

PENTAX

CCTV Lens



Monofocal Manual Iris Lens

Machine Vision Mega-Pixel Lens

Line-Scan Lens

UV Lens

Monofocal Auto-Iris Lens

Pinhole Lens

Vari-Focal Lens

Manual Zoom Lens

Motorized Zoom Lens

Board Camera Lens

CCTV Lens Accessory



PENTAX is a pioneer of the CCTV Lens industry
high quality and performance.
The PENTAX CCTV Lens product range fulfills the
demands from everyday life and industry.

PENTAX Optical technology satisfies your demands.

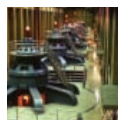
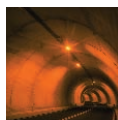
To minimize the threat by surveillance through day and night, accidents and disaster.....

To efficiently guide automation of factories from all types of industry.

The demands and application fields for CCTV Lenses are more diverse year after year.

As a leading manufacturer of CCTV Lenses, PENTAX provides a diversified product range with high quality and performance using our innovative optical technology.

Tell us your requirements and PENTAX provides the ideal solution for your application.





providing
diverse

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Features of PENTAX CCTV Lens

◆ Compact, high quality and performance

Advanced optical technology of PENTAX has been condensed in a compact and lightweight body. With the careful inspection of prototypes and strict quality control in the production process, PENTAX provides high reliability that fulfills customers' demands by the thorough pursuit of high quality and performance.

◆ Advanced design and development philosophy

By meeting and sharing information with CCTV camera manufacturers, and based on the market demands, PENTAX continuously develops and introduces advanced products. The development of lenses for 1/2" and 1/3" format size corresponding to the miniaturization of sensors and adoption of CS mount prior to the industry contributing to the reduced size and higher efficiency of cameras is an example of our insight and development ahead of the industry trend.

◆ Meets diversified surveillance demands

Along with a wide variety of standard lenses, the PENTAX product line up includes UV sensitive lenses, high speed zoom lenses for security systems, machine vision lenses designed for close focus, lenses for board cameras and more. Whether it's in a bank, traffic, office, factory, town, or city PENTAX CCTV Lenses can be an effective part.

MODEL	Focal length (mm)	Iris range	Mount	Horizontal Angle of View (°)				Filter size	Dimensions (D×L) (W×H×L) mm	Weight (g)	Remarks	Page
				1/4 format	1/3 format	1/2 format	2/3 format					

● Monofocal Manual Iris Lens

1/2 format												
H416 (C60402)	4.2	1.6-C	C	47.87	64.27	86.77	—	—	42×43.5	120	Lock Screw	6
H612A (C60607)	6.0	1.2-C	C	32.97	43.55	56.93	—	40.5 P=0.5	42×46	125	Lock Screw	6
H1212B (C61215)	12.0	1.2-22	C	16.93	22.60	30.18	—	27.0 P=0.5	30×35.5	67	Lock Screw	6
2/3,1 format												
C416DX (C30405)	4.8	1.8-C	C	41.68	55.11	72.37	96.36	—	40.5×35.5	105	Lock Screw	6
C815B (C30811)	8.5	1.5-C	C	24.02	31.87	42.09	56.49	40.5 P=0.5	42×40	120	Lock Screw	6
B1214D-2 (C21211)	12.5	1.4-C	C	16.21	21.53	28.51	38.65	40.5 P=0.5	42×50	135	Lock Screw	6
B1218A (C21228)	12.5	1.8-C	C	16.53	21.97	29.12	39.56	40.5 P=0.5	42×40	95	Lock Screw	7
C1614A (C31630)	16.0	1.4-22	C	12.70	16.91	22.48	30.72	27.0 P=0.5	30×33	58	Lock Screw	7
B2514D (C22525)	25.0	1.4-22	C	8.23	10.97	14.62	20.10	27.0 P=0.5	30×37.3	76	Lock Screw	7
B2518 (C22516)	25.0	1.8-C	C	8.23	10.95	14.55	19.87	40.5 P=0.5	42×40	87	Lock Screw	7
B5014A (C25011)	50.0	1.4-C	C	4.13	5.50	7.32	10.04	46.0 P=0.75	48×48	180	Lock Screw	7
B7514C (C27509)	75.0	1.4-C	C	2.75	3.67	4.90	6.75	58.0 P=0.75	62×79	450	Lock Screw	7

● Machine Vision Mega-Pixel Lens

1/2 format												
H1214-M (C61232)	12.0	1.4-16	C	16.49	21.88	28.91	—	27.0 P=0.5	29.5×28.5	55	Lock Screw	8
2/3 format												
C1614-M (C31634)	16.0	1.4-16	C	12.86	17.11	22.72	30.97	27.0 P=0.5	29.5×33.2	63	Lock Screw	8
C2514-M (C32500)	25.0	1.4-16	C	8.24	10.97	14.60	20.00	27.0 P=0.5	29.5×32	55	Lock Screw	8
C3516-M (C33500)	35.0	1.6-16	C	6.07	8.09	10.76	14.76	27.0 P=0.5	29.5×35.4	64	Lock Screw	8
C5028-M (C35001)	50.0	2.8-22	C	4.12	5.50	7.32	10.05	27.0 P=0.5	29.5×34	55	Lock Screw	8
C7528-M (C37500)	75.0	2.8-32	C	2.83	3.77	5.03	6.90	30.5 P=0.5	34×59.6	125	Lock Screw	8

● Line-Scan Lens

YF3528 (C52915F)	35.0	2.8-22	F	64.4 (45mm Image Format)				62 P=0.75	72×56.8	440	Not for photographic cameras	9
YK3528 (C52915K)	35.0	2.8-22	K	64.4 (45mm Image Format)				62 P=0.75	72×57.8	440	Not for photographic cameras	(9)
YF5028 (C52893F)	50.0	2.8-22	F	47.6 (45mm Image Format)				62 P=0.75	72×56.8	440	Not for photographic cameras	9
YK5028 (C52893K)	50.0	2.8-22	K	47.6 (45mm Image Format)				62 P=0.75	72×57.8	440	Not for photographic cameras	(9)

● UV Lens (Ultraviolet Ray)

1/2 format												
H2520-UV (C62500)	25.0	2.0-16	C	8.24	10.98	14.62	—	27 P=0.5	29.5×46	78	200nm-1000nm Ray	9
1 format												
B2528-UV (C91699)	25.0	2.8-16	C	8.30	11.10	14.80	20.40	25.5 P=0.5	30×25.4	33	230nm-800nm Ray	9
B7838-UV (C91698)	78.0	3.8-16	C	2.70	3.50	4.70	6.50	49 P=0.75	62.5×109.3	446		9

● Monofocal Auto-Iris Lens

1/3 format												
TS212E (C70210)	2.8	1.2-200	CS	71.54	94.28	—	—	—	36.8×43.5×36.3	54	DC Iris	10
TS412E (C70406)	4.0	1.2-200	CS	49.18	63.89	—	—	—	36.8×43.5×33.8	49	DC Iris	10
TS812E (C70804)	8.0	1.2-200	CS	25.05	33.33	—	—	—	36.8×43.5×33.8	44	DC Iris	10
1/2 format												
HS316E (C60309)	3.7	1.6-300	CS	53.50	70.96	93.58	—	34 P=0.5	42.8×47.1×36.5	57	DC Iris	10
HS614E (C60630)	6.0	1.4-300	CS	33.83	44.52	57.79	—	34 P=0.5	42.8×47.1×36.5	60	DC Iris	10
HS1214E (C61227)	12.0	1.4-300	CS	16.52	22.03	29.38	—	34 P=0.5	42.8×47.1×36.5	46	DC Iris	10
H416E (C60405)	4.2	1.6-360	C	47.87	64.27	86.77	—	—	46.5×50.5×45	135	Video Iris	11
H416ER (C60404)	4.2	1.6-360	C	47.90	64.30	86.78	—	—	46.5×50.5×45	135	Video Iris	(11)
H612E (C60625)	6.0	1.2-360	C	32.97	43.55	56.93	—	43 P=0.75	46.5×50.5×51.1	140	Video Iris	11
H612ER (C60624)	6.0	1.2-360	C	32.96	43.54	56.91	—	43 P=0.75	46.5×50.5×51.1	140	Video Iris	(11)
H1212E (C61220)	12.0	1.2-360	C	16.94	22.60	30.19	—	43 P=0.75	46.5×50.5×51.1	140	Video Iris	11
H1212ER (C61219)	12.0	1.2-360	C	16.94	22.60	30.19	—	43 P=0.75	46.5×50.5×51.1	140	Video Iris	(11)
2/3,1 format												
C814E (C30821)	8.0	1.4-360	C	25.10	33.22	43.67	58.25	43 P=0.75	46.5×50.5×51.1	140	Video Iris	11
C814ER (C30820)	8.0	1.4-360	C	25.10	33.22	43.67	58.25	43 P=0.75	46.5×50.5×51.1	140	Video Iris	(11)
B1214E (C21223)	12.5	1.4-360	C	16.22	21.55	28.54	38.69	43 P=0.75	46.5×50.5×47.5	140	Video Iris	11
B1214ER (C21221)	12.5	1.4-360	C	16.22	21.55	28.54	38.69	43 P=0.75	46.5×50.5×47.5	140	Video Iris	(11)
C1614E (C31632)	16.0	1.4-360	C	12.72	16.92	22.50	30.76	43 P=0.75	46.5×50.5×46.7	110	Video Iris	11
C1614ER (C31631)	16.0	1.4-360	C	12.70	16.92	22.50	30.76	43 P=0.75	46.5×50.5×46.7	110	Video Iris	(11)
B2514E (C22527)	25.0	1.4-360	C	8.23	10.97	14.62	20.09	43 P=0.75	46.5×50.5×51.8	140	Video Iris	12
B2514ER (C22526)	25.0	1.4-360	C	8.23	10.97	14.62	20.09	43 P=0.75	46.5×50.5×51.8	140	Video Iris	(12)
B5018E (C25018)	50.0	1.8-360	C	4.13	5.50	7.32	10.04	49 P=0.75	62×51	230	Video Iris	12
B5018ER (C25017)	50.0	1.8-360	C	4.13	5.50	7.32	10.04	49 P=0.75	62×51	230	Video Iris	(12)
B7518AE (C27515)	75.0	1.8-360	C	2.74	3.65	4.87	6.69	49 P=0.75	62×70.5	300	Video Iris	12

MODEL	Focal length (mm)	Iris range	Mount	Horizontal Angle of View (°)				Filter size	Dimensions (D×L) (W×H×L) mm	Weight (g)	Remarks	Page
				1/4 format	1/3 format	1/2 format	2/3 format					

● Pinhole Lens

1/3 format

TS420PE (C70403)	4.0	2.0-64	CS	51.24	68.47	—	—	—	36.5×42.3×65.9	79	DC Iris	12
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1/2 format

H620PE (C60626)	6.2	2.0-300	C	32.44	42.82	56.12	—	—	39×45.5×83.2	100	Video & DC Iris	12
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● Vari-Focal Lens

1/3 format

TS2V114E (C70100)	1.6-3.4	1.4-64	CS	180-64.89	180-89.55	—	—	—	38.3×44.7×56.7	140	Fish-Eye, DC Iris	13
TS2V214AED (C70220)	2.8-6.0	1.4-300	CS	72.26-35.35	96.70-47.04	—	—	—	40.4×45.7×43.2	59	Video & DC Iris, Day & Night	13
TS2V314CED (C70319)	3.5-8.0	1.4-300	CS	60.52-26.54	82.41-35.42	—	—	—	38.3×44.7×44.2	52	DC Iris	13
TS3V310 (C70316)	3.0-8.0	1.0-C	CS	68.98-26.44	93.22-35.26	—	—	—	36.2×44.4	47	Manual Iris, Day&Night	13
TS3V310ED (C70315)	3.0-8.0	1.0-360	CS	68.98-26.44	93.22-35.26	—	—	—	38.3×44.7×44.4	60	Video & DC Iris, Day & Night	13
TS4V214ED (C70223)	2.8-12	1.4-360	CS	71.82-18.05	93.29-23.50	—	—	—	43.0×51.5×63.5	83	DC Iris	14
TS10V518AED (C70508)	5.0-50	1.8-360	CS	37.80-4.14	50.00-5.52	—	—	—	44.5×50.8×61.5	140	DC Iris	14

1/2 format

HS2V616ED (C60635)	6.0-12	1.6-300	CS	34.98-17.23	47.38-23.02	65.29-30.82	—	30.5 P=0.5	40.4×45.7×43.5	57	Video & DC Iris, Day & Night	14
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● Manual Zoom Lens

1/3 format

TS6ZE (C70605)	6.3-38	1.2-512	CS	31.26-5.59	41.12-7.43	—	—	49 P=0.75	57.5×77.8	320	Video & DC Iris	15
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1/2 format

H6ZB10 (C60812)	8.0-48	1.0-22	C	24.92-4.42	32.99-5.86	43.26-7.73	—	55 P=0.75	57×95	430	Manual Iris	15
H6ZBE (C60811)	8.0-48	1.0-720	C	24.92-4.42	32.98-5.86	43.24-7.73	—	55 P=0.75	69×64×95	465	Video & DC Iris	15

2/3 format

C6Z1218 (C31204)	12.5-75	1.8-22	C	16.07-2.75	21.38-3.66	28.41-4.87	38.76-6.67	49 P=0.75	51×90	320	Manual Iris	15
C6ZE (C31219)	12.5-75	1.8-720	C	16.05-2.75	21.36-3.66	28.38-4.87	38.72-6.67	49 P=0.75	68×90	385	Video Iris	15

● Motorized Zoom Lens

1/3 format

TS6ZME (C70600)	6.3-38	1.2-360	CS	31.26-5.59	41.12-7.43	—	—	49 P=0.75	58×63.5×78	410	Video & DC Iris	16
TS10ZME (C70500)	5.8-58	1.2-360	CS	33.77-3.62	44.07-4.78	—	—	49 P=0.75	64.6×70.3×85	380	Video & DC Iris	16
TS10ZME-P (C70501)	5.8-58	1.2-360	CS	33.77-3.62	44.07-4.78	—	—	49 P=0.75	64.6×70.3×85	430	Video & DC Iris	16
TS15ZAME (C70624)	6.0-90	1.2-430	CS	32.96-2.33	43.48-3.08	—	—	62 P=0.75	78×88.5×119	760	Video & DC Iris	17
TS15ZAME-P (C70627)	6.0-90	1.2-430	CS	32.96-2.33	43.48-3.08	—	—	62 P=0.75	78×88.5×119	770	Video & DC Iris	17
TS20ZAME (C70904)	9.0-180	1.2-510	CS	22.61-1.15	30.28-1.53	—	—	95 P=1.0	116×135×223.5	2540	Video & DC Iris	17
TS20ZAME-P (C70906)	9.0-180	1.2-510	CS	22.61-1.15	30.28-1.53	—	—	95 P=1.0	116×135×223.5	2540	Video & DC Iris	17

1/2 format

HS6ZME (C60806)	8.0-48	1.4-360	CS	24.81-4.39	32.78-5.82	42.88-7.69	—	49 P=0.75	58×63.5×78	400	Video & DC Iris	18
H6ZBME (C60809)	8.0-48	1.0-720	C	24.92-4.42	32.98-5.86	43.24-7.73	—	55 P=0.75	64×74.5×97	530	Video & DC Iris	18
H6ZBME-P (C60810)	8.0-48	1.0-720	C	24.92-4.42	32.98-5.86	43.24-7.73	—	55 P=0.75	64×74.5×97	540	Video & DC Iris	18
HS10ZME (C60700)	7.5-75	1.4-360	CS	26.15-2.83	34.52-3.75	45.05-4.95	—	58 P=0.75	67×75×112	580	Video & DC Iris	19
H10ZME (C60701)	7.5-75	1.2-512	C	26.45-2.84	34.94-3.77	45.63-4.99	—	62 P=0.75	70×80.5×121.5	715	Video & DC Iris	19
H10ZME-P (C60702)	7.5-75	1.2-512	C	26.45-2.84	34.94-3.77	45.63-4.99	—	62 P=0.75	70×80.5×121.5	740	Video & DC Iris	19
H15ZAME (C60826)	8.0-120	1.6-1000	C	24.76-1.76	32.85-2.34	43.37-3.09	—	62 P=0.75	78×88.5×134	800	Video & DC Iris	20
H15ZAME-P (C60829)	8.0-120	1.6-1000	C	24.76-1.76	32.85-2.34	43.37-3.09	—	62 P=0.75	78×88.5×134	810	Video & DC Iris	20
H20ZAME (C61237)	12-240	1.6-720	C	17.17-0.88	22.95-1.17	30.78-1.56	—	95 P=1.0	116×135×223.5	2590	Video & DC Iris	20
H20ZAME-P (C61239)	12-240	1.6-720	C	17.17-0.88	22.95-1.17	30.78-1.56	—	95 P=1.0	116×135×223.5	2620	Video & DC Iris	20
H55ZME-F (C61233)	12-1320	4.0-360	C	17.17-0.31	23.18-0.21	31.65-0.28	—	105 P=1.0	155×138×355	5400	Video Iris	21
H18ZME-F (C60839)	8.0-144	1.6-720	C	25.67-1.43	34.10-1.91	45.10-2.55	—	—	139.8×151.9×210	3840	Video Iris, Day & Night	21

2/3 format

C6Z1218M3 (C31211)	12.5-75	1.8-C	C	16.08-2.75	21.40-3.66	28.44-4.87	38.82-6.67	49 P=0.75	101.5×92.2×94.5	820	Motorized Iris	22
C6ZAME (C31220)	12.5-75	1.8-720	C	16.07-2.75	21.36-3.66	28.38-4.87	38.72-6.67	49 P=0.75	101.5×92.2×94.5	620	Video Iris	22

● Board Camera Lens

1/4 format

QD222E (C40214)	2.3	2.2-128	φ14	88.20	—	—	—	—	19×31×20.9	8	DC Iris	23
QD320E (C40302)	3.0	2.0-200	φ14	69.14	—	—	—	—	19×31×18.2	8	DC Iris	23
QD420E (C40402)	4.0	2.0-200	φ14	51.86	—	—	—	—	19×31×17.5	8	DC Iris	23
QD2V2214AE (C40209)	2.2-4.5	1.4-200	φ14	93.36-45.75	—	—	—	—	29.6×37.3×32	27	DC Iris	23
QD2V2814AE (C40208)	2.8-5.8	1.4-200	φ14	74.62-35.87	—	—	—	—	29.6×37.3×32.1	26	DC Iris	23
QD2V2214BE-DN (C40216)	2.2-4.5	1.4-200	φ14	92.84-45.88	—	—	—	—	29.6×50.2×31.9	34	DC Iris, Day & Night	24
QD2V2814BE-DN (C40217)	2.8-5.8	1.4-200	φ14	74.67-35.86	—	—	—	—	29.6×50.2×31.9	33	DC Iris, Day & Night	24
QD3ZMED (C40219)	2.8-7.3	1.9-200	Special	73.42-28.74	—	—	—	—	35.1×29.7×26.8	18	DC Iris	24

1/3 format

TD3V314E-DN (C70318)	3.0-8.0	1.4-300	φ14	68.67-26.48	92.55-35.28	—	—	—	29.6×41.2×33.1	29	DC Iris, Day & Night	24
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Monofocal Manual Iris Lens



Model		H416 (C60402)	H612A (C60607)	H1212B (C61215)
Format Size		1/2	1/2	1/2
Focal Length		4.2mm	6.0mm	12.0mm
Max. Aperture Ratio		1:1.6	1:1.2	1:1.2
Iris Range		1.6~C	1.2~C	1.2~22
Mount		C	C	C
Horizontal Angle of View	1/4 format	47.87°	32.97°	16.93°
	1/3 format	64.27°	43.55°	22.60°
	1/2 format	86.77°	56.93°	30.18°
	2/3 format	—	—	—
Min. Object Distance		0.2m	0.2m	0.2m
Back Focal Length		10.42mm	14.31mm	13.87mm
Filter Size		—	40.5mm P=0.5mm	27.0mm P=0.5mm
Dimensions		42×43.5mm	42×46mm	30×35.5mm
Weight		120g	125g	67g
Remarks		Lock Screw	Lock Screw	Lock Screw
Unit: mm				

Monofocal Manual Iris Lens



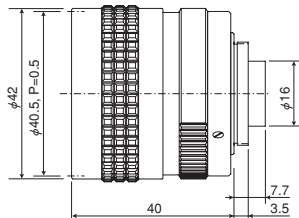
Model		C418DX (C30405)	C815B (C30811)	B1214D-2 (C21211)
Format Size		2/3	2/3	1
Focal Length		4.8mm	8.5mm	12.5mm
Max. Aperture Ratio		1:1.8	1:1.5	1:1.4
Iris Range		1.8~C	1.5~C	1.4~C
Mount		C	C	C
Horizontal Angle of View	1/4 format	41.68°	24.02°	16.21°
	1/3 format	55.11°	31.87°	21.53°
	1/2 format	72.37°	42.09°	28.51°
	2/3 format	96.36°	56.49°	38.65°
Min. Object Distance		0.3m	0.2m	0.3m
Back Focal Length		9.71mm	10.88mm	14.40mm
Filter Size		—	40.5mm P=0.5mm	40.5mm P=0.5mm
Dimensions		40.5×35.5mm	42×40mm	42×50mm
Weight		105g	120g	135g
Remarks		Lock Screw	Lock Screw	Lock Screw
Unit: mm				

Monofocal Manual Iris Lens

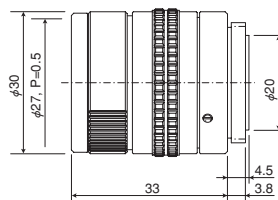


Model	B1218A (C21228)		C1614A (C31630)		B2514D (C22525)	
Format Size	1		2/3		1	
Focal Length	12.5mm		16.0mm		25.0mm	
Max. Aperture Ratio	1:1.8		1:1.4		1:1.4	
Iris Range	1.8~C		1.4~22		1.4~22	
Mount	C		C		C	
Horizontal Angle of View	1/4 format	16.53°	12.70°	8.23°	1/4 format	8.23°
	1/3 format	21.97°	16.91°	10.97°	1/3 format	10.97°
	1/2 format	29.12°	22.48°	14.62°	1/2 format	14.62°
	2/3 format	39.56°	30.72°	20.10°	2/3 format	20.10°
Min. Object Distance	0.3m		0.3m		0.3m	
Back Focal Length	10.36mm		13.22mm		14.98mm	
Filter Size	40.5mm P=0.5mm		27.0mm P=0.5mm		27.0mm P=0.5mm	
Dimensions	42×40mm		30×33mm		30×37.3mm	
Weight	95g		58g		76g	
Remarks	Lock Screw		Lock Screw		Lock Screw	

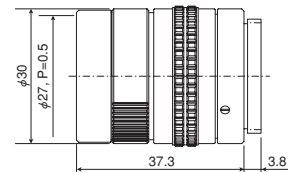
Unit: mm



Unit: mm



Unit: mm

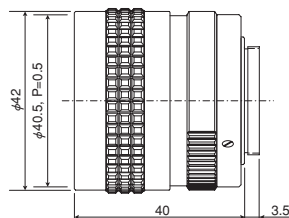


Monofocal Manual Iris Lens

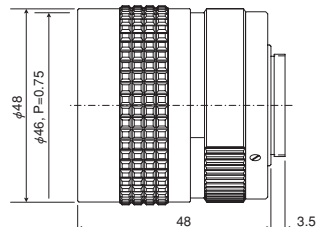


Model	B2518 (C22516)		B5014A (C25011)		B7514C (C27509)	
Format Size	1		1		1	
Focal Length	25.0mm		50.0mm		75.0mm	
Max. Aperture Ratio	1:1.8		1:1.4		1:1.4	
Iris Range	1.8~C		1.4~C		1.4~C	
Mount	C		C		C	
Horizontal Angle of View	1/4 format	8.23°	4.13°	2.75°	1/4 format	2.75°
	1/3 format	10.95°	5.50°	3.67°	1/3 format	3.67°
	1/2 format	14.55°	7.32°	4.90°	1/2 format	4.90°
	2/3 format	19.87°	10.04°	6.75°	2/3 format	6.75°
Min. Object Distance	0.6m		1.0m		1.2m	
Back Focal Length	15.80mm		18.10mm		18.50mm	
Filter Size	40.5mm P=0.5mm		46.0mm P=0.75mm		58.0mm P=0.75mm	
Dimensions	42×40mm		48×48mm		62×79mm	
Weight	87g		180g		450g	
Remarks	Lock Screw		Lock Screw		Lock Screw	

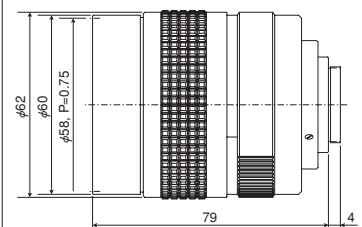
Unit: mm



Unit: mm



Unit: mm



Machine Vision Mega-Pixel Lens

Machine Vision
Mega-Pixel Lens



Model		H1214-M (C61232)	C1614-M (C31634)	C2514-M (C32500)
Format Size		1/2	2/3	2/3
Focal Length		12.0mm	16.0mm	25.0mm
Max. Aperture Ratio		1:1.4	1:1.4	1:1.4
Iris Range		1.4~16	1.4~16	1.4~16
Mount		C	C	C
Horizontal Angle of View	1/4 format	16.49°	12.86°	8.24°
	1/3 format	21.88°	17.11°	10.97°
	1/2 format	28.91°	22.72°	14.60°
	2/3 format	—	30.97°	20.00°
Min. Object Distance		0.25m	0.25m	0.25m
Back Focal Length		11.50mm	14.61mm	11.50mm
Filter Size		27.0mm P=0.5mm	27.0mm P=0.5mm	27.0mm P=0.5mm
Dimensions		29.5×28.5mm	29.5×33.2mm	29.5×32mm
Weight		55g	63g	55g
Remarks		Lock Screws, Up to 2 Mega-Pixel For Close-up application	Lock Screws, Up to 2 Mega-Pixel For Close-up application	Lock Screws, Up to 2 Mega-Pixel For Close-up application
Unit: mm				

Machine Vision Mega-Pixel Lens



Model		C3516-M (C33500)	C5028-M (C35001)	C7528-M (C37500)
Format Size		2/3	2/3	2/3
Focal Length		35.0mm	50.0mm	75.0mm
Max. Aperture Ratio		1:1.6	1:2.8	1:2.8
Iris Range		1.6~16	2.8~22	2.8~32
Mount		C	C	C
Horizontal Angle of View	1/4 format	6.07°	4.12°	2.83°
	1/3 format	8.09°	5.50°	3.77°
	1/2 format	10.76°	7.32°	5.03°
	2/3 format	14.76°	10.05°	6.90°
Min. Object Distance		0.4m	0.9m	0.7m
Back Focal Length		11.85mm	21.03mm	30.94mm
Filter Size		27.0mm P=0.5mm	27.0mm P=0.5mm	30.5mm P=0.5mm
Dimensions		29.5×35.4mm	29.5×34mm	34×59.6mm
Weight		64g	55g	125g
Remarks		Lock Screws, Up to 2 Mega-Pixel For Close-up application	Lock Screws, Up to 2 Mega-Pixel For Close-up application	Lock Screws, Up to 2 Mega-Pixel For Close-up application
Unit: mm				

Line-Scan Lens



Model	YF3528 (C52915F)	YF5028 (C52893F)	
Format Size	45mm Image Circle	45mm Image Circle	
Focal Length	35.0mm	50.0mm	
Max. Aperture Ratio	1:2.8	1:2.8	
Iris Range	2.8~22	2.8~22	
Mount	F (Bayonet)	F (Bayonet)	
Horizontal Angle of View	1/4 format	64.4° (45mm Image Format)	47.6° (45mm Image Format)
	1/3 format		
	1/2 format		
	2/3 format		
Min. Object Distance	0.19m	0.25m	
Back Focal Length	33.22mm	36.99mm	
Filter Size	62 P=0.75	62 P=0.75	
Dimensions	72×56.8mm	72×56.8mm	
Weight	440g	440g	
Remarks	Not for photographic cameras K-Mount: YK3528 (C52915K)	Not for photographic cameras K-Mount: YK5028 (C52893K)	
Unit: mm			

Line-Scan Lens

UV Lens
(Ultraviolet Ray)

UV Lens (Ultraviolet Ray)

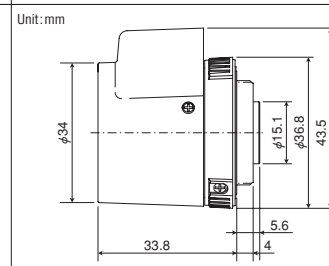
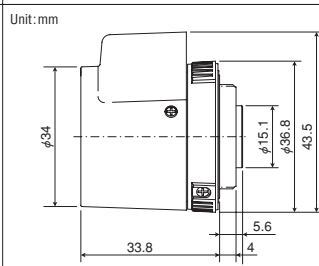
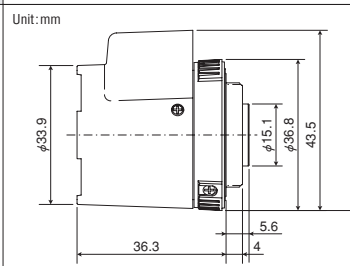


Model	H2520-UV (C62500)	B2528-UV (C91699)	B7838-UV (C91698)
Format Size	1/2	1	1
Focal Length	25.0mm	25.0mm	78.0mm
Max. Aperture Ratio	1:2.0	1:2.8	1:3.8
Iris Range	2.0~16	2.8~16	3.8~16
Mount	C	C	C
Horizontal Angle of View	1/4 format	8.24°	8.30°
	1/3 format	10.98°	11.10°
	1/2 format	14.62°	14.80°
	2/3 format	—	20.40°
Min. Object Distance	0.25m	0.23m	0.44m
Back Focal Length	12.01mm (330nm)	22.07mm (266nm)	71.31mm (250nm)
Filter Size	27.0mm P=0.5mm	25.5mm P=0.5mm	49mm P=0.75mm
Dimensions	29.5×46mm	30×25.4mm	62.5×109.3mm
Weight	78g	33g	446g
Remarks	200nm-1000nm Ray (280nm-365nm for 2 Mega-Pixel)	365nm (230nm-800nm with Band pass filter)	365nm (230nm-800nm with Band pass filter)
Unit: mm			

Monofocal Auto-Iris Lens



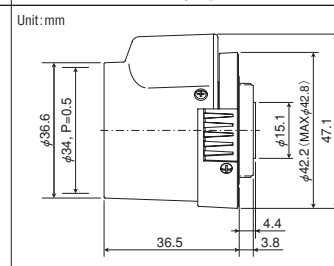
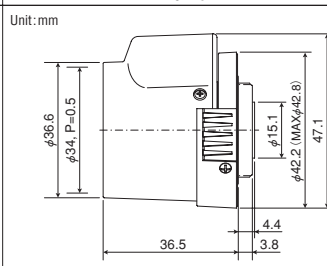
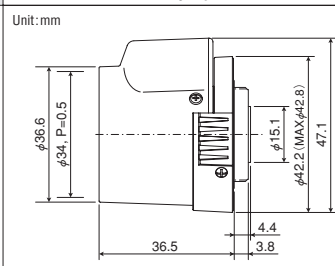
Model	TS212E (C70210)		TS412E (C70406)		TS812E (C70804)	
Format Size	1/3		1/3		1/3	
Focal Length	2.8mm		4.0mm		8.0mm	
Max. Aperture Ratio	1:1.2		1:1.2		1:1.2	
Iris Range	1.2~200		1.2~200		1.2~200	
Mount	CS		CS		CS	
Horizontal Angle of View	1/4 format	71.54°	49.18°	25.05°		
	1/3 format	94.28°	63.89°	33.33°		
	1/2 format	—	—	—		
	2/3 format	—	—	—		
Min. Object Distance	0.3m		0.2m		0.2m	
Back Focal Length	7.67mm		8.01mm		7.73mm	
Filter Size	—		—		—	
Dimensions	36.8×43.5×36.3mm		36.8×43.5×33.8mm		36.8×43.5×33.8mm	
Weight	54g		49g		44g	
Remarks	DC Iris		DC Iris		DC Iris	



Monofocal Auto-Iris Lens



Model	HS316E (C60309)		HS614E (C60630)		HS1214E (C61227)	
Format Size	1/2		1/2		1/2	
Focal Length	3.7mm		6.0mm		12.0mm	
Max. Aperture Ratio	1:1.6		1:1.4		1:1.4	
Iris Range	1.6~300		1.4~300		1.4~300	
Mount	CS		CS		CS	
Horizontal Angle of View	1/4 format	53.50°	33.83°	16.52°		
	1/3 format	70.96°	44.52°	22.03°		
	1/2 format	93.58°	57.79°	29.38°		
	2/3 format	—	—	—		
Min. Object Distance	0.2m		0.2m		0.5m	
Back Focal Length	8.99mm		10.49mm		10.38mm	
Filter Size	34mm P=0.5mm		34mm P=0.5mm		34mm P=0.5mm	
Dimensions	42.8×47.1×36.5mm		42.8×47.1×36.5mm		42.8×47.1×36.5mm	
Weight	57g		60g		46g	
Remarks	DC Iris		DC Iris		DC Iris	

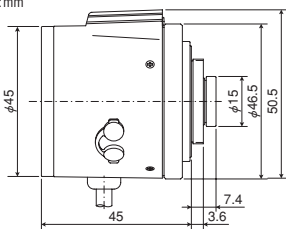


Monofocal Auto-Iris Lens

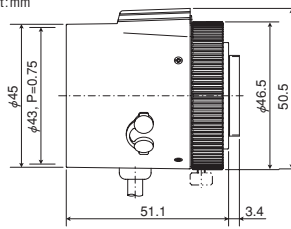


Model		H416E (C60405)	H612E (C60625)	H1212E (C61220)
Format Size		1/2	1/2	1/2
Focal Length		4.2mm	6.0mm	12.0mm
Max. Aperture Ratio		1:1.6	1:1.2	1:1.2
Iris Range		1.6~360	1.2~360	1.2~360
Mount		C	C	C
Horizontal Angle of View	1/4 format	47.87°	32.97°	16.94°
	1/3 format	64.27°	43.55°	22.60°
	1/2 format	86.77°	56.93°	30.19°
	2/3 format	—	—	—
Min. Object Distance		0.2m	0.2m	0.3m
Back Focal Length		10.40mm	14.30mm	13.90mm
Filter Size		—	43mm P=0.75mm	43mm P=0.75mm
Dimensions		46.5×50.5×45mm	46.5×50.5×51.1mm	46.5×50.5×51.1mm
Weight		135g	140g	140g
Remarks		Video Iris Manual Override: H416ER (C60404)	Video Iris Manual Override: H612ER (C60624)	Video Iris Manual Override: H1212ER (C61219)

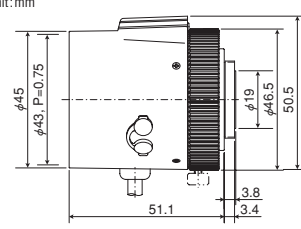
Unit: mm



Unit: mm



Unit: mm

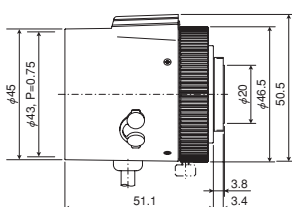


Monofocal Auto-Iris Lens

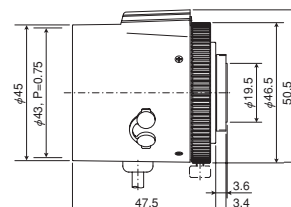


Model		C814E (C30821)	B1214E (C21223)	C1614E (C31632)
Format Size		2/3	1	2/3
Focal Length		8.0mm	12.5mm	16.0mm
Max. Aperture Ratio		1:1.4	1:1.4	1:1.4
Iris Range		1.4~360	1.4~360	1.4~360
Mount		C	C	C
Horizontal Angle of View	1/4 format	25.10°	16.22°	12.72°
	1/3 format	33.22°	21.55°	16.92°
	1/2 format	43.67°	28.54°	22.50°
	2/3 format	58.25°	38.69°	30.76°
Min. Object Distance		0.2m	0.3m	0.5m
Back Focal Length		14.50mm	14.40mm	13.20mm
Filter Size		43mm P=0.75mm	43mm P=0.75mm	43mm P=0.75mm
Dimensions		46.5×50.5×51.1mm	46.5×50.5×47.5mm	46.5×50.5×46.7mm
Weight		140g	140g	110g
Remarks		Video Iris Manual Override: C814ER (C30820)	Video Iris Manual Override: B1214ER (C21221)	Video Iris Manual Override: C1614ER (C31631)

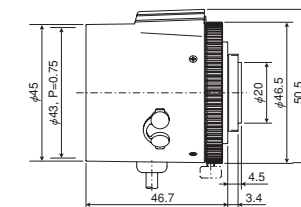
Unit: mm



Unit: mm



Unit: mm



Monofocal Auto-Iris Lens



Model		B2514E (C22527)	B5018E (C25018)	B7518AE (C27515)
Format Size		1	1	1
Focal Length		25.0mm	50.0mm	75.0mm
Max. Aperture Ratio		1:1.4	1:1.8	1:1.8
Iris Range		1.4~360	1.8~360	1.8~360
Mount		C	C	C
Horizontal Angle of View	1/4 format	8.23°	4.13°	2.74°
	1/3 format	10.97°	5.50°	3.65°
	1/2 format	14.62°	7.32°	4.87°
	2/3 format	20.09°	10.04°	6.69°
Min. Object Distance		0.9m	1.0m	2.5m
Back Focal Length		14.98mm	31.70mm	29.08mm
Filter Size		43mm P=0.75mm	49mm P=0.75mm	49mm P=0.75mm
Dimensions		46.5×50.5×51.8mm	62×51mm	62×70.5mm
Weight		140g	230g	300g
Remarks		Video Iris Manual Override: B2514ER (C22526)	Video Iris Manual Override: B5018ER (C25017)	Video Iris
Unit: mm				

Pinhole Lens



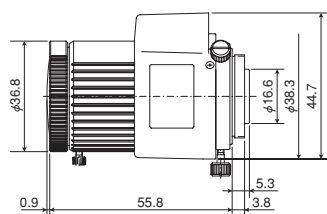
Model		TS420PE (C70403)	H620PE (C60626)
Format Size		1/3	1/2
Focal Length		4.0mm	6.2mm
Max. Aperture Ratio		1:2.0	1:2.0
Iris Range		2.0-64	2.0~300
Mount		CS	C
Horizontal Angle of View	1/4 format	51.24°	32.44°
	1/3 format	68.47°	42.82°
	1/2 format	—	56.12°
	2/3 format	—	—
Min. Object Distance		0.3m	0.3m
Back Focal Length		8.55mm	14.23mm
Filter Size		—	—
Dimensions		36.5×42.3×65.9	39×45.5×83.2mm
Weight		79g	100g
Remarks		DC Iris	Video & DC Iris
Unit: mm			

Vari-Focal Lens

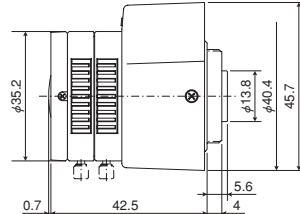


Model	TS2V114E (C70100)	TS2V214AED (C70220)	
Format Size	1/3	1/3	
Focal Length	1.6~3.4mm	2.8~6.0mm	
Max. Aperture Ratio	1:1.4	1:1.4	
Iris Range	1.4~64	1.4~300	
Mount	CS	CS	
Horizontal Angle of View	1/4 format	180~64.89°	72.26~35.35°
	1/3 format	180~89.55°	96.70~47.04°
	1/2 format	—	—
	2/3 format	—	—
Min. Object Distance	0.5m	0.3m	
Back Focal Length	8.07mm	7.54mm	
Filter Size	—	—	
Dimensions	38.3×44.7×56.7mm	40.4×45.7×43.2mm	
Weight	140g	59g	
Remarks	Fish-Eye, DC Iris	Video & DC Iris, Day & Night	

Unit: mm



Unit: mm

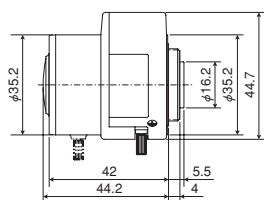


Vari-Focal Lens

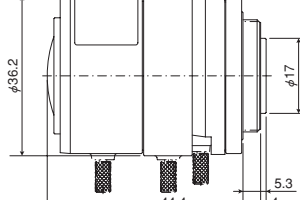


Model	TS2V314CED (C70319)	TS3V310 (C70316)	TS3V310ED (C70315)
Format Size	1/3	1/3	1/3
Focal Length	3.5~8.0mm	3.0~8.0mm	3.0~8.0mm
Max. Aperture Ratio	1:1.4	1:1.0	1:1.0
Iris Range	1.4~300	1.0~C	1.0~360
Mount	CS	CS	CS
Horizontal Angle of View	1/4 format	60.52~26.54°	68.98~26.44°
	1/3 format	82.41~35.42°	93.22~35.26°
	1/2 format	—	—
	2/3 format	—	—
Min. Object Distance	0.35m	0.3m	0.3m
Back Focal Length	7.67mm	7.50mm	7.50mm
Filter Size	—	—	—
Dimensions	38.3×44.7×44.2mm	36.2×44.4mm	38.3×44.7×44.4mm
Weight	52g	47g	60g
Remarks	DC Iris	Manual Iris, Day & Night	Video & DC Iris, Day & Night

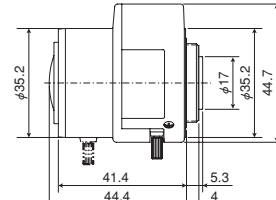
Unit: mm



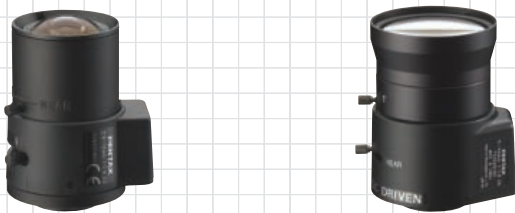
Unit: mm



Unit: mm



Vari-Focal Lens



Model		TS4V214ED (C70223)	TS10V518AED (C70508)	
Format Size		1/3	1/3	
Focal Length		2.8~12mm	5.0~50mm	
Max. Aperture Ratio		1:1.4	1:1.8	
Iris Range		1.4~360	1.8~360	
Mount		CS	CS	
Horizontal Angle of View	1/4 format	71.82~18.05°	37.80~4.14°	
	1/3 format	93.29~23.50°	50.00~5.52°	
	1/2 format	—	—	
	2/3 format	—	—	
Min. Object Distance		0.25m	0.6m	
Back Focal Length		8.57mm	7.60mm	
Filter Size		—	—	
Dimensions		43.0×51.5×63.5mm	44.5×50.8×61.5mm	
Weight		83g	140g	
Remarks		DC Iris	DC Iris	
		Unit: mm 	Unit: mm 	

Vari-Focal Lens



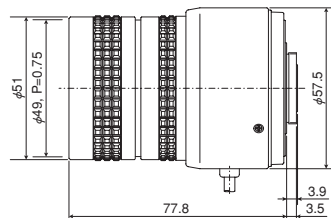
Model		HS2V616ED (C60635)		
Format Size		1/2		
Focal Length		6.0~12mm		
Max. Aperture Ratio		1:1.6		
Iris Range		1.6~300		
Mount		CS		
Horizontal Angle of View	1/4 format	34.98~17.23°		
	1/3 format	47.38~23.02°		
	1/2 format	65.29~30.82°		
	2/3 format	—		
Min. Object Distance		1.0m		
Back Focal Length		7.55mm		
Filter Size		30.5mm P=0.5mm		
Dimensions		40.4×45.7×43.5		
Weight		57g		
Remarks		Video & DC Iris, Day & Night		
		Unit: mm 		

Manual Zoom Lens

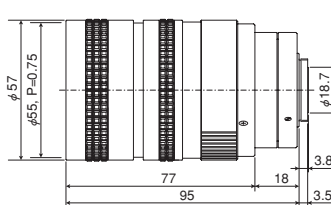


Model	TS6ZE (C70605)	H6Z810 (C60812)	H6ZBE (C60811)
Format Size	1/3	1/2	1/2
Focal Length	6.3~38mm	8.0~48mm	8.0~48mm
Max. Aperture Ratio	1:1.2	1:1~1.2	1:1~1.2
Iris Range	1.2~512	1.0~22	1.0~720
Mount	CS	C	C
Horizontal Angle of View	1/4 format	31.26~5.59°	24.92~4.42°
	1/3 format	41.12~7.43°	32.99~5.86°
	1/2 format	—	43.24~7.73°
	2/3 format	—	—
Min. Object Distance	1.8m	1.2m	1.2m
Back Focal Length	9.23mm	13.65mm	13.65mm
Filter Size	49mm P=0.75mm	55mm P=0.75mm	55mm P=0.75mm
Dimensions	57.5×77.8mm	57×95mm	69×64×95mm
Weight	320g	430g	465g
Remarks	Video & DC Iris	Manual Iris	Video & DC Iris

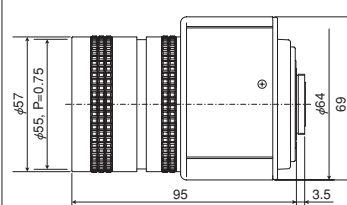
Unit: mm



Unit: mm



Unit: mm

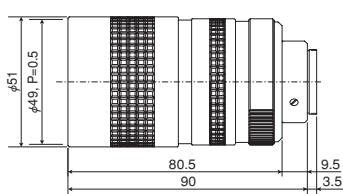


Manual Zoom Lens

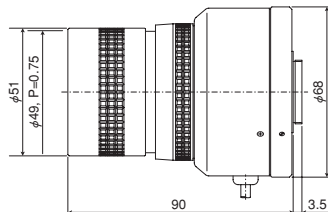


Model	C6Z1218 (C31204)	C6ZE (C31219)
Format Size	2/3	2/3
Focal Length	12.5~75mm	12.5~75mm
Max. Aperture Ratio	1:1.8	1:1.8
Iris Range	1.8~22	1.8~720
Mount	C	C
Horizontal Angle of View	1/4 format	16.07~2.75°
	1/3 format	21.38~3.66°
	1/2 format	28.41~4.87°
	2/3 format	38.76~6.67°
Min. Object Distance	1.0m	1.0m
Back Focal Length	18.40mm	18.41mm
Filter Size	49mm P=0.75mm	49mm P=0.75mm
Dimensions	51×90mm	68×90mm
Weight	320g	385g
Remarks	Manual Iris	Video Iris

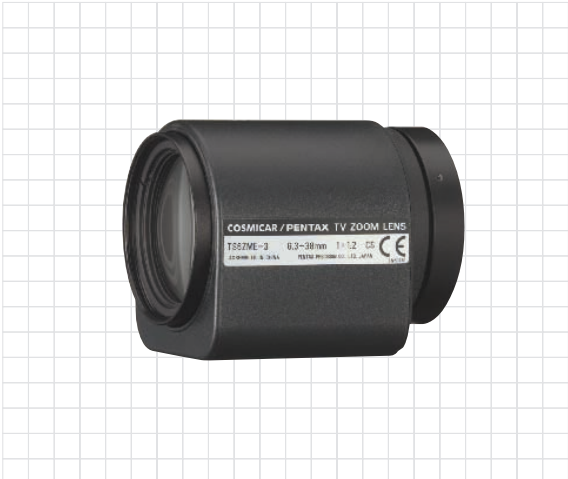
Unit: mm



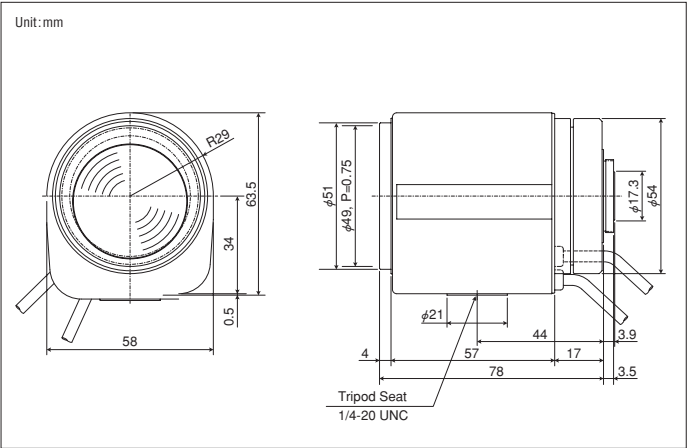
Unit: mm



Motorized Zoom Lens



Basic Specification		
Format Size		1/3
Focal Length		6.3~38mm
Max. Aperture Ratio		1:1.2
Iris Range		F1.2~360
Mount		CS
Horizontal Angle of View	1/4 format	31.26~5.59°
	1/3 format	41.12~7.43°
	1/2 format	—
	2/3 format	—
Min. Object Distance		1.8m
Back Focal Length		9.23mm
Filter Size		49mm P=0.75mm
Dimensions		58×63.5×78mm

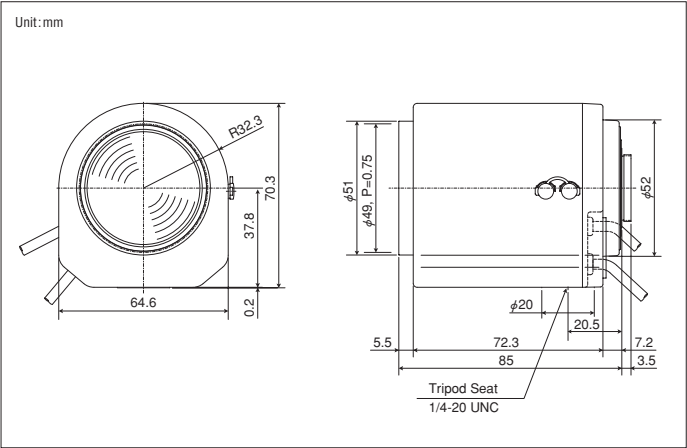


Model	TS6ZME (C70600)	
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	
Focus	Motorized Approx. 5.0 sec (Near-Far)	
Zoom	Motorized Approx. 5.0 sec (Wide-Tele)	
Weight	410g	
Remarks		

Motorized Zoom Lens



Basic Specification		
Format Size		1/3
Focal Length		5.8~58mm
Max. Aperture Ratio		1:1.2~1.7
Iris Range		F1.2~360
Mount		CS
Horizontal Angle of View	1/4 format	33.77~3.62°
	1/3 format	44.07~4.78°
	1/2 format	—
	2/3 format	—
Min. Object Distance		1.8m
Back Focal Length		8.99mm
Filter Size		49mm P=0.75mm
Dimensions		64.6×70.3×85mm

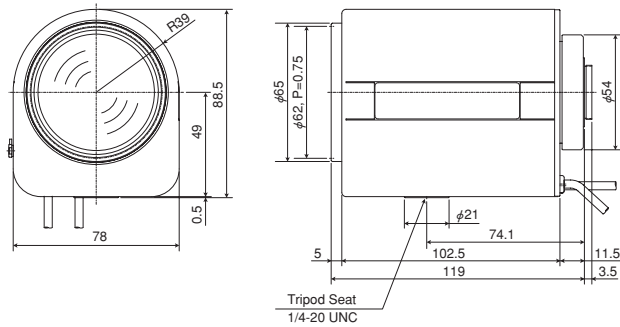


Model	TS10ZME (C70500)	TS10ZME-P (C70501)
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)
Focus	Motorized Approx. 8.0 sec (Near-Far)	Motorized with Pre-Set Approx. 8.0 sec (Preset) (Near-Far)
Zoom	Motorized Approx. 6.5 sec (Wide-Tele)	Motorized with Pre-Set Approx. 6.5 sec (Preset) (Wide-Tele)
Weight	380g	430g
Remarks		

Motorized Zoom Lens



Unit: mm



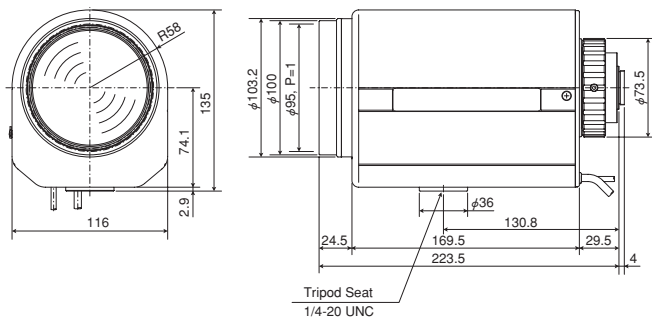
Basic Specification		
Format Size		1/3
Focal Length		6.0~90mm
Max. Aperture Ratio		1:1.2~1.8
Iris Range		F1.2~430
Mount		CS
Horizontal Angle of View	1/4 format	32.96~2.33°
	1/3 format	43.48~3.08°
	1/2 format	—
	2/3 format	—
Min. Object Distance		1.5m
Back Focal Length		10.70mm
Filter Size		62mm P=0.75mm
Dimensions		78×88.5×119mm

Model	TS15ZAME (C70624)	TS15ZAME-P (C70627)
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)
Focus	Motorized Approx. 8.0 sec (Near-Far)	Motorized with Pre-Set Approx. 8.0 sec (Near-Far)
Zoom	Motorized Approx. 6.0 sec (Wide-Tele)	Motorized with Pre-Set Approx. 6.0 sec (Wide-Tele)
Weight	760g	770g
Remarks		Manual Override (Only Video Iris) TS15ZAME-FH (C70634) High-Speed

Motorized Zoom Lens



Unit: mm



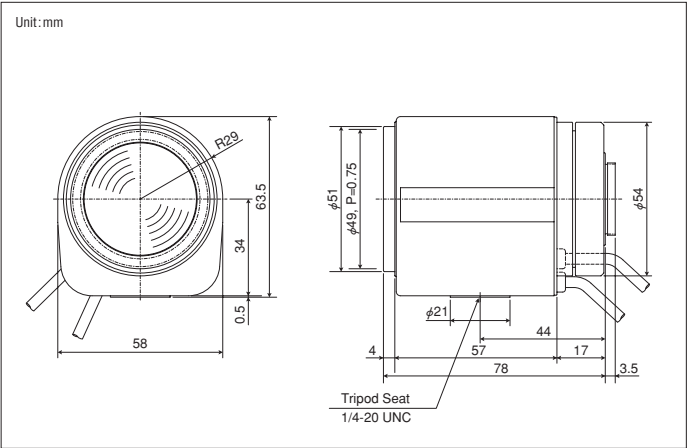
Basic Specification		
Format Size		1/3
Focal Length		9.0~180mm
Max. Aperture Ratio		1:1.2~2.1
Iris Range		F1.2~510
Mount		CS
Horizontal Angle of View	1/4 format	22.61~1.15°
	1/3 format	30.28~1.53°
	1/2 format	—
	2/3 format	—
Min. Object Distance		2.2m
Back Focal Length		14.25mm
Filter Size		95mm P=1.0mm
Dimensions		116×135×223.5mm

Model	TS20ZAME (C70904)	TS20ZAME-P (C70906)
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)
Focus	Motorized Approx. 10 sec (Near-Far)	Motorized with Pre-Set Approx. 10 sec (Preset) (Near-Far)
Zoom	Motorized Approx. 10 sec (Wide-Tele)	Motorized with Pre-Set Approx. 10 sec (Preset) (Wide-Tele)
Weight	2,540g	2,540g
Remarks		Manual Override (Only Video Iris) TS20ZAME-F (C70905)

Motorized Zoom Lens



Basic Specification		
Format Size		1/2
Focal Length		8.0~48mm
Max. Aperture Ratio		1:1.4
Iris Range		F1.4~360
Mount		CS
Horizontal Angle of View	1/4 format	24.81~4.39°
	1/3 format	32.78~5.82°
	1/2 format	42.88~7.69°
	2/3 format	—
Min. Object Distance		1.8m
Back Focal Length		11.60mm
Filter Size		49mm P=0.75mm
Dimensions		58×63.5×78mm

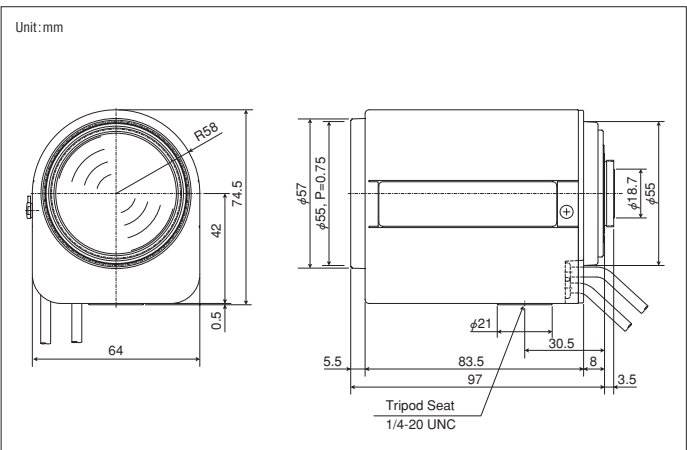


Model	HS6ZME (C60806)	
Iris	Auto-Iris (Video & DC Iris) Approx. 1.0 sec (Video Iris) (Close-Open)	
Focus	Motorized Approx. 5.0 sec (Near-Far)	
Zoom	Motorized Approx. 5.0 sec (Wide-Tele)	
Weight	400g	
Remarks		

Motorized Zoom Lens



Basic Specification		
Format Size		1/2
Focal Length		8.0~48mm
Max. Aperture Ratio		1:1.0~1.2
Iris Range		F1.0~720
Mount		C
Horizontal Angle of View	1/4 format	24.92~4.42°
	1/3 format	32.98~5.86°
	1/2 format	43.24~7.73°
	2/3 format	—
Min. Object Distance		1.2m
Back Focal Length		13.65mm
Filter Size		55mm P=0.75mm
Dimensions		64×74.5×97mm

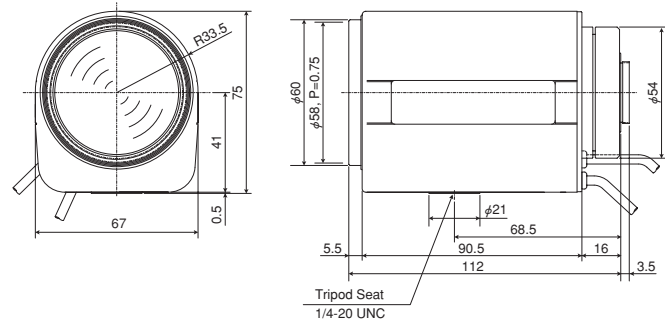


Model	H6ZBME (C60809)	H6ZBME-P (C60810)
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)
Focus	Motorized Approx. 6.0 sec (Near-Far)	Motorized with Pre-Set Approx. 6.0 sec (Near-Far)
Zoom	Motorized Approx. 6.0 sec (Wide-Tele)	Motorized with Pre-Set Approx. 6.0 sec (Wide-Tele)
Weight	530g	540g
Remarks		Manual Override (only Video Iris) H6ZBME-F (C60813)

Motorized Zoom Lens



Unit: mm



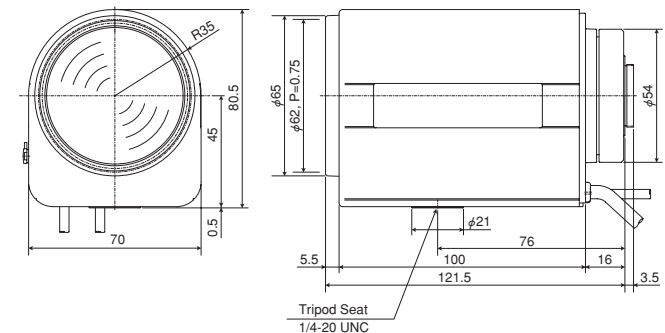
Basic Specification		
Format Size		1/2
Focal Length		7.5~75mm
Max. Aperture Ratio		1:1.4~1.5
Iris Range		F1.4~360
Mount		CS
Horizontal Angle of View	1/4 format	26.15~2.83°
	1/3 format	34.52~3.75°
	1/2 format	45.05~4.95°
	2/3 format	—
Min. Object Distance		1.8m
Back Focal Length		10.75mm
Filter Size		58mm P=0.75mm
Dimensions		67×75×112mm

Model	HS10ZME (C60700)	
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	
Focus	Motorized Approx. 6.5 sec * (Near-Far)	
Zoom	Motorized Approx. 5.5 sec ** (Wide-Tele)	
Weight	580g	
Remarks	* 6.0 sec for Type 2 ** 5.0 sec for Type 2	

Motorized Zoom Lens



Unit: mm



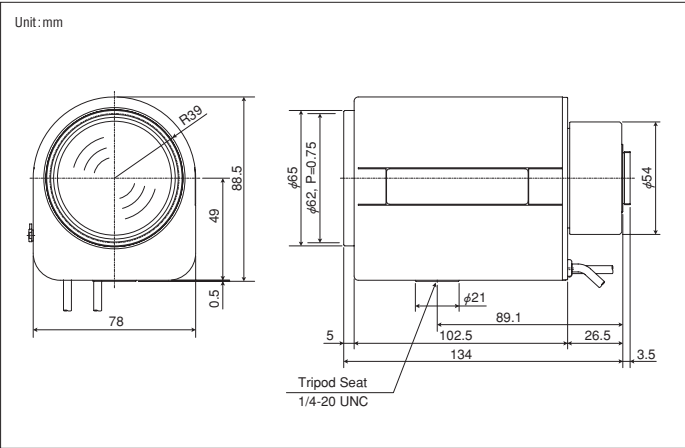
Basic Specification		
Format Size		1/2
Focal Length		7.5~75mm
Max. Aperture Ratio		1:1.2~1.5
Iris Range		F1.2~512
Mount		C
Horizontal Angle of View	1/4 format	26.45~2.84°
	1/3 format	34.94~3.77°
	1/2 format	45.63~4.99°
	2/3 format	—
Min. Object Distance		1.8m
Back Focal Length		14.52mm
Filter Size		62mm P=0.75mm
Dimensions		70×80.5×121.5mm

Model	H10ZME (C60701)	H10ZME-P (C60702)
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)
Focus	Motorized Approx. 5.5 sec * (Near-Far)	Motorized with Pre-Set Approx. 5.5 sec * (Near-Far)
Zoom	Motorized Approx. 5.5 sec * (Wide-Tele)	Motorized with Pre-Set Approx. 5.5 sec * (Wide-Tele)
Weight	715g	740g
Remarks	* 6.0 sec for Type 1&3	Manual Override (only Video Iris) H10ZME-F (C60704) * 6.0 sec for Type 1&3

Motorized Zoom Lens



Basic Specification		
Format Size		1/2
Focal Length		8.0~120mm
Max. Aperture Ratio		1:1.6~2.4
Iris Range		F1.6~1000
Mount		C
Horizontal Angle of View	1/4 format	24.76~1.76°
	1/3 format	32.85~2.34°
	1/2 format	43.37~3.09°
	2/3 format	—
Min. Object Distance		1.5m
Back Focal Length		14.05mm
Filter Size		62mm P=0.75mm
Dimensions		78×88.5×134mm

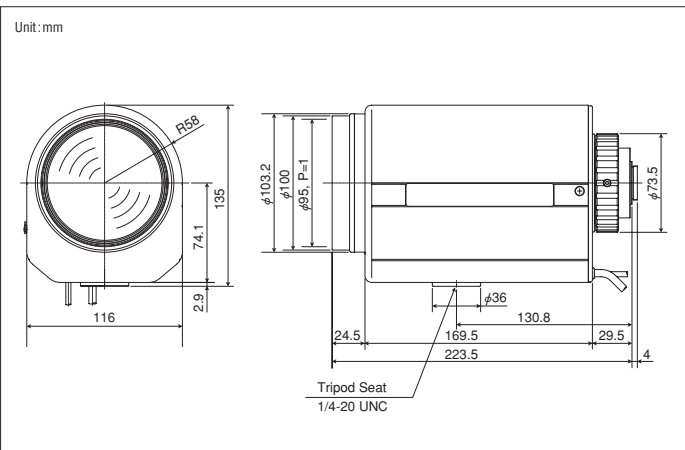


Model	H15ZAME (C60826)	H15ZAME-P (C60829)
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Video Iris) (Close-Open)
Focus	Motorized Approx. 8.0 sec (Near-Far)	Motorized with Pre-Set Approx. 8.0 sec * (Near-Far)
Zoom	Motorized Approx. 6.0 sec (Wide-Tele)	Motorized with Pre-Set Approx. 6.0 sec (Wide-Tele)
Weight	800g	810g
Remarks		Manual Override (Only Video Iris) H15ZAME-F (C60827) *6.0 sec for Type 1&3

Motorized Zoom Lens



Basic Specification		
Format Size		1/2
Focal Length		12~240mm
Max. Aperture Ratio		1:1.6~2.8
Iris Range		F1.6~720
Mount		C
Horizontal Angle of View	1/4 format	17.17~0.88°
	1/3 format	22.95~1.17°
	1/2 format	30.78~1.56°
	2/3 format	—
Min. Object Distance		2.8m
Back Focal Length		19.82mm
Filter Size		95mm P=1.0mm
Dimensions		116×135×223.5mm

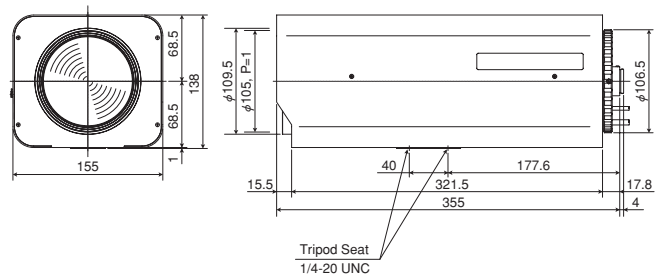


Model	H20ZAME (C61237)	H20ZAME-P (C61239)
Iris	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Close-Open)	Auto-Iris (Video & DC Iris) Approx. 1.5 sec (Close-Open)
Focus	Motorized Approx. 10 sec (Near-Far)	Motorized with Pre-Set Approx. 10 sec (Near-Far)
Zoom	Motorized Approx. 10 sec (Wide-Tele)	Motorized with Pre-Set Approx. 10 sec (Wide-Tele)
Weight	2,590g	2,620g
Remarks		Manual Override (Only Video Iris) H20ZAME-FH (C61240) High-Speed

Motorized Zoom Lens



Unit: mm



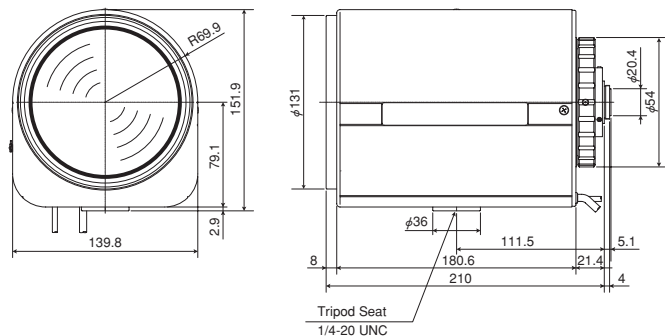
Basic Specification		
Format Size	1/2	
Focal Length	12~1,320mm	
Max. Aperture Ratio	1:4.0~7.2	
Iris Range	F4.0~360	
Mount	C	
Horizontal Angle of View	1/4 format	17.17~0.31°
	1/3 format	23.18~0.21°
	1/2 format	31.65~0.28°
	2/3 format	—
Min. Object Distance	5.0m	
Back Focal Length	8.99mm	
Filter Size	105mm P=1.0mm	
Dimensions	155×138×355mm	

Model	H55ZME-F (C61233)	
Iris	Auto-Iris (Video Iris) / Manual Override Approx. 1.5 sec (Close-Open)	
Focus	Motorized with Pre-Set Approx. 4.5 sec (Near-Far)	
Zoom	Motorized with Pre-Set Approx. 4.5 sec (Wide-Tele)	
Extender	Motorized Approx. 1.5 sec (In-out)	
Weight	5,400g	
Remarks	Built-In 2x Extender	

Motorized Zoom Lens



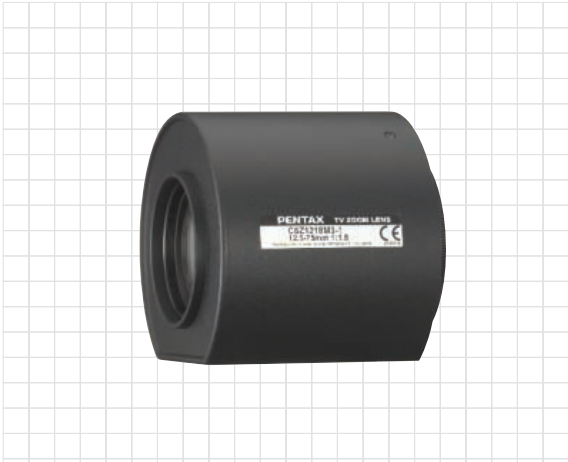
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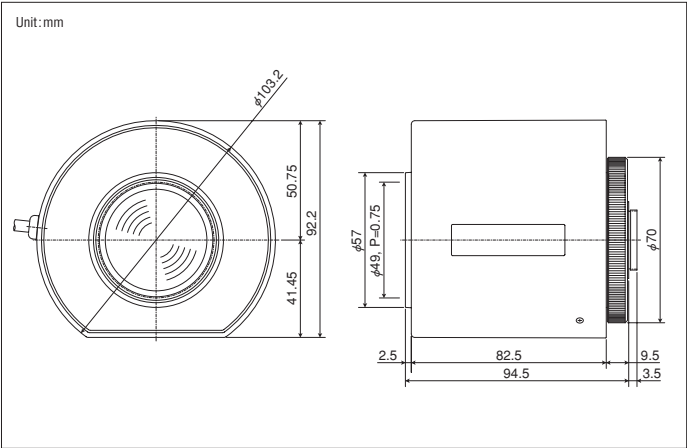
Basic Specification		
Format Size	1/2	
Focal Length	8.0~144mm	
Max. Aperture Ratio	1:1.6~2.2	
Iris Range	F1.6~720	
Mount	C	
Horizontal Angle of View	1/4 format	25.67~1.43°
	1/3 format	34.10~1.91°
	1/2 format	45.10~2.55°
	2/3 format	—
Min. Object Distance	4.0m	
Back Focal Length	13.75mm	
Filter Size	—	
Dimensions	139.8×151.9×210mm	

Model	H18ZME-F (C60839)	
Iris	Auto-Iris (Video Iris) / Manual Override Approx. 1.5 sec (Close-Open)	
Focus	Motorized with Pre-Set Approx. 3.5 sec (Near-Far)	
Zoom	Motorized with Pre-Set Approx. 4.0 sec (Wide-Tele)	
Weight	3,840g	
Remarks	Day & Night	

Motorized Zoom Lens

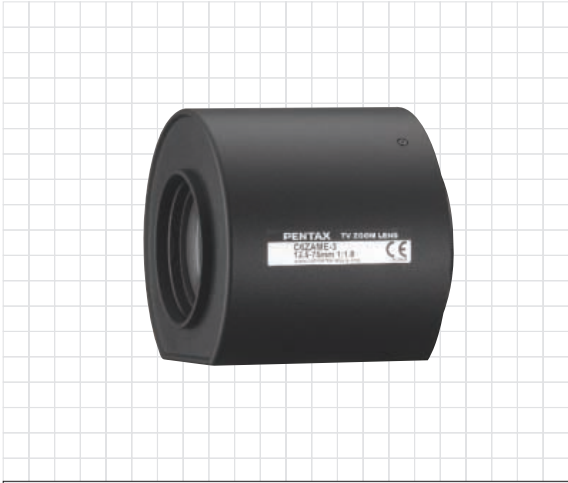


Basic Specification		
Format Size	2/3	
Focal Length	12.5~75mm	
Max. Aperture Ratio	1:1.8	
Iris Range	1.8 - C	
Mount	C	
Horizontal Angle of View	1/4 format	16.08~2.75°
	1/3 format	21.40~3.66°
	1/2 format	28.44~4.87°
	2/3 format	38.82~6.67°
Min. Object Distance	1.0m	
Back Focal Length	18.41mm	
Filter Size	49mm P=0.75mm	
Dimensions	101.5×92.2×94.5mm	

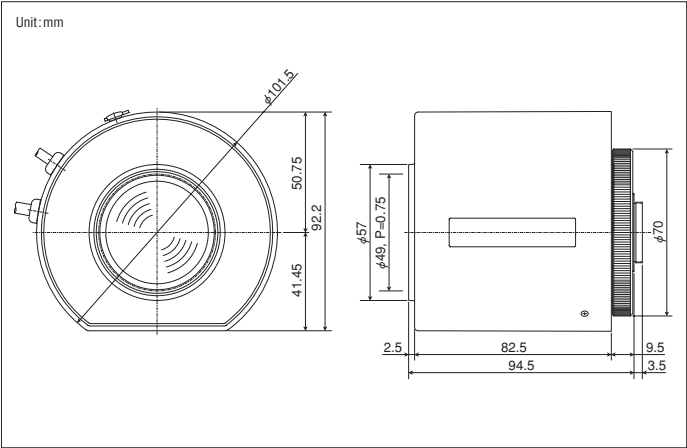


Model	C6Z1218M3 (C31211)	
Iris	Motorized Approx. 4.0 sec (Close-Open)	
Focus	Motorized Approx. 5.0 sec * (Near-Far)	
Zoom	Motorized Approx. 5.0 sec * (Wide-Tele)	
Weight	820g	
Remarks	* 5.5 sec for Type 1&3	

Motorized Zoom Lens



Basic Specification		
Format Size	2/3	
Focal Length	12.5~75mm	
Max. Aperture Ratio	1:1.8	
Iris Range	F1.8~720	
Mount	C	
Horizontal Angle of View	1/4 format	16.07~2.75°
	1/3 format	21.36~3.66°
	1/2 format	28.38~4.87°
	2/3 format	38.72~6.67°
Min. Object Distance	1.0m	
Back Focal Length	18.41mm	
Filter Size	49mm P=0.75mm	
Dimensions	101.5×92.2×94.5mm	



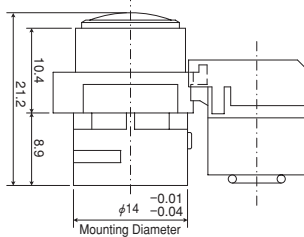
Model	C6ZAME (C31220)	
Iris	Auto-Iris (Video Iris) Approx. 1.5 sec (Close-Open)	
Focus	Motorized Approx. 5.0 sec * (Near-Far)	
Zoom	Motorized Approx. 5.0 sec * (Wide-Tele)	
Weight	620g	
Remarks	* 5.5 sec for Type 1&3	

Board Camera Lens

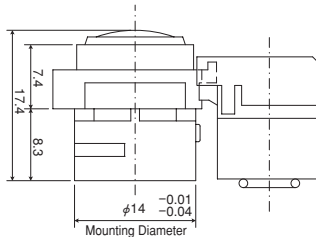


Model	QD222E (C40214)	QD320E (C40302)	QD420E (C40402)
Format Size	1/4	1/4	1/4
Focal Length	2.3mm	3.0mm	4.0mm
Max. Aperture Ratio	1:2.2	1:2	1:2
Iris Range	2.2~128	2.0~200	2.0~200
Mount	φ14	φ14	φ14
Horizontal Angle of View	1/4 format	88.20°	69.14°
	1/3 format	—	—
	1/2 format	—	—
	2/3 format	—	—
Min. Object Distance	0.5m	0.5m	0.5m
Back Focal Length	6.91mm	5.66mm	6.09mm
Filter Size	—	—	—
Dimensions	19×31×20.9mm	19×31×18.2mm	19×31×17.5mm
Weight	8g	8g	8g
Remarks	DC Iris	DC Iris	DC Iris

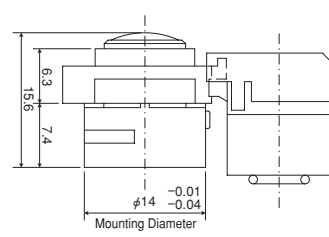
Unit: mm



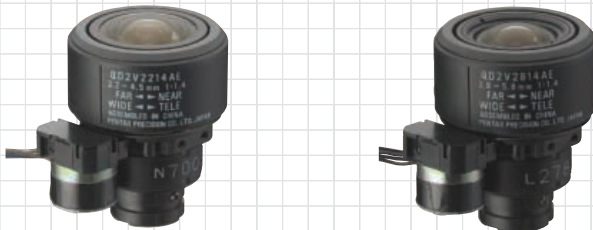
Unit: mm



Unit: mm

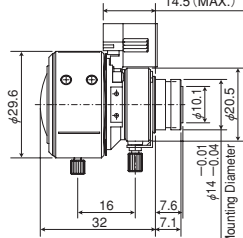


Board Camera Lens

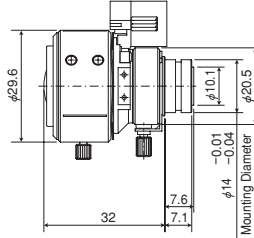


Model	QD2V2214AE (C40209)	QD2V2814AE (C40208)
Format Size	1/4	1/4
Focal Length	2.2~4.5mm	2.8~5.8mm
Max. Aperture Ratio	1:1.4	1:1.4
Iris Range	1.4~200	1.4~200
Mount	φ14	φ14
Horizontal Angle of View	1/4 format	93.36°~45.75°
	1/3 format	—
	1/2 format	—
	2/3 format	—
Min. Object Distance	0.2m	0.2m
Back Focal Length	6.47~10.02mm	6.47~9.96mm
Filter Size	—	—
Dimensions	29.6×37.3×32mm	29.6×37.3×32.1mm
Weight	27g	26g
Remarks	DC Iris	DC Iris




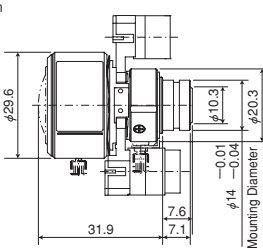
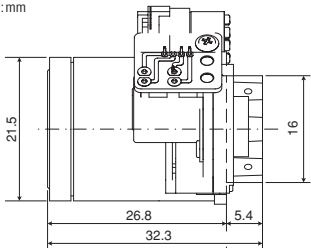
Unit: mm




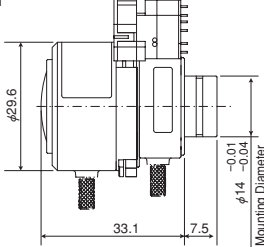
Unit: mm



Board Camera Lens

				
Model		QD2V2214BE-DN (C40216)	QD2V2814BE-DN (C40217)	QD3ZMED (C40219)
Format Size		1/4	1/4	1/4
Focal Length		2.2~4.5mm	2.8~5.8mm	2.8~7.3mm
Max. Aperture Ratio		1:1.4	1:1.4	1:1.9~3.1
Iris Range		1.4~200	1.4~200	1.9~200
Mount		φ14	φ14	Special
Horizontal Angle of View	1/4 format	92.84°~45.88°	74.67°~35.86°	73.42°~28.74°
	1/3 format	—	—	—
	1/2 format	—	—	—
	2/3 format	—	—	—
Min. Object Distance		0.2m	0.2m	0.6m
Back Focal Length		6.44~9.98mm	6.43~9.96mm	4.90mm
Filter Size		—	—	—
Dimensions		29.6×50.2×31.9mm	29.6×50.2×31.9mm	35.1×29.7×26.8mm
Weight		34g	33g	18g
Remarks		DC Iris, Day & Night	DC Iris, Day & Night	DC Iris
Unit: mm			Unit: mm	

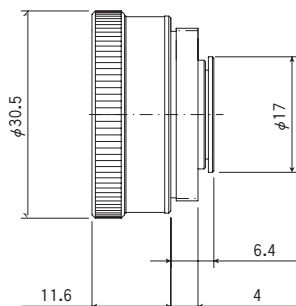
Board Camera Lens

			
Model		TD3V314E-DN (C70318)	
Format Size		1/3	
Focal Length		3.0~8.0mm	
Max. Aperture Ratio		1:1.4~1.8	
Iris Range		1.4~300	
Mount		φ14	
Horizontal Angle of View	1/4 format	68.67°~26.48°	
	1/3 format	92.55°~35.28°	
	1/2 format	—	
	2/3 format	—	
Min. Object Distance		0.35m	
Back Focal Length		7.67mm	
Filter Size		—	
Dimensions		29.6×41.2×33.1mm	
Weight		29g	
Remarks		DC Iris, Day & Night	
Unit: mm			

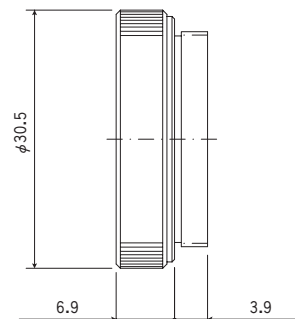
Accessory

Extender

2-EX (C80001)



S2-EX (C80034)



Specifications

	2-EX (C80001)	S2-EX (C80034)
Magnification of Focal Length	2X	2X
Flange Back Length	17.526mm	12.5mm
Weight	40g	27g
Compatibility	C-Mount	CS-Mount

Note

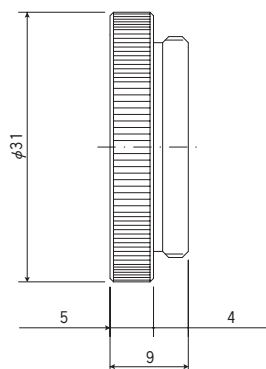
- 1) According to the doubled focal length, the angle of view gets half and F No. will be double.
- 2) Minimum object distance and zoom ratio remains the same.

Mount Adapter

C-CS-A

C-CS Mount Adapter (5mm Ring)

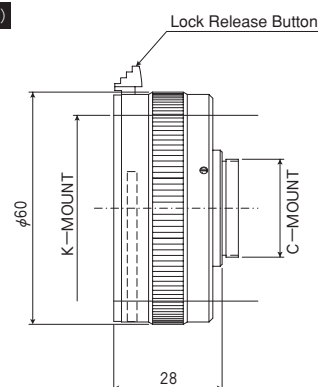
C-CS-A (C80035)



KC-Mount

PENTAX Bayonet Mount for 35mm Photo Lens

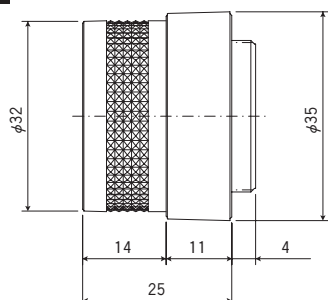
KC-MOUNT (C80020)



Dummy Lens

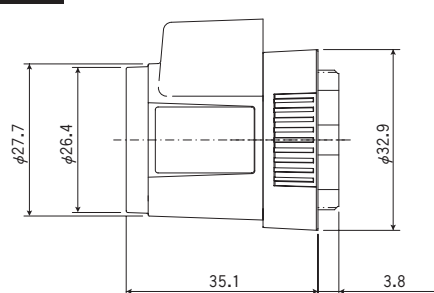
Monofocal type

DM-163 (C80039)



Vari-Focal type

DM-E01 (C80040)

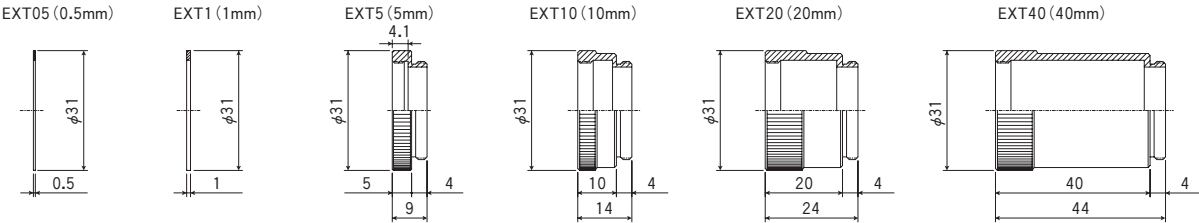


Accessory

Extension Tube Set (Macro Ring)

Extension Tube Set (Macro Ring) is inserted in between the lens and camera to shift the focus point further than the mechanical limit for close-up focus.

EX-C6 (C90100)



Specifications

Model No.	EXT-0.5	EXT-1	EXT-5	EXT-10	EXT-20	EXT-40
Length (mm)	0.5	1	5	10	20	40
Max. Diameter	31mm					

Note

Extension Tube is not suitable for zoom lens.
Please refer to Page 37 for the principles.

Close-Up Lens

Close-Up Lens is effective to come closer to an object than the minimum object distance of a lens.

Specifications

Model No.	1	2	3
Close-Up No.	No. 1	No. 2	No. 3
Dioptrie	+1	+2	+3
Focusing Range (Inf.)	1000mm	500mm	333mm

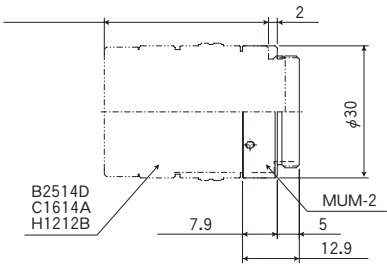
Note

Regardless of the focal length of a lens as long as focus is set to infinity, focus is obtained at a point equal to the distance from the tip of the lens to the focal length of the close-up lens.

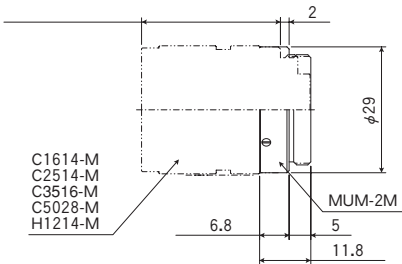
Macro Focus Mount

Macro Focus Mounts extend the flange back length by 2mm by replacing the original C-mount of lens.

MUM-2 (C80038)



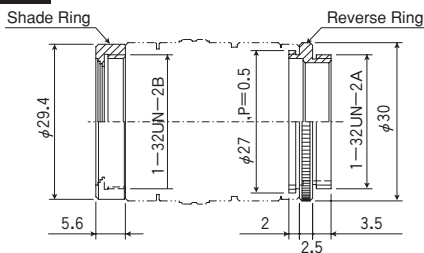
MUM-2M (C80037)



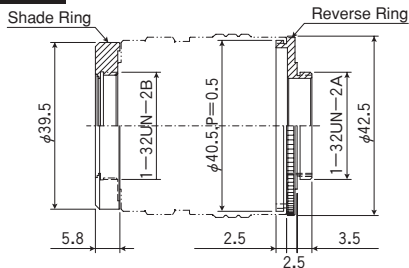
Reverse Ring

When the magnification is more than 1:1 (the image sensor is bigger than the object), attaching the lens reversely improves image quality. Reverse Ring is used to assist when attaching the lens reversely.

RR-27 (C80036)



RR-40.5 (C80037)



Technical Information

Connection for Auto-Iris

Wiring Diagram	Model
	DC Iris (EIAJ Standard 4-Pin connector)
	Video Iris 1 (EIAJ Standard 4-Pin connector)
	Video Iris 2
	Video Iris 3
	Manual Override

Wiring Diagram for Motorized Zoom Lens

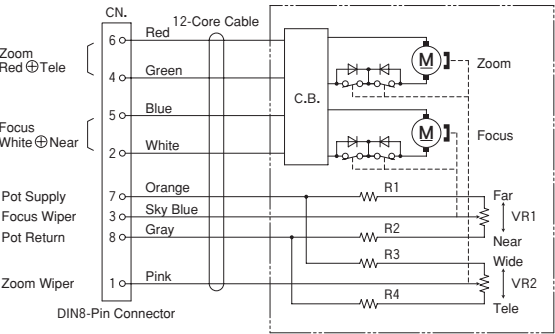
Type	Auto-Iris & Motorized Zoom lenses	Full Motorized Zoom lenses
Type 1 (DC6V) Type 5 (DC12V)		
Type 2 (DC±12V)		
Type 3 (DC±6V)		

Technial Information

Wiring Diagram for P type zoom lenses

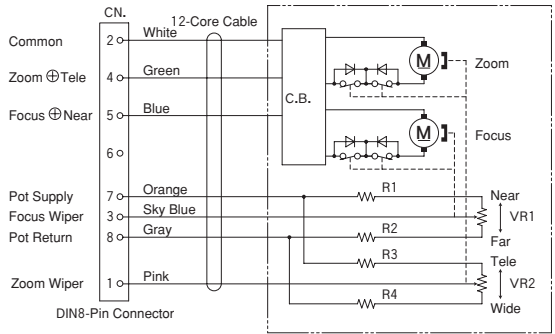
Motorized Zoom and Focus with Pre-Set Auto-Iris

Type 1 (DC6V) / Type 5 (DC12V)



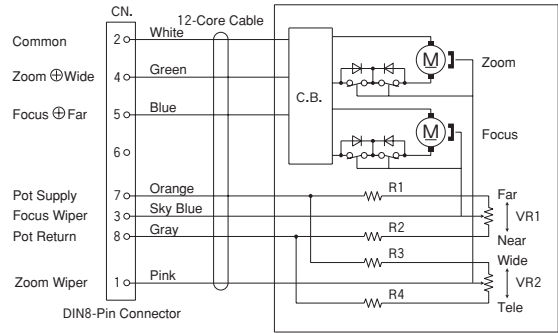
R1、R2、R3、R4	1KΩ±1% 0.1W
VR1、VR2	5KΩ±15% 0.2W

Type 2 (DC±12V)



R1、R2、R3、R4	1KΩ±1% 0.1W
VR1、VR2	5KΩ±15% 0.2W

Type 3 (DC±6V)



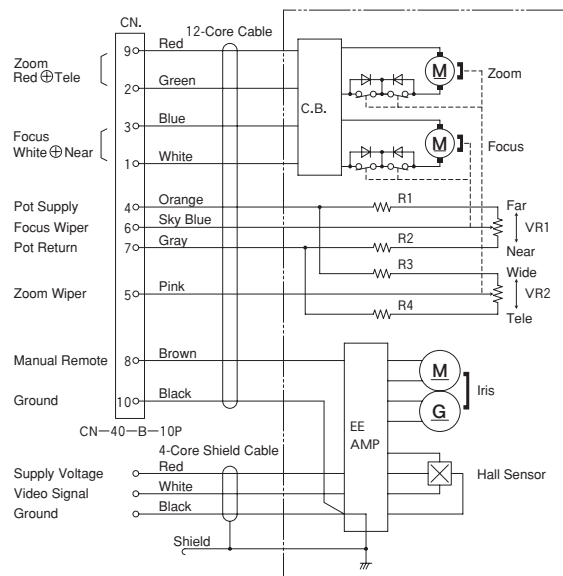
R1、R2、R3、R4	1KΩ±1% 0.1W
VR1、VR2	5KΩ±15% 0.2W

Technical Information

Wiring Diagram for F type zoom lenses

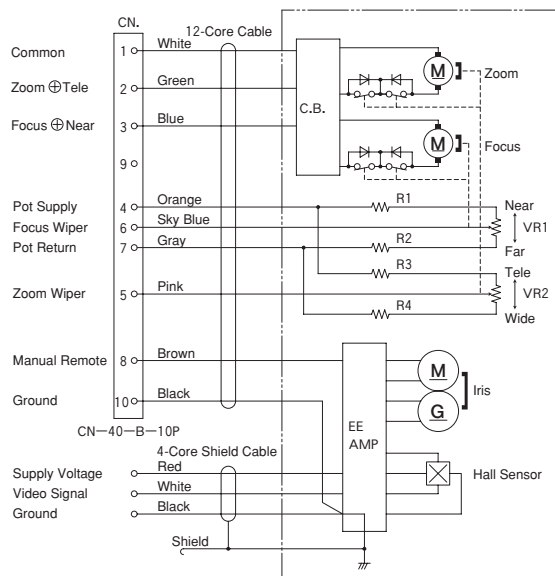
■ Motorized Zoom and Focus with Pre-Set ■ Auto-Iris with Manual Override

Type 1 (DC6V) / Type 5 (DC12V)



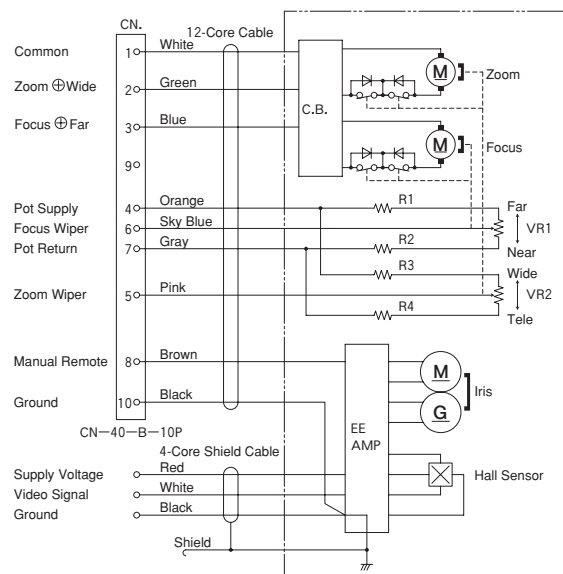
R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Type 2 (DC±12V)



R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Type 3 (DC±6V)



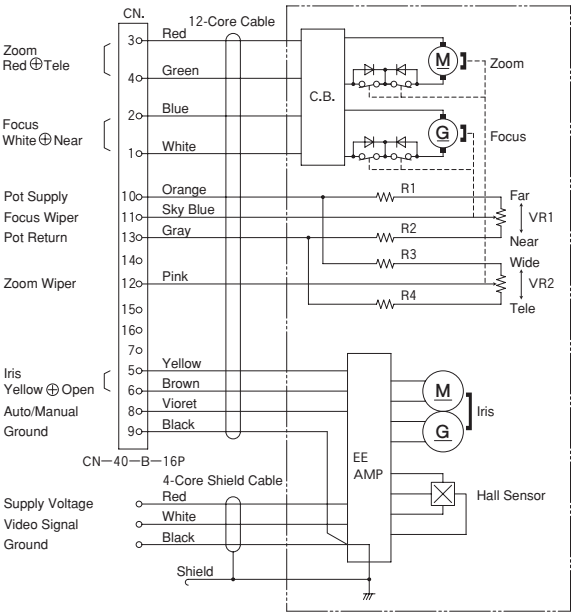
R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Technial Information

Wiring Diagram for F type zoom lenses (with D/A converter)

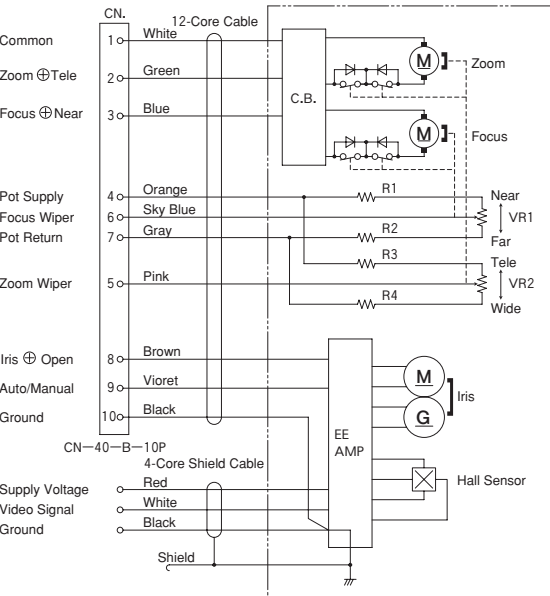
Motorized Zoom and Focus with Pre-Set Auto-Iris with Manual Override
*D/A converter is option for F type of zoom lenses.

Type 1 (DC6V) / Type 5 (DC12V)



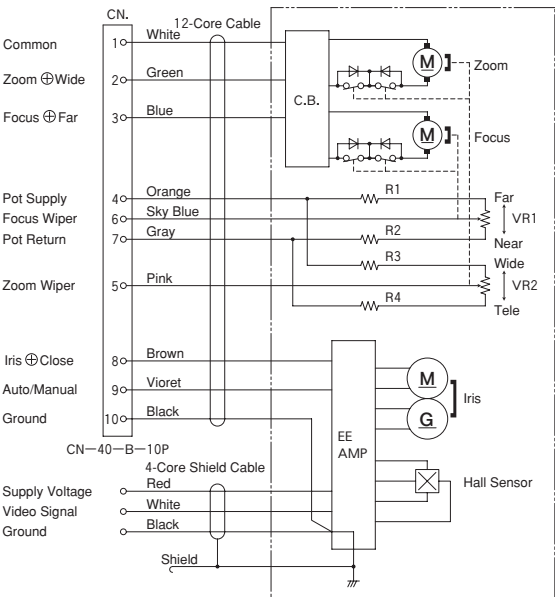
R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Type 2 (DC±12V)



R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Type 3 (DC±6V)



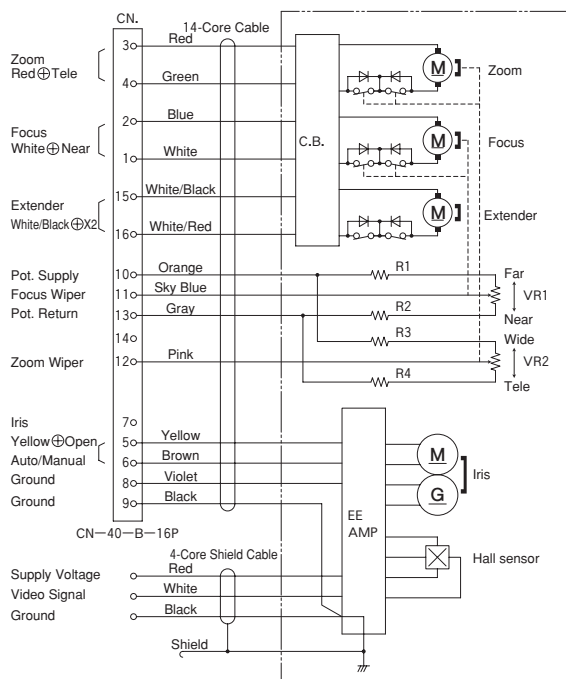
R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Technical Information

Wiring Diagram for H55ZME-F (Built-In 2x Extender)

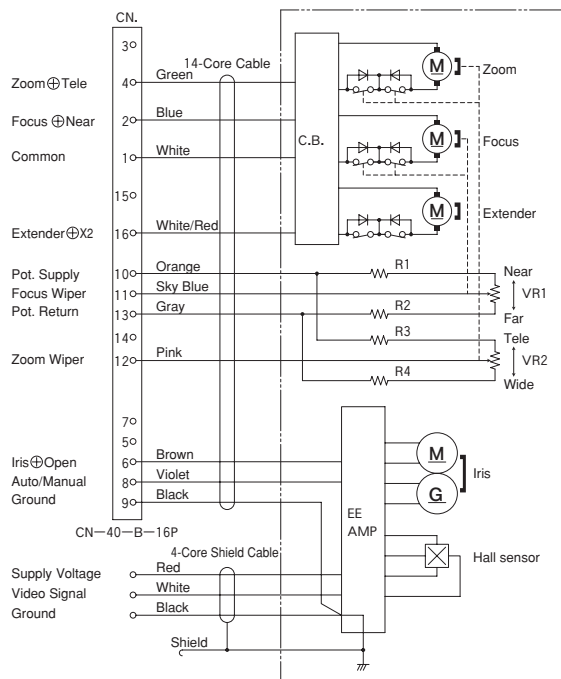
■ Motorized Zoom and Focus with Pre-Set ■ Auto-Iris with Manual Overried ■ Built-In Motorized 2x Extender
*D/A converter is the standard for H55ZME-F.

Type 5 (DC12V) with D/A converter



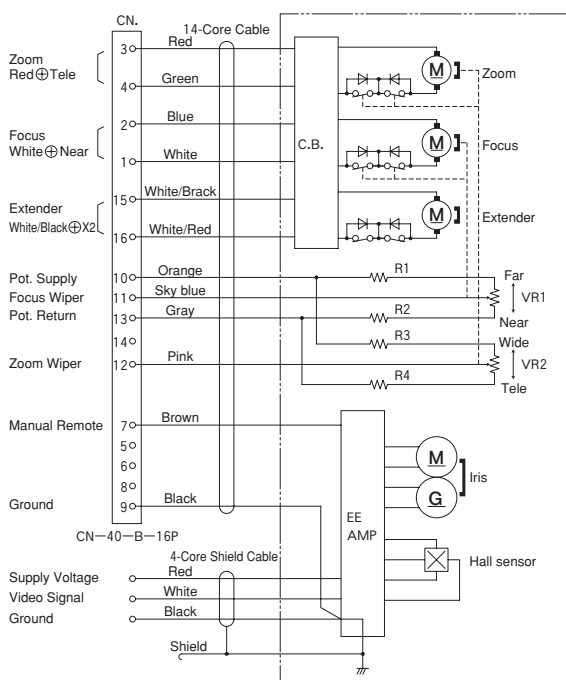
R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Type 2 (DC±12V) with D/A converter



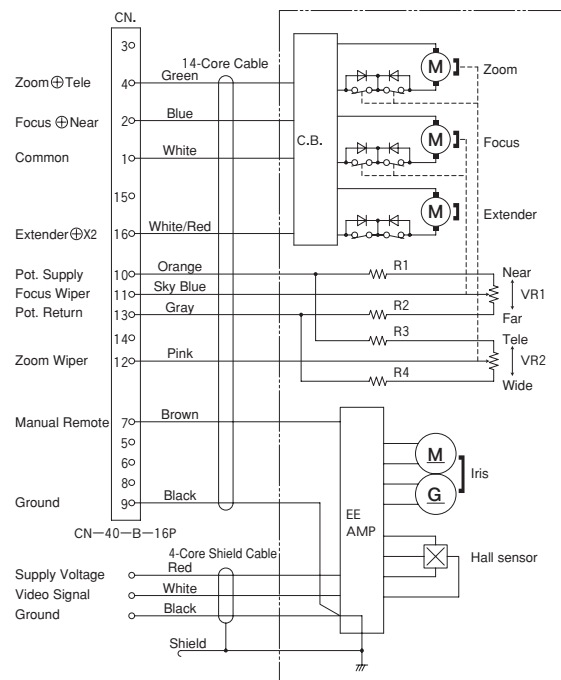
R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Type 5 (DC12V)



R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

Type 2 (DC±12V)

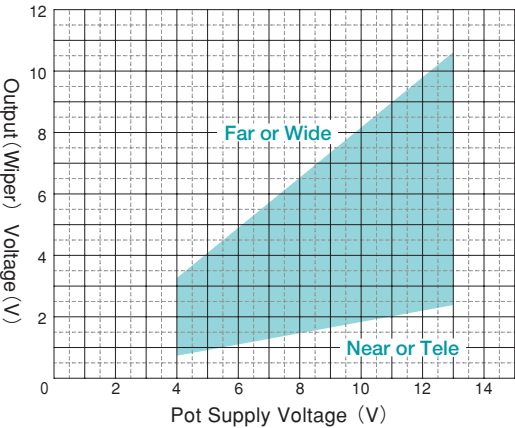


R1, R2, R3, R4	1KΩ±1% 0.1W
VR1, VR2	5KΩ±15% 0.2W

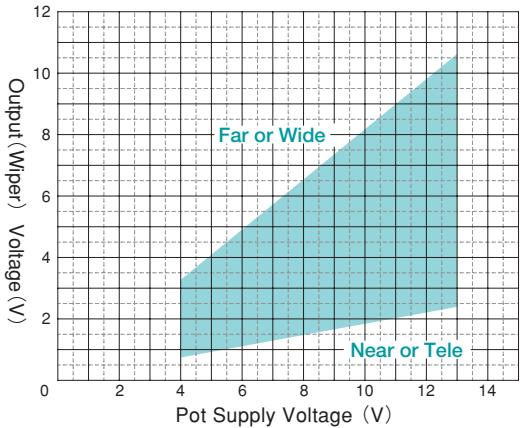
Technical Information

Pot (Pre-Set) Supply Output range Characteristics

Type 1 & 3



Type 2 & 3



Manual Override (without D/A converter)

Manual Override (without D/A converter) and "ALC" can be controlled remotely as per the following schematic diagram.

Schematic diagram of the Manual Override circuit. It shows a +Vcc supply connected to a network of resistors (R1, R2, VR1) and a switch (SW1). The switch is controlled by an 'EE AMP' block. The output is connected to a 'Brown' wire and a 'Black' wire. The circuit is labeled with 'OPEN' and 'CLOSE' states.

SW (Switch)	IRIS MODE
Open or Ground	Auto
Close	Manual Remote

Input Voltage (Vcc) (V)	Resistor (R1) (KΩ)	Resistor (R2) (KΩ)
13	1.8	0.33
12.5	1.6	0.33
12	1.5	0.33
11.5	1.3	0.33
10.5	1.3	0.33
10	1.2	0.33
9.5	1	0.33
9	0.91	0.33
8.5	0.82	0.33
8	0.68	0.33
7.5	0.58	0.33
7	0.47	0.33
6.5	0.33	0.33
6	0.22	0.33
5.5	0.1	0.33
5	0	0.33

*Vcc represents supply voltage from a lens controller.

Video Iris and DC Iris

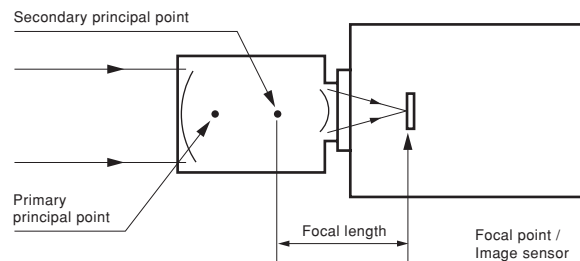
Auto Iris offers DC Driven and Video Driven types. Video Driven Iris is equipped with an amplifier inside and is operated by Video Signal and DC Power Supply from the camera. DC Driven Iris is not equipped with an amplifier and is operated by DC Power Supply (Driving and Damping) controlled by the circuit inside the camera.

Technical Information

CCTV is widely accepted as an important and valuable tool in many areas. Manual iris lenses for constant, stable lighting conditions and auto iris lenses for variable lighting conditions. Select the best suited lens for optimum performance in each application.

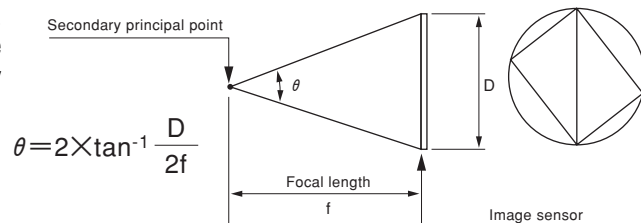
Focal Length

Rays from infinitely distance objects are condensed internally in the lens at a common point on the optical axis. The point at which the image sensor of the CCTV camera is positioned, is called a focal point. By virtue of design, lenses have 2 principal points, a primary principal point & a secondary principal point, the distance between the secondary principal point and the focal point (image sensor) determines the focal length of the lens.



Angle of View

The angle formed by the 2 lines from the secondary principal point to the image sensor is called the angle of view. Therefore, the focal length of the lens is fixed regardless of the image format size of the CCTV camera. Conversely, the angle of view varies in accordance with the image size. The focal lengths in the catalog are nominal and the angles of view calculated by the formula referring to the focal lengths are approximate.



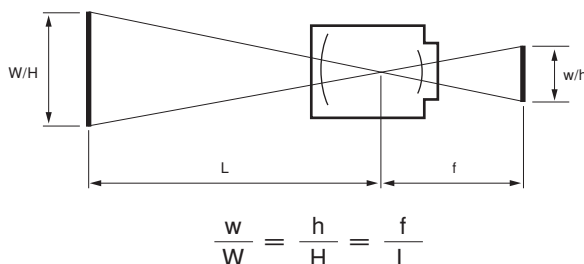
F-Number

The F number is the index for the amount of light that passes through a lens. The smaller the number, the greater the amount of light. The F number is a ratio between focal length and effective aperture as follows.

$$\text{F Number} = \frac{f}{D} \quad \begin{array}{l} f = \text{focal length} \\ D = \text{effective diameter} \end{array}$$

Field of View

The field of view varies along with the focal length of the lens as follows.



- W : width of object
- H : height of object
- w : width of format
 - 1/2 format = 6.4mm, 1/3 format = 4.8mm,
 - 1/4 format = 3.6mm
- h : height of format
 - 1/2 format = 4.8mm, 1/3 format = 3.6mm,
 - 1/4 format = 2.7mm
- f : focal length
- L : object distance

Example : Full image of 4.5m-high object on a TV monitor camera: 1/3 format, Object distance: 10m
 H = 4.5m = 4,500mm L = 10m = 10,000mm

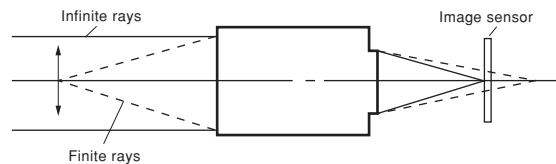
$$\frac{h}{H} = \frac{f}{L} \longrightarrow \frac{3.6}{4,500} = \frac{f}{10,000} \longrightarrow f = 8\text{mm}$$

Technical Information

Close-Up Application

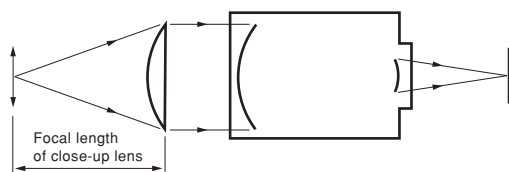
1) Extension Tube (Macro Ring)

When the rays originate from a finite object distance, the rays are condensed at a point further than the focal point, while the rays from infinite distance are condensed at the actual focal point. The focus adjustment moves the lens barrel toward the object to shift the focusing point at the image sensor. However, the amount of focusing adjustment is mechanically limited as seen by the minimum object distance. Extension Tube (Macro Ring) is inserted in between the lens and camera to shift the focus point further than the mechanical limit for close-up focus.



2) Close-Up Lens

The close-up lens has a positive meniscus lens as a supplementary lens. Generally, 3 types of close-up lenses are available, close-up lens No.1, 2 & 3 have 1,000mm (1,000mm/1), 500mm (1,000mm/2), 333mm (1,000mm/3) respectively. When an object is placed at the focal point of the close-up lens, the rays from the object are converted by the close-up lens to be parallel rays against the optical axis as seen on the right.



This lens is effective when wishing to come closer to an object than the min. object distance of a lens, or taking close-up pictures of small objects.

Depth of Field

When an object is focused, it is typically observed that the area in front and behind the object is also in focus. The range in focus is called Ådepth of fieldÅh. When the background is extended to infinity, the object distance (focusing distance) is called Åhyper focal distanceÅh. Depth of field is calculated by using the following formula.

$$H = \frac{f^2}{C \times F}$$

$$T1 = \frac{B(H+f)}{H+B}$$

$$T2 = \frac{B(H-f)}{H-B}$$

F = F No.

H = hyper focal distance

f = focal length

B = object distance (measured from image sensor)

T1 = near limit

T2 = far limit

C = circle of least confusion

1/2 format = 0.015mm, 1/3 format = 0.011mm,

1/4 format = 0.008mm

Depth of field increases when:

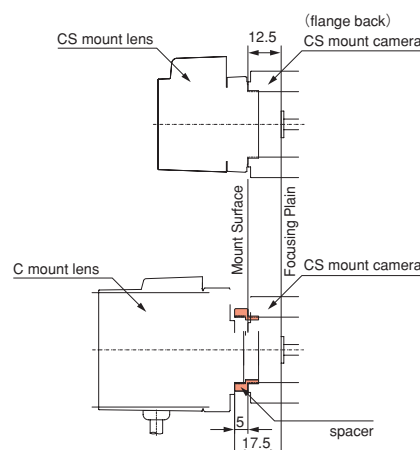
*Focal length is shorter

*F-number is larger (F/1.4 < F/5.6)

*Object distance is longer

CS and C mount

CS mount as present CCTV market standard is specially designed for CCTV camera lens developed by PENTAX. This is to minimize the size and to improve the performance of lens by shortening the flange back by 5mm comparing to C mount. C and CS mount lenses are available in the present market, and CS mount is only applicable to CS mount camera. C mount lens is applicable not only to C mount camera but also to CS mount camera by using 5mm Adapter Ring (as C-CS-A).

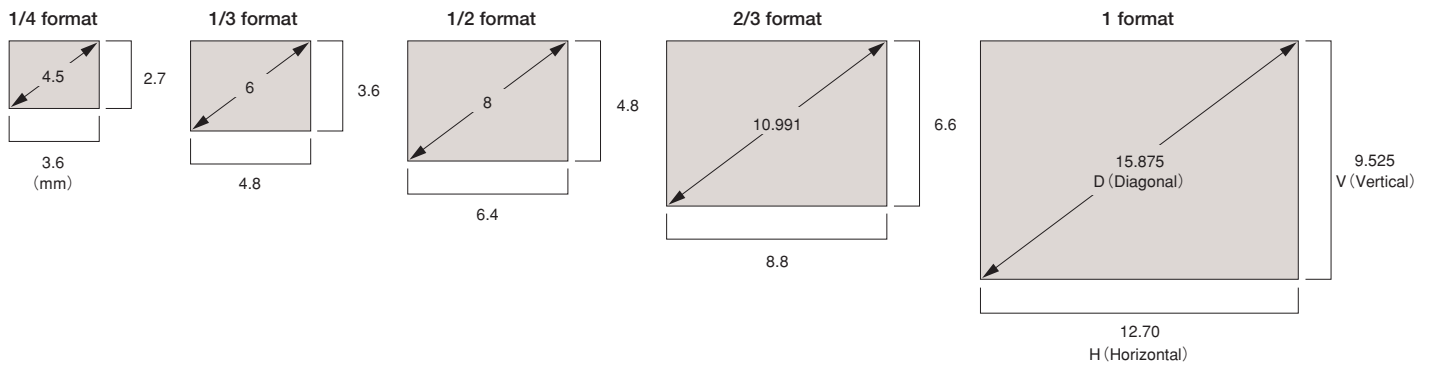


Angle View

Unit : Degrees

Model	1/4 format : Angle of view (°)			1/3 format : Angle of view (°)			1/2 format : Angle of view (°)			2/3 format : Angle of view (°)			1 format : Angle of view (°)		
	D	H	V	D	H	V	D	H	V	D	H	V	D	H	V
H416	60.14	47.87	35.76	81.05	64.27	47.87	110.21	86.77	64.27	—	—	—	—	—	—
H612A	40.93	32.97	24.84	53.68	43.55	32.97	68.89	56.93	43.55	—	—	—	—	—	—
H1212B	21.18	16.93	12.70	28.28	22.60	16.93	37.83	30.18	22.60	—	—	—	—	—	—
C418DX	51.78	41.68	31.40	68.14	55.11	41.68	88.66	72.37	55.11	115.94	96.36	74.46	—	—	—
C815B	29.92	24.02	18.07	39.57	31.87	24.02	51.85	42.09	31.87	67.87	56.49	43.34	—	—	—
B1214D-2	20.21	16.21	12.19	26.78	21.53	16.21	35.32	28.51	21.53	47.48	38.65	29.37	65.08	53.95	41.59
B1218A	20.61	16.53	12.42	27.35	21.97	16.53	36.13	29.12	21.97	48.73	39.56	30.01	67.20	55.49	42.61
C1614A	15.86	12.70	9.54	21.09	16.91	12.70	27.99	22.48	16.91	38.19	30.72	23.17	—	—	—
B2514D	10.29	8.23	6.17	13.71	10.97	8.23	18.27	14.62	10.97	25.10	20.10	15.08	36.10	28.95	21.74
B2518	10.27	8.23	6.18	13.66	10.95	8.23	18.11	14.55	10.95	24.64	19.87	15.00	34.79	28.24	21.44
B5014A	5.16	4.13	3.10	6.87	5.50	4.13	9.14	7.32	5.50	12.52	10.04	7.55	17.93	14.41	10.85
B7514C	3.44	2.75	2.06	4.59	3.67	2.75	6.13	4.90	3.67	8.45	6.75	5.05	12.30	9.78	7.30
H1214-M	20.54	16.49	12.39	27.17	21.88	16.49	35.69	28.91	21.88	—	—	—	—	—	—
C1614-M	16.05	12.86	9.66	21.32	17.11	12.86	28.25	22.72	17.11	38.28	30.97	23.41	—	—	—
C2514-M	10.29	8.24	6.18	13.70	10.97	8.24	18.21	14.60	10.97	24.89	20.00	15.05	—	—	—
C3516-M	7.58	6.07	4.55	10.10	8.09	6.07	13.43	10.76	8.09	18.39	14.76	11.10	—	—	—
C5028-M	5.15	4.12	3.09	6.86	5.50	4.12	9.14	7.32	5.50	12.53	10.05	7.55	—	—	—
C7528-M	3.54	2.83	2.13	4.71	3.77	2.83	6.28	5.03	3.77	8.61	6.90	5.18	—	—	—
H2520-UV	10.30	8.24	6.18	13.71	10.98	8.24	18.24	14.62	10.98	—	—	—	—	—	—
B2528-UV	10.40	8.30	6.20	13.90	11.10	8.30	18.90	14.80	11.10	25.50	20.40	15.30	37.20	29.68	22.20
B7838-UV	3.30	2.70	2.00	4.40	3.50	2.70	5.90	4.70	3.50	8.10	6.50	4.90	11.80	9.50	7.10
TS212E	88.60	71.54	54.09	117.79	94.28	71.54	—	—	—	—	—	—	—	—	—
TS412E	60.35	49.18	37.36	76.71	63.89	49.18	—	—	—	—	—	—	—	—	—
TS812E	31.27	25.05	18.80	41.34	33.33	25.05	—	—	—	—	—	—	—	—	—
HS316E	66.63	53.50	40.23	88.02	70.96	53.50	115.18	93.58	70.96	—	—	—	—	—	—
HS614E	41.90	33.83	25.55	54.61	44.52	33.83	69.24	57.79	44.52	—	—	—	—	—	—
HS1214E	20.65	16.52	12.39	27.54	22.03	16.52	36.74	29.38	22.03	—	—	—	—	—	—
H416E	60.14	47.87	35.76	81.05	64.27	47.87	110.21	86.77	64.27	—	—	—	—	—	—
H612E	40.93	32.97	24.84	53.68	43.55	32.97	68.89	56.93	43.55	—	—	—	—	—	—
H1212E	21.18	16.94	12.70	28.28	22.60	16.93	37.83	30.19	22.60	—	—	—	—	—	—
C814E	31.21	25.10	18.91	41.11	33.22	25.10	53.57	43.67	33.22	70.08	58.25	44.94	—	—	—
B1214E	20.22	16.22	12.19	26.80	21.55	16.22	35.35	28.54	21.55	47.55	38.69	29.40	65.22	54.04	41.64
C1614E	15.87	12.72	9.55	21.11	16.92	12.72	28.02	22.50	16.92	38.25	30.76	23.19	—	—	—
B2514E	10.29	8.23	6.17	13.71	10.97	8.23	18.27	14.62	10.97	25.09	20.09	15.08	36.08	28.94	21.73
B5018E	5.16	4.13	3.10	6.87	5.50	4.13	9.14	7.32	5.50	12.51	10.04	7.55	17.89	14.40	10.85
B7518AE	3.42	2.74	2.05	4.56	3.65	2.74	6.08	4.87	3.65	8.35	6.69	5.02	12.03	9.64	7.23
TS420PE	64.14	51.24	38.39	86.17	68.47	51.24	—	—	—	—	—	—	—	—	—
H620PE	40.26	32.44	24.46	52.86	42.82	32.44	68.66	56.12	42.82	—	—	—	—	—	—
TS2V114E	180-83.11	180-64.89	107.98-47.84	180-118.31	180-89.55	180-64.89	—	—	—	—	—	—	—	—	—
TS2V214AED	90.54-44.13	72.26-35.35	54.08-26.54	121.44-58.68	96.70-47.04	72.26-35.35	—	—	—	—	—	—	—	—	—
TS2V314CED	76.79-33.20	60.52-26.54	44.86-19.90	106.05-44.33	82.41-35.42	60.52-26.54	—	—	—	—	—	—	—	—	—
TS3V310	87.06-33.06	68.98-26.44	51.30-19.84	118.46-44.08	93.22-35.26	68.98-26.44	—	—	—	—	—	—	—	—	—
TS3V310ED	87.06-33.06	68.98-26.44	51.30-19.84	118.46-44.08	93.22-35.26	68.98-26.44	—	—	—	—	—	—	—	—	—
TS4V214ED	89.21-22.53	71.82-18.05	54.07-3.55	115.04-29.30	93.29-23.50	70.58-17.70	—	—	—	—	—	—	—	—	—
TS10V518AED	47.25-5.18	37.80-4.14	28.35-3.11	63.00-6.90	50.00-5.52	37.80-4.14	—	—	—	—	—	—	—	—	—
HS2V616ED	44.22-21.57	34.98-17.23	26.03-12.91	60.60-28.86	47.38-23.02	34.98-17.23	86.44-38.80	65.29-30.82	47.38-23.02	—	—	—	—	—	—
TS6ZE	38.70-6.97	31.26-5.59	23.60-4.20	50.39-9.23	41.12-7.43	31.26-5.59	—	—	—	—	—	—	—	—	—
H6Z810	30.99-5.50	24.92-4.42	18.76-3.33	40.75-7.27	32.99-5.86	24.92-4.42	52.74-9.52	43.26-7.73	32.99-5.86	—	—	—	—	—	—
H6ZBE	30.98-5.50	24.92-4.42	18.76-3.33	40.74-7.27	32.98-5.86	24.92-4.42	52.72-9.52	43.24-7.73	32.98-5.86	—	—	—	—	—	—
C6Z1218	20.06-3.43	16.07-2.75	12.06-2.06	26.66-4.57	21.38-3.66	16.07-2.75	35.34-6.07	28.41-4.87	21.38-3.66	47.99-8.30	38.76-6.67	29.28-5.02	—	—	—
C6ZE	20.04-3.43	16.05-2.75	12.05-2.06	26.63-4.57	21.36-3.66	16.05-2.75	35.30-6.07	28.38-4.87	21.36-3.66	47.94-8.30	38.72-6.67	29.25-5.02	—	—	—
TS6ZME	38.70-6.97	31.26-5.59	23.60-4.20	50.39-9.23	41.12-7.43	31.26-5.59	—	—	—	—	—	—	—	—	—
TS10ZME	41.57-4.49	33.77-3.62	25.61-2.73	53.36-5.88	44.07-4.78	33.77-3.62	—	—	—	—	—	—	—	—	—
TS15ZAME	40.89-2.90	32.96-2.33	24.86-1.76	53.59-3.80	43.48-3.08	32.96-2.33	—	—	—	—	—	—	—	—	—
TS20ZAME	28.35-1.43	22.61-1.15	16.93-0.87	38.16-1.90	30.28-1.53	22.61-1.15	—	—	—	—	—	—	—	—	—
HS6ZME	30.81-5.46	24.81-4.39	18.70-3.30	40.42-7.23	32.78-5.82	24.81-4.39	52.07-9.48	42.88-7.69	32.78-5.82	—	—	—	—	—	—
H6ZBME	30.98-5.50	24.92-4.42	18.76-3.33	40.74-7.27	32.98-5.86	24.92-4.42	52.72-9.52	43.24-7.73	32.98-5.86	—	—	—	—	—	—
HS10ZME	32.46-3.52	26.15-2.83	19.71-2.12	42.50-4.65	34.52-3.75	26.15-2.83	54.43-6.09	45.05-4.95	34.52-3.75	—	—	—	—	—	—
H10ZME	32.85-3.54	26.45-2.84	19.93-2.13	43.04-4.69	34.94-3.77	26.45-2.84	55.25-6.18	45.63-4.99	34.94-3.77	—	—	—	—	—	—
H15ZAME	30.84-5.29	24.76-1.76	18.62-1.32	40.78-2.90	32.85-2.34	24.76-1.76	53.64-3.81	43.37-3.09	32.85-2.34	—	—	—	—	—	—
H20ZAME	21.50-1.10	17.17-0.88	2.86-0.66	28.81-1.46	22.95-1.17	17.17-0.88	38.89-1.94	30.78-1.56	22.95-1.17	—	—	—	—	—	—
H55ZME-F	21.65-0.39	17.17-0.31	12.79-0.23	29.47-0.52	23.18-0.42	17.17-0.31	40.84-0.69	31.65-0.56	23.18-0.42	—	—	—	—	—	—
H55Z (w/2x)	10.68-0.20	8.53-0.16	6.39-0.12	14.29-0.26	11.40-0.21	8.53-0.16	19.20-0.35	15.27-0.28	11.40-0.21	—	—	—	—	—	—
H18ZME-F	32.00-1.79	25.67-1.43	19.29-1.07	42.38-2.39	34.10-1.91	25.67-1.43	55.69-3.20	45.10-2.55	34.10-1.91	—	—	—	—	—	—
C6Z1218M3	20.06-3.43	16.08-2.75	12.06-2.06	26.66-4.57	21.40-3.66	16.07-2.75	35.34-6.07	28.44-4.87	21.38-3.66	47.99-8.30	38.82-6.67	29.28-5.02	—	—	—
C6ZAME	20.04-3.43	16.07-2.75	12.05-2.06	26.63-4.57	21.36-3.66	16.05-2.75	35.30-6.07	28.38-4.87	21.36-3.66	47.94-8.30	38.72-6.67	29.25-5.02	—	—	—
QD222E	110.64	88.20	65.94	—	—	—	—	—	—	—	—	—	—	—	—
QD320E	88.44	69.14	51.04	—	—	—	—	—	—	—	—	—	—	—	—
QD420E	65.40	51.86	38.64	—	—	—	—	—	—	—	—	—	—	—	—
QD2V2214AE	117.81-57.16	93.36-45.75	69.49-34.35	—	—	—	—	—	—	—	—	—	—	—	—
QD2V2814AE	95.18-44.84	74.62-35.87	55.21-26.91	—	—	—	—	—	—	—	—	—	—	—	—
QD2V2214BE-DN	117.19-57.32	92.84-45.88	69.12-34.44	—	—	—	—	—	—	—	—	—	—	—	—
QD2V2814BE-DN	95.29-44.82	74.67-35.86	55.24-26.90	—	—	—	—	—	—	—	—	—	—	—	—
QD3ZMED	92.20-35.80	73.40-28.70	54.70-21.60	—	—	—	—	—	—	—	—	—	—	—	—
TD3V314E-DN	86.51-33.08	68.67-26.48	51.16-19.87	117.20-44.04	92.52-35.28	68.67-26.48	—	—	—	—	—	—	—	—	—

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