



FUJINON
CCTV LENS
for Security & Surveillance

FUJINON CCTV LENSES

FUJINON lenses have dominated the broadcasting lens market where excellent image quality is required. The technologies for those broadcasting lenses are now adopted in CCTV lens manufacturing. We offer various lenses for a wide range of purposes including large super zoom lenses suitable for long range surveillance, day and night lenses, and HD lenses. We always make great effort to produce reliable products for customers all over the world through our strictest quality control and streamlined production structure.

See what it is, not what it might be. FUJINON CCTV LENSES

Features



Fish-Eye Lenses

Fujinon's Fish-Eye lens, with an angle of 185 degrees, is the world's first to support 5 megapixel CCD cameras. High-quality image display in imaging software has been made simple with captured images that are sharp from edge to edge, and with the adoption of the F θ system suited for uniform displaying of images. Look no further for effective, blindspot-free wide-area surveillance, such as of subway entrances and shopping arcades.



Fixed Focal Length Lenses

High cost-performance fixed focal length lenses that are compact, lightweight and of course provide high quality images for security CCTV cameras. Great lineups including day-and-night use lenses supporting 5-megapixel cameras, which are optimum for ITS in growing demand. These lenses are highly effective wherever security monitoring is required, including bank ATMs, convenience stores, offices, condominiums and transportation facilities.



HD Vari-Focal Lenses

High-resolution lenses for use in security systems for which demand has grown in recent years. These lenses boast super clear imaging from the center to the edges with superior face recognition capability. The lenses are suitable for any purpose and locale, in day and night use, from among focal lengths of 2.2 mm to 80 mm.



Vari-Focal Lenses

Lenses for use in security systems for which demand has grown in recent years. These lenses allow clear imaging from the center to the edges with superior face recognition capability. They are suitable for any purpose and locale. The lenses are featured by: an AT aspheric surface, large aperture of F0.95, day and night use, miniature design for dome application or coverage for 1/2-inch sensors superior in terms of optical performance.



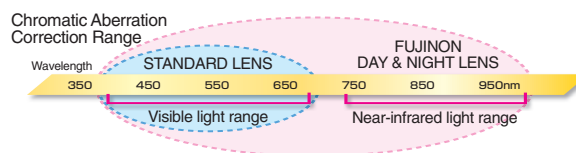
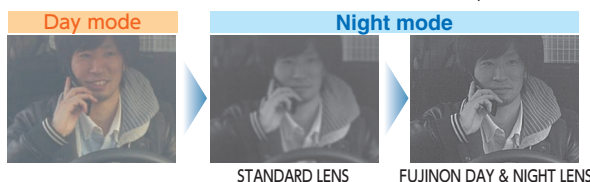
Zoom Lenses

With the adoption of high-precision TRI-CAM + INNERCAM technology, we offer an expanded lineup of products to meet ever more diversified needs. There are models with auto-focusing, optical anti-vibration, zoom and focus presetting, and also those which support the RS-232C standard that enable sophisticated zoom control by computer. We are expanding the lineup with lenses for night vision cameras and lenses with super zoom (eg: 60x), long focal length (eg: 3200 mm) or high resolution (eg: 2 megapixels) demanded for long range surveillance. Small and lightweight lenses enable compact long range surveillance systems to be built.



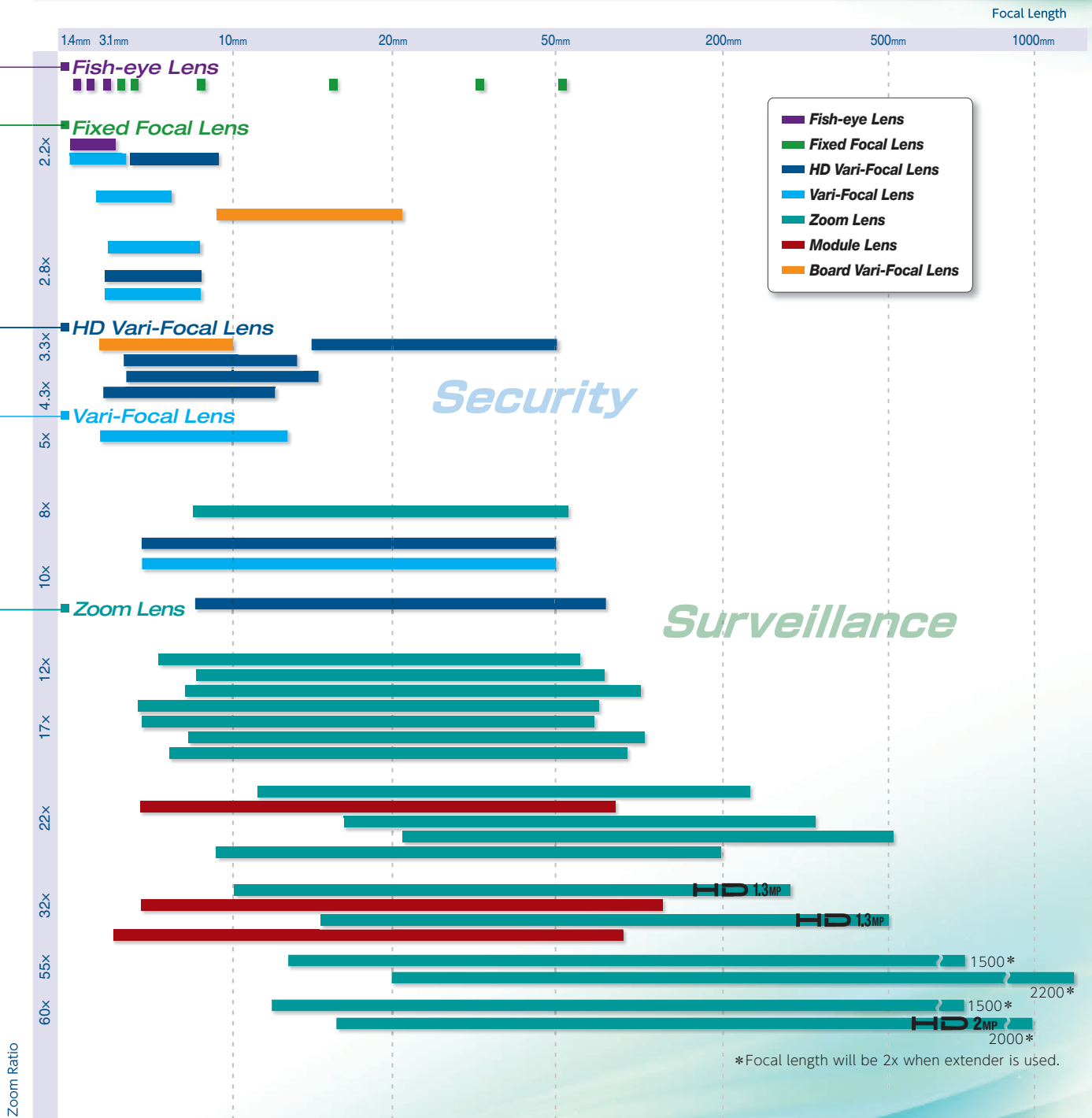
Day&Night Lenses

There is a growing need for compact, high quality lenses for 24/7 surveillance applications such as parking lots, factory premises, streets. Continuous surveillance is also required for public facilities such as airports, harbors, highways and border patrol, requiring more versatile focal lengths and higher zoom ratios. Fujinon has developed lenses that respond to infrared illumination to capture clear, corrected images, even at 0 lux. We offer a lineup of lenses from the standard focal length of 2.9-8 mm, to the diverse focal length of 12.5-2200 mm.



At night, day & night cameras operate in the near-infrared range. For this reason, use of regular lenses causes the image to be out of focus. Using special optical glass and advanced optical designing technology, Fujinon's day&night lenses achieve minimal axial aberration. Sharp and high quality images can be captured around-the-clock, whether in the visible range (day / color) or in the near-infrared range (night / monochrome), and at every focal distance from the wide end to the tele end.

Focal Length



FUJINON HD Lenses

As modern industries and social infrastructures are growing rapidly, demands for surveillance systems incorporating high-definition cameras are increasing day by day. In order to fully utilize advanced complex security systems, superior lens performance for image capture is essential.

To respond to this market demand, Fujifilm offers a wide variety of high quality lenses for HD security cameras, achieving clear images for superior face recognition capability.

Suitable for any application and condition, our lineup contains Day and Night, and other lenses ranging from 2.2 mm to 3200 mm.

FUJINON HD Vari-Focal lenses can be incorporated with the P-iris control, a precise control of the iris (by using a stepping motor) according to the situation, to produce higher quality video images. (*1)(*2)



**High-vision
surveillance images!**

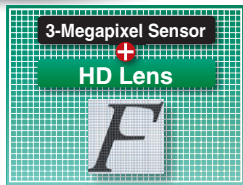


Image captured by HD lens for 3-megapixel sensor

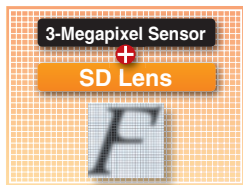
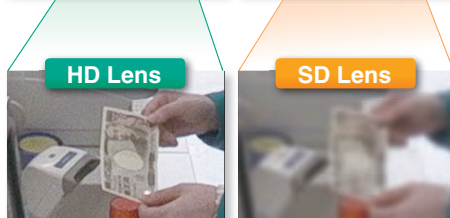


Image captured by SD lens

* The above are simulated images of those captured by HD lens/SD lens and 3-megapixel sensor.

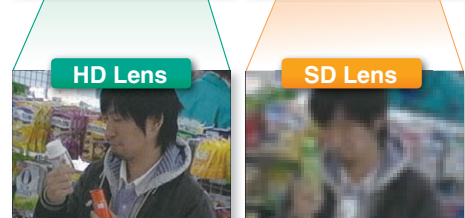
Lenses supporting 1.3- to 5-megapixel HD sensors provide 2 to 4 times greater resolution, compared to traditional lenses for SD sensors. Only when used in combination with these lenses, cameras with greater pixel sizes and image quality allowed to fully exercise their performance.

• **Over Cash Register**



Details on banknotes or cash display are clearly seen.

• **In Store**



Facial expressions or details of clothing can be easily seen in images taken by HD lenses.

* 1: The P-iris is an optional feature. Contact us separately to incorporate it.
* 2: P-iris lenses are only available with the cameras supporting P-iris control.

FUJINON

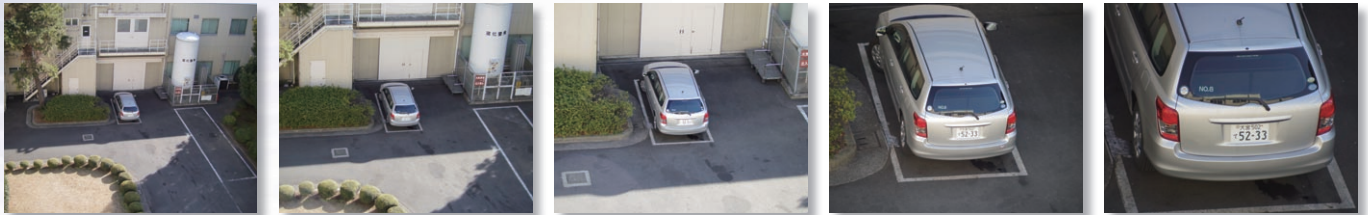
Chart of Focus Range for HD Vari-Focal Lenses.



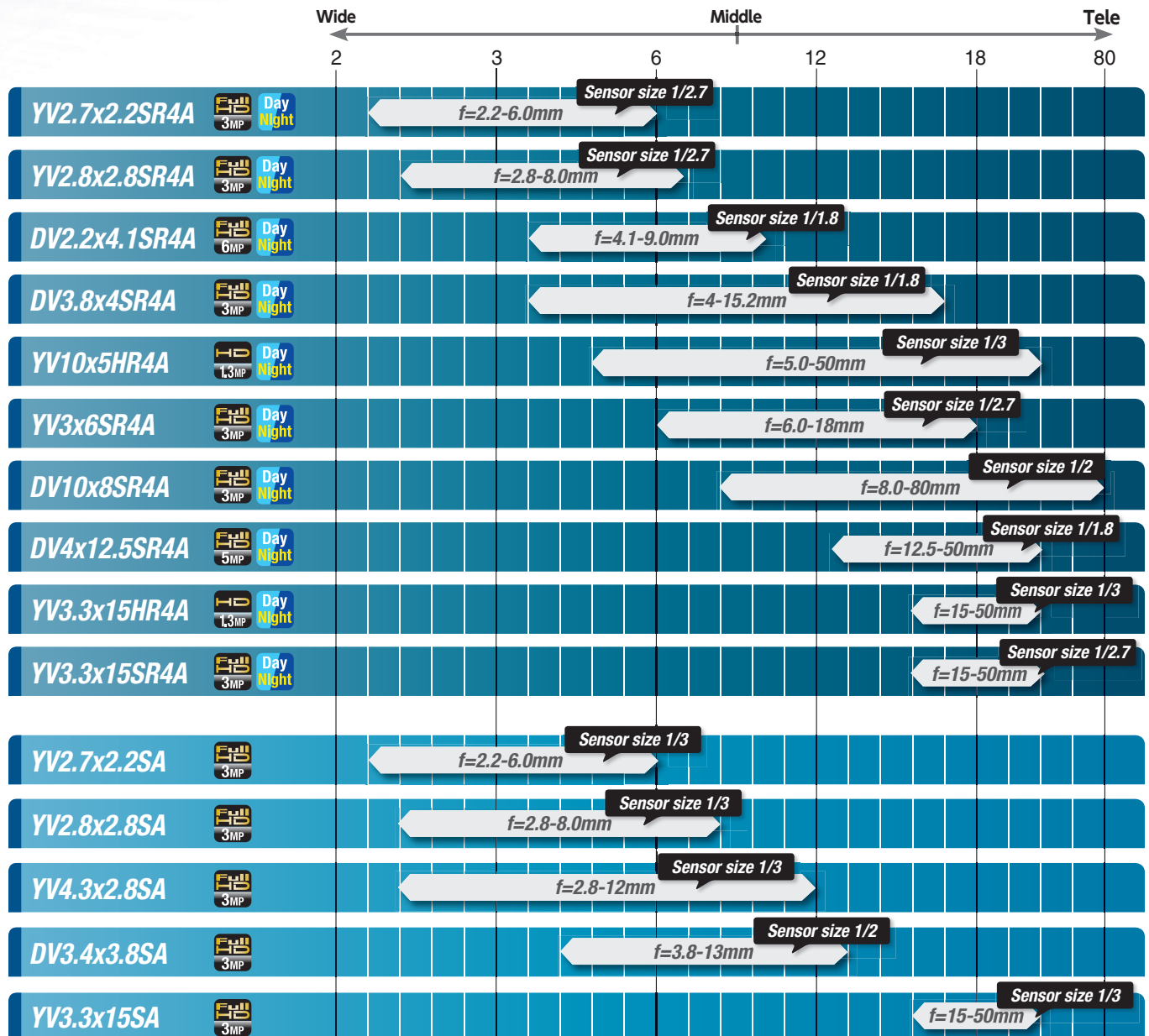
Wide

Middle

Tele



*Shots taken by DV10x8SR4A



Vari-Focal Day Type

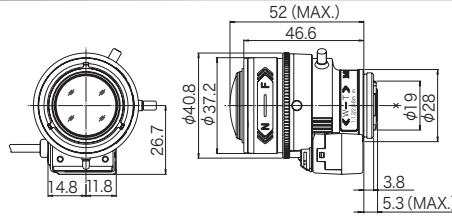
3MP

YV2.8x2.8SA-SA2

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

2.8x

Applicable to **1/3**



Unit : mm



Vari-Focal Wide Angle DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

※ This product is also available in manual Iris type.

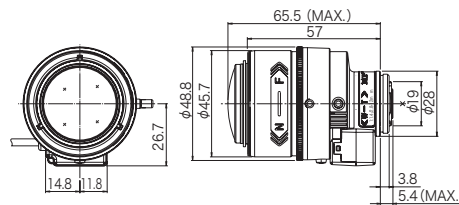
Focal Length (mm)	2.8 - 8 (2.8x)	
Iris Range	F1.2 - T360(Equivalent to F360)	
Operation	Zoom	Manual
	Focus	Manual
	Iris	Auto (DC type)*1
Angle of View (H × V)	1/3"	WIDE 100° 00' × 73° 45' TELE 35° 03' × 26° 18'
	1/4"	WIDE 73° 45' × 54° 49' TELE 26° 18' × 19° 44'
Angle of View (H × V)	1/3"	WIDE 109° 50' × 59° 51' TELE 38° 11' × 21° 29'
	1/4"	WIDE 80° 39' × 44° 38' TELE 28° 39' × 16° 07'
Aspect Ratio	16:9	
Focus Range (From the Lens Front) (m)	∞ - 0.3	
Mass (g)	50	

YV4.3x2.8SA-SA2

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

4.3x

Applicable to **1/3**



Unit : mm



Vari-Focal Wide Angle Telephoto Long Focal DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

※ This product is also available in manual Iris type.

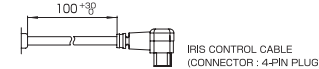
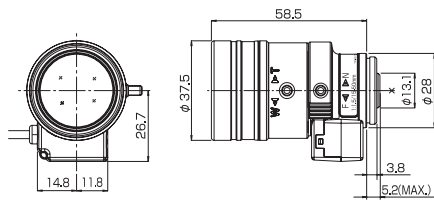
Focal Length (mm)	2.8 - 12 (4.3x)	
Iris Range	F1.4 - T360(Equivalent to F360)	
Operation	Zoom	Manual
	Focus	Manual
	Iris	Auto (DC type)*1
Angle of View (H × V)	1/3"	WIDE 100° 02' × 74° 03' TELE 23° 26' × 17° 36'
	1/4"	WIDE 74° 03' × 55° 06' TELE 17° 36' × 13° 13'
Angle of View (H × V)	1/3"	WIDE 109° 33' × 60° 08' TELE 25° 31' × 14° 23'
	1/4"	WIDE 80° 56' × 44° 51' TELE 19° 10' × 10° 48'
Aspect Ratio	16:9	
Focus Range (From the Lens Front) (m)	∞ - 0.3	
Mass (g)	80	

YV3.3x15SA-SA2

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

3.3x

Applicable to **1/3**



Unit : mm



Vari-Focal Telephoto Long Focal DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

※ This product is also available in manual Iris type.

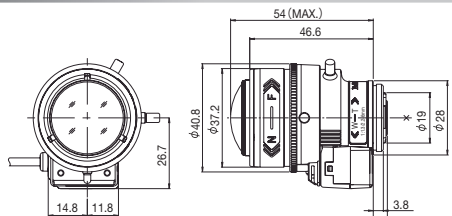
Focal Length (mm)	15 - 50 (3.3x)	
Iris Range	F1.5 - T360(Equivalent to F360)	
Operation	Zoom	Manual
	Focus	Manual
	Iris	Auto (DC type)*1
Angle of View (H × V)	1/3"	WIDE 18° 08' × 13° 34' TELE 5° 35' × 4° 12'
	1/4"	WIDE 13° 34' × 10° 10' TELE 4° 12' × 3° 10'
Angle of View (H × V)	1/3"	WIDE 19° 46' × 11° 04' TELE 6° 04' × 3° 26'
	1/4"	WIDE 14° 47' × 8° 18' TELE 4° 34' × 2° 35'
Aspect Ratio	16:9	
Focus Range (From the Lens Front) (m)	∞ - 0.8	
Mass (g)	60	

YV2.7x2.2SA-SA2

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

2.7x

Applicable to **1/3**



Unit : mm



Vari-Focal Wide Angle DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

※ This product is also available in manual Iris type.

Focal Length (mm)	2.2 - 6 (2.7x)	
Iris Range	F1.3 - T360(Equivalent to F360)	
Operation	Zoom	Manual
	Focus	Manual
	Iris	Auto (DC type)*1
Angle of View (H × V)	1/3"	WIDE 120° 00' × 91° 36' TELE 46° 26' × 34° 59'
	1/4"	WIDE 91° 36' × 69° 21' TELE 34° 59' × 26° 18'
Angle of View (H × V)	1/3"	WIDE 129° 43' × 75° 23' TELE 50° 30' × 28° 38'
	1/4"	WIDE 99° 23' × 56° 53' TELE 38° 04' × 21° 31'
Aspect Ratio	16:9	
Focus Range (From the Lens Front) (m)	∞ - 0.3	
Mass (g)	55	

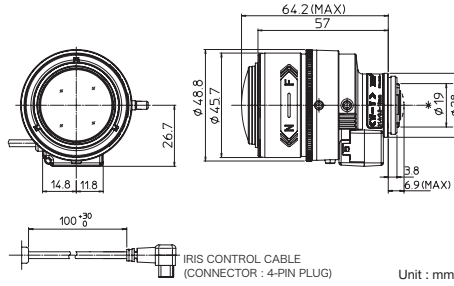
* 1: The iris automatically closes when the camera is turned off.
 ※ Each of the above products is also available in long cable type (230 mm).

DV3.4x3.8SA-SA1

Applicable camera (model) 1 2/3 1/2 1/3 1/4

3.4 x

Applicable to 1/2



Focal Length (mm)	3.8 - 13 (3.4x)		
Iris Range	F1.4 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
	Iris	Auto (DC type)*1	
Angle of View (H × V)	1/2"	WIDE	97° 34' × 71° 47'
		TELE	28° 23' × 21° 18'
	1/3"	WIDE	71° 47' × 53° 15'
		TELE	21° 18' × 15° 59'
	1/4"	WIDE	53° 15' × 39° 41'
		TELE	15° 59' × 11° 59'
Angle of View (H × V)	1/2"	WIDE	107° 12' × 58° 10'
	TELE	30° 55' × 17° 25'	
Aspect Ratio 16:9	1/3"	WIDE	78° 34' × 43° 18'
	TELE	23° 12' × 13° 04'	
Focus Range (From the Lens Front) (m)	1/4"	WIDE	58° 10' × 32° 20'
	TELE	17° 25' × 9° 48'	
Mass (g)	80		



Vari-Focal Wide Angle Long Focal DC Auto Iris C Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

VARI WIDE TELE DC C-mt METAL ND AT F1.4 RoHS

※ This product is also available in manual Iris type.

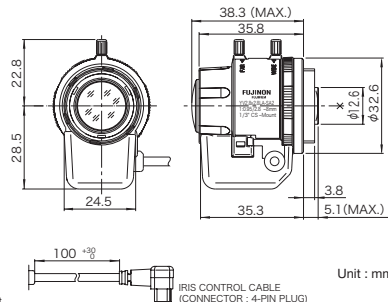
SD

YV2.8x2.8LA-SA2

Applicable camera (model) 1 2/3 1/2 1/3 1/4

2.8 x

Applicable to 1/3



Focal Length (mm)	2.8 - 8 (2.8x)		
Iris Range	F0.95 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
	Iris	Auto (DC type)*1	
Angle of View (H × V)	1/2"	WIDE	-
		TELE	-
	1/3"	WIDE	99° 52' × 73° 17'
		TELE	35° 14' × 26° 24'
	1/4"	WIDE	73° 17' × 54° 19'
		TELE	26° 24' × 19° 47'
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	45		

Vari-Focal Wide Angle DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

VARI WIDE DC CS-mt METAL ND AT F0.95 RoHS

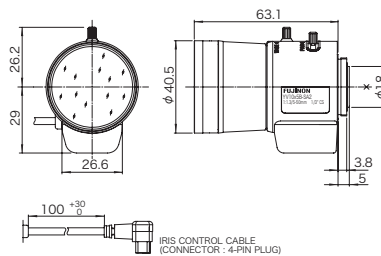
※ This product is also available in manual Iris type.

YV10x5B-SA2

Applicable camera (model) 1 2/3 1/2 1/3 1/4

10 x

Applicable to 1/3



Focal Length (mm)	5 - 50 (10x)		
Iris Range	F1.3 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
	Iris	Auto (DC type)*1	
Angle of View (H × V)	1/2"	WIDE	-
		TELE	-
	1/3"	WIDE	51° 59' × 39° 12'
		TELE	5° 24' × 4° 05'
	1/4"	WIDE	39° 12' × 29° 30'
		TELE	4° 05' × 3° 05'
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	100		

Vari-Focal Wide Angle Telephoto Long Focal DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

VARI WIDE TELE DC CS-mt METAL ND AT F1.3 RoHS

※ This product is also available in manual Iris type.

* 1: The iris automatically closes when the camera is turned off.
 ※ Each of the above products is also available in long cable type (230 mm).

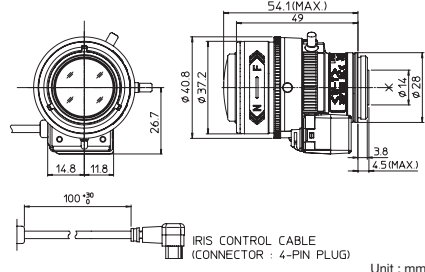
Vari-Focal Day&Night Type

3MP

YV2.8x2.8SR4A-SA2

2.8x

Applicable to 1/2.7



IRIS CONTROL CABLE (CONNECTOR : 4-PIN PLUG)

Unit : mm

Day Night

FHD 3MP

Vari-Focal Wide Angle DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

※ This product is also available in manual Iris type.

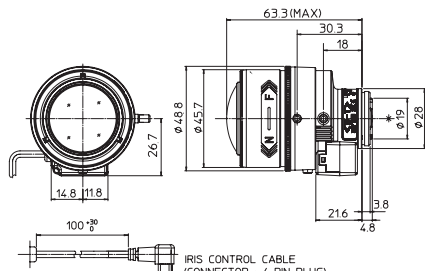
Applicable camera (model) 1 2/3 1/2 1/2.7 1/3 1/4

Focal Length (mm)	2.8 - 8 (2.8x)		
Iris Range	F1.3 - T360		
Operation	Zoom	Manual	
	Focus	Manual	
Angle of View (H × V)	1/2.7"	WIDE	112° 24' × 81° 16'
		TELE	38° 48' × 29° 05'
	1/3"	WIDE	100° 34' × 73° 22'
Angle of View (H × V)	1/3"	TELE	35° 16' × 26° 26'
		WIDE	73° 22' × 54° 18'
	1/4"	TELE	26° 26' × 19° 49'
Angle of View (H × V)	1/2.7"	WIDE	124° 51' × 65° 26'
		TELE	42° 17' × 23° 43'
	1/3"	WIDE	111° 8' × 59° 19'
Aspect Ratio 16:9	1/3"	TELE	38° 27' × 21° 35'
		WIDE	80° 23' × 44° 13'
	1/4"	TELE	28° 47' × 16° 13'
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	60		

YV3x6SR4A-SA2

3x

Applicable to 1/2.7



IRIS CONTROL CABLE (CONNECTOR : 4-PIN PLUG)

Unit : mm

Day Night

FHD 3MP

Vari-Focal DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

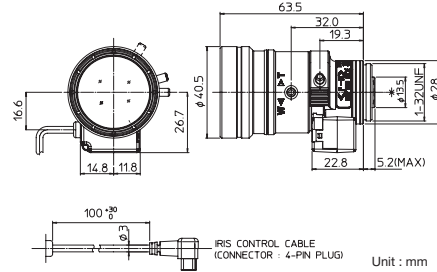
Applicable camera (model) 1 2/3 1/2 1/2.7 1/3 1/4

Focal Length (mm)	6 - 18 (3x)		
Iris Range	F1.4 - T360		
Operation	Zoom	Manual	
	Focus	Manual	
Angle of View (H × V)	1/2.7"	WIDE	51° 5' × 37° 50'
		TELE	16° 60' × 12° 45'
	1/3"	WIDE	46° 13' × 34° 18'
Angle of View (H × V)	1/3"	TELE	15° 27' × 11° 36'
		WIDE	34° 18' × 25° 35'
	1/4"	TELE	11° 36' × 8° 42'
Angle of View (H × V)	1/2.7"	WIDE	55° 56' × 30° 48'
		TELE	18° 30' × 10° 26'
	1/3"	WIDE	50° 35' × 27° 54'
Aspect Ratio 16:9	1/3"	TELE	16° 50' × 9° 28'
		WIDE	37° 27' × 20° 53'
	1/4"	TELE	12° 37' × 7° 7'
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	95		

YV3.3x15SR4A-SA2

3.3x

Applicable to 1/2.7



IRIS CONTROL CABLE (CONNECTOR : 4-PIN PLUG)

Unit : mm

Day Night

FHD 3MP

Vari-Focal Telephoto Long Focal DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

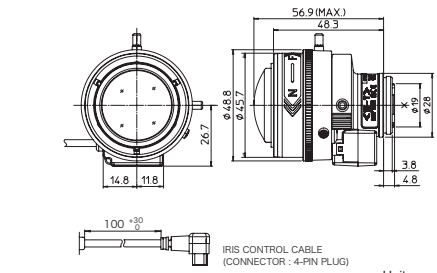
Applicable camera (model) 1 2/3 1/2 1/2.7 1/3 1/4

Focal Length (mm)	15 - 50 (3.3x)		
Iris Range	F1.5 - T360		
Operation	Zoom	Manual	
	Focus	Manual	
Angle of View (H × V)	1/2"	WIDE	20° 1' × 15° 5' *2
		TELE	6° 9' × 4° 39' *2
	1/3"	WIDE	18° 14' × 13° 43'
Angle of View (H × V)	1/3"	TELE	5° 37' × 4° 14'
		WIDE	13° 43' × 10° 18'
	1/4"	TELE	4° 14' × 3° 11'
Angle of View (H × V)	1/2"	WIDE	21° 45' × 12° 20' *2
		TELE	6° 41' × 3° 49' *2
	1/3"	WIDE	19° 49' × 11° 14'
Aspect Ratio 16:9	1/3"	TELE	6° 6' × 3° 28'
		WIDE	14° 56' × 8° 26'
	1/4"	TELE	4° 36' × 2° 36'
Focus Range (From the Lens Front) (m)	∞ - 1.0		
Mass (g)	80		

YV2.7x2.2SR4A-SA2

2.7x

Applicable to 1/2.7



IRIS CONTROL CABLE (CONNECTOR : 4-PIN PLUG)

Unit : mm

Day Night

FHD 3MP

Vari-Focal Wide Angle DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

※ This product is also available in manual Iris type.

Applicable camera (model) 1 2/3 1/2 1/2.7 1/3 1/4

Focal Length (mm)	2.2 - 6 (2.7x)		
Iris Range	F1.3 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
Angle of View (H × V)	1/2.7"	WIDE	132° 47' × 100° 19'
		TELE	50° 26' × 37° 54'
	1/3"	WIDE	121° 4' × 91° 20'
Angle of View (H × V)	1/3"	TELE	45° 51' × 34° 28'
		WIDE	91° 20' × 68° 43'
	1/4"	TELE	34° 28' × 25° 53'
Angle of View (H × V)	1/2.7"	WIDE	144° 08' × 82° 08'
		TELE	54° 48' × 30° 57'
	1/3"	WIDE	131° 34' × 74° 46'
Aspect Ratio 16:9	1/3"	TELE	49° 55' × 28° 11'
		WIDE	99° 19' × 56° 19'
	1/4"	TELE	37° 31' × 21° 12'
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	75		

* 1: The iris automatically closes when the camera is turned off.

※ Each of the above products is also available in long cable type (230 mm).

Vari-Focal Day&Night Type

Day&Night Lens

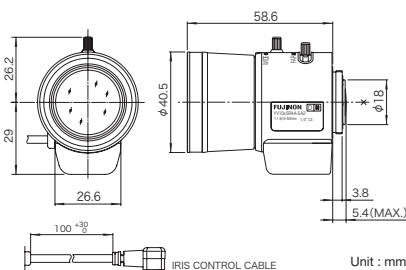
HD

YV10x5HR4A-SA2

Applicable camera (model) 1 2/3 1/2 1/3 1/4

10x

Applicable to 1/3



Unit : mm

Focal Length (mm)	5 - 50 (10x)		
Iris Range	F1.6 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
	Iris	Auto (DC type) *1	
Angle of View (H x V)	1/3"	WIDE	51° 17' x 39° 36'
		TELE	5° 30' x 4° 07'
	1/4"	WIDE	39° 36' x 30° 13'
		TELE	4° 07' x 3° 06'
Angle of View (H x V)	1/3"	WIDE	55° 35' x 31° 58'
	TELE	5° 47' x 3° 20'	
Aspect Ratio 16:9	1/4"	WIDE	42° 19' x 24° 4'
	TELE	4° 25' x 2° 31'	
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	85		

Day Night

HD 1.3MP

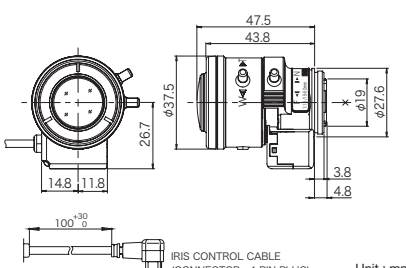
Vari-Focal Wide Angle Long Focal DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

YV3.3x15HR4A-SA2

Applicable camera (model) 1 2/3 1/2 1/3 1/4

3.3x

Applicable to 1/3



Unit : mm

Focal Length (mm)	15 - 50 (3.3x)		
Iris Range	F1.5 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
	Iris	Auto (DC type) *1	
Angle of View (H x V)	1/3"	WIDE	18° 29' x 13° 45'
		TELE	5° 29' x 4° 09'
	1/4"	WIDE	13° 45' x 10° 16'
		TELE	4° 09' x 3° 08'
Angle of View (H x V)	1/3"	WIDE	20° 13' x 11° 11'
	TELE	5° 57' x 3° 25'	
Aspect Ratio 16:9	1/4"	WIDE	15° 0' x 8° 22'
	TELE	4° 31' x 2° 34'	
Focus Range (From the Lens Front) (m)	∞ - 0.8		
Mass (g)	50		

Day Night

HD 1.3MP

Vari-Focal Long Focal DC Auto Iris CS Mount Metal Mount ND Filter Aspherical Lens Large Aperture Ratio RoHS Compliant

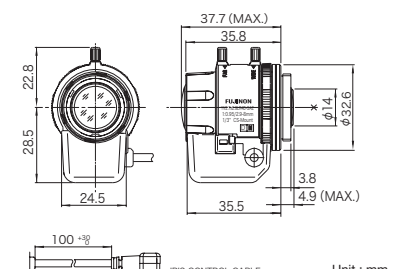
SD

YV2.7x2.9LR4D-SA2

Applicable camera (model) 1 2/3 1/2 1/3 1/4

2.7x

Applicable to 1/3



Unit : mm

Focal Length (mm)	2.9 - 8(2.7x)		
Iris Range	F0.95 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
	Iris	Auto (DC type) *1	
Angle of View (H x V)	1/3"	WIDE	94° 37' x 69° 30'
		TELE	35° 18' x 26° 26'
	1/4"	WIDE	61° 30' x 51° 33'
		TELE	26° 26' x 19° 48'
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	45		

Day Night

HD 1.3MP

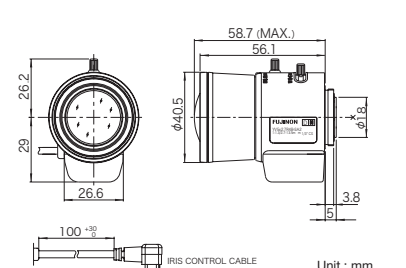
Vari-Focal Wide Angle DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

YV5x2.7R4B-SA2

Applicable camera (model) 1 2/3 1/2 1/2.7 1/3 1/4

5x

Applicable to 1/2.7



Unit : mm

Focal Length (mm)	2.7 - 13.5(5x)		
Iris Range	F1.3 - T360 (Equivalent to F360)		
Operation	Zoom	Manual	
	Focus	Manual	
	Iris	Auto (DC type) *1	
Angle of View (H x V)	1/3"	WIDE	99° 42' x 74° 17'
		TELE	20° 37' x 15° 30'
	1/4"	WIDE	74° 17' x 55° 26'
		TELE	15° 30' x 11° 38'
Focus Range (From the Lens Front) (m)	∞ - 0.3		
Mass (g)	70		

Day Night

HD 1.3MP

Vari-Focal Wide Angle Long Focal DC Auto Iris CS Mount Metal Mount ND Filter Long Cable Aspherical Lens Large Aperture Ratio RoHS Compliant

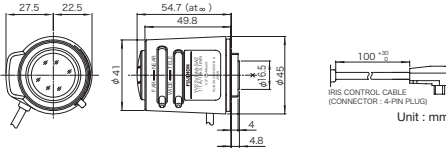
* 1 : The iris automatically closes when the camera is turned off.
 ※ Each of the above products is also available in long cable type (230 mm).

Fish-eye

SD

YV2.2x1.4A-SA2

2.2x



Vari-Focal Fish-Eye DC Auto Iris CS Mount ND Filter Long Cable Aperture Ratio Large Aperture Ratio RoHS Compliant

VARI **Fish-Eye 185°** **DC** **CS-mt** **ND** **F30** **F1.4** **RoHS**

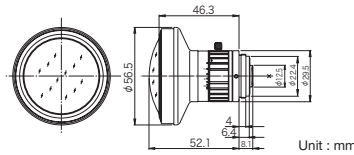
Applicable camera (model) **1 2/3 1/2 1/3 1/4**

Focal Length	1.4 - 3.1 (2.2x)	
Iris Range	F1.4 - T360 (Equivalent to F360)	
Operation	Zoom Manual	
	Focus Manual	
	Iris Auto (DC type) *1	
Angle of View (H x V)	1" -	
	2/3" -	
	1/2" -	
	1/3" WIDE	185° x 185° (ϕ 3.45mm)
		TELE 94° 47' x 69° 26'
	1/4" WIDE	185° x 121°
TELE 69° 26' x 51° 30'		
Focus Range (From the Lens Front) (m)	∞ - 0.2	
Mass (g)	80	

5MP

FE185C046HA-1

Applicable to **1/2**



Fixed Focal Fish-Eye Manual Iris C Mount Metal Mount Aperture Ratio Large Aperture Ratio RoHS Compliant

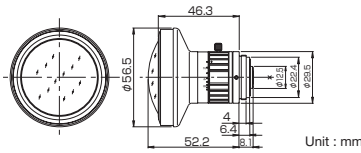
5MP **FIXED** **Fish-Eye 185°** **MANUAL** **C-mt** **METAL** **F1.4** **RoHS**

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

Focal Length	1.4	
Iris Range	F1.4 - F16	
Operation	Zoom -	
	Focus Fixed	
	Iris Manual	
Angle of View (H x V)	1" -	
	2/3" -	
	1/2" WIDE	185° x 185° (ϕ 4.6mm)
	1/3" WIDE	TELE 185° x 144° 47'
		TELE 144° 47' x 108° 35'
	Focus Range (From the Lens Front) (m)	∞ - 0.1
Mass (g)	140	

FE185C057HA-1

Applicable to **2/3**



Fixed Focal Fish-Eye Manual Iris C Mount Metal Mount Aperture Ratio Large Aperture Ratio RoHS Compliant

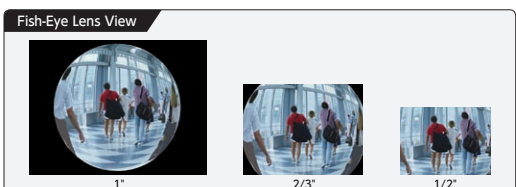
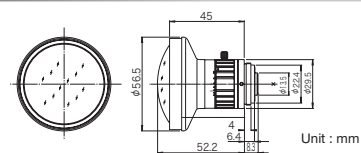
5MP **FIXED** **Fish-Eye 185°** **MANUAL** **C-mt** **METAL** **F1.4** **RoHS**

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

Focal Length	1.8	
Iris Range	F1.4 - F16	
Operation	Zoom -	
	Focus Fixed	
	Iris Manual	
Angle of View (H x V)	1" -	
	2/3" WIDE	185° x 185° (ϕ 5.7mm)
	1/2" WIDE	TELE 185° x 154° 08'
		TELE 154° 08' x 115° 27'
	Focus Range (From the Lens Front) (m)	∞ - 0.1
	Mass (g)	135

FE185C086HA-1

Applicable to **1**



Fixed Focal Fish-Eye Manual Iris C Mount Metal Mount Aperture Ratio Large Aperture Ratio RoHS Compliant

5MP **FIXED** **Fish-Eye 185°** **MANUAL** **C-mt** **METAL** **RoHS**

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

Focal Length	2.7	
Iris Range	F1.8 - F16	
Operation	Zoom -	
	Focus Fixed	
	Iris Manual	
Angle of View (H x V)	1" WIDE	185° x 185° (ϕ 8.6mm)
	2/3" WIDE	TELE 185° x 140° 35'
		TELE 136° 18' x 102° 19'
	1/3" WIDE	TELE -
		TELE -
	Focus Range (From the Lens Front) (m)	∞ - 0.2
Mass (g)	160	

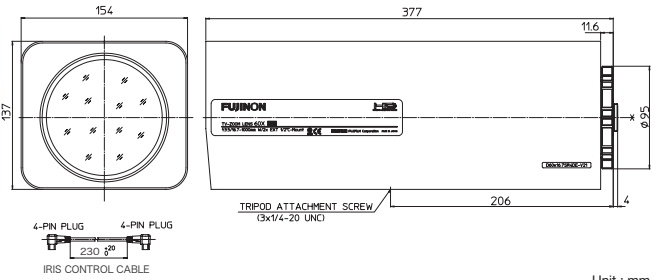
* 1 : The iris automatically closes when the camera is turned off.

** YV2.2 x 1.4A-SA2 is an SD lens and is also available in a long cable type (230 mm) or manual type.

D60x16.7SR4DE Series / D60x16.7SR4FE **2,000mm**

Applicable camera (model) **1 2/3 1/1.8 1/2 1/3 1/4**

60x
Applicable to **1/1.8**



Unit : mm

Day Night **VISIBLE LIGHT CUT** **FULL HD 2MP**

Zoom MOTOR DRIVE TELE AF OS-TECH DC IRIS-REMOTE C-mt METAL PRESET ND Filter Extender PC Control Full Servo RoHS Compliant
ZOOM **MOTOR DRIVE** **TELE** **AF** **OS-TECH** **DC** **IRIS-REMOTE** **C-mt** **METAL** **PRESET** **ND** **2x** **PC** **SERVO** **RoHS**
-ZP1A **-ZPIC** **-V21** **-ZP1A** **-ZPIC**

		Applicable to 1/1.8		Applicable to 1/1.8		Applicable to 1/1.8	
		D60x16.7SR4DE-V21		D60x16.7SR4DE-ZP1A (AF)		D60x16.7SR4FE-ZP1C (AF and Anti-Vibration)	
Focal Length (mm)		1x	16.7 - 1000 (60x)				
		2x	33.4 - 2000				
Iris Range		1x	F3.5 - F16				
		2x	F7.0 - F32				
Filter		Filter ND (1/8, 1/64), Visible Light Cut					
Operation	Zoom	Motor Drive			Servo Control		
	Focus	Motor Drive			Servo Control		
	Iris	Auto(DC type) or Remote*1					
AF		N/A			Available (with analog camera)		
Optical Anti-Vibration		N/A			Available		
Temperature Correction Mechanism		○					
Angle of View (H×V)	1/1.8"	1x	WIDE	23° 5' × 17° 41'			
			TELE	0° 25' × 0° 19'			
		2x	WIDE	11° 46' × 8° 54'			
			TELE	0° 12' × 0° 9'			
	1/2"	1x	WIDE	20° 53' × 15° 55'			
			TELE	0° 22' × 0° 17'			
2x		WIDE	10° 35' × 7° 59'				
		TELE	0° 11' × 0° 8'				
Angle of View (H×V) (16:9)	1/1.8"	1x	WIDE	24° 56' × 14° 34'			
			TELE	0° 27' × 0° 15'			
		2x	WIDE	12° 47' × 7° 18'			
			TELE	0° 14' × 0° 8'			
	1/2"	1x	WIDE	22° 35' × 13° 6'			
			TELE	0° 24' × 0° 14'			
2x		WIDE	11° 30' × 6° 32'				
		TELE	0° 12' × 0° 7'				
Focus Range (From the Lens Front) (m)		∞ - 5					
Object imensions at M.O.D. (H × V) (4:3) (mm)	1/1.8"	1x	WIDE	1975 × 1504			
			TELE	35 × 27			
		2x	WIDE	998 × 753			
			TELE	18 × 13			
	1/2"	1x	WIDE	1782 × 1353			
			TELE	32 × 24			
2x		WIDE	896 × 676				
		TELE	16 × 12				
Object imensions at M.O.D. (H × V) (16:9) (mm)	1/1.8"	1x	WIDE	2137 × 1237			
			TELE	38 × 22			
		2x	WIDE	1084 × 617			
			TELE	19 × 11			
	1/2"	1x	WIDE	1931 × 1111			
			TELE	34 × 20			
2x		WIDE	974 × 553				
		TELE	17 × 10				
Back Focal Distance (in air) (mm)		24.85					
Exit Pupil Position (From Image Plane) (mm)		(1x) -448.80 (2x) -85.23					
Filter Thread (mm)		M112 × 0.75					
Mount		C					
Extender		2x					
Mass (kg)		6.5			7.1		
Standard Accessories		IRIS CONTROL CABLE					
Wiring Diagram		P20					

* 1 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23). The above product is also available in reinforced body model with axis adjustment mechanism.

Vari-Focal

Fixed Focal

Fish-eye

Zoom

Zoom Lens Wiring

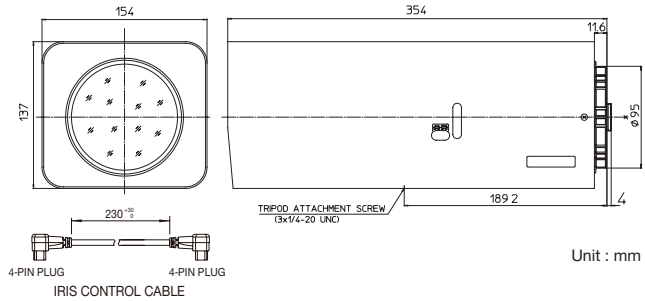
Technical Information

D60x12.5BE-V41 / D60x12.5R3DE Series 1,500mm

Applicable camera (model) 1 2/3 1/2 1/3 1/4

60x

Applicable to 1/2



Unit : mm

Day Night

D60x12.5BE-V41

Zoom Motor Drive Wide Angle Long Focal Telephoto Auto Iris Iris-Remote C Mount Metal Mount Potentiometer ND Filter Extender RoHS Compliant
ZOOM MOTOR DRIVE WIDE TELE VIDEO IRIS-REMOTE C-mt METAL PRESET ND 2x RoHS

D60x12.5R3DE Series

Zoom Motor Drive Wide Angle Long Focal Telephoto Auto Iris Iris-Remote C Mount Metal Mount Potentiometer ND Filter Extender PC Control Full Servo RoHS Compliant
ZOOM MOTOR DRIVE WIDE TELE VIDEO IRIS-REMOTE C-mt METAL PRESET ND 2x PC SERVO RoHS
 -V41 -ZP1 -ZP1

D60x12.5R3DE-V41
D60x12.5R3DE-ZP1

Applicable to 1/2 ※ This product is for sale while stock lasts.

Applicable to 1/2

Applicable to 1/2

		D60x12.5BE-V41	D60x12.5R3DE-V41	D60x12.5R3DE-ZP1
Focal Length (mm)	1x	12.5 - 750(60x)		
	2x	25 - 1500(60x)		
Iris Range	1x	F3.8 - T3000(Equivalent to F3000)		
	2x	F7.6 - T3000(Equivalent to F3000)		
Operation	Zoom	Motor Drive		Servo Control
	Focus	Motor Drive		Servo Control
	Iris	Auto (Video Type) or Remote*1*2		Auto (Video Type) or Remote or Servo Control*1*2
Angle Of View (HxV)	1/2°	1x WIDE	28° 43' x 21° 44'	
		1x TELE	0° 29' x 0° 22'	
	2x WIDE	14° 35' x 10° 58'		
	2x TELE	0° 15' x 0° 11'		
	1/3°	1x WIDE	21° 44' x 16° 23'	
		1x TELE	0° 22' x 0° 17'	
Object Dimensions at M.O.D. (HxV) (mm)	1/2°	1x WIDE	2465 x 1849	
		1x TELE	41 x 31	
	2x WIDE	1233 x 924		
	2x TELE	21 x 15		
	1/3°	1x WIDE	1849 x 1387	
		1x TELE	31 x 23	
Back Focal Distance (in air) (mm)	1x	53.23		
	2x	31.10		
Exit Pupil Position (From Image Plane) (mm)	1x	-77		
	2x	-38		
Filter Thread (mm)		M107 x 1		
Extender		2x		
Mass (g)		5100	5200	
Wiring Diagram		P20	P21	

* 1 : When power is turned off, iris will automatically close.

* 2 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

Zoom position D60x16.7SR4DE Series

WIDE (16.7mm)

TELE (1,000mm)

*without Extender

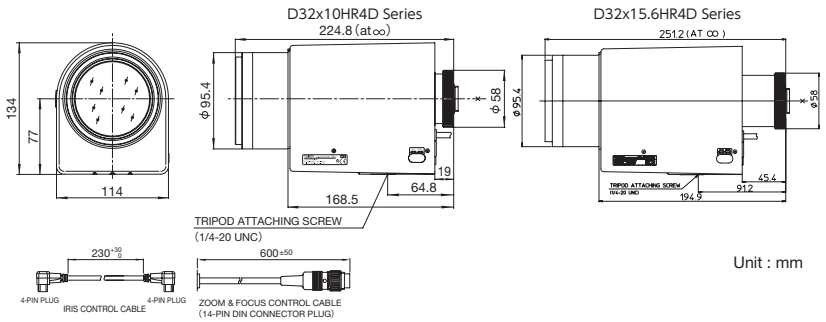


D32x10HR4D Series / D32x15.6HR4D Series

Applicable camera (model) 1 2/3 1/2 1/3 1/4

32 x

Applicable to 1/2



*Photograph of the D32x10HR4D model



- Zoom
 - Motor Drive
 - Wide-Angle
 - Telephoto Long Focal
 - Switchable
 - Iris-Remote
 - C-Mount
 - Metal Mount
 - Potentiometer
 - ND Filter
 - RoHS Compliant
- ZOOM MOTOR DRIVE WIDE TELE DC VIDEO IRIS-REMOTE C-MT METAL PRESET ND RoHS

Vari-Focal

Fixed Focal

Fish-eye

Zoom

Zoom Lens Wiring

Technical Information

		Applicable to 1/2		Applicable to 1/2	
		D32x10HR4D-VX1		D32x15.6HR4D-VX1	
Focal Length (mm)		10 - 320(32x)		15.6 - 500(32x)	
Iris Range		F2.5 - T1500 (Equivalent to F1500)		F3.9 - T1500 (Equivalent to F1500)	
Operation		Zoom	Motor Drive		
		Focus	Motor Drive		
		Iris	Switchable Iris Mode DC Mode : Auto*1 / Video Mode : Auto or Remote*1*2		
Angle of View (H×V)	1/2"	WIDE	35° 29' × 26' 59'	23° 11' × 17' 30'	
		TELE	1° 09' × 0' 52'	0' 44' × 0' 33'	
	1/3"	WIDE	26° 59' × 20° 24'	17° 30' × 13' 10'	
		TELE	0° 52' × 0' 39'	0' 33' × 0' 25'	
Angle of View (H×V) (16:9)	1/2"	WIDE	36° 45' × 21° 29'	24° 41' × 14° 04'	
		TELE	1° 14' × 0' 42'	0° 49' × 0' 27'	
	1/3"	WIDE	28° 16' × 16° 13'	18° 41' × 10° 35'	
		TELE	0° 56' × 0' 32'	0' 37' × 0' 21'	
Focus Range (From the Lens Front) (m)				∞ - 3	
Object Dimensions at M.O.D. (H × V) (4:3) (mm)	1/2"	WIDE	1746 × 1310	1179 × 884	
		TELE	57 × 43	37 × 28	
	1/3"	WIDE	1310 × 982	884 × 663	
		TELE	43 × 32	28 × 21	
Object Dimensions at M.O.D. (H × V) (16:9) (mm)	1/2"	WIDE	1891 × 1087	1253 × 709	
		TELE	62 × 35	41 × 23	
	1/3"	WIDE	1440 × 818	944 × 532	
		TELE	47 × 26	31 × 17	
Back Focal Distance (in air) (mm)		22.70		44.92	
Exit Pupil Position (From Image Plane) (mm)		-53		-75	
Filter Thread (mm)		M82 × 0.75		M82 × 0.75	
Mass (kg)		2.5		2.7	
Wiring Diagram				P21	

* 1 : The Iris automatically closes when the camera is turned off.

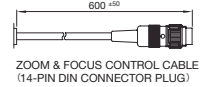
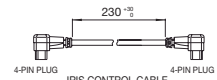
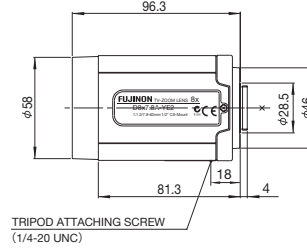
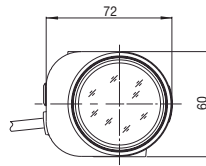
* 2 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

D8x7.8HA Series

Applicable camera (model) **1** **2/3** **1/2** **1/3** **1/4**

8 x

Applicable to **1/2**



Unit : mm

HD
1.3MP

Zoom Motor Drive Wide Angle DC Auto Iris CS Mount Metal Mount Potentiometer ND Filter Large Aperture Ratio RoHS Compliant
ZOOM MOTOR DRIVE WIDE DC CS-mt METAL PRESET ND F1.2 RoHS
 -YE2 -SE2

Applicable to **1/2**

D8x7.8HA-YE2

Applicable to **1/2**

D8x7.8HA-SE2

Focal Length (mm)	7.8 - 63(8x)	
Iris Range	F1.2 - T400 (Equivalent to F400)	
Operation	Zoom	Motor Drive
	Focus	Motor Drive
	Iris	Auto(DC Type)*1
Angle Of View (H×V)	1/2"	WIDE TELE 44° 37' × 34° 12' 5° 49' × 4° 22'
Angle Of View (H×V) (16 : 9)	1/2"	WIDE TELE -
Focusing Range (From Front Of The Lens) (m)	∞ - 1.2	
ObjectDimensions at M.O.D.(H×V) (mm)	1/2"	WIDE TELE 944 × 708 117 × 88
Back Focal Distance (in air) (mm)	14.00	
Exit Pupil Position (From Image Plane) (mm)	-55	
Filter Thread (mm)	M55 × 0.75	
Extender	-	
Mass (g)	400	
Wiring Diagram	P21	

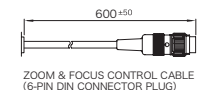
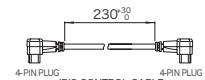
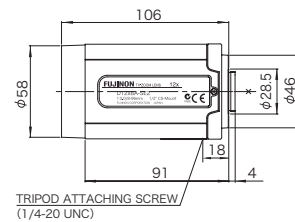
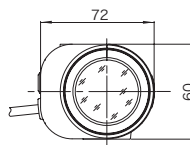
* 1 : When power is turned off, iris will automatically close.

D12x8A Series/ Y12x6A Series

Applicable camera (model) **1** **2/3** **1/2** **1/3** **1/4**

12 x

Applicable to **1/2**



Unit : mm

Zoom Motor Drive Wide Angle Telephoto Long Focal DC Auto Iris CS Mount Metal Mount Potentiometer ND Filter RoHS Compliant
ZOOM MOTOR DRIVE WIDE TELE DC CS-mt METAL PRESET ND RoHS
 -YE2

Applicable to **1/2**

D12x8A-SE2

D12x8A-YE2

Applicable to **1/3**

Y12x6A-SE2

Y12x6A-YE2

Focal Length (mm)	8 - 96(12x)		6 - 72(12x)	
Iris Range	F2.0 - T400 (Equivalent to F400)		F1.5 - T400 (Equivalent to F400)	
Operation	Zoom	Motor Drive		
	Focus	Motor Drive		
	Iris	Auto(DC Type)*1		
Angle Of View (H×V)	1/2"	WIDE TELE 43° 36' × 33° 24' 3° 49' × 2° 52'	-	
	1/3"	WIDE TELE 33° 24' × 25° 22' 2° 52' × 2° 09'	43° 36' × 33° 24' 3° 49' × 2° 52'	
Focusing Range (From Front Of The Lens) (m)	∞ - 1.3		-	
ObjectDimensions at M.O.D.(H×V) (mm)	1/2"	WIDE TELE 1003 × 753 84 × 63	-	
	1/3"	WIDE TELE 752 × 565 63 × 47	1003 × 753 84 × 63	
Back Focal Distance (in air) (mm)	16.22		11.69	
Exit Pupil Position (From Image Plane) (mm)	-51		-6028	
Filter Thread (mm)	M55 × 0.75			
Mass (g)	330	350	330	350
Coil Resistance	-		Drive Coil	180 Ω
	-		Damping Coil	720 Ω
Current Consumption	-		22mA (Max.) at DC 4V	
Wiring Diagram	P21			

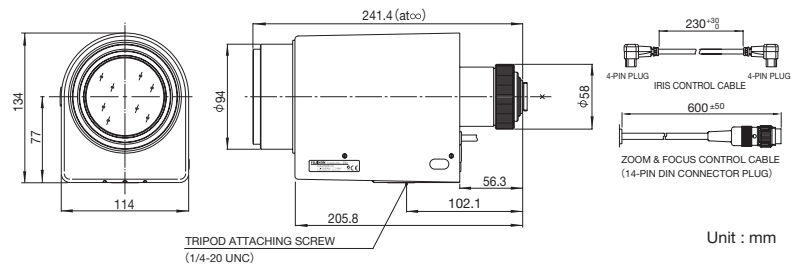
* 1 : When power is turned off, iris will automatically close. * 2 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

C22x23 Series

Applicable camera (model) **1** **2/3** **1/2** **1/3** **1/4**

22x

Applicable to **1**



Unit : mm

Day Night

- ZOOM
- MOTOR DRIVE
- TELE
- VIDEO
- IRIS-REMOTE
- C-mt
- METAL
- PRESET
- ND
- PC
- SERVO
- RoHS

Applicable to 1		C22x23R2D-V41		Applicable to 1		C22x23R2D-ZP1		
Focal Length (mm)		23 - 506(22x)						
Iris Range		F3.1 - T3000(Equivalent to F3000)						
Operation	Zoom	Motor Drive				Servo Control		
	Focus	Motor Drive				Servo Control		
	Iris	Auto(Video Type)or Remote*1				Auto(Video Type), Remote*1 or Servo Control		
Angle Of View (H×V)	1"	WIDE	31° 06' × 23° 35'					
		TELE	1° 27' × 1° 05'					
Focusing Range (From Front Of The Lens) (m)		∞ - 3						
ObjectDimensions at M.O.D.(H×V) (mm)	1"	WIDE	1611 × 1208					
		TELE	73 × 55					
Back Focal Distance (in air) (mm)		39.54						
Exit Pupil Position (From Image Plane) (mm)		-64						
Filter Thread (mm)		M82 × 0.75						
Mass (kg)		2.4						
Wiring Diagram		P22						

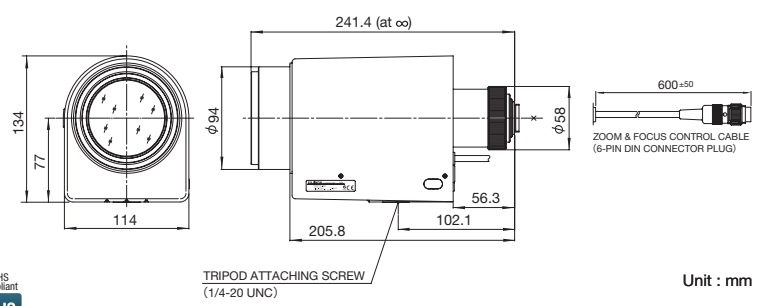
* 1 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

C22x17 Series

Applicable camera (model) **1** **2/3** **1/2** **1/3** **1/4**

22x

Applicable to **1**



Unit : mm

Day Night

- ZOOM
- MOTOR DRIVE
- WIDE
- TELE
- VIDEO
- C-mt
- METAL
- PRESET
- ND
- RoHS

Applicable to 1		C22x17B-Y41		Applicable to 1		C22x17R2D-ZP1		
Focal Length (mm)		17 - 374(22x)						
Iris Range		F2.3 - T3000 (Equivalent to F3000)						
Operation	Zoom	Motor Drive				Servo Control		
	Focus	Motor Drive				Servo Control		
	Iris	Auto(Video Type)or Remote*1				Auto(Video Type) or Servo Control		
Angle Of View (H×V)	1"	WIDE	41° 16' × 31° 32'					
		TELE	1° 58' × 1° 28'					
Focusing Range (From Front Of The Lens) (m)		∞ - 3						
ObjectDimensions at M.O.D.(H×V) (mm)	1"	WIDE	2178 × 1633					
		TELE	99 × 74					
Back Focal Distance (in air) (mm)		67.38						
Exit Pupil Position (From Image Plane) (mm)		-127						
Filter Thread (mm)		M82 × 0.75						
Mass (kg)		2.3						
Wiring Diagram		P22						

* 1 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

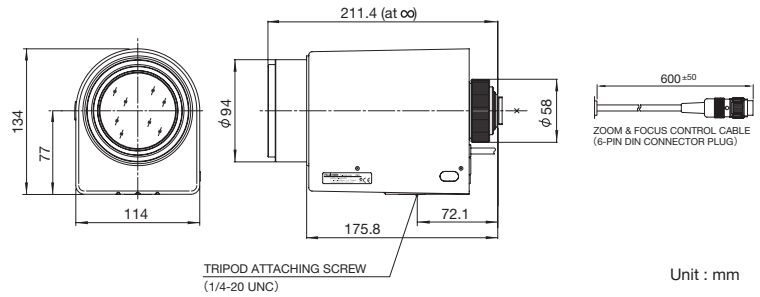
Vari-Focal
Fixed Focal
Fish-eye
Zoom
Zoom Lens Wiring
Technical Information

H22x11.5 Series

Applicable camera (model) 1 2/3 1/2 1/3 1/4

22 x

Applicable to 2/3



Unit : mm

Day Night

H22x11.5R2D-ZP1 Series
 Zoom Motor Drive Wide Angle Telephoto Long Focal Remote Iris Video Auto Iris Iris-Remote C Mount Metal Mount Potentiometer ND Filter PC Control Full Servo Large Aperture Ratio RoHS Compliant
ZOOM MOTOR DRIVE WIDE TELE REMOTE VIDEO IRIS-REMOTE C-mt METAL PRESET ND PC SERVO F1.6 RoHS
 -Y41 -ZP1 -ZP1

Applicable to 2/3

Applicable to 2/3

	H22x11.5B-Y41	H22x11.5R2D-ZP1
Focal Length (mm)	11.5 - 253(22x)	
Iris Range	F1.6 - T2000(Equivalent to F2000)	
Operation	Zoom	Motor Drive
	Focus	Motor Drive
	Iris	Auto(Video Type), Remote*1
Angle Of View (H×V)	2/3" WIDE TELE	41° 52' × 32° 01' 2° 00' × 1° 30'
Focusing Range (From Front Of The Lens) (m)	∞ - 3	
Object Dimensions at M.O.D.(H×V) (mm)	2/3" WIDE TELE	2213 × 1660 101 × 75
Back Focal Distance (in air) (mm)	36.16	
Exit Pupil Position (From Image Plane) (mm)	-103	
Filter Thread (mm)	M82 × 0.75	
Mass (kg)	2.3	2.5
Wiring Diagram	P22	

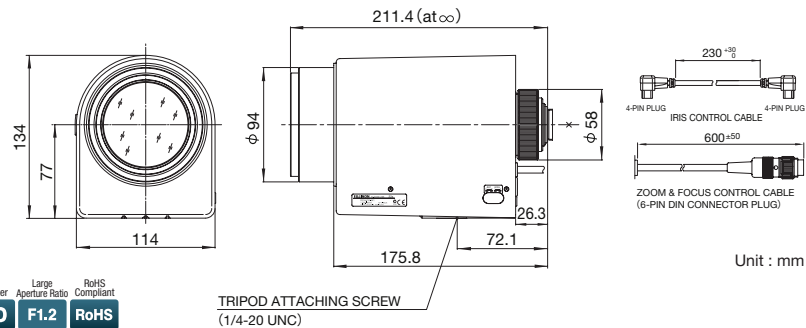
* 1 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

D22x9.1 Series

Applicable camera (model) 1 2/3 1/2 1/3 1/4

22 x

Applicable to 1/2



Unit : mm

Day Night

D22x9.1R2D-V41

Zoom Motor Drive Wide Angle Telephoto Long Focal Remote Iris Video Auto Iris Iris-Remote C Mount Metal Mount Potentiometer ND Filter Large Aperture Ratio RoHS Compliant
ZOOM MOTOR DRIVE WIDE TELE VIDEO C-mt METAL PRESET ND F1.2 RoHS
 -Y41

Applicable to 1/2

Applicable to 1/2

	D22x9.1B-Y41	D22x9.1R2D-V41
Focal Length (mm)	9.1 - 200(22x)	
Iris Range	F1.2 - T1500 (Equivalent to F1500)	
Operation	Zoom	Motor Drive
	Focus	Motor Drive
	Iris	Auto(Video Type)
Angle Of View (H×V)	1/2" WIDE TELE	38° 45' × 29° 33' 1° 50' × 1° 23'
Focusing Range (From Front Of The Lens) (m)	∞ - 3	
Object Dimensions at M.O.D.(H×V) (mm)	1/2" WIDE TELE	2034 × 1526 93 × 69
Back Focal Distance (in air) (mm)	23.93	24.05
Exit Pupil Position (From Image Plane) (mm)	-676	-672
Filter Thread (mm)	M82 × 0.75	
Mass (kg)	2.3	2.5
Wiring Diagram	P22	

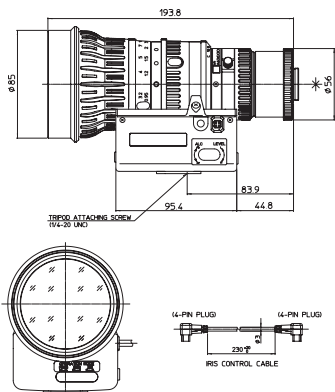
* 1 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

FULL HD

XT17Sx4.5DA-R11

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

Applicable to **1/3**



Unit : mm

FULL HD 2MP Zoom Motor Drive Wide Angle Long Focal Telephoto Auto Iris Video IRIS-REMOTE For 3CCD Camera C-Mount Metal Mount Full Servo RoHS Compliant

Focal Length (mm)	4.5 - 77	
Iris Range	F1.6 - F16	
Operation	Zoom	Motor Drive
	Focus	Motor Drive
	Iris	Auto (Video Type) or Remote*1
Angle Of View (H x V)	1/3" WIDE	56° 09' x 43° 36'
	4:3 TELE	3° 34' x 2° 41'
	1/4" WIDE	43° 36' x 33° 24'
	4:3 TELE	2° 41' x 2° 01'
	1/3" WIDE	60° 19' x 36° 11'
	16:9 TELE	3° 53' x 2° 11'
Focusing Range (From Front Of The Lens) (m)	∞ - 0.95	
	Object Dimensions at M.O.D. (H x V) (mm)	1/3" WIDE 920 x 690 TELE 55 x 41
Back Focal Distance (in air) (mm)	19.95	
Exit Pupil Position (From Image Plane) (mm)	-69	
Filter Thread (mm)	M82 x 0.75	
Mass (g)	1400	
Wiring Diagram	P23	

*1 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

HC16x100R2CE-F11

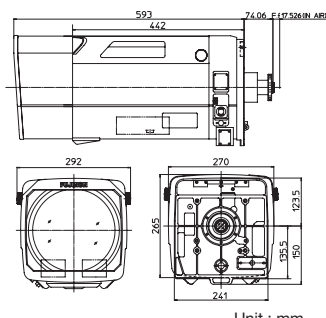
Applicable camera (model) **1 2/3 1/2 1/3 1/4**

16 x

Applicable to **1**



*Manufacture on demand



Unit : mm

Day Night FULL HD 3MP Zoom Motor Drive Long Focal Telephoto Auto Iris Video C-Mount Metal Mount Aspherical Lens PC Control Full Servo Extender RoHS Compliant

Focal Length (mm)	1 x	100 - 1600 (16x)	
Iris Range	2 x	200 - 3200 (16x)	
	1 x	F3.4 - F16	
Operation	Zoom	Servo Control	
	Focus	Servo Control	
	Iris	Auto (Video Type) or Remote	
Angle Of View (H x V)	1"	1 x WIDE	7° 19' x 5° 30'
		TELE	0° 28' x 0° 21'
	2 x	1 x WIDE	3° 40' x 2° 45'
		TELE	0° 14' x 0° 10'
Focusing Range (From Front Of The Lens) (m)	∞ ~ 5		
Object Dimensions at M.O.D. (H x V) (mm)	1 x	WIDE 603 x 452 TELE 38 x 28	
	2 x	WIDE 302 x 226 TELE 19 x 14	
		Back Focal Distance (in air) (mm)	29.38
Back Focal Adjustment	○		
Day & Night	○		
Exit Pupil Position (From Image Plane) (mm)	1 x	-125	
	2 x	-111	
Extender	-		
Mass (kg)	24		

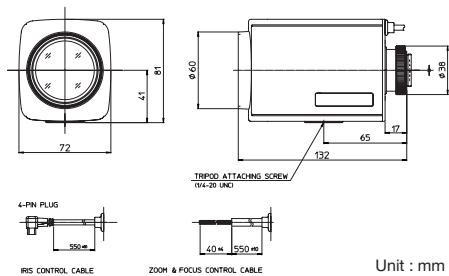
*1 : This model uses the CLH-12 lens support and two ESM-D51B servo modules (for Zoom and Focus.)

HD

D17x7.5B-YN1

Applicable camera (model) **1 2/3 1/2 1/3 1/4**

Applicable to **1/2**



Unit : mm

ZOOM MOTOR DRIVE WIDE TELE DC C-MT PRESET METAL ND RoHS Zoom Motor Drive Wide Angle Long Focal DC Auto Iris C-Mount Potentiometer Metal Mount ND Filter RoHS Compliant

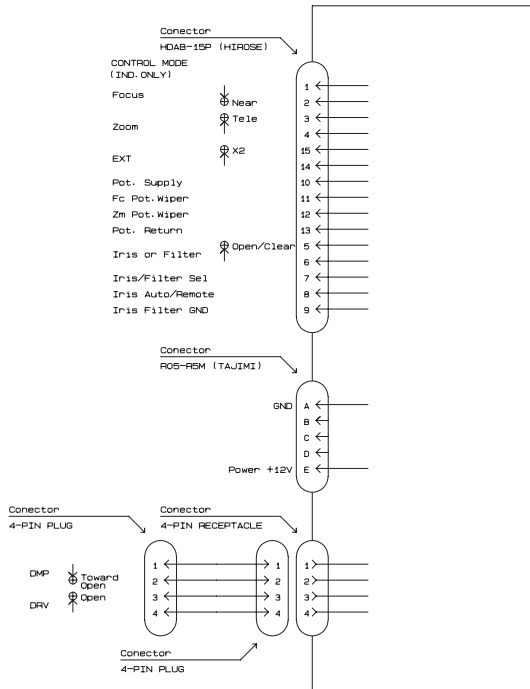
Focal Length (mm)	7.5 - 128	
Iris Range	F1.6 - F16	
Operation	Zoom	Motor Drive
	Focus	Motor Drive
	Iris	Auto (DC Type)*1
Angle Of View (H x V)	1/2" WIDE	45° 36' x 34° 42'
	4:3 TELE	2° 54' x 2° 12'
	1/3" WIDE	34° 54' x 26° 24'
	4:3 TELE	2° 12' x 1° 42'
	1/4" WIDE	26° 24' x 19° 54'
	4:3 TELE	1° 42' x 1° 18'
Focusing Range (From Front Of The Lens) (m)	∞ - 1.5	
	Object Dimensions at M.O.D. (H x V) (mm)	1/2" WIDE 1193 x 893 TELE 73 x 55
Back Focal Distance (in air) (mm)	15.1	
Exit Pupil Position (From Image Plane) (mm)	-80.1	
Filter Thread (mm)	M58 x 0.75	
Mass (g)	580	
Wiring Diagram	P23	

*1 : For details on the Iris-Remote connection, see the relevant Technical Reference (Page 23).

Zoom Lens Wiring

D60x16.7SR4DE-V21

P13

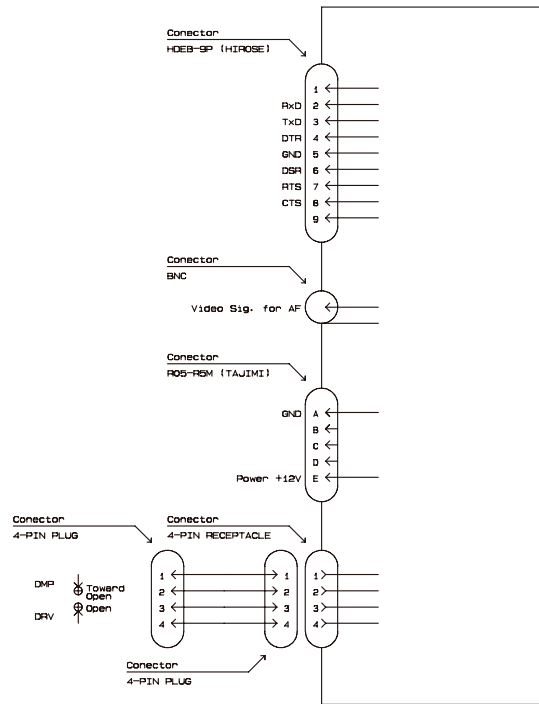


D60x16.7SR4DE-ZP1A

P13

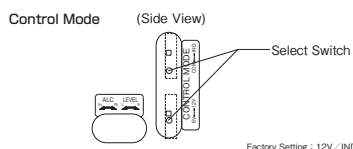
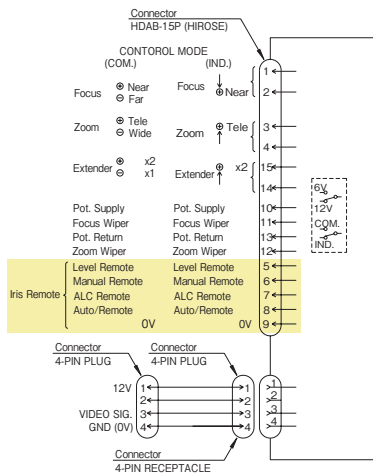
D60x16.7SR4FE-ZP1C

P13



D60x12.5BE-V41

P14

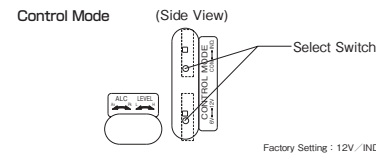
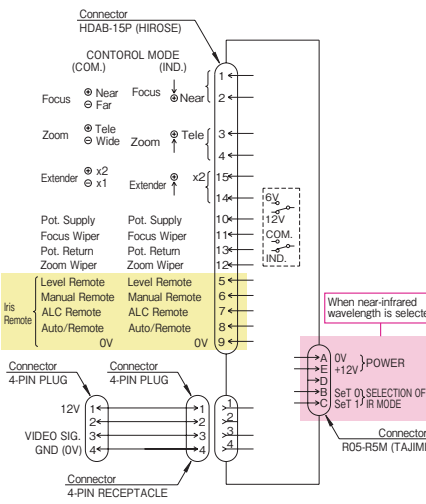


Factory Setting : 12V / IND.

Controller Output	Select Switch Position
6V	6V / IND.
±6V	6V / COM.
12V	12V / IND.
±12V	12V / COM.

D60x12.5R3DE-V41

P14

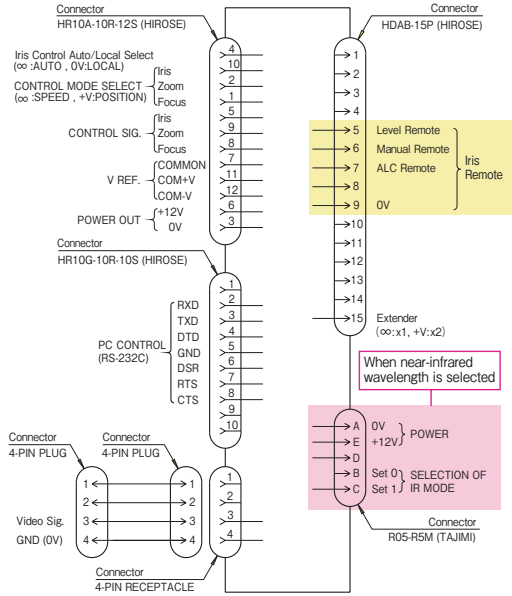


Factory Setting : 12V / IND.

Controller Output	Select Switch Position
6V	6V / IND.
±6V	6V / COM.
12V	12V / IND.
±12V	12V / COM.

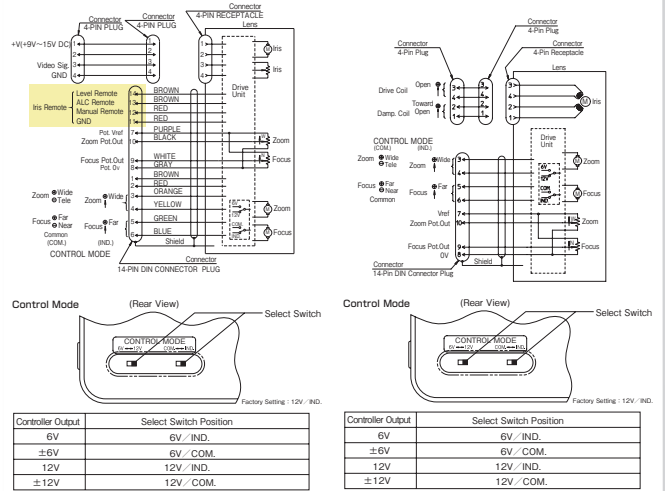
D60x12.5R3DE-ZP1

P14



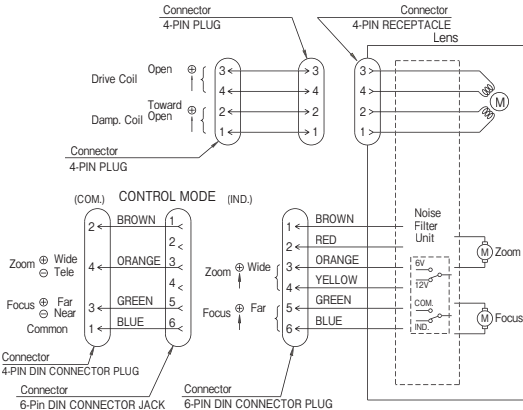
D32x10HR4D-VX1
D32x15.6HR4D-VX1

P15
P15



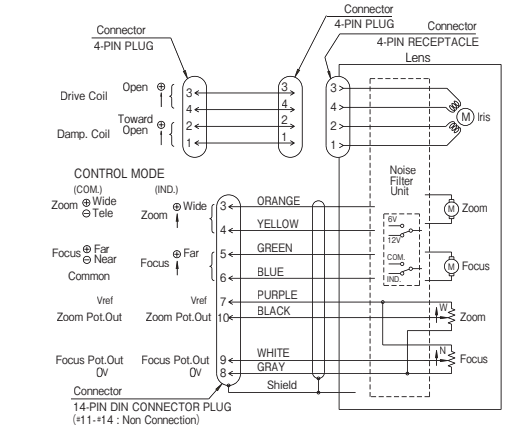
D8x7.8HA-SE2
D12x8A-SE2
Y12x6A-SE2

P16
P16
P16



D8x7.8HA-YE2
D12x8A-YE2
Y12x6A-YE2

P16
P16
P16



Vari-Focal

Fixed Focal

Fish-eye

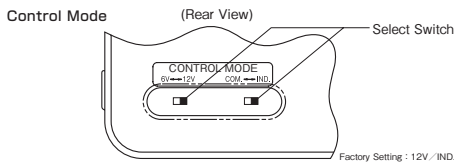
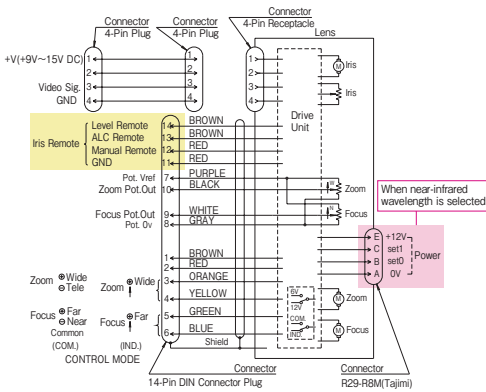
Zoom

Zoom Lens Wiring

Technical Information

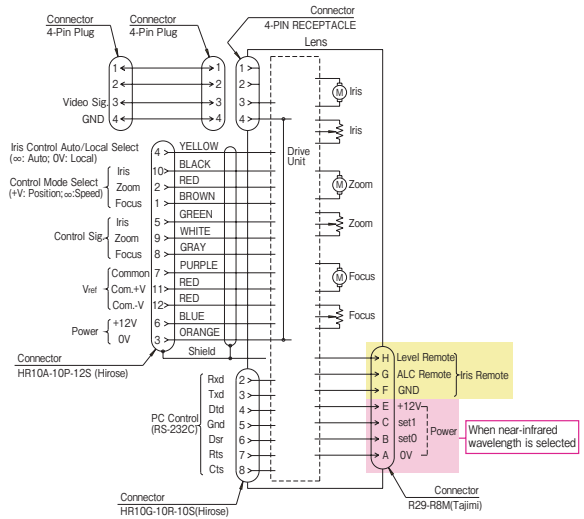
Zoom Lens Wiring

C22x23R2D-V41 _____ **P17**
D22x9.1R2D-V41 _____ **P18**

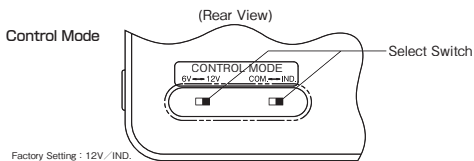
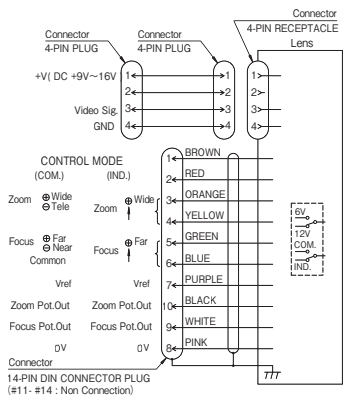


Controller Output	Select Switch Position
6V	6V / IND.
±6V	6V / COM.
12V	12V / IND.
±12V	12V / COM.

C22x23R2D-ZP1 _____ **P17**
C22x17R2D-ZP1 _____ **P17**
H22x11.5R2D-ZP1 _____ **P18**

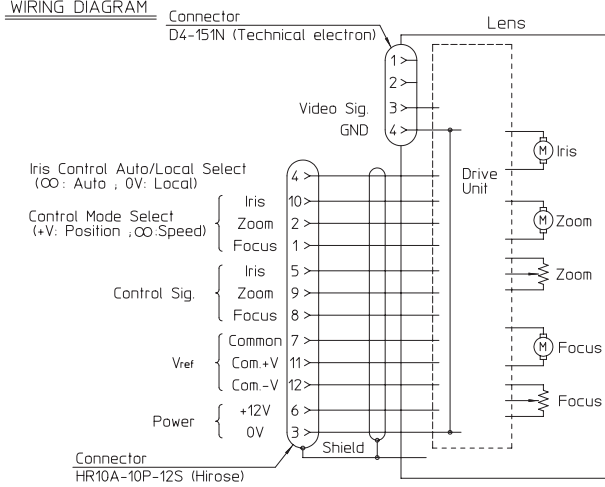


C22x17B-Y41 _____ **P17**
H22x11.5B-Y41 _____ **P18**
D22x9.1B-Y41 _____ **P18**

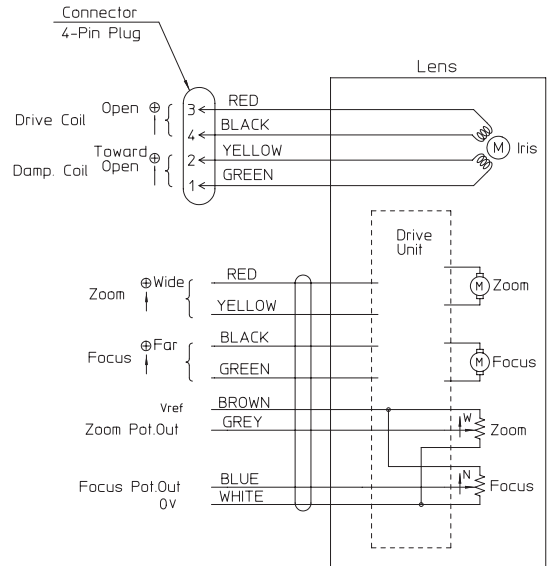


Controller Output	Select Switch Position
6V	6V / IND.
±6V	6V / COM.
12V	12V / IND.
±12V	12V / COM.

WIRING DIAGRAM

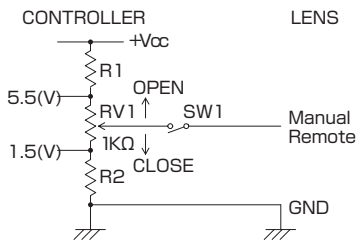


WIRING DIAGRAM

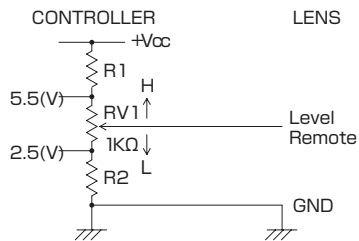


Operation System - Iris Remote

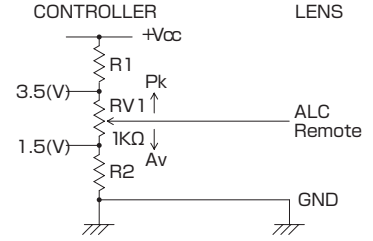
Manual Remote



Level Remote



ALC Remote

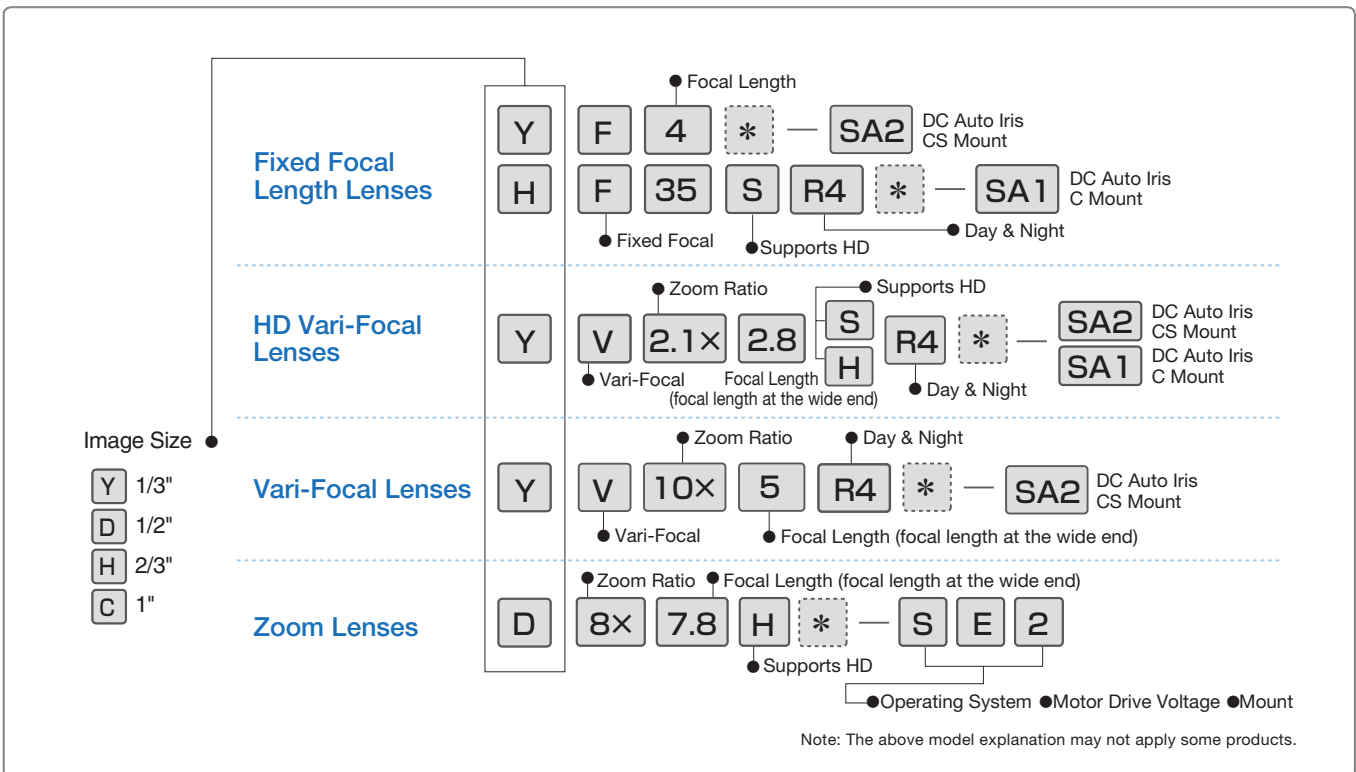


Technical Information

Feature Indications

Lens Type	Fixed Focal FIXED High performance single focal lens for the best image quality	Vari-Focal VARI Variable magnification lens with manually controllable angle. It functions as if you have multiple fixed focal lenses	Zoom ZOOM Zoom lens with the high performance cam adopted, which offers high quality smooth movements			
Feature/Function	4K Day & Night Specially-designed lens supporting both visible light and near-infrared light to prevent out-of-focus of day & night cameras AF Easy and sharp auto-focusing even in zooming Extender 2x Function to double the focal length by one-touch control	6 Mpx HD High performance to fully exploit 6 megapixel HD cameras' high resolution VISIBLE LIGHT CUT Blocks visible light, allowing the capturing of image using only near-infrared light OS-TECH High-intensity optical vibration isolation system, optimizing the image in any circumstances PC Control Enables the advanced control of zoom lens using a PC	5 Mpx HD High performance to fully exploit 5 megapixel HD cameras' high resolution Fish-Eye 185° Super wide angle lens realizing angle of 185 degrees 3CCD Lens exclusively for 3CCD cameras for the optimum color reproduction and high resolution of 3CCD cameras Long Cable 230 Cable length options provided to let you select the best-suited length for your camera	3 Mpx HD High performance to fully exploit 3 megapixel HD cameras' high resolution MOTOR DRIVE Enables the lens control from remote locations Built-in Cast-in lens resulted from abolition of the standard mounting method, enabling the downsizing of your system Full Servo DC servo circuit enabling the smooth movement and accurate positioning	2 Mpx HD High performance to fully exploit 2 megapixel HD cameras' high resolution TELE Telephoto lens with the ability to zoom PRESSET Enables to preset the zoom, focus and iris positions of the zoom lens Aspherical Lens AT Adopts the aspheric lens technologies developed in the most advanced lenses for broadcasting	1.3 Mpx HD High performance to fully exploit 1.3 megapixel HD cameras' high resolution WIDE Wide angle lens which ensures wide field of view ND Filter ND With the built-in ND filter, enables to optimize the brightness of the bright object in direct sunlight RoHS Compliant RoHS
Iris Type	Manual Iris Manually-operated iris	Remote Iris Motor-driven iris	DC Auto Iris Auto iris supporting DC-controlled cameras	Video Auto Iris Auto iris supporting video-controlled cameras	Iris-Remote Allows switching between auto iris and remote iris	
Mounting Type	C Mount Screw-in mounting commonly used in FA lenses	CS Mount Screw-in mounting commonly used in security lenses	Metal Mount Metal mounting with high accuracy and durability			
Large Aperture Ratio Bright lenses with large aperture ratio, fully exploiting camera sensitivity	F0.95	F1.2	F1.3	F1.4	F1.5	F1.6

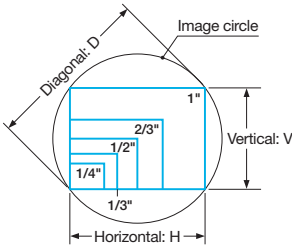
Model Explanation



Terminology

Image Sizes

- There are several types of imaging sensors for CCTV cameras, with different image sizes. The aspect ratio of a CCTV camera is normally 4:3 (H:V).



Product symbol	Image sensor	Image size (mm)		
		Horizontal: H	Vertical: V	Diagonal: D
C	1"	12.8	9.6	16.0
H	2/3"	8.8	6.6	11.0
D, S	1/2"	6.4	4.8	8.0
Y, T	1/3"	4.8	3.6	6.0
Q	1/4"	3.6	2.7	4.5
35 mm camera lens (Reference)	35 mm film	36.0	24.0	43.3

C/CS-Mount

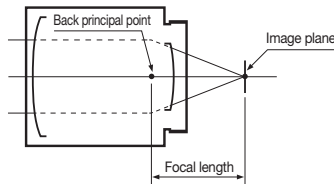
- CCTV cameras have either a C-mount or CS-mount.

	C-mount	CS-mount
Standard	Flange back focal length (mm)	17.526*1
	Diameter of screw thread (mm)	1-32UNF
Interchangeability	C-mount camera	○
	CS-mount lens	○

*1 Length in air
*2 Will need a C-mount adapter ring (5 mm) when fitting a C-mount lens to a CS-mount camera.

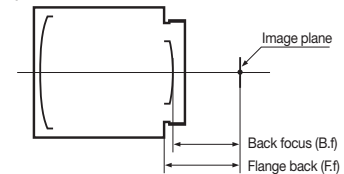
Focal Length

- The focal length will be the distance from the back principal point to the image plane. Lower the focal length wider the image.



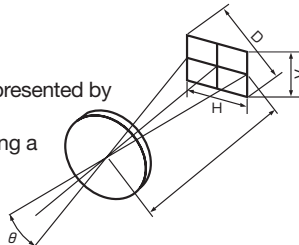
Flange Back and Back Focal Distance

- Flange back will be the distance between the mechanical mount surface and image plane. Back focal distance will be the distance between the rear end of the lens part and the image plane.



Angle of View

- The angle of view is the object size that can be captured at a specified image size, which is represented by angular measure. Normally the angle of view is measured assuming a lens is focused at infinity. When using a lens of the same focal length with a different image size, the angle of view will differ.



$$\theta = 2 \tan^{-1} \frac{Y'}{2f}$$

θ : Angle of view
 Y' : Image size
 f : Focal length

Example

The angle of view when the camera size is 1/2" and the focal length is 12.5 mm:

$$Y' : 6.4$$

$$f : 12.5$$

$$\theta = 2 \tan^{-1} \frac{6.4}{2 \times 12.5} = 28.72^\circ$$

Brightness of a Lens (F and T No.)

- The F No. is an indication of the brightness of lens. The smaller the value, the brighter the image produced by the lens. The F No. is inversely proportional to the effective diameter of the lens and directly proportional to the focal length. The scale on the iris ring of lens uses a ratio of 2, because the value of light incident on a lens is proportional to the cross section of luminous flux (square of diameter). In other words, the brightness decreases by half each time the F No. is increased by one F stop.
- The F No. is a value determined on the assumption that the transmittance of the lens is 100%. Virtually all lenses however, have different spectral transmittance, and thus, the same F No. can have different levels of brightness. To eliminate this inconvenience, a system has been developed to consider both F No. and spectral transmittance, the T No. The T No. and the F No. are related to each other as shown in right:

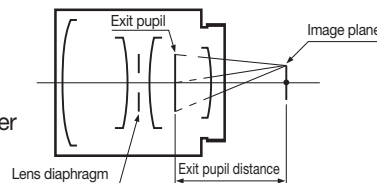
$$F \text{ No.} = \frac{f}{d}$$

f : Focal length of a lens
 d : Effective diameter of a lens

$$T \text{ No.} = \frac{F \text{ No.}}{\sqrt{\text{Transmittance (\%)}}} \times 10$$

Exit Pupil Position

- The exit pupil is the image (virtual image) reflected by the lens located at the back of the lens diaphragm. The exit pupil position is generally represented with the distance between the image plane and the exit pupil. "-" (minus)" indicates closer to the object, and "+" (plus)" toward the camera.

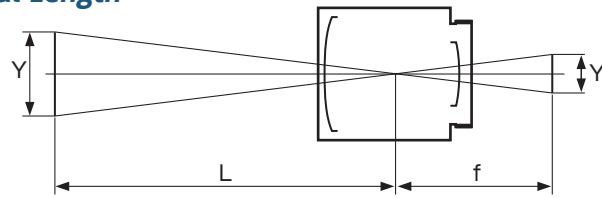


M.O.D.

- The M.O.D. (minimum object distance) is the closest distance to the object at which an image can be taken. This is the distance from the vertex of the front lens.

Technical Reference

Field of View and Focal Length



Y : Object size
 Y' : Image size
 L : Object distance
 f : Focal length

(1) How to calculate the field of view

If the distance to the object is finite, you can use the following formula to calculate the field of view.

$$Y = Y' \cdot \frac{L}{f}$$

Example

A 1/3" CCD camera with an 8 mm lens is used, and the distance to the object is 3 m. The maximum horizontal width as viewed on the monitor can be calculated as follows.

Y' : 4.8
 L : 3000
 f : 8

$$Y = 4.8 \times \frac{3000}{8} = 1800 \rightarrow \text{Horizontal width 1.8 m}$$

(2) How to calculate focal length

If the distance to the object is finite, you can use the following formula to calculate the focal length.

$$f = Y' \cdot \frac{L}{Y}$$

Example

A 1/3" CCD camera is used, and the distance to the object is 3 m and the horizontal width of the object is 2 m. The focal length to capture the complete object size can be calculated as follows.

Y' : 4.8
 L : 3000
 Y : 2000

$$f = 4.8 \times \frac{3000}{2000} = 7.2 \rightarrow \text{Focal length approx. 7 mm}$$

Depth of Field

- When focusing on a certain area in front of and behind the deep object appears in focus. This area is called the depth of field. This is because the focus appears sharp if the focus misalignment is under a certain volume. This certain volume is called the permissible circle of confusion.

The depth of field has following properties.

- The larger the F No. is, the wider the depth of field becomes.
- The shorter the focal length is, the wider the depth of field becomes.
- The longer the distance to the object is, the wider the depth of field becomes.
- The backward depth of field is wider than the forward depth of field.

Image sensor	Permissible circle of confusion
1"	0.03 mm
2/3"	0.021 mm
1/2"	0.015 mm
1/3"	0.011 mm
1/4"	0.008 mm

The depth of field can be calculated by the following formula.

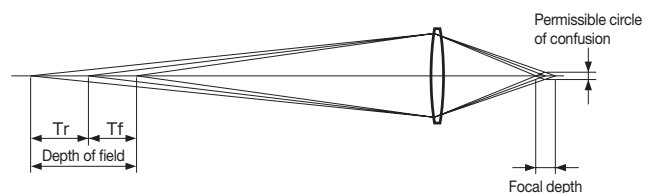
Backward depth of field $T_r = \frac{\delta \cdot F \cdot L^2}{f^2 - \delta \cdot F \cdot L}$

Forward depth of field $T_f = \frac{\delta \cdot F \cdot L^2}{f^2 + \delta \cdot F \cdot L}$

Depth of field = $T_r + T_f$

Focal depth = $2\delta \cdot F$

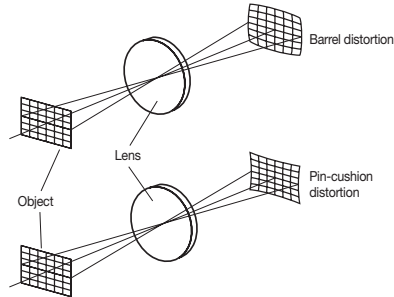
f: Focal distance
 F: F No.
 δ : Permissible circle diameter of confusion
 L: Object distance



Technical Reference

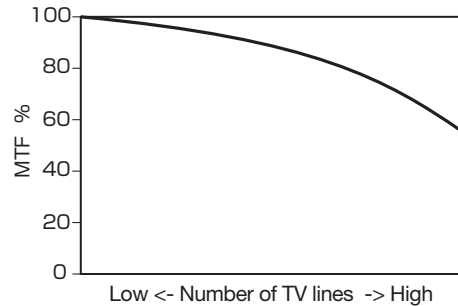
Distortion

● Distortion is an aberration where the geometric figure of the object is not reproduced faithfully at the image plane. It is normally represented by the level shift of an image point from its ideal position by a percentage of image height or width.



MTF (Modulation Transfer Function)

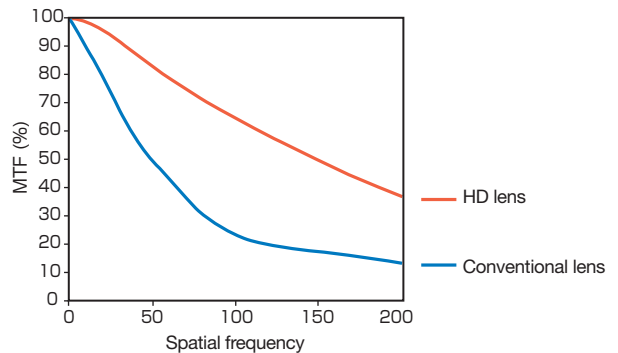
● MTF (Modulation Transfer Function) represents the declining contrast rate when shooting a chart consisted of black and white lines.



HD Lens

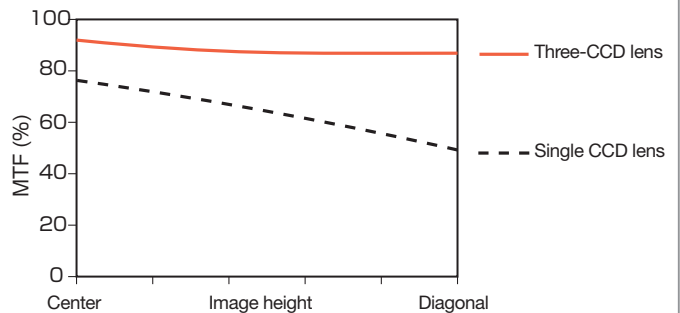
● Based on design techniques accumulated through our experience in production of broadcast lenses, high resolution, small and light-weight HD lenses with minimal aberrations have been realized.

The chart at the right shows the difference between an HD lens and a conventional CCTV lens. As the number of TV lines increases, the disparity in MTF becomes greater.



Three-CCD lenses

● Three-CCD cameras have thicker glass between the lens and the CCDs than that of single CCD cameras because they use three CCDs to correspond with the red, blue and green colors separated by a prism. Fujifilm's three-CCD lenses are designed to optimally match three-CCD cameras. The chart shown at the right explains the difference in MTF when a three-CCD lens or a single CCD lens is mounted on a three-CCD camera.

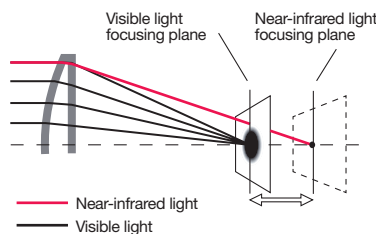


Day & Night Lens

● The day & night lens uses an advanced optical design, special optical glass, and other state-of-the-art technologies to focus light (visible to near-infrared 400- 1000 nm) on the same plane to prevent the focus to become blurry enabling sharp images.

■ A standard lens (for visible light)

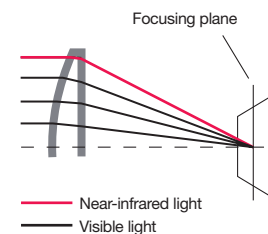
is mounted on a day & night camera, and used under near-infrared light.



Result: Blurry image

■ A day & night lens

is mounted on a day & night camera, and used under near-infrared light.



Result: Clear image without getting blurry

FUJINON

CCTV Lenses Catalog Ver. 1.5

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For your safety

Be certain to read the instructions for use before using any equipment.

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