, and focus controls. The unique device allows for one zoom controller and one focus controller to simultaneously operate both lenses while providing even higher interoperability and precision in synchronization of zoom, focus and iris positions of the lens pairs.

Lens Refinements for 3D

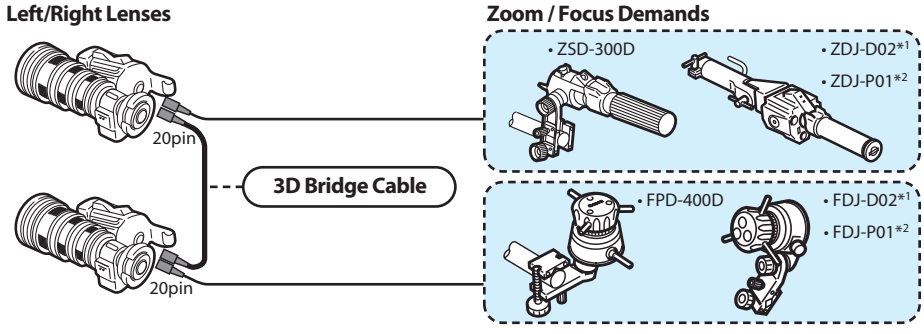
3D Lens Adjustment Software



3D Bridge Cable

The "3D Lens Adjustment Software" is intended to make stereoscopic tracking of the zoom, focus and iris even more precise, and allow appropriate offsets to be easily made using the Digital Drive Unit's display to compensate for minor zoom and focus tracking differences between any two lens pairs (zoom:3points, focus:2points, iris:2points). Another attraction of Canon's synchronous lens control system is that the system doesn't require special controllers. If the lens is installed with the 3D Lens Adjustment Software, all the servo controllers for digital servo lenses as shown below will be compatible by connecting the two lenses with the simple 3D Bridge Cable (BC-100), which should save additional costs when implementing 3D production systems.

System Configuration



*1 BDC-10 conversion cable is necessary to connect between ZDJ-D02 or FDJ-D02 (18pin) and Digital Drive Lens (20pin).

*2 BDC-20 conversion cable is necessary to connect between ZDJ-P01 or FDJ-P01 (12pin) and Digital Drive Lens (20pin).

STUDIO/FIELD LENSES

Horizontal Field of View (16:9)		72.9°	68.8°	66.7°	58.3°	56.1°	54.6°	3.4°	1.02°	0.69°	0.67°	0.59°
Focal Length (mm)		6.5	7	7.3	8.6	9	9.3	161	540	800	820	930
Studio Lens	XJ22x7.3B	Compact Studio Lens										
	XJ23x7B	Affordable Studio Lens										
	XJ27x6.5B	Wide Angle Studio Lens										
	XJ27x6.5B AF	Wide Angle Studio Lens With Advaced Auto Focus Function										
Field Lens	XJ60x9B				Affordable Field Lens							
	XJ76x9B				Standard Field Lens With Superb Quality and Performance							
	XJ80x8.8B				Premium Field Lens With Superb Quality and Advanced Image Stabilizer							
	XJ86x9.3B AF				Telephoto Field Lens With Auto Focus and Image Stabilizer							
	XJ95x8.6B				Telephoto Field Lens With Advanced Image Stabilizer							
	XJ100x9.3B				Flagship Field Lens With Image Stabilizer							
	XJ100x9.3B AF				Flagship Field Lens With Auto Focus and Image Stabilizer							

- Please refer to page 13 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 20-22).
- The DIGISUPER 22 xs is a studio lens based on a new concept to be used with portable cameras. Please refer to page 19 for the specification.

Studio/Field Lenses

HDTV

		DIGISUPER 100AF		DIGISUPER 100		DIGISUPER 95	
Model Number		XJ100x9.3B AF		XJ100x9.3B		XJ95x8.6B	
Zoom Ratio		100x		100x		95x	
Built-in Extender		2.0x		2.0x		2.0x	
Range of Focal Length (with Extender)		9.3~930mm 18.6~1860mm		9.3~930mm 18.6~1860mm	(2.0x)	8.6~820mm 17.2~1640mm	(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 1:9.4 at 1860mm	(2.0x)	1:1.7 at 9.3~296mm 1:4.7 at 930mm 1:3.4 at 18.6~592mm 1:9.4 at 1860mm	(2.0x)	1:1.7 at 8.6~340mm 1:4.1 at 820mm 1:3.4 at 17.2~680mm 1:8.2 at 1640mm	(2.0x)
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 0.27°x0.20° at 1860mm	(2.0x)	50.6°x39.1° at 9.3mm 0.54°x0.41° at 930mm 26.6°x20.1° at 18.6mm 0.27°x0.20° at 1860mm	(2.0x)	54.2°x42.0° at 8.6mm 0.61°x0.46° at 820mm 28.7°x21.7° at 17.2mm 0.31°x0.23° at 1640mm	(2.0x)
	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 0.30°x0.17° at 1860mm	(2.0x)	54.6°x32.4° at 9.3mm 0.59°x0.33° at 930mm 28.9°x16.5° at 18.6mm 0.30°x0.17° at 1860mm	(2.0x)	58.3°x34.9° at 8.6mm 0.67°x0.38° at 820mm 31.2°x17.8° at 17.2mm 0.34°x0.19° at 1640mm	(2.0x)
M.O.D. from Lens Front		3.0m		3.0m		3.0m	
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 1.27x0.95cm at 1860mm	(2.0x)	253.9x190.4cm at 9.3mm 2.54x1.90cm at 930mm 127.0x95.2cm at 18.6mm 1.27x0.95cm at 1860mm	(2.0x)	274.1x205.6cm at 8.6mm 3.0x2.3cm at 820mm 137.1x102.8cm at 17.2mm 1.5x1.2cm at 1640mm	(2.0x)
	16:9 Aspect Ratio (9.6x5.4mm)	276.4x155.5cm at 9.3mm 2.76x1.56cm at 930mm 138.2x77.8cm at 18.6mm 1.38x0.78cm at 1860mm	(2.0x)	276.4x155.5cm at 9.3mm 2.76x1.56cm at 930mm 138.2x77.8cm at 18.6mm 1.38x0.78cm at 1860mm	(2.0x)	298.1x167.7cm at 8.6mm 3.2x1.8cm at 820mm 149.1x83.9cm at 17.2mm 1.6x0.9cm at 1640mm	(2.0x)
Approx.Size (WxHxL)		250.6x255.5x661.5mm		250.6x255.5x610mm		250.6x255.5x610mm	
Approx.Mass		26.8kg (59.3lbs)		23.5kg (51.8lbs)		23.2kg (51.1lbs)	
Macro		—		—		—	
Protection Filter		Standard		Standard		Option	
Built-in Optical Image Stabilizer		○		○		○	
Crossover Type		—		—		—	
Auto Focus System		○		—		—	

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

Angular Field of View (with Extender)	**4:3 mode of Most Switchable Cameras (7.2x5.4mm)**	

•Please refer to page 13, 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
•Black color cover lenses are also available as an alternative to the white color lenses.

DIGISUPER 86AF		DIGISUPER 80		DIGISUPER 76		DIGISUPER 60 xs	
XJ86x9.3B AF		XJ80x8.8B		XJ76x9B		XJ60x9B IE-D	
86x		80x		76x		60x	
2.0x		2.0x		2.0x		2.0x	
9.3~800mm 18.6~1600mm	(2.0x)	8.8~710mm 17.6~1420mm	(2.0x)	9~690mm 18~1380mm	(2.0x)	9~540mm 18~1080mm	(2.0x)
1:1.7 at 9.3~340mm 1:4.0 at 800mm 1:3.4 at 18.6~680mm 1:8.0 at 1600mm	(2.0x)	1:1.7 at 8.8~340mm 1:3.55 at 710mm 1:3.4 at 17.6~680mm 1:7.1 at 1420mm	(2.0x)	1:1.7 at 9~340mm 1:3.45 at 690mm 1:3.4 at 18~680mm 1:6.9 at 1380mm	(2.0x)	1:1.7 at 9~306mm 1:3.0 at 540mm 1:3.4 at 18~612mm 1:6.0 at 1080mm	(2.0x)
50.6°x39.1° at 9.3mm 0.63°x0.47° at 800mm 26.6°x20.1° at 18.6mm 0.32°x0.24° at 1600mm	(2.0x)	53.1°x41.1° at 8.8mm 0.71°x0.53° at 710mm 28.1°x21.2° at 17.6mm 0.36°x0.27° at 1420mm	(2.0x)	52.1°x40.3° at 9mm 0.73°x0.55° at 690mm 27.5°x20.8° at 18mm 0.37°x0.27° at 1380mm	(2.0x)	52.1°x40.3° at 9mm 0.93°x0.70° at 540mm 27.5°x20.8° at 18mm 0.47°x0.35° at 1080mm	(2.0x)
54.6°x32.4° at 9.3mm 0.69°x0.39° at 800mm 28.9°x16.5° at 18.6mm 0.34°x0.19° at 1600mm	(2.0x)	57.2°x34.1° at 8.8mm 0.77°x0.44° at 710mm 30.5°x17.4° at 17.6mm 0.39°x0.22° at 1420mm	(2.0x)	56.1°x33.4° at 9mm 0.80°x0.45° at 690mm 29.9°x17.1° at 18mm 0.40°x0.22° at 1380mm	(2.0x)	56.1°x33.4° at 9mm 1.02°x0.57° at 540mm 29.9°x17.1° at 18mm 0.51°x0.29° at 1080mm	(2.0x)
3.0m		3.0m		3.0m		2.8m	
253.9x190.4cm at 9.3mm 2.8x2.1cm at 800mm 127.0x95.2cm at 18.6mm 3.2x1.8cm at 800mm	(2.0x)	266.8x200.1cm at 8.8mm 3.4x2.6cm at 710mm 133.4x100.1cm at 17.6mm 1.7x1.3cm at 1420mm	(2.0x)	259.9x194.9cm at 9mm 3.5x2.6cm at 690mm 130.0x97.5cm at 18mm 1.8x1.3cm at 1380mm	(2.0x)	243.8x182.9cm at 9mm 4.1x3.1cm at 540mm 121.9x91.5cm at 18mm 2.1x1.6cm at 1080mm	(2.0x)
276.4x155.5cm at 9.3mm 3.2x1.8cm at 800mm 138.2x77.8cm at 18.6mm 1.6x0.9cm at 1600mm	(2.0x)	290.0x163.1cm at 8.8mm 3.7x2.1cm at 710mm 145.0x81.6cm at 17.6mm 1.9x1.1cm at 1420mm	(2.0x)	282.4x158.9cm at 9mm 3.8x2.1cm at 690mm 141.2x79.5cm at 18mm 1.9x1.1cm at 1380mm	(2.0x)	265.1x149.1cm at 9mm 4.5x2.5cm at 540mm 132.6x74.6cm at 18mm 2.3x1.3cm at 1080mm	(2.0x)
250.6x255.5x661.5mm		250.6x255.5x610mm		250.6x255.5x610mm		250.6x255.5x547.8mm	
26.8kg (59.3lbs)		23.2kg (51.1lbs)		23.0kg (50.6lbs)		19.9kg (43.8lbs)	
—		—		—		—	
Standard		Option		Option		Option	
○		○		—		—	
—		—		—		Option	
○		—		—		—	

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

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

Studio/Field Lenses

HDTV

		DIGISUPER 27AF		DIGISUPER 27		DIGISUPER 23 xs	
Model Number		XJ27x6.5B AF		XJ27x6.5B		XJ23x7B IE-D	
Zoom Ratio		27x		27x		23x	
Built-in Extender		2.0x		2.0x		2.0x	
Range of Focal Length (with Extender)		6.5~180mm 13~360mm	(2.0x)	6.5~180mm 13~360mm	(2.0x)	7~161mm 14~322mm	(2.0x)
Maximum Relative Aperture (with Extender)		1:1.5 at 6.5~123mm 1:2.2 at 180mm 1:3.0 at 13~246mm 1:4.4 at 360mm	(2.0x)	1:1.5 at 6.5~123mm 1:2.2 at 180mm 1:3.0 at 13~246mm 1:4.4 at 360mm	(2.0x)	1:1.6 at 7~132mm 1:1.95 at 161mm 1:3.2 at 14~223mm 1:3.9 at 322mm	(2.0x)
Angular Field of View (with Extender)	**4:3 Aspect Ratio (8.8x6.6mm)**	68.2°x53.8° at 6.5mm 2.8°x2.1° at 180mm 37.4°x28.5° at 13mm 1.4°x1.1° at 360mm	(2.0x)	68.2°x53.8° at 6.5mm 2.8°x2.1° at 180mm 37.4°x28.5° at 13mm 1.4°x1.1° at 360mm	(2.0x)	64.3°x50.5° at 7mm 3.1°x2.3° at 161mm 34.9°x26.5° at 14mm 1.6°x1.2° at 322mm	(2.0x)
	16:9 Aspect Ratio (9.6x5.4mm)	72.9°x45.1° at 6.5mm 3.1°x1.7° at 180mm 40.5°x23.5° at 13mm 1.5°x0.9° at 360mm	(2.0x)	72.9°x45.1° at 6.5mm 3.1°x1.7° at 180mm 40.5°x23.5° at 13mm 1.5°x0.9° at 360mm	(2.0x)	68.8°x42.1° at 7mm 3.4°x1.9° at 161mm 37.8°x21.8° at 14mm 1.7°x1.0° at 322mm	(2.0x)
M.O.D. from Lens Front		0.6m (10mm with Macro)		0.6m (10mm with Macro)		0.6m	
Object Dimensions at M.O.D. (with Extender)	**4:3 Aspect Ratio (8.8x6.6mm)**	97.0x72.8cm at 6.5mm 3.5x2.6cm at 180mm 48.5x36.4cm at 13mm 1.8x1.3cm at 360mm	(2.0x)	97.0x72.8cm at 6.5mm 3.5x2.6cm at 180mm 48.5x36.4cm at 13mm 1.8x1.3cm at 360mm	(2.0x)	90.6x68.0cm at 7mm 3.8x2.9cm at 161mm 45.3x34.0cm at 14mm 1.9x1.5cm at 322mm	(2.0x)
	16:9 Aspect Ratio (9.6x5.4mm)	106.1x59.7cm at 6.5mm 3.8x2.1cm at 180mm 53.1x29.9cm at 13mm 1.9x1.1cm at 360mm	(2.0x)	106.1x59.7cm at 6.5mm 3.8x2.1cm at 180mm 53.1x29.9cm at 13mm 1.9x1.1cm at 360mm	(2.0x)	99.0x55.7cm at 7mm 4.2x2.4cm at 161mm 49.5x27.9cm at 14mm 2.1x1.2cm at 322mm	(2.0x)
Approx.Size (WxHxL)		250.6x255.5x567mm		250.6x255.5x550mm		250.6x255.5x525mm	
Approx.Mass		23.3kg (51.4lbs)		21.9kg (48.3lbs)		19.5kg (42.5lbs)	
Macro		Option (Remote)		Option (Remote)		—	
Protection Filter		Option		Option		Option	
Built-in Optical Image Stabilizer		—		—		—	
Crossover Type		—		Option		Option	
Auto Focus System		○		—		—	

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

Angular Field of View (with Extender)	**4:3 mode of Most Switchable Cameras (7.2x5.4mm)**			58.0°x45.1° at 6.5mm 2.3°x1.7° at 180mm 31.0°x23.5° at 13mm 1.1°x0.9° at 360mm	(2.0x)	54.3°x42.1° at 7mm 2.5°x1.9° at 161mm 27.9°x21.1° at 14mm 1.3°x1.0° at 322mm	(2.0x)

•Please refer to page 13, 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
•Black color cover lenses are also available as an alternative to the white color lenses.

COMPACT STUDIO LENS

HD xs DIGI SUPER

DIGISUPER 22 xs

Model Number		XJ22x7.3B IE-D	
Zoom Ratio		22x	
Built-in Extender		2.0x	
Range of Focal Length **(with Extender)**		7.3~161mm 14.6~322mm	(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)
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)
	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)
M.O.D. from Lens Front		0.8m (10mm with Macro)	
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)
	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)
Approx.Size (WxHxL)		165x175x336mm	
Approx.Mass		6.1kg (13.42lbs)	
Macro		Standard (Manual)	
Protection Filter		—	
Built-in Optical Image Stabilizer		—	
Crossover Type		Option	

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

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)

•Please refer to page 13, 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

Compact Studio Lens

DIGISUPER 22 xs

Corresponding to the world's trend of using portable cameras in HD Studio Systems, Canon introduces a new concept for a Studio Lens.

The DIGISUPER 22 xs is a "Compact HD Studio lens" which was specifically designed to be used with a portable camera.

By adopting technologies developed from Canon's long history, the DIGISUPER 22 xs is superior in both optical performance and ease of operation, compared with HD portable lenses as well as all previous SD Studio Box Type Lenses.

■High Optical Performance

The DIGISUPER 22 xs offers higher contrast and resolution compared with portable lenses and at the same time, reducing the Focus Breathing to a zero level.

■Small In Size, Light In Weight

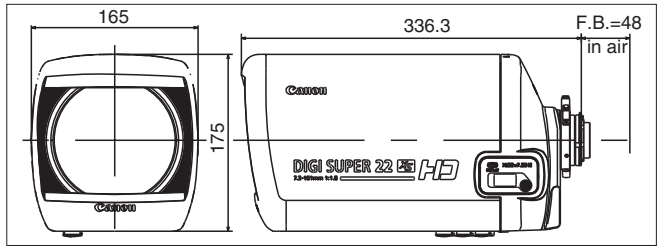
In order to realize the best capabilities from the camera / lens combination, the lens was specifically designed to be as small and light as possible.

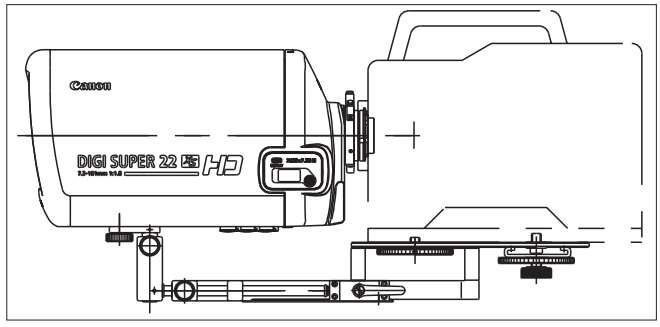
■Advanced Operation

By adopting the "Encoder Device", it has capable features to zoom from a very fast 0.5 sec. to a very slow 5 min. and at the same time, making the zoom, focus and iris control much more precise and repeatable. Also, the new encoder device enables the lens to be easily integrated into virtual studio applications.

■Diverse Functions

The DIGISUPER 22 xs is equipped with an information display, which will enable you to use diverse digital functions, easily and precisely.





•The SUP-400 supporter for the DIGISUPER 22 xs 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, DIGISUPER 100AF, DIGISUPER 95, DIGISUPER 86AF, DIGISUPER 80, DIGISUPER 76, DIGISUPER 60 xs, DIGISUPER 27AF, DIGISUPER 27, and DIGISUPER 23 xs.)

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

a) Shuttle Shot and Frame Preset

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

Frame 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

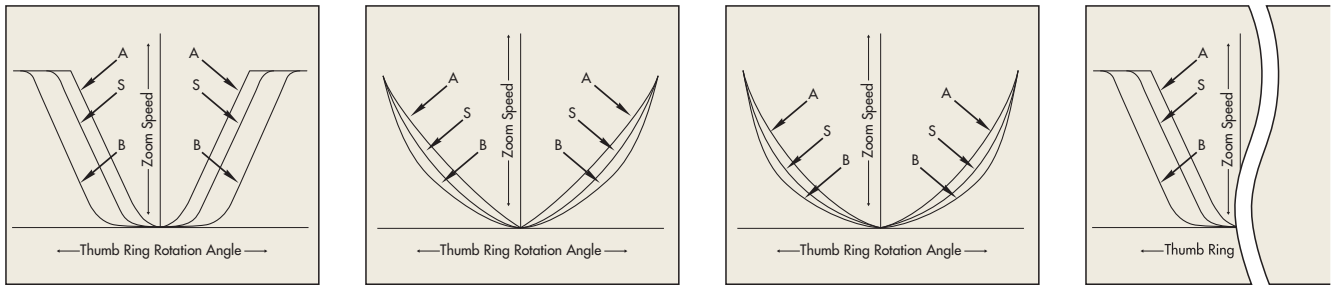
A zoom speed agreed on during rehearsal can be reproduced accurately. The preset memory is not automatically cleared and can be repeated as many times as needed.

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.



Standard Curvature Group

e) "AUX" Switch Function Assignment

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

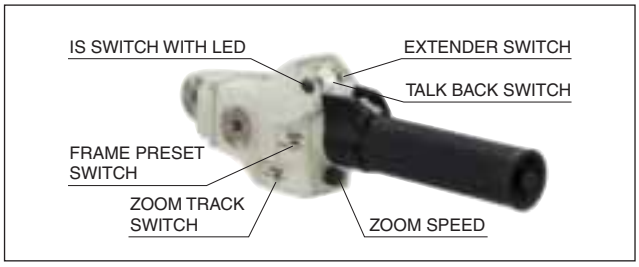
1) Image Stabilizer : To activate/stop the built-in Shift-IS function. (Ref: page 12)

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.

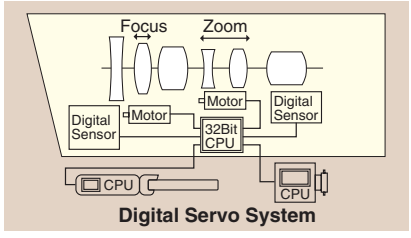
In addition to Canon's ZDJ-D02, there is an introduction of a compact zoom demand, the ZDJ-P01. In comparison, the ZDJ-P01 is smaller in size and designed to enhance usability and heighten ease of operation. When used with the latest DIGISUPER series zoom lens, it allows for creative use of the digital 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.



Digital Servo System

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:0.5sec, focus:0.8sec in case of the DIGISUPER 27), and high repeatability.

e) Auto Focus Function

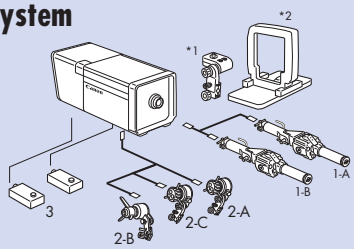
Canon's unique auto focusing system has been adapted to the newly introduced DIGISUPER 100AF, DIGISUPER 86AF and DIGISUPER 27AF. Please refer to page 7 for the details.

Control Accessories for Studio/Field Lenses

DIGITAL DIGISUPER Series

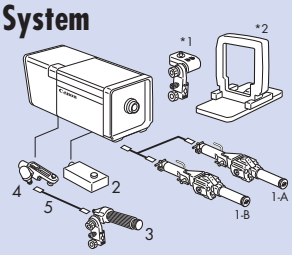
For :
DIGISUPER 100 / DIGISUPER 95 / DIGISUPER 80 / DIGISUPER 76 / DIGISUPER 60 xs / DIGISUPER 27 / DIGISUPER 23 xs

Full Servo System



1-A.	Zoom Demand ZDJ-D02 (Digital Servo)	1822A066
1-B.	Zoom Demand ZDJ-P01 (Digital Servo)	1822A082
2-A.	Focus Demand FDJ-D02 (Digital Servo)	1822A065
2-B.	Focus Demand FDJ-D12 (Digital Servo)	1822A071
2-C.	Focus Demand FDJ-P01 (Digital Servo)	1822A081
3.	Servo Module SMJ-E01 (˝2pcs)	1822A077

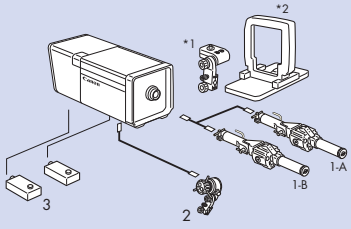
Semi-Servo System



1-A.	Zoom Demand ZDJ-D02 (Digital Servo)	1822A066
1-B.	Zoom Demand ZDJ-P01 (Digital Servo)	1822A082
2.	Servo Module SMJ-E01	1822A077
3.	Flexible Focus Controller FFP-T61	1822A007
4.	Flexible Module FMJ-702	1822A072
5.	Flexible Cable 36"	—

For :
DIGISUPER 100AF / DIGISUPER 86AF / DIGISUPER 27AF

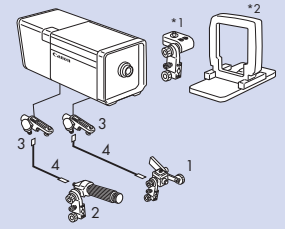
Full Servo System



1-A.	Zoom Demand ZDJ-D02 (Digital Servo)	1822A066
1-B.	Zoom Demand ZDJ-P01 (Digital Servo)	1822A082
2.	Focus Demand FDJ-P31 (Digital Servo)*3	—
3.	Servo Module SMJ-E01 (˝2pcs)	1822A077

For :
All DIGISUPER Lenses

Full Manual System



1.	Flexible Zoom Controller FZP-T61	1822A005
2.	Flexible Focus Controller FFP-T61	1822A007
3.	Flexible Module FMJ-702 (˝2pcs)	1822A072
4.	Flexible Cable 36" (˝2pcs)	—

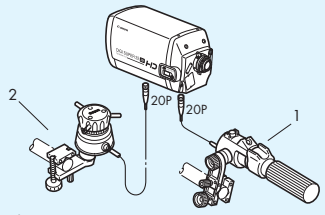
*1 Switch Box is optionally available. The equivalent switches are integrated into Zoom Demands. It is recommended to have the Switch Box with Full Manual System.
*2 Lens Supporter is necessary for portable camera mounting. Some cameras need separate power supply for zoom and focus servo operation.
*3 For DIGISUPER 100AF, DIGISUPER 86AF and DIGISUPER 27AF, FDJ-P31 is necessary to control the AF function. FDJ-P41 is also available for left hand users.
- Zoom Demand and Focus Demand with Pre-set Box is also available.
- For detail information, please contact a Canon Sales Office.

Control Accessories for Studio/Field Lenses

For :
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 Compact Field/Studio demands by use of a conversion cable.

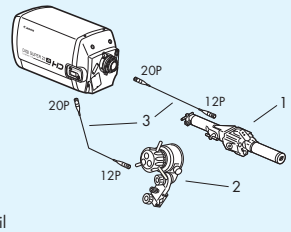
With Current ENG Demand (Standard)



Kit Detail

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

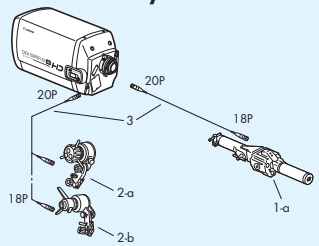
With Compact Field/Studio Demand



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
2-a	Digital Focus Demand	FDJ-D02
2-b	Digital Focus Demand Propeller Type	FDJ-D12
3	Conversion Cable	BDC-10

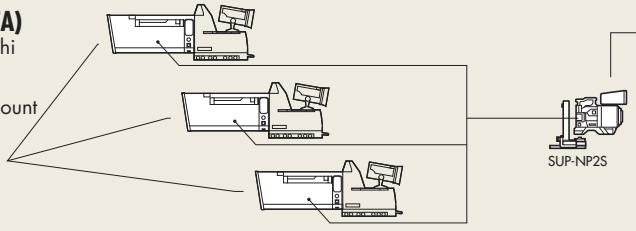
* The SUP-400 SUPPORTER is included as a standard component with the lens.

Studio/Field Lenses Mount Compatibility

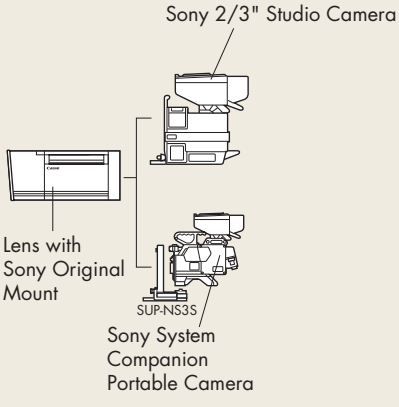
To Use Camera Manufacturer's Original Mount Lens

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.

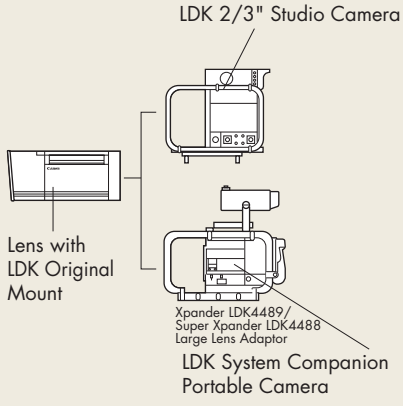
Standard HD Mount (BTA)
Panasonic, Ikegami, Hitachi
Thomson Grass Valley



Sony



Thomson Grass Valley-SDTV



BROADCAST ENG/EFP LENSES

Horizonal Field of View (16:9)		96.3	93.7			65.2	64.6	58.9	51.3	47.1	37.8	35.5	19.6	11	9.1		4.3	4.0	3.5	3.3		1.43	1.4	1.1	1.05	1
	(4:3)	91.3	88.7			60.8	60.1	54.7	47.5	43.6	34.9	32.7	18	10.1	8.4			3.7	3.2	3		1.31	1.3	1	0.96	0.9
Focal Length (mm)		4.3	4.5	6.2	7.5	7.6	8.5	10	11	14	15	28	50	60	106	128	137	158	168	385	400	500	525	560			
HJ Series (HDTV)	HJ14ex4.3B	Widest Angle HDTV Lens To Date in the TV Industry																									
	HJ15ex8.5B	The First HDTV ENG Lens in the Industry With Advanced Image Stabilizer																									
	HJ17ex6.2B	Wider and Closer Premium Standard Lens																									
	HJ18ex7.6B	Standard HDTV ENG Lens in Compact Size																									
	HJ21ex7.5B	HDTV EFP Lens of Advanced Optical Performance																									
	HJ22ex7.6B	Multi Purpose HDTV ENG Lens of Broad Range of Focal Length																									
	HJ18ex28B	Ultra Telephoto HDTV EFP Lens in Portable Size																									
	HJ40ex10B	Telephoto HDTV EFP Lens With Advanced Image stabilizer																									
	HJ40ex14B	Ultra Telephoto HDTV EFP Lens With Advanced Image stabilizer																									
J Series (SDTV)	J35ex11B	Telephoto SDTV Lens																									
	J35ex15B	Ultra Telephoto SDTV Lens																									

- Canon offers a variety of Broadcast ENG/EFP lenses, including both HDTV and SDTV versions. Please refer to page 13 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 8, 9 & 10 regarding HDxs and HDgc series lenses. All Broadcast ENG/EFP lenses are equipped with Canon's "xs" technology as well as our enhanced "Digital Drive" which is explained on page 34 & 35.
- The DIGISUPER 22 xs 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 higher versatility as opposed to the large box type lenses. Please refer to page 19 for the details.

2/3” ENG/EFP Lenses

HDTV

HJ40x14B IASD-V

HJ40x10B IASD-V

HJ18ex28B IASE A

Zoom Ratio		40x		40x		18x		
Image Size		2/3"		2/3"		2/3"		
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	(2.0x)	
Maximum Relative Aperture (with Extender)		1:2.8 at 14~307mm 1:5.1 at 560mm 1:5.6 at 28~614mm 1:10.2 at 1120mm	(2.0x)	1:2.0 at 10~220mm 1:3.65 at 400mm 1:4.0 at 20~440mm 1:7.3 at 800mm	(2.0x)	1:2.8 at 28~286mm 1:4.9 at 500mm 1:5.6 at 56~572mm 1:9.8 at 1000mm	(2.0x)	
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 0.5°x0.3° at 1120mm	(2.0x)	47.5°x36.5° at 10mm 1.3°x0.9° at 400mm 24.8°x18.7° at 20mm 0.6°x0.5° at 800mm	(2.0x)	18.0°x13.5° at 28mm 1.0°x0.8° at 500mm 9.0°x6.8° at 56mm 0.5°x0.4° at 1000mm	(2.0x)	
	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 0.5°x0.3° at 1120mm	(2.0x)	51.3°x30.2° at 10mm 1.4°x0.8° at 400mm 27.0°x15.4° at 20mm 0.7°x0.4° at 800mm	(2.0x)	19.6°x11.1° at 28mm 1.1°x0.6° at 500mm 9.9°x5.6° at 56mm 0.6°x0.3° at 1000mm	(2.0x)	
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 2.1x1.6cm at 1120mm	(2.0x)	227.7x170.8cm at 10mm 5.7x4.3cm at 400mm 113.9x85.4cm at 20mm 2.9x2.2cm at 800mm	(2.0x)	65.4x49.1cm at 28mm 3.8x2.9cm at 500mm 32.7x24.6cm at 56mm 1.9x1.5cm at 1000mm	(2.0x)	
	16:9 Aspect Ratio (9.6x5.4mm)	177.1x99.5cm at 14mm 4.5x2.5cm at 560mm 88.6x49.8cm at 28mm 2.3x1.3cm at 1120mm	(2.0x)	248.4x139.7cm at 10mm 6.2x3.5cm at 400mm 124.2x69.9cm at 20mm 3.1x1.8cm at 800mm	(2.0x)	71.1x40.0cm at 28mm 4.1x2.3cm at 500mm 35.6x20.0cm at 56mm 2.1x1.2cm at 1000mm	(2.0x)	
Approx.Size (WxHxL)		174.1x133x355.5mm		174.1x133x335.4mm		176.2x123.6x268.3mm		
Approx.Mass (IRSE/IASE)		5.45kg (12.02lbs)		5.40kg (11.90lbs)		2.56kg (5.65lbs)		
Filter Thread Size (Hood/Lens Barrel)		— /127mm P0.75		— /127mm P0.75		127mm P0.75/ —		
Built-in Optical Image Stabilizer		○		○		—		
Information Display		×		×		○		

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

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 0.4°x0.3° at 1120mm	(2.0x)	39.6°x30.2° at 10mm 1.0°x0.8°at 400mm 20.4°x15.4° at 20mm 0.5°x0.4° at 800mm	(2.0x)	14.7°x11.1° at 28mm 0.8°x0.6°at 500mm 7.4°x5.6° at 56mm 0.4°x0.3° at 1000mm	(2.0x)	

- Please refer to page 13, 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 37 for explanation about IASE (IASD).
- M.O.D. = Minimum Object Distance
- The IRSE A / IASE A Digital Drive Units come equipped with Zoom, Iris and Focus Encoders.

2/3” ENG/EFP Lenses

HDTV

	HJ22ex7.6B IRSE A/IASE A	HJ21ex7.5B IASE A	HJ18ex7.6B IRSE S / IASE S	HJ17ex6.2B IRSE / IASE
Zoom Ratio	22x	21x	18x	17x
Image Size	2/3"	2/3"	2/3"	2/3"
Built-in Extender	2.0x	2.0x	2.0x	2.0x
Range of Focal Length (with Extender)	7.6~168mm 15.2~336mm (2.0x)	7.5~158mm 15~316mm (2.0x)	7.6~137mm 15.2~274mm (2.0x)	6.2~106mm 12.4~212mm (2.0x)
Maximum Relative Aperture (with Extender)	1:1.8 at 7.6~114.1mm 1: 2.65 at 168mm 1:3.6 at 15.2~228.2mm (2.0x) 1:5.3 at 336mm	1:1.9 at 7.5~116mm 1:2.6 at 158mm 1:3.8 at 15~232mm (2.0x) 1:5.2 at 316mm	1:1.8 at 7.6~103mm 1:2.4 at 137mm 1:3.6 at 15.2~206mm (2.0x) 1:4.8 at 274mm	1:1.8 at 6.2~65.8mm 1:2.9 at 106mm 1:3.6 at 12.4~131.6mm (2.0x) 1:5.8 at 212mm
Angular Field of View (with Extender) — **4:3 Aspect Ratio (8.8x6.6mm)**	60.1°x46.9° at 7.6mm 3.0°x2.25° at 168mm 32.3°x24.5° at 15.2mm (2.0x) 1.5°x1.13° at 336mm	60.8°x47.5° at 7.5mm 3.2°x2.4° at 158mm 32.7°x24.8° at 15mm (2.0x) 1.6°x1.2° at 316mm	60.1°x46.9° at 7.6mm 3.7°x2.8° at 137mm 35.1°x20.1° at 15.2mm (2.0x) 1.8°x1.4° at 274mm	70.7°x56.0° at 6.2mm 4.8°x3.6° at 106mm 39.1°x29.8° at 12.4mm (2.0x) 2.4°x1.8° at 212mm
Angular Field of View (with Extender) — **16:9 Aspect Ratio (9.6x5.4mm)**	64.6°x39.1° at 7.6mm 3.27°x1.84° at 168mm 35.1°x20.1° at 15.2mm (2.0x) 1.64°x0.92° at 336mm	65.2°x39.6° at 7.5mm 3.5°x2.0° at 158mm 35.5°x20.4° at 15mm (2.0x) 1.7°x1.0° at 316mm	64.6°x39.1° at 7.6mm 4.0°x2.3° at 137mm 35.1°x20.1° at 15.2mm (2.0x) 2.0°x1.1° at 274mm	75.5°x47.1° at 6.2mm 5.2°x 2.9° at 106mm 42.3°x24.6° at 12.4mm (2.0x) 2.6°x1.5° at 212mm
M.O.D. from Lens Front	0.85m (10mm with Macro)	0.85m (10mm with Macro)	0.56m (10mm with Macro)	0.4m (10mm with Macro)
M.O.D. from Image Plane	1.11m	1.16m	0.81m	0.69m
Object Dimensions at M.O.D. (with Extender) — **4:3 Aspect Ratio (8.8x6.6mm)**	92.5x69.4cm at 7.6mm 4.25x3.19cm at 168mm 46.3x34.7cm at 15.26mm (2.0x) 2.13x1.6cm at 336mm	110.1x82.6cm at 7.5mm 5.1x3.8cm at 158mm 55.1x41.3cm at 15mm (2.0x) 2.6x1.9cm at 316mm	55.9 x 44.9cm at 7.6mm 3.3 x 2.5cm at 137mm 30.0x22.5cm at 15.2mm (2.0x) 1.7x1.3cm at 274mm	66.9x50.2cm at 6.2mm 3.8x2.9cm at 106mm 33.5x25.1cm at 12.4mm (2.0x) 1.9x1.5cm at 212mm
Object Dimensions at M.O.D. (with Extender) — **16:9 Aspect Ratio (9.6x5.4mm)**	100.6x56.6cm at 7.6mm 4.60x2.60cm at 168mm 50.3x28.4cm at 15.2mm (2.0x) 2.30x1.30cm at 336mm	120.4x67.7cm at 7.5mm 5.6x3.2cm at 158mm 60.2x33.9cm at 15mm (2.0x) 2.8x1.6cm at 316mm	65.5 x 36.8cm at 7.6mm 3.8 x 2.1cm at 137mm 32.8x18.4cm at 15.2mm 1.9x1.1cm at 274mm	73.3x41.2cm at 6.2mm 4.1x2.3cm at 106m 36.7x20.6cm at 12.4mm (2.0x) 2.1x1.2cm at 212mm
Approx.Size (WxHxL)	164.7x112.1x221.5mm	175.2x122.5x260.1mm	165 x 105 x 206.2mm	165.0x112.3x240.5mm
Approx.Mass (IRSE/IASE)	1.81kg (4.00lbs)/1.89kg (4.17lbs)	— /2.69kg (5.94lbs)	1.58kg (3.48lbs)/1.66kg (3.65lbs)	1.97kg (4.34lbs)/2.05kg (4.52lbs)
Filter Thread Size (Hood/Lens Barrel)	105mm P1/94mm P1	127mm P0.75/ —	— /82mm P0.75	105mm P1/ —
Built-in Optical Image Stabilizer	—	—	—	—
Information Display	○	○	○	○

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

Angular Field of View (with Extender)	**4:3 mode of Most Switchable Cameras (7.2x5.4mm)**	50.7°x39.1° at 7.6mm 2.46°x1.84° at 168mm 26.6°x20.1° at 15.2mm (2.0x) 1.22°x0.92° at 336mm	51.3°x39.6° at 7.5mm 2.6°x2.0° at 158mm 27.0°x20.4° at 15mm (2.0x) 1.3°x1.0° at 316mm	50.7°x39.1° at 7.6mm 3.0°x2.3° at 137mm 26.6x20.1 at 15.2mm (2.0x) 1.5x1.1 at 274mm	60.3°x47.1° at 6.2mm 3.9°x2.9° at 106mm 32.4°x24.6° at 12.4mm (2.0x) 1.9°x1.5° at 212mm

- Please refer to page 13, 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 37 for explanation about IASE (IASD).
- M.O.D. = Minimum Object Distance
- The IRSE A / IASE A Digital Drive Units come equipped with Zoom, Iris and Focus Encoders.

SDTV

HJ14ex4.3B IRSE/IASE

HJ15ex8.5B KRSE-V

J35ex15B IASD

J35ex11B IASD

14x		15x		35x		35x	
2/3"		2/3"		2/3"		2/3"	
2.0x		—		2.0x		2.0x	
4.3~60mm 8.6~120mm	(2.0x)	8.5~128mm		15~525mm 30~1050mm	(2.0x)	11~385mm 22~770mm	(2.0x)
1:1.8 at 4.3~40mm 1:2.7 at 60mm 1:3.6 at 8.6~80mm 1:5.4 at 120mm	(2.0x)	1:2.5 at 8.5~68mm 1:4.7 at 128mm		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)
91.3°x75.0° at 4.3mm 8.4°x6.3° at 60mm 54.2°x42.0° at 8.6mm 4.2°x3.2° at 120mm	(2.0x)	54.7°x42.4° at 8.5mm 3.9°x3.0° at 128mm		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)
96.3°x64.2° at 4.3mm 9.1°x5.2° at 60mm 58.3°x34.9° at 8.6mm 4.6°x2.6° at 120mm	(2.0x)	58.9°x35.2° at 8.5mm 4.3°x 2.4° at 128mm		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)
0.3m (10mm with Macro)		0.8m (10mm with Macro)		2.2m (50mm with Macro)		2.2m (50mm with Macro)	
0.59m				2.57m		2.56m	
69.9x52.4cm at 4.3mm 4.8x3.6cm at 60mm 35.0x26.2cm at 8.6mm 2.4x1.8cm at 120mm	(2.0x)	87.4x65.6cm at 8.5mm 5.8x4.4cm at 128mm		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)
76.4x43cm at 4.3mm 5.2x2.9cm at 60mm 38.2x21.5cm at 8.6mm 2.6x1.5cm at 120mm	(2.0x)	95.8x53.9cm at 8.5mm 6.4x3.6cm at 128m		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)
163.5x110.8x247.8mm		170.2x119.1x239.1mm		169.5x143x330mm		169.5x143x316mm	
1.99kg (4.39lbs)/2.07kg (4.56lbs)		1.99kg (4.37lbs)		— /4.5kg (9.94lbs)		— /4.5kg (9.83lbs)	
127mm P0.75/ —		— /82mm P0.75		— /125mm P1		— /125mm P1	
—		○		—		—	
○		○		×		×	

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

79.9°x64.2° at 4.3mm 6.9°x5.2° at 60mm 45.4°x34.9° at 8.6mm 3.4°x2.6° at 120mm	(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)

- Please refer to page 28 for the details of the HJ15ex8.5B KRSE-V.
- M.O.D. = Minimum Object Distance
- Please refer to page 13, regarding the difference between HDTV and SDTV lenses.
- The IRSE / IASE Digital Drive Units for HJ14ex4.3B come equipped with Zoom, Iris and Focus Encoders.

World's First Built-In Image Stabilizer HDTV Portable Lens

Canon introduces the HJ15ex8.5B KRSE-V, the world's first portable HD lens with built-in optical image stabilization. This is a compact, lightweight lens specifically intended to produce stable HD imagery in those many shooting environments that entail vibration and physical disturbances to the lens-camera system. This lens is an HD successor to the earlier popular SD lens J13x9 KRS-V which first employed Canon's patented VAP-IS technology. The new HJ15ex8.5B offers a higher zoom ratio and wider angle of view. Throughout the entire zoom range, the Vari-angle Prism image stabilizer technology overcomes a wide range of disturbance frequencies while maintaining a high optical performance to ensure a high level of HD image stabilization.
(See P.27 for the specification)

HDXS

IMAGE STABILIZER

HJ15ex8.5B KRSE-V

Main Features

●Preserving Full HDTV Optical Performance with incorporation of the Vari-Angle Prism Image Stabilizer System.

●Powerful Image Stabilization throughout the entire zoom range.

●Real-time compensation for a wide range of disturbance frequencies encountered by a camera operator who is shooting handheld while walking, running, or operating from a motorcycle pillion, within a moving vehicle, boat, or helicopter etc.

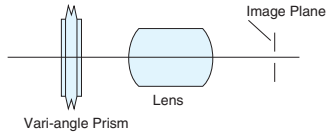
●Various Stabilizing Modes
Combination of two modes from two categories is available and each mode is simply set by changing the switches on the lens.

Select According to the Shooting Situation	Portable mode	Compensates for motion-related disturbances while shooting shoulder mount or handheld
	Tripod mode	Effectively compensates for disturbances caused by unsteady platform or wind
Select According to the Direction of Disturbance	H+V mode	Optimizes stabilization action when disturbance frequencies are both horizontal and vertical
	V mode	Effectively counters vertical disturbances while operationally panning the lens-camera

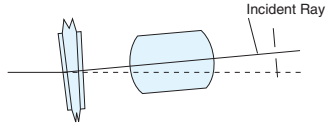
Stabilized Image

How the VAP-IS (Vari-Angle-Prism Image Stabilizer) Works

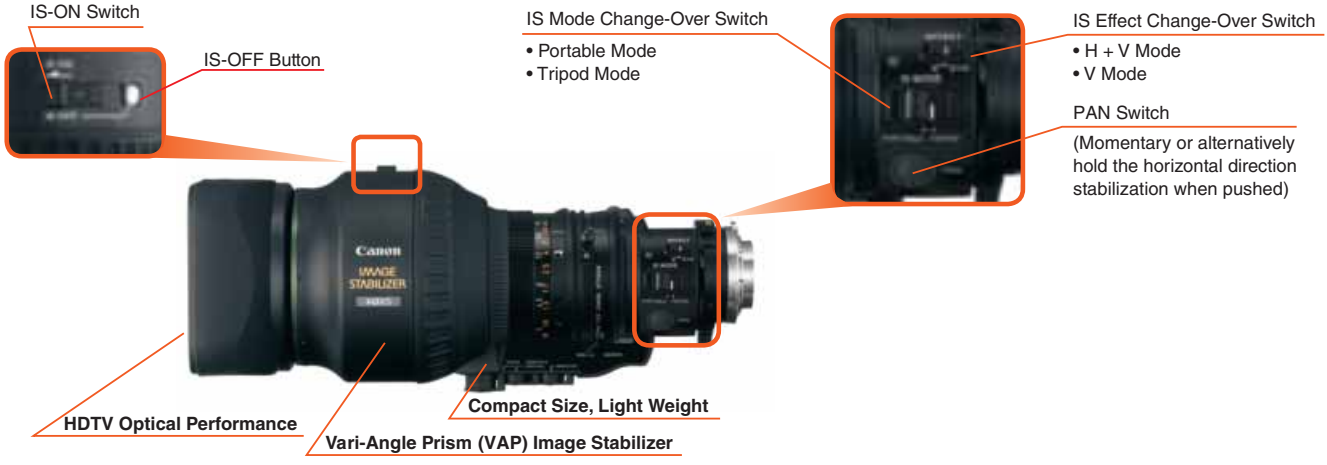
Under perfect shooting conditions, light rays from a scene pass through the lens optical system in a tightly prescribed manner. Any vibration or jolt to the lens-camera system will deflect those light rays and produce image unsteadiness. The VAP-IS technology is incorporated within the lens optical system to intercept such light ray perturbations and correct their deviations in real-time. The technology to do this is based upon a flexible optical bellows that entails two flat glass elements separated by a special liquid forming a sealed mini-optical grouping within the overall lens element groupings. The bellow expands and contracts when the lens is physically disturbed – and the very high refractive index of the liquid bends the disturbed light rays in the opposite direction. This imparts a high degree of real-time correction to the angle of the light rays, ensuring they arrive at the image plane devoid of any unsteadiness.



Static Condition



Under Stabilization



Canon

HDgc SERIES ENG LENSES

Horizonal Field of View (16:9)		93.7°	88.1°	77.3°	75.7°	64.6°	63.9°	62.9°	62.6°	60.7°	58.9°	57.1°	55.2°	12.2°	11.1°	7°	6.8°	4.3°	4.2°	4.1°	3.4°	3.3°	3.2°	3.1°	3°
Focal Length (mm)	(2/3)	4.5		6		7.6	7.7			8.2	8.5			45		78			131		164	168	170		
	(1/2)		3.6		4.5			5.7				6.4			36		59	92					120		128	
	(1/3)								4.3				5							73						100
2/3"	KJ10ex4.5B	2/3" Wide Angle HDTV Lens																								
	KJ17ex7.7B	2/3" Standard HDTV ENG Lens																								
	KJ22ex7.6B	2/3" Multi Purpose HDTV ENG Lens																								
	KJ13x6B	2/3" Wide Angle HDTV Lens Without Extender																								
	KJ20x8.2B	2/3" Multi Purpose HDTV ENG Lens With Extender																								
1/2"	KH10ex3.6	1/2" Wide Angle HDTV Lens																								
	KH16ex5.7	1/2" Standard Angle HDTV Lens																								
	KH21ex5.7	1/2" Multi Purpose HDTV ENG Lens																								
	KH13ex4.5	1/2" Wide Angle HDTV Lens Without Extender																								
	KH20ex6.4	1/2" Multi Purpose HDTV ENG Lens Without Extender																								
1/3"	KT17ex4.3B	1/3" Premium HDTV ENG Lens																								
	KT20x5B	1/3" Multi Purpose HDTV ENG Lens Without Extender																								

- The HDgc is a lens series consists of a variety of HDTV ENG Lenses for 2/3", 1/2" and 1/3" image size cameras. The HDgc series will support the emergence of an important new generation of cost-effective HD acquisition systems.
- Please refer to Page 9 for the introduction of the HDgc Series.

HDgc Series Lenses

HDTV

KJ22ex7.6B IRSE/IASE

KJ17ex7.7B IRSE/IASE

KJ10ex4.5B IRSE A/IASE A

Zoom Ratio		22x		17x		10x	
Image Size		2/3"		2/3"		2/3"	
Built-in Extender		2.0x		2.0x		2.0x	
Range of Focal Length (with Extender)		7.6~168mm 15.2~336mm	(2.0x)	7.7~131mm 15.4~262mm	(2.0x)	4.5~45mm 9~90mm	(2.0x)
Maximum Relative Aperture (with Extender)		1:1.8 at 7.6~116.3mm 1:2.6 at 168mm 1:3.6 at 15.2~232.6mm 1:5.2 at 336mm	(2.0x)	1:1.8 at 7.7~102.5mm 1:2.3 at 131mm 1:3.6 at 15.4~205mm 1:4.6 at 262mm	(2.0x)	1:1.8 at 4.5~34.5mm 1:2.35 at 45mm 1:3.6 at 9~68.9mm 1:4.7 at 90mm	(2.0x)
Angular Field of View (with Extender)	**4:3 Aspect Ratio**	60.1°x46.9° at 7.6mm 3.0°x2.3° at 168mm 32.3°x24.5° at 15.2mm 1.5°x1.1° at 336mm	(2.0x)	59.5°x46.4° at 7.7mm 3.85°x2.89° at 131mm 31.9°x24.2° at 15.4mm 1.92°x1.44° at 262mm	(2.0x)	88.7°x72.5° at 4.5mm 11.2°x8.4° at 45mm 52.1°x40.3° at 9mm 5.6°x4.2° at 90mm	(2.0x)
	16:9 Aspect Ratio	64.6°x39.1° at 7.6mm 3.3°x1.8° at 168mm 35.1°x20.1° at 15.2mm 1.6°x0.9° at 336mm	(2.0x)	63.9°x38.6° at 7.7mm 4.2°x2.36° at 131mm 34.6°x19.9° at 15.4mm 2.1°x1.18° at 262mm	(2.0x)	93.7°x61.9° at 4.5mm 12.2°x6.9° at 45mm 56.1°x33.4° at 9mm 6.1°x3.4° at 90mm	(2.0x)
M.O.D. from Lens Front		0.8m (10mm with Macro)		0.6m (10mm with Macro)		0.3m (10mm with Macro)	
Object Dimensions at M.O.D. (with Extender)	**4:3 Aspect Ratio**	87.4x65.6cm at 7.6mm 4.0x3.0cm at 168mm 43.7x32.8cm at 15.2mm 2.0x1.5cm at 336mm	(2.0x)	63.1x47.3cm at 7.7mm 3.8x2.9cm at 131mm 31.6x23.7cm at 15.4mm 1.9x1.5cm at 262mm	(2.0x)	67.9x50.9cm at 4.5mm 5.9x4.4cm at 45mm 34.0x25.5cm at 9mm 3.0x2.2cm at 90mm	(2.0x)
	16:9 Aspect Ratio	95.0x53.4cm at 7.6mm 4.4x2.5cm at 168mm 47.5x26.7cm at 15.2mm 2.2x1.3cm at 336mm	(2.0x)	68.5x38.5cm at 7.7mm 4.2x2.4cm at 131mm 34.3x19.3cm at 15.4mm 2.1x1.2cm at 262mm	(2.0x)	74.1x41.7cm at 4.5mm 6.4x3.6cm at 45mm 37.0x20.8cm at 9mm 3.2x1.8cm at 90mm	(2.0x)
Approx. Size (WxHxL)		164.7x112.1x218.6mm		159.3x106.6x197.8mm		168.2x110.6x237.7mm	
Approx. Mass (IRSE/IASE)		1.82kg (4.0lbs)/1.90kg (4.19lbs)		1.48kg (3.26lbs)/1.56kg (3.44lbs)		1.83kg (4.04lbs)/1.91kg (4.22lbs)	
Information Display		○		○		○	
Filter Thread Size (Hood/Lens Barrel)		105mm P1/94mm P1		— /82mm P0.75		127mm P0.75/ —	

- "IRSD PS12" model for KJ22ex/KJ17ex/KJ10ex is available as an exclusive model for Panasonic AG-HPX500.
- For control accessories, please refer to page 37 and 38.
- Please refer to page 37 for explanation about IRSE/IASE.
- For KJ17ex, KJ22ex IRESE/IASE and KJ10ex IRSE A/IASE A, Digital Drive Units come equipped with Zoom, Focus and Iris Encoders.
- The above specification for each lenses are based on ϕ 11mm image size format.

KH21ex5.7 IRSE		KH16ex5.7 IRSE		KH10ex3.6 IRSE		KT17ex4.3B IRSE	
21x		16x		10x		17x	
1/2"		1/2"		1/2"		1/3"	
2.0x		2.0x		2.0x		2.0x	
5.7~120mm 11.4~240mm	(2.0x)	5.7~92mm 11.4~184mm	(2.0x)	3.6~36mm 7.2~72mm	(2.0x)	4.3~73mm 8.6~146mm	(2.0x)
1:1.4 at 5.7~86mm 1:1.95 at 120mm 1:2.8 at 11.4~172mm 1:3.9 at 240mm	(2.0x)	1:1.4 at 5.7~71.6mm 1:1.8 at 92mm 1:2.8 at 11.4~143.1mm 1:3.6 at 184mm	(2.0x)	1:1.45 at 3.6~27mm 1:1.9 at 36mm 1:2.9 at 7.2~55mm 1:3.8 at 72mm	(2.0x)	1:1.4 at 4.3~73mm 1:2.8 at 8.6~146mm	(2.0x)
58.6°x45.7° at 5.7mm 3.0°x2.3° at 120mm 31.4°x23.8° at 11.4mm 1.5°x1.1° at 240mm	(2.0x)	58.6°x45.7° at 5.7mm 4.0°x3.0° at 92mm 31.4°x23.8° at 11.4mm 2.0°x1.5° at 184mm	(2.0x)	83.3°x67.4° at 3.6mm 10.2°x7.6° at 36mm 47.9°x36.9° at 7.2mm 5.0°x3.8° at 72mm	(2.0x)	58.3°x45.4° at 4.3mm 3.8°x2.8° at 73mm 31.2°x23.6° at 8.6mm 1.9°x1.4° at 146mm	(2.0x)
62.9°x38.0° at 5.7mm 3.3°x1.9° at 120mm 34.0°x19.5° at 11.4mm 1.7°x0.9° at 240mm	(2.0x)	62.9°x38.0° at 5.7mm 4.3°x2.4° at 92mm 34.0°x19.5° at 11.4mm 2.1°x1.2° at 184mm	(2.0x)	88.1°x57.1° at 3.6mm 11.1°x6.2° at 36mm 51.7°x30.5° at 7.2mm 5.5°x3.1° at 72mm	(2.0x)	62.6°x37.7° at 4.3mm 4.1°x2.3° at 73mm 33.8°x19.4° at 8.6mm 2.1°x1.2° at 146mm	(2.0x)
0.8m (10mm with Macro)		0.6m (10mm with Macro)		0.3m (10mm with Macro)		0.6m (10mm with Macro)	
84.9x63.7cm at 5.7mm 3.9x2.9cm at 120mm 42.5x31.9cm at 11.4mm 2.0x1.5cm at 240mm	(2.0x)	61.9x46.4cm at 5.7mm 3.8x2.9cm at 92mm 31.0x23.2cm at 11.4mm 1.9x1.5cm at 184mm	(2.0x)	61.3x46.0cm at 3.6mm 5.4x4.1cm at 36mm 30.7x23.0cm at 7.2mm 2.7x2.0cm at 72mm	(2.0x)	61.5x46.1cm at 4.3mm 3.8x2.9cm at 73mm 30.8x23.1cm at 8.3mm 1.9x1.5cm at 146mm	(2.0x)
92.2x51.9cm at 5.7mm 4.3x2.4cm at 120mm 46.1x26.0cm at 11.4mm 2.2x1.2cm at 240mm	(2.0x)	67.2x37.8cm at 5.7mm 4.1x2.3cm at 92mm 33.6x18.9cm at 11.4mm 2.1x1.2cm at 184mm	(2.0x)	67.4x37.9cm at 3.6mm 5.9x3.3cm at 36mm 33.7x19.0cm at 7.2mm 3.0x1.7cm at 72mm	(2.0x)	66.9x37.6cm at 4.3mm 4.1x2.3cm at 73mm 33.5x18.8cm at 8.6mm 2.1x1.2cm at 146mm	(2.0x)
169.4x111.9x217.5mm		163.9x106.3x196.7mm		168.2x110.6x240.8mm		159.3x106.6x197.3mm	
1.79kg (3.95lbs)		1.47kg (3.24lbs)		1.83kg (4.04lbs)		1.48kg (3.26lbs)	
○		○		○		○	
105mm P1/94mm P1		— /82mm P0.75		127mm P0.75/ —		— /82mm P0.75	

- For control accessories, please refer to page 37 and 38.
- Please refer to page 37 for explanation about IRSE models.
- For KT17ex Digital Drive Unit come equipped with Zoom, Iris and Focus Encoders. For KH21ex/KH16ex/KH10ex Digital Drive Units come equipped with Zoom and Iris Encoders only. A Focus Encoder is available as an option in these units.
- The above specification for each lenses are based on the following image size formats. 1/2": ϕ 8mm, 1/3": ϕ 6mm.

HDgc Series Lenses

HDTV

KJ20x8.2B IRSD

KJ20x8.2B KRSD

KJ13x6B KRSD

Zoom Ratio		20x	20x	13x
Image Size		2/3"	2/3"	2/3"
Built-in Extender		2.0x	—	—
Range of Focal Length (with Extender)		8.2~164mm 16.4~328mm (2.0x)	8.2~164mm	6~78mm
Maximum Relative Aperture (with Extender)		1:1.9 at 8.2~115.4mm 1:2.7 at 164mm 1:3.8 at 16.4~230.8mm 1:5.4 at 328mm (2.0x)	1:1.9 at 8.2~115.4mm 1:2.7 at 164mm	1:2.0 at 6~58mm 1:2.7 at 78mm
Angular Field of View (with Extender)	**4:3 Aspect Ratio**	56.4°x43.8° at 8.2mm 3.1°x2.3° at 164mm 30.0°x22.8° at 16.4mm 1.5°x1.2° at 328mm (2.0x)	56.4°x43.8° at 8.2mm 3.1°x2.3° at 164mm	72.5°x57.6° at 6mm 6.5°x4.8°at 78mm
	16:9 Aspect Ratio	60.7°x36.5° at 8.2mm 3.4°x1.9° at 164mm 32.6°x 18.7° at 16.4mm 1.7°x0.9° at 328mm (2.0x)	60.7°x36.5° at 8.2mm 3.4°x1.9° at 164mm	77.3°x48.5° at 6mm 7.0°x4.0° at 78mm
M.O.D. from Lens Front		0.9m (10mm with Macro)	0.9m (10mm with Macro)	0.4m (10mm with Macro)
Object Dimensions at M.O.D. (with Extender)	**4:3 Aspect Ratio**	90.1x67.6cm at 8.2mm 4.6x3.5cm at 164mm 45.1x33.8cm at 16.4mm 2.3x1.8cm at 328mm (2.0x)	90.1x67.6cm at 8.2mm 4.6x3.5cm at 164mm	67.8x50.9cm at 6mm 5.0x3.8cm at 78mm
	16:9 Aspect Ratio	98.2x55.2cm at 8.2mm 5.0x2.8cm at 164mm 49.1x27.6cm at 16.4mm 2.5x1.4cm at 328mm (2.0x)	98.2x55.2cm at 8.2mm 5.0x2.8cm at 164mm	74.3x41.8cm at 6mm 5.4x3.0cm at 78mm
Approx. Size (WxHxL)		163.3x103.0x208.0mm	163.3x103.0x181.8mm	165.4x105.1x211.7mm
Approx. Mass (IRSE/IASE)		1.42kg (3.13lbs)/ —	1.25kg (2.76lbs)	1.59kg (3.51lbs)
Information Display		×	×	×
Filter Thread Size (Hood/Lens Barrel)		— /82mm P0.75	— /82mm P0.75	105mm P1/ —

•For control accessories, please refer to page 45.
•M.O.D. = Minimum Object Distance.
•The above specification for each lenses are based on the following image size formats. 2/3": ϕ 11mm.

KH20x6.4 KRSD SY14	KH13x4.5 KRSD SY14	KT20x5B KRSD A
20x	13x	20x
1/2"	1/2"	1/3"
—	—	—
6.4~128mm	4.5~59mm	5~100mm
1:1.4 at 6.4~89.6mm 1:2.0 at 128mm	1:1.5 at 4.5~44mm 1:2.0 at 59mm	1:1.4 at 5.0~90.3mm 1:1.55 at 100mm
53.1°x41.1° at 6.4mm 2.9°x2.1° at 128mm	70.8°x56.1° at 4.5mm 6.2°x4.7° at 59mm	51.3°x39.6° at 5mm 2.8°x2.1° at 100mm
57.1°x34.1° at 6.4mm 3.1°x1.8° at 128mm	75.7°x46.9° at 4.5mm 6.8°x3.8° at 59mm	55.2°x32.8° at 5mm 3.0°x1.7° at 100mm
0.9m (10mm with Macro)	0.4m (10mm with Macro)	0.9m (10mm with Macro)
82.6x62.0cm at 6.4mm 4.3x3.2cm at 128mm	66.7x50.0cm at 4.5mm 4.9x3.7cm at 59mm	80.9x60.7cm at 5mm 4.2x3.2cm at 100mm
89.8x50.5cm at 6.4mm 4.6x2.6cm at 128mm	73.4x41.3cm at 4.5mm 5.4x3.0cm at 59mm	88.1x49.6cm at 5.0mm 4.5x2.5cm at 100mm
163.3x103x182.5mm	165.4x105.1x215.3mm	163.3x103x171.2mm
1.27kg (2.8lbs)	1.59kg (3.51lbs)	1.19kg (2.62lbs)
×	×	×
— /82mm P0.75	105mm P1/ —	— /82mm P0.75

•For control accessories, please refer to page 45.
•M.O.D. = Minimum Object Distance.
•The above specification for each lenses are based on the following image size formats. 1/2": ϕ 8mm, 1/3": ϕ 6mm.

Features with: Digital Drive ENG/EFP Lenses

With the introduction of the 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, which has also been inherited to our new HDxs and HDgc (IRSE / IASE model) lenses. The concept of enhanced “Digital Drive” is based on “Ease of Operation” for our customers.

1. Three Preset Functions

Canon Digital Drive provides 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.

Frame Preset

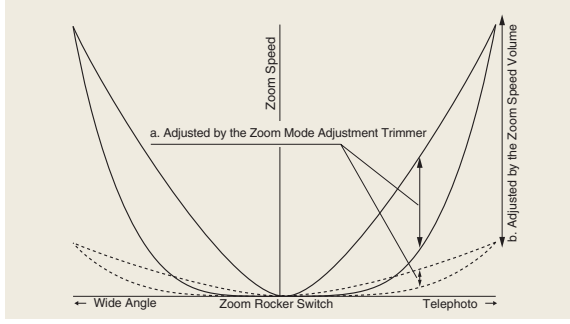
An angle of view can be preset in either of two memories (DD: one memory) and the lens will zoom to that position by pushing a simple button. During a performance, frame preset will reproduce the zoom position decided upon at the rehearsal. It’s easy to repeat the same zoom as often as you like at the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

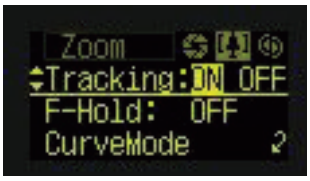
One of several operational curves can be chosen which will allow different zoom movement characteristics when operating the seesaw switch. This is accomplished as a linear adjustment as opposed to an adjustment done in steps.



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

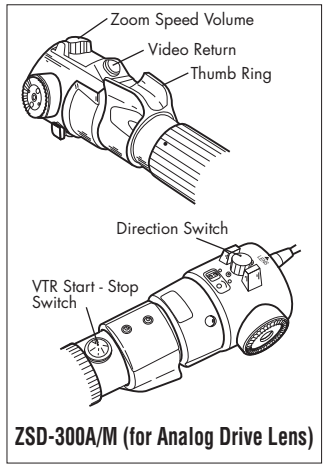
The HDxs/e-IFxs/HDgc (IRSE / IASE model) Ergonomic Drive Unit is tilted at an ideal angle of 12.5° to realize good balance and comfort.
A information display has been added which now allows the user to customize the enhanced digital functions easily, precisely and fully.
The enhanced digital functions 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

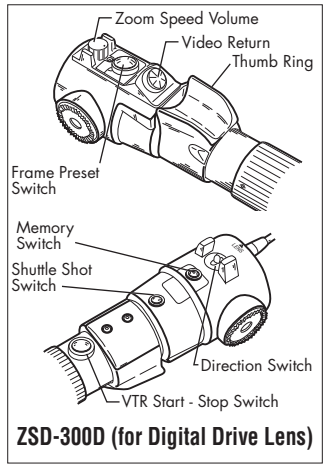
Zoom: 0.5 sec., Focus: 1.5 sec.

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 Driver's unique functions. These demands are connected to the "Digital Drive" via a 20 pin 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 38.)



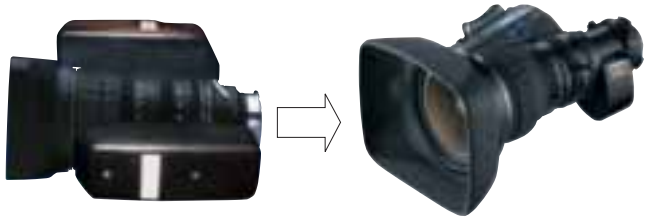
ZSD-300A/M (for Analog Drive Lens)



ZSD-300D (for Digital Drive Lens)

8. Compatibility with Virtual Studio System

Canon has a series of HDxs/e-IFxs/HDgc (IRSE / IASE model) 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.



Lens with Optional Encoder Units

Lens with Encoder Device included in the Drive Unit

DIGITAL

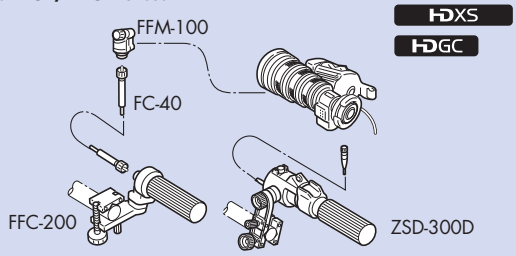
Control Accessories of Digital Drive ENG/EFP Lenses

J35ex11B/J35ex15B/KJ22ex7.6B/KJ17ex7.7B/KJ10ex4.5B/KH21ex5.7/KH16ex5.7/KH10ex3.6/KT17ex4.3B/HJ14ex4.3B/HJ15ex8.5B KRSE-V/HJ17ex6.2B/HJ18ex7.6B/HJ18ex28B/HJ21ex7.5B/HJ22ex7.6B/HJ40x10B/HJ40x14B

Recommended Kit Configuration

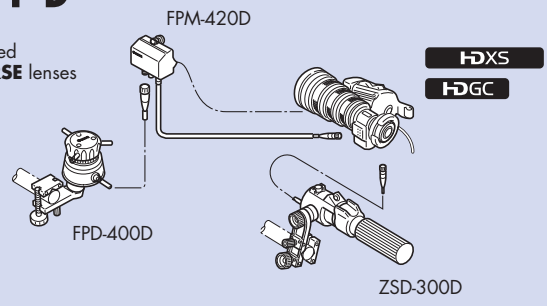
MS-210D SEMI-SERVO KIT

for all listed **IRSE/KRSE** lenses



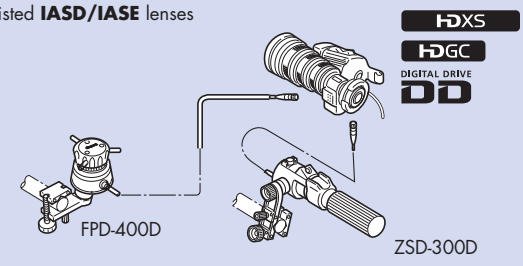
SS-41-D FULL SERVO KIT

for all listed **IRSE/KRSE** lenses



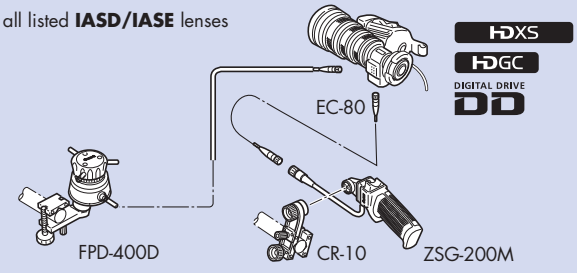
SS-41-IASD FULL SERVO KIT

for all listed **IASD/IASE** lenses



SS-42-IAS FULL SERVO KIT

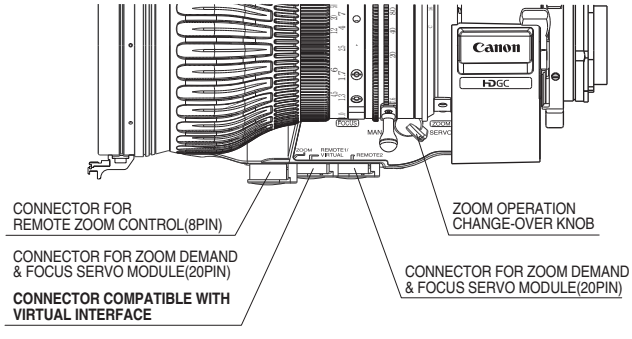
for all listed **IASD/IASE** lenses



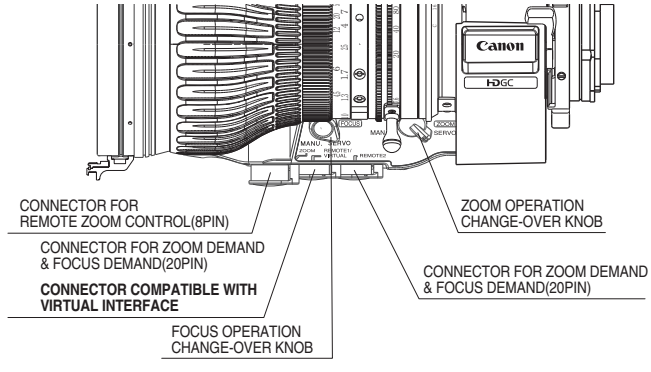
The Difference Between IRSE and IASE (IASD) Type Lenses

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



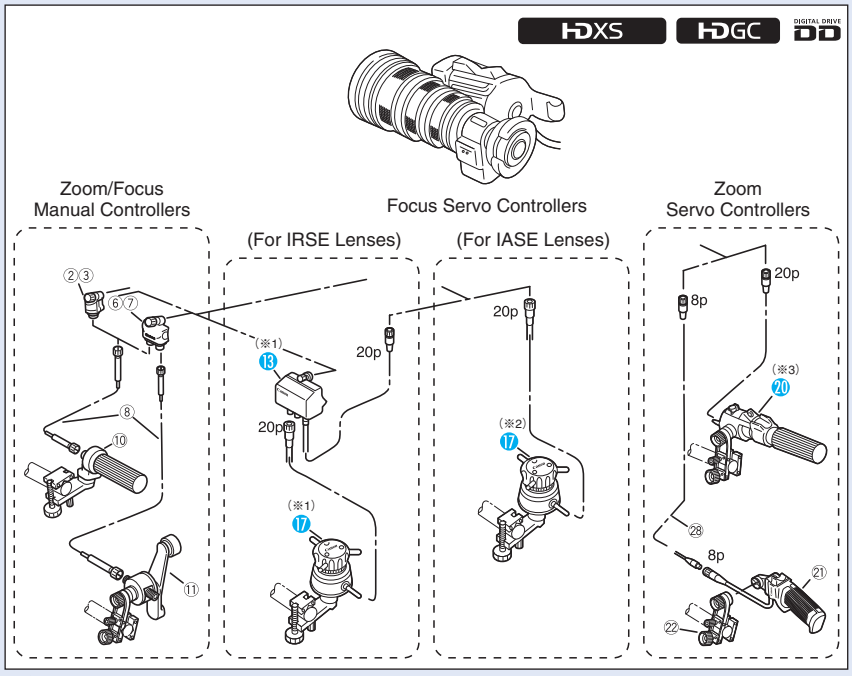
IASE (IASD) TYPE



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

DIGITAL

Applicable Component Detail



#	Unit	Description
②	FFM-100	Flex Focus Module
③	FFM-300	Flex Focus Module
⑥	FFM-200	Flex Dual Module
⑦	FFM-400	Flex Dual Module
⑧	FC-40	Flex Cable
⑩	FFC-200	Flex Focus Controller
⑪	FZC-100	Flex Zoom Controller
⑬	FPM-420D	Focus Positional Servo Module
⑰	FPD-400D	Focus Positional Demand
⑳	ZSD-300D	Zoom Demand
㉑	ZSG-200M	Zoom Servo Grip
㉒	CR-10	Clamper
㉘	EC-80	Zoom Extension Cable (8P)

(※1) Analog FPD-400 and FPM-420 are also applicable, however, CC-2012 conversion cable is necessary to connect between IRSE Digital Drive Lens and FPM-420.
(※2) Analog FPD-400 is also applicable, however, CC-2006 conversion cable is necessary to connect between IASD/IASE Digital Drive Lens and FPD-400.
(※3) Analog ZSD-300A/M is also applicable.

Applicable Kit Detail

For IRSE Type Lenses

		Zoom		Focus	
	Kit Name	System	Component	System	Component
Zoom Servo Only	(ZR-1D)	ZR-1D	⑳	--	--
	--	ZR-2(A)	㉑ ㉒ ㉘	--	--
Semi-Servo	MS-210D	ZR-1D	⑳	FR-2	② ⑧ ⑩
	MS-220	ZR-2(A)	㉑ ㉒ ㉘	FR-2	② ⑧ ⑩
Full Servo	SS-41-D	ZR-1D	⑳	FPS-4D	⑬ ⑰
Full Manual	--	FZC-1	⑥ ⑧ ⑪	FR-2(w/o ②)	⑧ ⑩

For IASE Type Lenses (Except HJ40x, J35ex)

		Zoom		Focus	
	Kit Name	System	Component	System	Component
Zoom Servo Only	(ZR-1D)	ZR-1D	⑳	--	--
	--	ZR-2(A)	㉑ ㉒ ㉘	--	--
Semi-Servo	MS-210D	ZR-1D	⑳	FR-2	② ⑧ ⑩
	MS-220	ZR-2(A)	㉑ ㉒ ㉘	FR-2	② ⑧ ⑩
Full Servo	SS-41-IASD	ZR-1D	⑳	FPS-4D	⑰
	SS-42-IASD	ZR-2(A)	㉑ ㉒ ㉘	FPS-4D	⑰
Full Manual	--	FZC-1	⑥ ⑧ ⑪	FR-2(w/o ②)	⑧ ⑩

For HJ40x14B, HJ40x10B, J35ex15B, J35ex11B

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

Recommended Kit Configuration for the listed lenses.(See Previous Page)
The controllers support the new DD functions.

Canon

PRO-VIDEO LENSES & REMOTE CONTROL LENSES

- Canon offers a variety of Pro-video ENG lenses that incorporate Canon's original IFpro, internal focusing system (refer to page 10).
- 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.
- Now, all IFpro ENG lenses are equipped with Canon's exclusive shuttle shot function and have become even more useful..

Pro-video ENG Lenses

SDTV

YJ20x8.5B KRS

YJ20x8.5B IRS

YJ13x6B KRS

YJ13x6B IRS

		YJ20x8.5B KRS	YJ20x8.5B IRS	YJ13x6B KRS	YJ13x6B IRS
Zoom Ratio		20x	20x	13x	13x
Image Size		2/3"	2/3"	2/3"	2/3"
Built-in Extender		—	2.0x	—	2.0x
Range of Focal Length (with Extender)		8.5~170mm	8.5~170mm 17~340mm (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 1:5.4 at 340mm (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 1:5.4 at 156mm (2.0x)
Angular Field of View	**4:3 Aspect Ratio (with Extender)**	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)	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)
	16:9 Aspect Ratio				
M.O.D from Lens Front		0.9m (10mm with Macro)	0.9m (10mm with Macro)	0.4m (10mm with Macro)	0.4m (10mm with Macro)
Object Dimensions at M.O.D	**4:3 Aspect Ratio (with Extender)**	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)	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)
	16:9 Aspect Ratio				
Approx.Size (WxHxL)		163.3x103x170.4mm	163.3x103.0x195.4mm	165.4x105.1x211.7mm	165.4x105.1x234.8mm
Approx.Mass		1.17kg (2.58lbs)	1.39kg (3.06lbs)	1.54kg (3.39lbs)	1.74kg (3.83lbs)
Filter Thread Size (Hood/Lens Barrel)		— /82mm P0.75	— /82mm P0.75	105mm P1/ —	105mm P1/ —
Macro		Yes	Yes	Yes	Yes
SHUTTLESHOT		Yes	Yes	Yes	Yes
Information Display		X	X	X	X
Reference: The following is the lens angle (without Shrinker) in the 4:3 mode of switchable cameras.					
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)	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)

The above specification for each lenses are based on the following image size formats. 2/3":ϕ11mm.

Lenses for HDTV Pro-video Applications HDGC

Canon offers a variety of lenses for HDTV applications in the pro-video scenes. The new HDTV lens series named HDgc are based upon Canon's latest design concepts which support the new generation of cost-effective HD acquisition systems. The HDgc lenses are designed to meet the specific bandwidth frequency (or the number of scanning lines) of these new HD camera systems and at the same time to offer an excellent performance-cost optimization.

KJ20x8.2B KRSD

KJ13x6B KRS

KH20x6.4 KRS

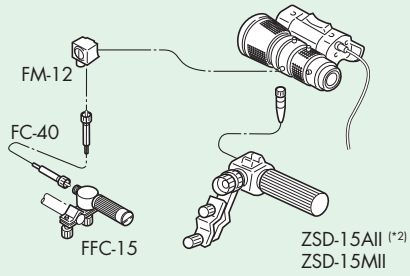
KH13x4.5 KRS

KT20x5B KRSD

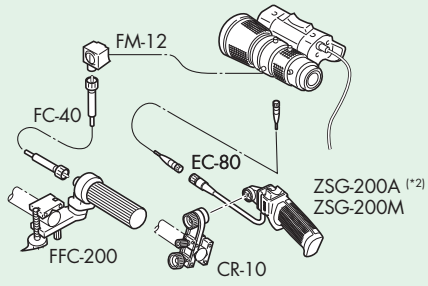
Control Accessories for Pro-video ENG Lenses and HDgc(*1) Lenses

Recommended Kit Configuration

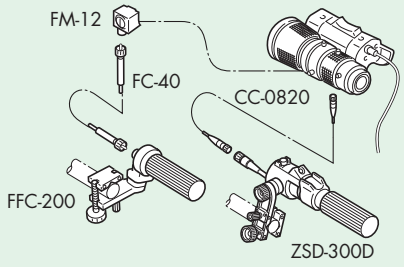
MS-15 SEMI-SERVO KIT
for all Pro-video ENG lenses



MS-22 SEMI-SERVO KIT
for all Pro-video ENG lenses

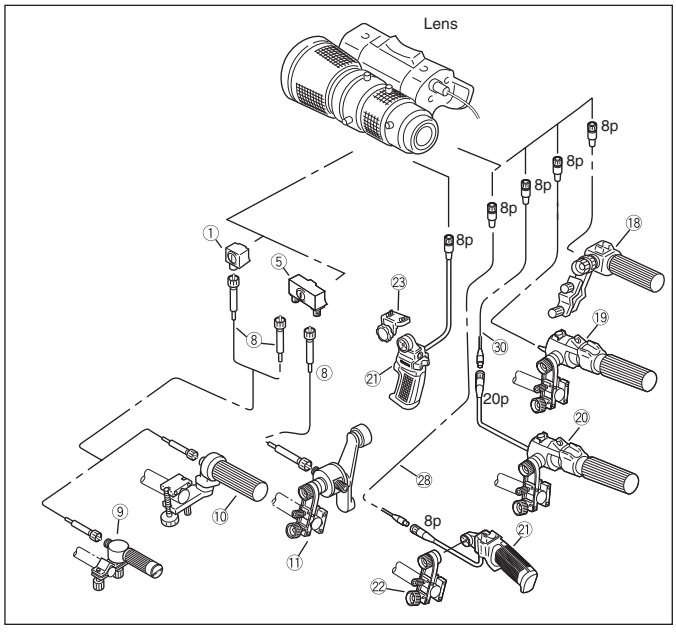


MS-21D SEMI-SERVO KIT
for all Pro-video ENG lenses



(*1) HDgc Lenses of page 32 and 33.
(*2) 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
⑱	ZSD-15A Ⅱ /M Ⅱ	Zoom Demand (*3)	A	1824A070
	(A or M types, depends on applicable camera)		M	1824A071
⑲	ZSD-300A/M	Zoom Demand (*3)	A	1824A066
	(A or M types, depends on applicable camera)		M	1824A067
⑳	ZSD-300D	Zoom Demand		1824A123
㉑	ZSG-200A/M	Zoom Servo Grip (*3)	A	1824A068
	(A or M types, depends on applicable camera)		M	1824A069
㉒	CR-10	Clamper		1824A007
㉓	GA-70	Grip Adapter		0018T531
㉘	EC-80	Zoom Extension Cable (8P)		1824A009
㉚	CC-0820	Conv. Cable (8pM-20pF)		1824A127

(*3) ZSD-15AⅡ, ZSD-300A/M, ZSG-200A and FPD-400 is not available from Canon stock.

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




	HJ18ex28B ITS-ME	HJ22ex7.6B ITS-ME	HJ17ex7.6B ITS-ME	HJ14ex4.3B ITS-ME
Zoom Ratio	18x	22x	17x	14x
Image Size	2/3"	2/3"	2/3"	2/3"
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)	7.6~130mm 15.2~260mm (2.0x)	4.3~60mm 8.6~120mm (2.0x)

HDTV


	KJ17ex7.7B ITS-ME	KJ22ex7.6B ITS-ME
Zoom Ratio	17x	22x
Image Size	2/3"	2/3"
Built-in Extender	2.0x	2.0x
Range of Focal Length (with Extender)	7.7~131mm 15.4~262mm (2.0x)	7.6~168mm 15.2~336mm (2.0x)

•Please refer to page 25, 26 and 30 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.

Pro-video Applications :

HDTV

	KJ20x8.2B KTS	KH20x6.4 KTS*1	KT20x5B KTS
Zoom Ratio	20x	20x	20x
Image Size	2/3"	1/2"	1/3"
Built-in Extender	—	—	—
Range of Focal Length	8.2~164mm	6.4~128mm	5~100mm

SDTV



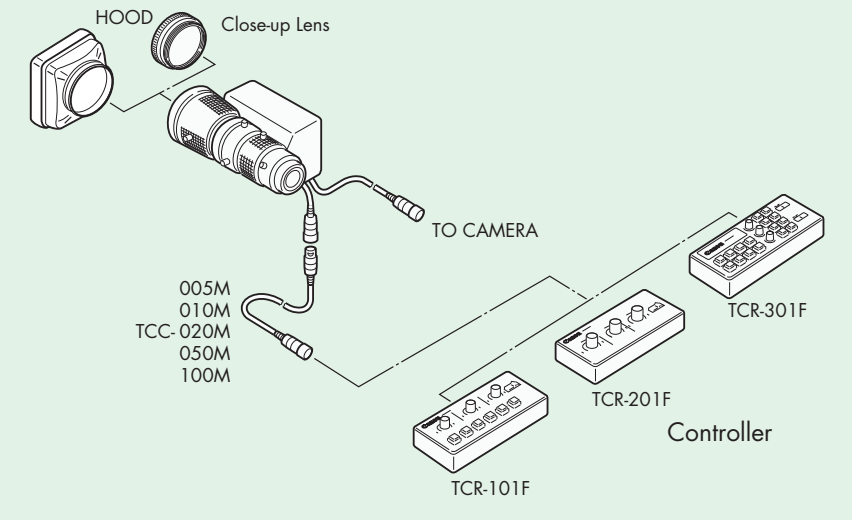
	YJ20x8.5B ITS-RE	YJ20x8.5B KTS	YJ13x6B KTS
Zoom Ratio	20x	20x	13x
Image Size	2/3"	2/3"	2/3"
Built-in Extender	2.0x	—	—
Range of Focal Length (with Extender)	8.5~170mm 17~340mm (2.0x)	8.5~170mm	6~78mm

•Please refer to page 32, 33 and 44 for more detailed specifications.
*1 Specifically designed for Sony HDC-X300/X310.

Control Accessories for Remote Control Lenses

The Canon Remote Control TV Lenses and standard controller system are engineered to satisfy your image capture needs. These broadcast quality products can be used in applications which differ from typical video production applications, such as fast and quiet servo operations. The Canon Remote Control TV Lenses accept 3 types of Canon standard controllers, as well as the standard remote control cables, which are designed to provide different types of zoom, focus and iris remote control. These lenses are also available with a simple interface for use with custom controllers.

System Configuration



Controller

Speed Servo Controller

TCR-101F

Positional Servo Controller

TCR-201F

8 Position Preset Controller

TCR-301F

Close-up Lens (not available for HJ18ex/HJ14ex)

Four types (82CL-UP800H / 82CL-UP1300H / 105CL-UP900H / 105CL-UP800HD) are available.
*Please refer to page 50 for the applications.

Remote Controller

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

Connecting Cable

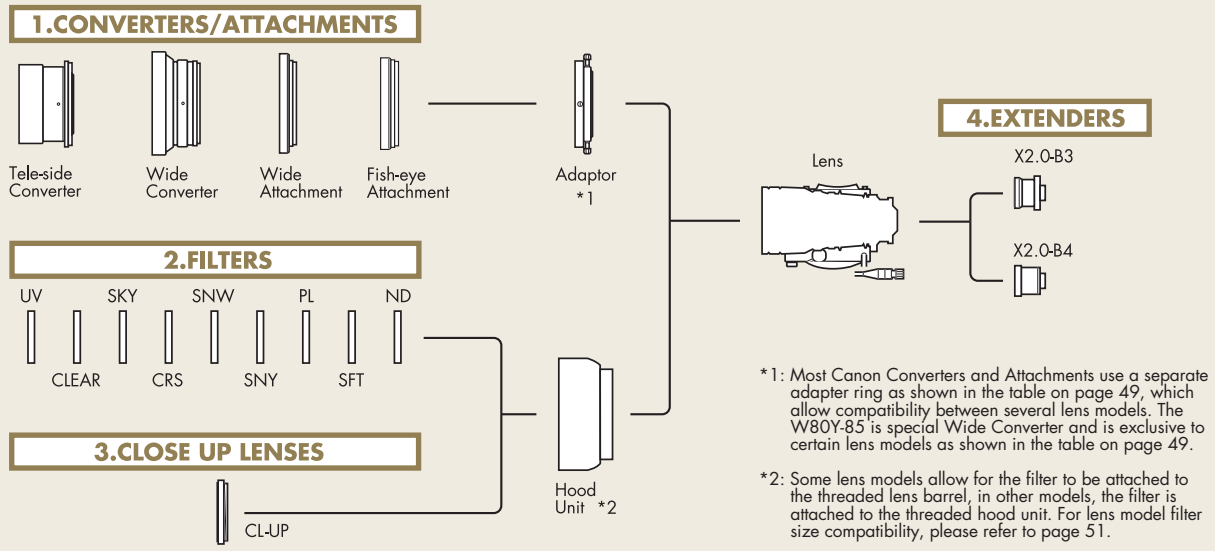
5m, 10m, 20m, 50m and 100m cables are available.
Maximum cable length is 150m by connection of these cables.

External Extender (For 2/3" Lens Only)

A 2x extender is available for telephoto shooting.
For the ITS-RE model of the Broadcast Remote Control Lenses and for the YJ20x8.5B ITS, the 2x extender is motorized and can be remote controlled.
*Please inquire to Canon Sales Office for extender remote control interface.

Optical Accessories for SDTV and HDTV ENG/EFP Lenses

SYSTEM



*1: Most Canon Converters and Attachments use a separate adapter ring as shown in the table on page 49, 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 49.

*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 51.

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
HJ22ex7.6B	1.9m	f:85mm
KJ17ex7.7B	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.
HJ22ex7.6B	7.6-168mm	6.1-134mm
KJ17ex7.7B	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.
HJ22ex7.6B	7.6-168mm	5.7mm
KJ17ex7.7B	7.7-131mm	5.8mm
YJ20x8.5B	8.5-170mm	6.4mm

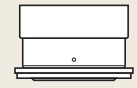
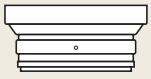
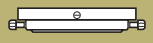
FISH-EYE ATTACHMENT

- 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
HJ22ex7.6B	7.6-168mm	4.6mm
KJ17ex7.7B	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				
				YJ20x8.5B KJ20x8.2B*1 KH20x6.4*1 KT20x5*1	KJ17ex7.7B*1 KJ20x8.2B*1 KH16ex5.7*1 KH20x6.4*1 KT17ex4.3B*1 KT20x5*1 YJ20x8.5B	HJ18ex7.6B KJ17ex7.7B KH16ex5.7 KH20x6.4 KT17ex4.3B KT20x5	KH21ex5.7*1 KJ22ex7.6B*1	HJ22ex7.6B KH21ex5.7 KJ22ex7.6B
Front Lens Diameter				ϕ 85mm			ϕ 98mm	
Tele-side Converter		T15-II	1823A005	●			●	
		T15HD-II	0025T799			●		●
		Adaptor85III	1824A002	●		●		
		Adaptor98II	1824A004				●	●
Wide Converter	 *2	W80Y-85	1823A009	●				
		W80-IIIB	1823A006	●			●	
		W80HD	1823A094			●		●
		Adaptor85III	1824A002	●		●		
		Adaptor98II	1824A004				●	●
Wide Attachment		WA75-II	1823A008	●			●	
		WA75HD	1823A095			●		●
		Adaptor85III	1824A002	●		●		
		Adaptor98II	1824A004				●	●
Fish-eye Attachment		FEA-IIIB	1823A011	●			●	
		FEA-HD	1823A099			●		●
		Adaptor85III	1824A002	●		●		
		Adaptor98II	1824A004				●	●

*1 The HD quality accessories offer higher optical performance.
*2 The drawing is an image of the W80-IIIB.
• 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.

[Mount Converters for Different Image Format Size Cameras]

Canon offers a variety of Mount Converters to be used between a lens and a camera of different image format sizes.
Each converter will extend the effective Angular Field of View of the associated lens according to the Shift Ratio listed below.

LO-32BMT
LCV-40B
LCV-42T

LCV-41E
LCV-20E

Converter	Image Size Conversion			Electronic Conversion
	Lens *3	Camera	Shift Ratio to Telephoto Side	
LO-32BMT	2/3" B4 Mount	1/2" SONY *4	approx. 1.4x	–
LCV-40B	2/3" B4 Mount	1/2" Standard Mount *5	approx. 1.4x	–
LCV-42T	2/3" B4 Mount	1/3" Standard Mount	approx. 1.8x	–
LCV-41E	2/3" B4 Mount	SONY PMW-EX3	approx. 1.4x	Lens Cable(12pin) → EX3 Hot Shoe(14pin)
LCV-20E	1/2" *6	SONY PMW-EX3	–	Lens Cable(12pin) → EX3 Hot Shoe(14pin)

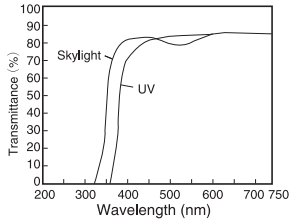
*3 The converters are to be used with lenses weighing less then 2.0kg (4.4lbs)
*4 SONY's Hot Shoe mount camera, excluding PMW-EX3
*5 1/2" Camera of standard type mount (Panasonic, JVC, Grass Valley)
*6 Only applicable to KH10ex/KH16ex/KH21ex. The other 1/2" mount lenses are not available.

2.FILTERS

UV/CLEAR/SKY LIGHT FILTER


UV


SKY



●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


CRS SNW SNY

●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


PL

●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


SFT

●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


ND4


ND8

●An 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.

●An 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 x S / (fc + S)
fc= Focal length of the close-up lens
S= M.O.D.of the master lens

Imaging range for KJ17ex7.7B, and YJ20x8.5B with close-up lenses

		82CL-UP800H				82CL-UP1300H			
KJ17ex7.7B (16:9)		Tele end : 131mm		Wide end : 7.7mm		Tele end : 131mm		Wide end : 7.7mm	
	Focusing Scale(mm)	∞	0.6	∞	0.6	∞	0.6	∞	0.6
	Object Distance(mm)	800	343	800	343	1300	411	1300	411
	Object Dimensions(mm)	58x33	24x14	989x556	376x212	95x53	29x16	1634x919	455x256
YJ20x8.5B (4:3)		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	YJ20x8.5B, KJ17ex7.7B, KJ20x8.2B, KH16ex5.7, KH20x6.4, KT17ex4.3B, KT20x5
82CL-UP1300H	1823A042	YJ20x8.5B, KJ17ex7.7B, KJ20x8.2B, KH16ex5.7, KH20x6.4, KT17ex4.3B, KT20x5
105CL-UP900H	1823A043	KH21ex5.7*, KJ22ex7.6B*
105CL-UP800HD	1823A096	HJ22ex7.6B, KH21ex5.7, KJ22ex7.6B*

* The HD quality accessories offer higher optical performance.

[Application of Filters]

FILTER TYPE	MODEL NAME	CODE	APPLICABLE LENSES						
			HJ18ex28B HJ21ex7.5B HJ14ex4.3B KJ10ex4.5B KH10ex3.6	HJ40x14B HJ40x10B	J35ex15B J35ex11B	HJ18x7.8B KJ13x6B KH13x4.5 YJ13x6B HJ17ex6.2B	HJ22ex7.6B KJ22ex7.6B KH21ex5.7	HJ18ex7.6B HJ15ex8.5B KJ17ex7.7B KH16ex5.7 KJ20x8.2B KH20x6.4 KT17ex4.3B KT20x5 YJ20x8.5B	KT14x4.4B YH16x7
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
U V	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-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.

DIGITAL CINEMA LENSES

4K

Canon introduces a full lineup of zoom and prime lenses for the Digital Cinema market.

The lenses are compatible with the arising large format cameras and the zoom lenses are available in both PL or EF mount while the prime lenses are available in EF mount only. Refer to the following pages for more details.

Lenses for Digital Cinema

The cinema lenses used to shoot movies loved around the world must always offer superior optical performance, not only because movies are projected on the big screen but also because filmmakers demand the rich color gradation that only cinema production can offer.
Canon cinema Lenses enjoys a legendary reputation in the filmmaking industry, and Canon cinema lenses have been honored with two Academy Awards.
As more filmmakers move to digital cinema production and manufacturers develop larger image sensors and introduce higher resolutions, these lenses must satisfy even higher standards of quality.
The Canon product line now includes compact, lightweight zoom lenses with outstanding optical performance with either PL or EF mounts for use with cameras of many manufacturers, offering superior performance in movie and video production.

Main Features of Canon Cinema Lenses

■ **Exceptional High Optical Performance**
With the use of the latest optical design technology and new optical materials, Canon has succeeded in reducing chromatic aberration, ghosting, and flares while maintaining high MTF, high resolution, and high contrast from the center of the image to its extreme edges. The lenses are compatible with industry-standard Super 35 mm equivalent image sensors, and ready for cameras that record at 4K (4,096×2,160) resolution. (Fixed focal length Prime lenses are compatible with full-size 35 mm sensors.)

■ **High Operability**
As well as the picture quality, the mechanics of the full manual CN-E series lenses are also designed to meet the special demands of the cinema industry.
- Control rings maintain the right amount of resistance, with consistent torque for smooth operation.
- Remarkably broad rotation angle of focus (300°) which achieves high accuracy in operating the lens.
- Focus, zoom, and iris markings are provided on angled surfaces. These markings are easier to read from behind the camera.

■ **Covers a broad range of focal lengths**
Supports versatile shooting at many focal lengths, either by combining wide-angle and telephoto zoom lenses or by using a zoom lens with prime lens.

■ **Easy to switch accessories**
Zoom and prime lenses have consistent gear positions, so lenses can be switched within each series without adjusting the rig setup.

■ **11-blade iris**
Halos from points of light at night or from rays of sunlight in shots that show the sun take on the appearance of the iris blades. The additional blades make the iris aperture look circular even when the iris is contracted, enabling beautiful, round highlight bokeh.

Zoom Lens Series

Cine Zoom Lens	CN-E14.5-60mm T2.6 L S/SP		CN-E30-300mm T2.95-3.7 L S/SP	
Mount	EF	PL	EF	PL
Focal Length	14.5-60mm		30-300mm	
Zoom Ratio	4.1×		10×	
Max. Relative Aperture (T-Number)	1:2.6 at 14.5-60mm		1:2.95 at 30-240mm/1:3.7 at 300mm	
Iris Blades	11		11	
Angle of View 1.9:1 26.2×13.8mm	84.2°×50.9° at 14.5mm 24.6°×13.1° at 60mm		47.2°×25.9° at 30mm 5.0°×2.6° at 300mm	
M.O.D. (from image sensor)	0.70m/2'4"		1.5m/5'	
Object Dimensions at M.O.D. 1.9:1 26.2×13.8mm	71.2×37.5cm at 14.5mm 16.4×8.6cm at 60mm		107.9×56.8cm at 30mm 10.5×5.6cm at 300mm	
Front Diameter	ø136mm		ø136mm	
Approx. Size (W×H×L)	136.0×163.1×326.0mm 5.35×6.42×12.83in.	136.0×163.1×318.0mm 5.35×6.42×12.52in.	144.0×167.1×350.1mm 5.67×6.58×13.78in.	144.0×167.1×342.1mm 5.67×6.58×13.47in.
Approx. Mass	4.5kg (9.9lbs)		5.8kg (12.79lbs)	
Pitch of Follow Focus Gear	0.8		0.8	

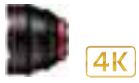
•M.O.D. = Minimum Object Distance

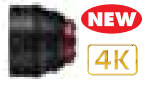
Compact Zoom Lens Series

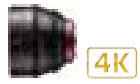
Cine Zoom Lens	CN-E15.5-47mm T2.8 L S/SP		CN-E30-105mm T2.8 L S/SP	
Mount	EF	PL	EF	PL
Focal Length	15.5-47mm		30-105mm	
Zoom Ratio	3×		3.5×	
Max. Relative Aperture (T-Number)	1:2.8 at 15.5-47mm		1:2.8 at 30-105mm	
Iris Blades	11		11	
Angle of View 1.9:1 26.2×13.8mm	80.4°×48.0° at 15.5mm 31.1°×16.7° at 47mm		47.2°×25.9° at 30mm 14.2°×7.5°cm at 105mm	
M.O.D. (from image sensor)	0.5m/1'8"		0.6m/2'	
Object Dimensions at M.O.D. 1.9:1 26.2×13.8mm	47.6×25.1cm at 15.5mm 15.4×8.1cm at 47mm		35.3×18.6cm at 30mm 10.2×5.4cm at 105mm	
Front Diameter	ø114mm		ø114mm	
Approx. Size (W×H×L)	114.0×125.0×222.0mm 4.49×4.92×8.74in.	114.0×125.0×214.0mm 4.49×4.92×8.43in.	114.0×125.0×217.9mm 4.49×4.92×8.58in.	114.0×125.0×209.9mm 4.49×4.92×8.26in.
Approx. Mass	2.2kg (4.85lbs)		2.2kg (4.85lbs)	
Pitch of Follow Focus Gear	0.8		0.8	

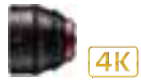
•M.O.D. = Minimum Object Distance

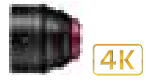
Prime Lens Series











Cine Prime Lens		CN-E14mm T3.1 L F	CN-E24mm T1.5 L F	CN-E 35mm T1.5 L F	CN-E50mm T1.3 L F	CN-E85mm T1.3 L F	CN-E135mm T2.2 L F
Mount		EF	EF	EF	EF	EF	EF
Focal Length		14mm	24mm	35mm	50mm	85mm	135mm
Max. Relative Aperture (T-Number)		1:3.1	1:1.5	1:1.5	1:1.3	1:1.3	1:2.2
Iris Blades		11	11	11	11	11	11
Angle of View	1.5:1 36.0×24.0mm	104.3°×81.2°	73.7°×53.1°	54.4°x 7.8°	39.6°×27.0°	23.9°×16.1°	15.2°×10.2°
	1.9:1 26.2×13.8mm	86.2°×52.5°	57.3°×32.1°	38.7°×22.3°	29.4°×15.7°	17.5°×9.3°	11.1°×5.9°
M.O.D. (from image sensor)		0.2m/8"	0.3m/12"	0.3m/12"	0.45m/18"	0.95m/3'2"	1.0m/3'4"
Object Dimensions at M.O.D.	1.5:1 36.0×24.0mm	24.8×16.5cm	28.8×19.2cm	20.1x13.4cm	24.9×16.6cm	34.3×22.9cm	21.1×14.1cm
	1.9:1 26.2×13.8mm	18.0×9.5cm	21.0×11.0cm	13.7x7.7cm	18.1×9.5cm	25.0×13.1cm	15.4×8.1cm
Front Diameter		ø114mm	ø114mm	ø114mm	ø114mm	ø114mm	ø114mm
Approx. Size (W×H×L)		118.4x118.4x94.0mm 4.66x4.66x3.70in	118.4x118.4x101.5mm 4.66x4.66x4.0in.	118.4x118.4x101.5mm 4.66x4.66x4.0in.	118.4x118.4x101.5mm 4.66x4.66x4.0in.	118.4x118.4x101.5mm 4.66x4.66x4.0in.	118.4x118.4x115.6mm 4.66x4.66x4.55in.
Approx. Mass		1.2kg (2.65lbs)	1.2kg (2.65lbs)	1.1kg (2.43lbs)	1.1kg (2.43lbs)	1.3kg (2.87lbs)	1.4kg (3.09lbs)
Pitch of Follow Focus Gear		0.8	0.8	0.8	0.8	0.8	0.8

•M.O.D. = Minimum Object Distance

Zoom/Compact Zoom Lenses : Highlights

Easy-to-read controls

Focus, zoom, and iris markings are provided on angled surfaces. These markings are easier to read from behind the camera.

Support Industry-standard Cameras

Supports industry-standard Super 35 mm equivalent and APS-C formats.

Light, Compact

Smaller and lighter than conventional cinema lenses, to meet a variety of shooting needs.

Marked on both sides

Lenses are marked on both sides. This makes markings visible from either side of the lens.

Switchable Unit for Focus Marking

The outer piece on marked focus rings can be switched from non-metric to metric labeling.

Comfortable Usability

Control rings maintain the right amount of resistance while offering exceptional usability with consistent operating torque.

New Inner Focus

Minimizes focus-induced changes in the angle of view.

Attractive Blurring

11-blade circular aperture enables soft, beautiful background bokeh.

Unified Front Lens Diameter, Gear Position

Uniform gear positions within the same categories eliminate the need for accessory gear position adjustment when switching lenses.

Zoom Lens Series

Compact Zoom Lens Series

Flange-Back Adjustment Mechanism

A covered flange-back adjustment mechanism is included, with broadcast applications in mind.

Prime Lenses : Highlights

Ready for Full-size 35 mm Sensors

The lenses are also compatible with the large imaging area of cameras equipped with a full-size 35 mm-equivalent CMOS sensor.

Light, Compact

Small and light among conventional cinema lenses, to meet a variety of shooting needs.

Standard Accessories Supported

Supports industry-standard accessories such as power-drive devices and matte boxes.

Accepts 105 mm filters (except for 14mm)

PL or other individual filters 105 mm in diameter can be attached to the end of the lens, enabling filter work in handheld shooting or other scenarios without using a matte box.

Fast Aperture

Enables shooting with the shallow DOF and broad bokeh that large sensors offer.

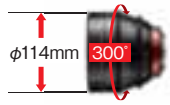
Comfortable Usability

Control rings maintain the right amount of resistance while offering exceptional usability with consistent operating torque.

Unified Front Lens Diameter, Gear Position

Compact Zoom and Prime lenses have same front lens diameter and consistent gear positions, so lenses within each series can be switched without adjusting the rig setup.

Prime Lens Series



Attractive Blurring

11-blade circular aperture enables soft, beautiful background bokeh.

Switchable Unit for Focus Marking

The outer piece on marked focus rings can be switched from non-metric to metric labeling.

CINE-SERVO Lens Series

Cine Zoom Lens	CN7x17 KAS S/E1	CN7x17 KAS S/P1
Mount	EF	PL
Focal Length	17mm-120mm	17mm-120mm
Zoom Ratio	7×	7×
Max. Relative Aperture (T-Number)	1: 2.95 at 17-91mm 1:3.9 at 120mm	1: 2.95 at 17-91mm 1:3.9 at 120mm
Iris Blades	11	11
Angle of View 1.9:1 26.2x13.8mm	75.2° x 44.2° at 17mm 12.5° x 6.6° at 120mm	75.2° x 44.2° at 17mm 12.5° x 6.6°at 120mm
M.O.D. (from image sensor)	0.85m/2.8'	0.85m/2.8'
Object Dimensions at M.O.D. 1.9:1 26.2×13.8mm	92.1 x 48.5cm at 17mm 12.7 x 6.7cm at 120mm	92.1 x 48.5cm at 17mm 12.7 x 6.7cm at 120mm
Front Diameter	ø114mm	ø114mm
Approx. Size (W×H×L)	174.2 x 125.0 x 262.9mm 6.86 x 4.92 x 10.35in.	174.2 x 125.0 x 254.9mm 6.86 x 4.92 x 10.04in.
Approx. Mass	2.9kg (6.39lbs)	2.9kg (6.39lbs)
Pitch of Follow Focus Gear	0.8	0.8

•M.O.D. = Minimum Object Distance

CINE-SERVO Lenses : Highlights

CN7x17 KAS S/E1 and CN7x17 KAS S/P1: Highlights

Designed for cinema and broadcast applications

Ergonomic design drive unit for ease of operation

Removable Servo Drive Unit

Three 20-pin connectors for externally operated accessories and a 16-bit metadata output for virtual studio systems

4K Ready, high optical performance with support for Super35mm large format cameras

Multiple communication capability with compatible cameras

11-blade Iris provides natural "bokeh"

7x zoom magnification

Wide 17–120mm focal range

High Durability and Ruggedness

Compact and lightweight lens available in an EF mount and PL mount that can be converted at an authorized Canon service facility

EF Mount

PL Mount

HIGH DEFINITION PTZ CAMERAS

XU-81
XU-81W

XU-81

The global trend in recent years has been for video production to be increasingly made in HD (High Definition), and users have become more and more vocal in their demands for HD images, not only from broadcast stations, but also in various other fields where Remote Control Pan-Tilt Cameras are used such as conference halls, educational institutions, churches and surveillance locations. In order to satisfy these demands, Canon has combined its highly advanced technology, developed over many years, to successfully engineer the XU-81 and XU-81W.

The XU-81 and XU-81W feature a 1/3" CMOS imaging sensor with 2.1 megapixels and an optical 20x zoom lens (along with the 12x digital zoom) that supports AF (Auto Focus). They achieve astounding performance that enables them to be used in high end production applications. Along with the aluminum die-cast body, they also feature a dust-proof and water-proof construction, and are small and lightweight enough to be carried around. These features allow these multi-use products, with their excellent durability, to be installed in virtually any location, whether indoors or outdoors.

Canon is firmly committed to researching and developing cutting-edge technological innovations in an effort to deliver innovative products capable of reproducing some of the world's most beautiful images.

XU-81W

With wiper and ND filter for outdoor installation

BU-47H

Outdoor Remote Control Pan-Tilt System

As the worldwide transition to HD (high definition) imaging continues to accelerate, many video content creators including broadcasters, cable networks and business/ industrial entities are seeking cost-effective, turnkey, remotely-controllable Pan-Tilt-Zoom (PTZ) HD camera systems to extend creative flexibilities. To meet these diverse needs, Canon has harnessed multiple unique technologies and experience in HD optics and digital cameras, robotics, and control software, to produce a cost-effective, integrated HD lens-camera PTZ product offering exceptional HD picture quality. The BU-47H is a rugged yet elegant outdoor PTZ system-following a legacy of decades of Canon expertise in designing such systems. A sister product, the BU-51H, has a design tailored for exacting indoor applications.

HD PTZ Cameras

	 BU-47H	 XU-81	 XU-81W
Operation Condition	Outdoor	Indoor	Outdoor
Operation Angle	Pan: 340° Tilt: + 30°~-50°	Pan: ±180° Tilt: +220°~-40°	Pan: ±180° Tilt: +220°~-40°
Operation Speed	Panning: 0.5° ~ 25°/s Tilting: 0.3° ~ 20°/s	Pan/Tilt: 0.3~40°/s (normal speed mode) Pan/Tilt: 0.3~60°/s (high speed mode)	Pan/Tilt: 0.3~40°/s (normal speed mode) Pan/Tilt: 0.3~60°/s (high speed mode)
Repeatability	Less than ±10 arc degrees	Within ±10 arc degrees	Within ±10 arc degrees
Wiper	Built-in Electric Wiper	None	Built-in Electric Wiper
Mic Input	Jack provided, pedestal section	Waterproof Microphone: lower part of the camera/0dBm/600 unbalanced output (with limiter)	Waterproof Microphone: lower part of the camera/0dBm/600 unbalanced output (with limiter)
Input/Output Connectors	DC terminal, Control (RS-422), SDI out, SD composite, Genlock, Aux out	5mm DC barrel-type; DB-9 (RS-232), RJ-45 (RS-422), HD-SDI out, Genlock, SD composite	5mm DC barrel-type; DB-9 (RS-232), RJ-45 (RS-422), HD-SDI out, Genlock, SD composite
Video Output	HD-SDI (embedded audio) BNC output x 1 (receptacle unit) SD analog composite BNC output x 1	HD: BNC (HD-SDI), SD: BNC (Composite Monitor)	HD: BNC (HD-SDI), SD: BNC (Composite Monitor)
Genlock Input	BNC (receptacle unit) (tri-level/black burst)	BNC (BB Sync/HD3value Sync)	BNC (BB Sync/HD3value Sync)
Operating Temperature	-15°C to 40°C (no condensation)	Ambient -15~40°C/~90% (non-condensing)	Ambient -15~40°C/~90% (non-condensing)
Wind Velocity-Resistance	0 ~ 25m/s Normal Operation 25 ~ 35m/s Operation Possible 35 ~ 60m/s Non Destruction	~15m/s Normal Operation ~30m/s Operation Possible ~60m/s Non Destruction	~15m/s Normal Operation ~30m/s Operation Possible ~60m/s Non Destruction
Noise	NC55 below	NC30 (40°/s), NC45 (60°/s)	NC30 (40°/s), NC45 (60°/s) (when Wiper, ND Filter, and IRC Filter are not in operation
Power Source	DC10.5~15V, 80W	DC12V±10%	DC12V±10%
Dustproof Waterproof Efficiency	IP45	IP55	IP55
Image Sensor	1/3" CMOS x 3 (HD CMOS PRO)	1/3" HD CMOS, total of ~ 2.1 million pixels	1/3" HD CMOS, total of ~ 2.1 million pixels
Range Of Focal Length / F No.	f=4.1-73.8mm / F1.6-2.8	f=4.7-94mm/F1.6-3.5	f=4.7-94mm/F1.6-3.5
Zoom Ratio	18x Optical Zoom (1.5x digital extender)	20x Optical Zoom (12x digital extender)	20x Optical Zoom (12x digital extender
Dimensions (W x D x H) (Including Camera & Lens)	15.19 x 13.2 x 15.35 in (386 x 337 x 390 mm)	8.543 x 8.543 x 12.24 in (217 x 217 x 311 mm (without projection))	8.543 x 8.543 x 12.24 in (217 x 217 x 311 mm (without projection))
Weight (Including Camera & Lens)	37.4 lbs (Approx. 16.9kg)	14.55 lbs (6.6kg) (without ND Filter and Wiper)	14.55 lbs (6.6kg) (without ND Filter and Wiper)

BROADCAST TELEVISION LENS
CINEMA LENS
& HD PTZ CAMERAS

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

Canon

South And Southeast Asia

Regional Headquarters:
Canon Singapore Pte Ltd.

1 HarbourFront Avenue,
#04-01 Keppel Bay Tower,
Singapore 098632

Tel:+65-6799-8888
Fax: +65-6799-8882

Website: www.canon-asia.com
Email: professional_imaging@canon.com.sg

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