

PENTAX



CCTV

Closed Circuit Television Lenses



For Security

Motorized Zoom Lens

Manual Zoom Lens

Vari-Focal Lens

Board Camera Lens

Monofocal Auto-Iris Lens

Pinhole Lens

For Machine Vision

Line-Scan Lens

UV Lens

Mega-Pixel Lens

Monofocal Manual Iris Lens

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.



FAR
FOCUS

WIDE
ANGLE

NEAR
PIXEL

EXX
OPTICAL
ZOOM



VALI
FOCAL

C O N T E N T S

■ For Security

Motorized Zoom Lens	5
Manual Zoom Lens	19
Vari-Focal Lens	21
Board Camera Lens	25
Monofocal Auto-Iris Lens	29
Auto-Iris Pinhole Lens	33

■ For Machine Vision

Line-Scan Lens	35
UV Lens	37
Mega-Pixel Lens	39
Monofocal Manual Iris Lens	41

Product Range	3
---------------	---

Product Outline	44
-----------------	----

Accessories	45
-------------	----

Technical Information	47
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Glossary	55
----------	----

Table of Angles of View	57
-------------------------	----

Products Line Up

MODEL	Focal Length (mm)	Iris Range	Mount	Horizontal Angel 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					
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 or DC Iris	6
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 or DC Iris	7
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 or DC Iris	7
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 or DC Iris	8
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 or DC Iris, Preset	8
TS15ZAME-FH(C70628)	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 Iris w/Override, Preset *	8
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	2,590	Video or DC Iris	9
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	2,590	Video or DC Iris, Preset	9
TS20ZAME-F(C70905)	9.0-180	1.2-510	CS	22.61-1.15	30.28-1.53			95 P=1.0	116×135×223.5	2,590	Video Iris w/Override, Preset *	9
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 or DC Iris	10
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 or DC Iris	11
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 or DC Iris, Preset	11
H6ZBME-F(C60813)	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 Iris w/Override, Preset	11
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 or DC Iris	12
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 or DC Iris	13
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 or DC Iris, Preset	13
H10ZME-F(C60704)	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 Iris w/Override, Preset *	13
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 or DC Iris	14
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	840	Video or DC Iris, Preset	14
H15ZAME-FH(C60830)	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	840	Video Iris w/Override, Preset *	14
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	2,590	Video or DC Iris	15
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	2,630	Video or DC Iris, Preset	15
H20ZAME-FH(C61240)	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	2,630	Video Iris w/Override, Preset *	15
H55ZAME-F(C61244)	12-1680	4.0-360	C	17.17-0.12	23.18-0.16	31.65-0.22		105 P=1.0	155×138×355	5,400	Video Iris w/Override, Preset *	16
2/3 format												
C6ZAME(C31220)	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	101.5×92.2×94.5	620	Video Iris	17
C6ZME-P(C31221)	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	101.5×92.2×94.5	655	Video Iris, Preset	17
C6Z1218M3(C31211)	12.5-75	1.8-C	C	16.07-2.75	21.38-3.66	28.41-4.87	38.76-6.67	49 P=0.75	101.5×92.2×94.5	820	Motorized Iris	18
D/A converter option available on the models marked with (*)												
Manual Zoom Lens												
1/2 format												
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 or DC Iris	19
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, Lock Screws	20
2/3 format												
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	19
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	20
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	22
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 or DC Iris, Day & Night	22
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	22
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 or DC Iris, Day & Night	23
TS4V214ED(C70223)	2.8-12	1.4-360	CS	71.82-18.05	93.29-23.50				43.0×51.5×68.1	83	DC Iris	23
TS10V518AED(C70509)	5.0-50	1.8-360	CS	37.80-4.14	50.00-5.52				44.5×50.8×61.5	140	DC Iris	23
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	24
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 or DC Iris, Day & Night	24
Board Camera Lens												
1/4 format												
QD2V2214BE-DN(C40218)	2.2-4.5	1.4-200	14	92.84-45.88					29.6×50.2×31.9	34	DC Iris, Day&Night	27
QD2V2814BE-DN(C40217)	2.8-5.8	1.4-200	14	74.67-35.86					29.6×50.2×31.9	33	DC Iris, Day&Night	27
QD3ZMED(C40219)	2.8-7.3	1.9-200	Special	73.42-28.74					35.1×29.7×26.8	18	DC Iris	26
1/3 format												
TD3V314E-DN(C70318)	3.0-8.0	1.4-300	14	68.67-26.48	92.52-35.28				29.6×41.2×33.1	29	DC Iris, Day & Night	28
TD3V212ED(C70225)	2.9-9.0	1.2-300	14	70.91-23.67	96.88-31.54				29.6×37.1×34.0	23	DC Iris	28

MODEL	Focal Length (mm)	Iris Range	Mount	Horizontal Angel 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 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	30
1/2 format													
H416E(C60405)	4.2	1.6-360	C	47.90	64.30	86.78		-		46.5 × 50.5 × 45	135	Video Iris	30
H416ER(C60404)	4.2	1.6-360	C	47.90	64.30	86.78		-		46.5 × 50.5 × 45	135	Video Iris with Override	30
H612E(C60625)	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	30
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 with Override	30
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	30
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 with Override	30
2/3 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	31
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 with Override	31
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	31
C1614ER(C31631)	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 with Override	31
1 format													
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	31
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 with Override	31
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	31
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 with Override	31
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 , Limited numbers available	32
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 with Override , Limited numbers available	32
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	32

Auto-Iris Pinhole Lens

TS420PE(C70403)	4.0	2.0-64	CS	51.24	68.47					36.5 × 42.3 × 65.9	79	DC Iris	34
H620PE(C60626)	6.2	2.0-300	C	32.44	42.82	56.12				39 × 45.5 × 83.2	100	Video or DC Iris	34

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, Lock Screws	38
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	38
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	230nm-800nm Ray	38

Machine Vision Mega-Pixel Lens

1/2 format													
H1214-M(C61232)	12.0	1.4-16	C	16.49	21.88	28.91				29.5 × 28.5	55	Lock Screws	40
2/3 format													
C1614-M(C31634)	16.0	1.4-16	C	12.86	17.11	22.72	30.97	27 P=0.5		29.5 × 33.2	63	Lock Screws	40
C2514-M(C32500)	25.0	1.4-16	C	8.24	10.97	14.60	20.00	27 P=0.5		29.5 × 32	55	Lock Screws	40
C3518-M(C33500)	35.0	1.6-16	C	6.07	8.09	10.76	14.76	27 P=0.5		29.5 × 35.4	64	Lock Screws	40
C5028-M(C35001)	50.0	2.8-22	C	4.12	5.50	7.32	10.05	27 P=0.5		29.5 × 34	55	Lock Screws	40
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 Screws	40

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 Screws	42
H612A(C60607)	6.0	1.2-C	C	32.97	43.55	56.93		40.5 P=0.5		42 × 46	125	Lock Screws	42
H1212B(C61215)	12.0	1.2-22	C	16.93	22.6	30.18		27 P=0.5		30 × 35.5	67	Lock Screws	42
2/3 format													
C418DX(C30405)	4.8	1.8-C	C	41.68	55.11	72.37	96.36			40.5 × 35.5	105	Lock Screws	42
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 Screws	42
C1614A(C31630)	16.0	1.4-22	C	12.70	16.91	22.48	30.72	27 P=0.5		30 × 33	58	Lock Screws	42
1 format													
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 Screws	43
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 Screws	43
B2514DX(C22525)	25.0	1.4-22	C	8.23	10.97	14.62	20.10	27 P=0.5		30 × 37.3	76	Lock Screws	43
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 Screws	43
B5014A(C25011)	50.0	1.4-C	C	4.13	5.50	7.32	10.04	46 P=0.75		48 × 48	180	Lock Screws	43
B7514C(C27509)	75.0	1.4-C	C	2.75	3.67	4.90	6.75	58 P=0.75		62 × 79	450	Lock Screws	43

MODEL	Focal Length (mm)	Iris Range	Mount	Magnification	Horizontal Field of View(mm)				Filter Size	Remarks	Page
					1/4 format	1/3 format	1/2 format	2/3 format			

Machine Vision 5 Mega-Pixel Lens

C5028A-M02(C35003)	50.0	2.8-22	C	0.15-0.23	24-16	32-21	43-28	59-38	52 P=0.75	Lock Screws, 5 Mega-Pixel	39
C5028A-M035(C35002)	50.0	2.8-22	C	0.28-0.4	13-9	17-12	23-16	31-22	52 P=0.75	Lock Screws, 5 Mega-Pixel	39

MODEL	Focal Length (mm)	Iris Range	Mount	Magnification	Horizontal Field of View(mm)			Filter Size	Dimensions (D×L)W×H×L)mm	Weight(g)	Remarks	Page
					4,096x7µm	7,450x4.7µm	4,096x10µm					

Line-Scan Lens

YF3528(C52915F)	35.0	2.8-22	F	-0.5	5(Magnification:0.5×)	7(Magnification:0.5×)	8(Magnification:0.5×)	62 P=0.75	72 × 56.8	440	Not for photographic camera	36
YK3528(C52915K)	35.0	2.8-22	K	-0.5	5(Magnification:0.5×)	7(Magnification:0.5×)	8(Magnification:0.5×)	62 P=0.75	72 × 57.8	440	Not for photographic camera	36
YF5028A-02(C52981F)	50.0	2.8-22	F	0.15-0.23	191-125	234-152	273-178	52 P=0.75	60 × 63.6	425	Not for photographic camera	36
YK5028A-02(C52981K)	50.0	2.8-22	K	0.15-0.23	191-125	234-152	273-178	52 P=0.75	60 × 64.6	440	Not for photographic camera	36
YF5028A-035(C52980F)	50.0	2.8-22	F	0.28-0.4	102-72	125-88	146-102	52 P=0.75	60 × 70.4	435	Not for photographic camera	36
YK5028A-035(C52980K)	50.0	2.8-22	K	0.28-0.4	102-72	125-88	146-102	52 P=0.75	60 × 71.4	450	Not for photographic camera	36

F(NIKON bayonet mount)

For Security

Motorized Zoom Lens

Motorized Zoom Lens



H55ZAME-F

Motorized Zoom Lens

Feature (H55ZAME-F)

Super-Telephoto capability provides detection at over 4.5 miles

Preset circuitry easily matches high-performance surveillance systems

High resolution optics compatible with C-mount 3CCD cameras

Ultra-High 137.5X Magnification with built-in optical 2.5X extender

RS232C Serial Communication option

Applications:

Surveillance of vast areas, borders, coastlines, parks, town centers and stadiums etc.

Tokyo Tower view from 2.3km away



1 Wide (f=12mm)



2 Mid Range



3 Tele (f=660mm, 55x zoom)



4 Super-Tele with built-in 2.5X extender (f=1,650mm, 137.5x zoom)

TS6ZME Series

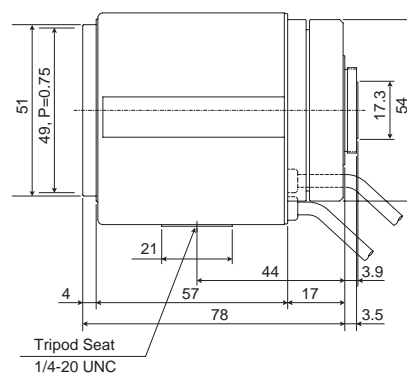
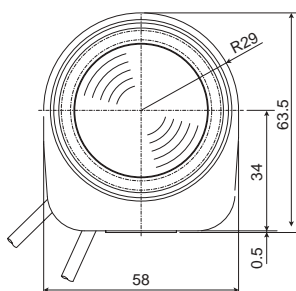


Motorized Zoom Lens

Specifications Code		Standard C70600	
Model	Zoom Operation	Type 1	TS6ZME-1
		Type 2	TS6ZME-2
		Type 3	TS6ZME-3
		Type 5	TS6ZME-5
Format Size		1/3 format	
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	
Iris Operation		Auto-Iris (Video or DC)	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.	
Speed of Focus (Near - Far)		Approx. 5.0 sec.	
Speed of Zoom (Wide - Tele)		Approx. 5.0 sec.	
Weight		410g	
Remarks			

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49.

Unit:mm



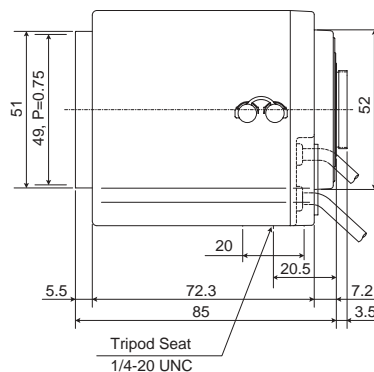
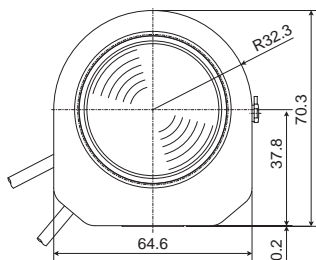
TS10ZME Series



Specifications Code		Standard C70500	Preset C70501
Model	Zoom Operation	Type 1	TS10ZME-1P
		Type 2	TS10ZME-2P
		Type 3	TS10ZME-3P
		Type 5	TS10ZME-5P
Format Size		1/3 format	
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	
Iris Operation		Auto-Iris(Video or DC)	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.	
Speed of Focus (Near - Far)		Approx. 8.0 sec	
Speed of Zoom (Wide - Tele)		Approx. 6.5 sec	
Weight		380g	430g
Remarks			

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49 and 50.

Unit:mm



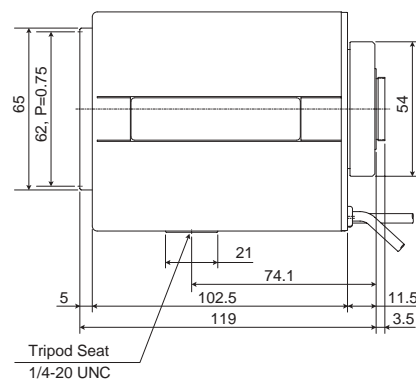
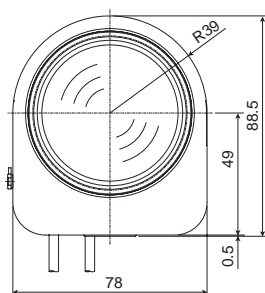
TS15ZAME Series



Specifications Code		Standard C70624	Preset C70627	Full Function (Preset & Iris Override) C70628
Model	Zoom Operation	Type 1	TS15ZAME-1	TS15ZAME-1P
		Type 2	TS15ZAME-2	TS15ZAME-2P
		Type 3	TS15ZAME-3	TS15ZAME-2FH
		Type 5	TS15ZAME-5	TS15ZAME-5P
Format Size		1/3 format		
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		
Iris Operation		Auto-Iris【 Video or DC(Model of DC: TS15ZAMED-)】		Video Iris with Override
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.		
Speed of Focus (Near - Far)		Approx. 8.0 sec.	Approx. 8.0 sec.	High-Speed: Approx. 2.5 sec.
Speed of Zoom (Wide - Tele)		Approx. 6.0 sec.	Approx. 6.0 sec.	High-Speed: Approx. 2.5 sec.
Weight		760g		770g
Remarks		D/A converter option		

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49, 50, 51 and 52.

Unit:mm



TS20ZAME Series

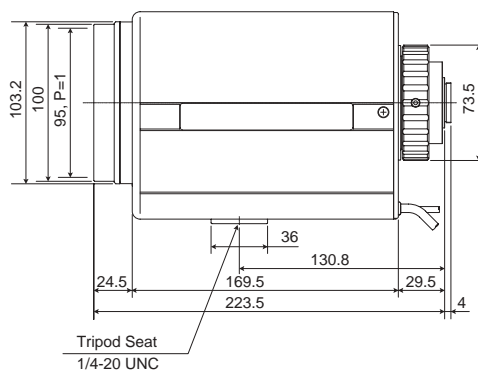
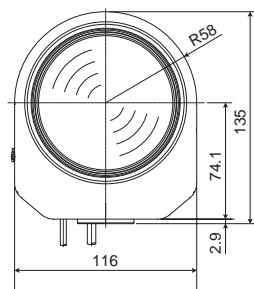
20X
Zoom



Specifications Code		Standard C70904	Preset C70906	Full Function (Preset & Iris Override) C70905	
Model	Zoom Operation	Type 1	TS20ZAME-1	TS20ZAME-1P	-
		Type 2	TS20ZAME-2	TS20ZAME-2P	TS20ZAME-2F
		Type 3	TS20ZAME-3	TS20ZAME-3P	-
		Type 5	TS20ZAME-5	TS20ZAME-5P	TS20ZAME-5F
Format Size		1/3 format			
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 x 135 x 223.5mm			
Iris Operation		Auto-Iris (Video or DC)		Video Iris with Override	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.			
Speed of Focus (Near - Far)		Approx. 10.0 sec.			
Speed of Zoom (Wide - Tele)		Approx. 10.0 sec.			
Weigh		2,590g			
Remarks		D/A converter option			

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49, 50, 51 and 52.

Unit:mm



HS6ZME Series

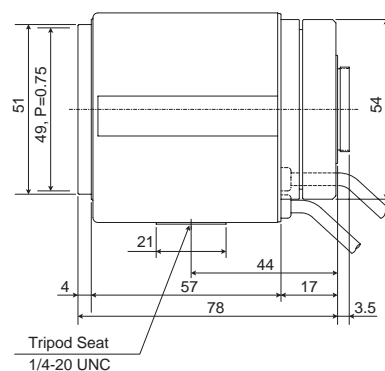
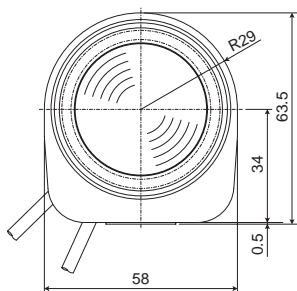


Motorized Zoom Lens

Specifications Code		Standard C60806	
Model	Zoom Operation	Type 1	HS6ZME-1
		Type 2	HS6ZME-2
		Type 3	HS6ZME-3
		Type 5	HS6ZME-5
Format Size		1/2 format	
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 x 63.5 x 78mm	
Iris Operation		Auto-Iris(Video or DC)	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.	
Speed of Focus (Near - Far)		Approx. 5.0 sec.	
Speed of Zoom (Wide - Tele)		Approx. 5.0 sec.	
Weight		400g	
Remarks			

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49.

Unit:mm



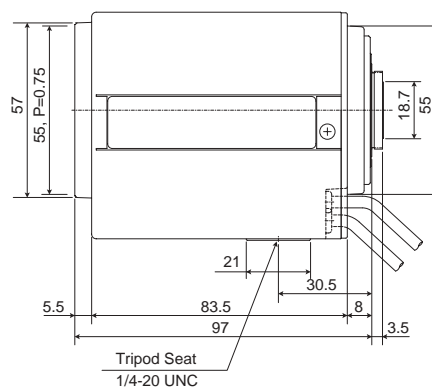
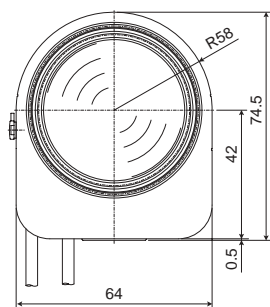
H6ZBME Series



Specifications Code		Standard C60809	Preset C60810	Full Function (Preset & Iris Override) C60813
Model	Zoom Operation	Type 1	H6ZBME-1P	H6ZBME-1F
		Type 2	H6ZBME-2P	H6ZBME-2F
		Type 3	H6ZBME-3P	H6ZBME-3F
		Type 5	H6ZBME-5P	H6ZBME-5F
Format Size		1/2 format		
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		
Iris Operation		Auto-Iris(Video or DC)		Video Iris with Override
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.		
Speed of Focus (Near - Far)		Approx. 6.0 sec.		
Speed of Zoom (Wide - Tele)		Approx. 6.0 sec.		
Weight		530g		540g
Remarks				

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49, 50, and 51.

Unit:mm



HS10ZME Series

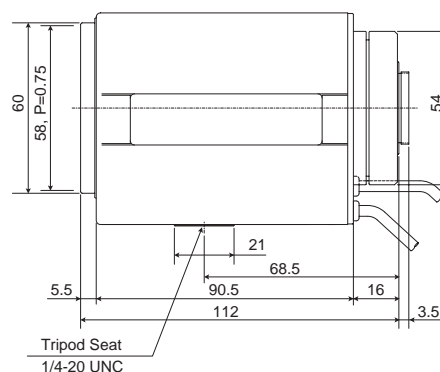
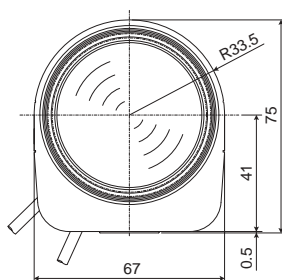


Motorized Zoom Lens

Specifications Code		Standard C60700	
Model	Zoom Operation	Type 1	HS10ZME-1
		Type 2	HS10ZME-2
		Type 3	HS10ZME-3
		Type 5	HS10ZME-5
Format Size		1/2 format	
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	
Iris Operation		Auto-Iris(Video or DC)	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.	
Speed of Focus (Near - Far)		Approx. 6.5 sec.(Type 2: Approx. 6.0 sec.)	
Speed of Zoom (Wide - Tele)		Approx. 5.5 sec.(Type 2: Approx. 5.0 sec.)	
Weight		580g	
Remarks			

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49.

Unit:mm



H10ZME Series

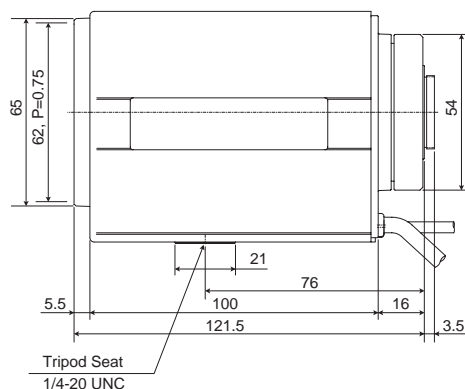
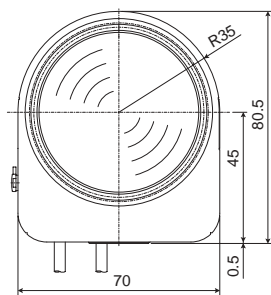
Motorized Zoom Lens



Specifications Code		Standard C60701	Preset C60702	Full Function (Preset & Iris Override) C60704
Model	Zoom Operation	Type 1	H10ZME-1	H10ZME-1P
		Type 2	H10ZME-2	H10ZME-2P
		Type 3	H10ZME-3	H10ZME-3P
		Type 5	H10ZME-5	H10ZME-5P
Format Size		1/2 format		
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 x 80.5 x 121.5mm		
Iris Operation		Auto-Iris(Video or DC)		Video Iris with Override
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.		
Speed of Focus (Near - Far)		Approx. 5.5 sec.(Type 1&3: Approx. 6.0 sec.)		
Speed of Zoom (Wide - Tele)		Approx. 5.5 sec.(Type 1&3: Approx. 6.0 sec.)		
Weight		715g	740g	
Remarks		D/A converter option		

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49, 50, 51 and 52.

Unit:mm



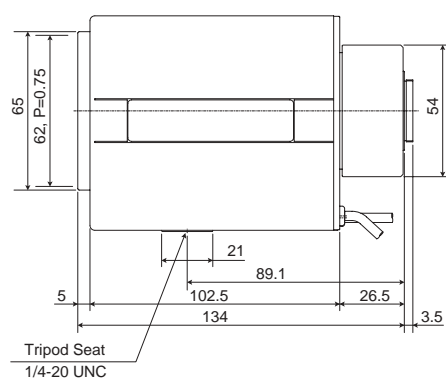
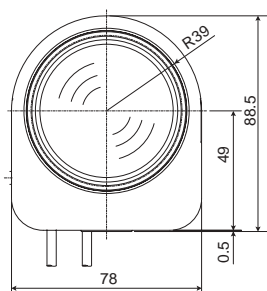
H15ZAME Series



Specifications Code		Standard C60826	Preset C60829	Full Function (Preset & Iris Override) C60830	
Model	Zoom Operation	Type 1	H15ZAME-1	H15ZAME-1P	-
		Type 2	H15ZAME-2	H15ZAME-2P	H15ZAME-2FH
		Type 3	H15ZAME-3	H15ZAME-3P	-
		Type 5	H15ZAME-5	H15ZAME-5P	H15ZAME-5FH
Format Size		1/2 format			
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			
Iris Operation		Auto-Iris【 Video or DC(Model Name of DC: H15ZAMED-)】		Video Iris with Override	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.			
Speed of Focus (Near - Far)		Approx. 8.0 sec.	Approx. 8.0 sec.	High-Speed: Approx. 2.5 sec.	
Speed of Zoom (Wide - Tele)		Approx. 6.0 sec.	Approx. 6.0 sec.	High-Speed: Approx. 2.5 sec.	
Weight		800g		840g	
Remarks		D/A converter option			

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49, 50, 51 and 52.

Unit:mm



H20ZAME Series

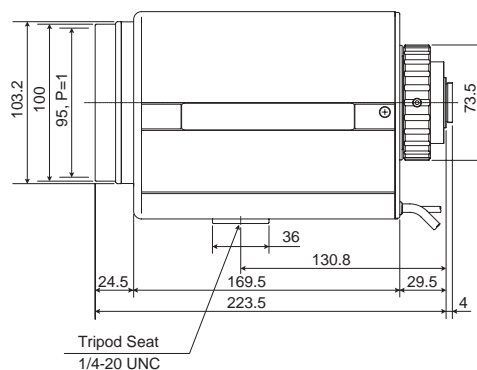
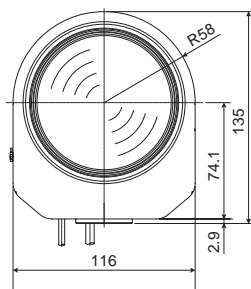
20X
Zoom



Specifications Code		Standard C61237	Preset C61239	Full Function (Preset & Iris Override) C61240	
Model	Zoom Operation	Type 1	H20ZAME-1	H20ZAME-1P	-
		Type 2	H20ZAME-2	H20ZAME-2P	H20ZAME-2FH
		Type 3	H20ZAME-3	H20ZAME-3P	-
		Type 5	H20ZAME-5	H20ZAME-5P	H20ZAME-5FH
Format Size		1/2 format			
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			
Iris Operation		Auto-Iris【Video or DC (Model Name of DC: H20ZAMED-)】		Video Iris with Override	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.			
Speed of Focus (Near - Far)		Approx. 10.0 sec.	Approx. 10.0 sec.	High-Speed: Approx. 4.5 sec.	
Speed of Zoom (Wide - Tele)		Approx. 10.0 sec.	Approx. 10.0 sec.	High-Speed: Approx. 4.5 sec.	
Weight		2,590g		2,630g	
Remarks		H20ZAME-2PI IR coating option		D/A converter option	

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49, 50, 51 and 52.

Unit:mm



H55ZAME Series

- 55X Zoom
- Built-in 2.5X Extender
- RS232C



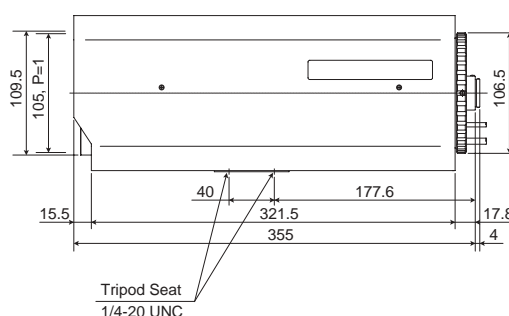
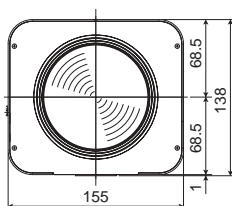
Motorized Zoom Lens

Specifications Code		Full Function (Preset & Iris Override) C61244	
Model	Zoom Operation	Type 1	
		Type 2	H55ZAME-2F
		Type 3	
		Type 5	H55ZAME-5F
Format Size		1/2 format	
Focal Length		12 ~ 660mm(30.5 ~ 1,680mm)	
Max. Aperture Ratio		1:4.0(f=12mm) ~ 18.2(f=1,680mm)	
Iris Range		F4.0 ~ 360	
Mount		C	
Horizontal Angle of View	1/4 format	17.17 ~ 0.31 (6.76 ~ 0.12 °)	
	1/3 format	23.18 ~ 0.42 (9.03 ~ 0.16 °)	
	1/2 format	31.65 ~ 0.56 (12.06 ~ 0.22 °)	
	2/3 format		
Min. Object Distance		5.0m	
Back Focal Length		8.99mm	
Filter Size		105mm P=1.0mm	
Dimensions		155 x 138 x 355mm	
Iris Operation		Video Iris with Override(with D/A converter)	
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.	
Speed of Focus (Near - Far)		Approx. 4.5 sec.	
Speed of Zoom (Wide - Tele)		Approx. 4.5 sec.	
Weight		5,400g	
Remarks		without D/A converter option, RS232C Serial Communication option	

The numerals in parentheses () refer to the figures when the built-in 2.5X extender is in use.

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 53.

Unit:mm

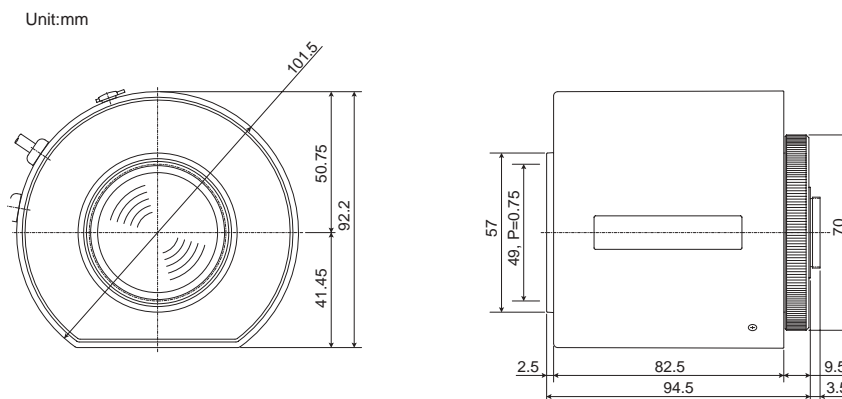


C6ZAME Series



Specifications Code		Standard C31220	Preset C31221	
Model	Zoom Operation	Type 1	C6ZAME-1	C6ZME-1P
		Type 2	C6ZAME-2	C6ZME-2P
		Type 3	C6ZAME-3	C6ZME-3P
		Type 5	C6ZAME-5	C6ZME-5P
Format Size		2/3 format		
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	16.05 ~ 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 x 92.2 x 94.5mm		
Iris Operation		Auto-Iris(Video)		
Response Speed of Video Iris (Close - Open)		Approx. 1.5 sec.		
Speed of Focus (Near - Far)		Approx. 5.0 sec. (Type 1&3: Approx. 5.5 sec.)		
Speed of Zoom (Wide - Tele)		Approx. 5.0 sec. (Type 1&3: Approx. 5.5 sec.)		
Weight		620g	655g	
Remarks				

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49 and 50.



C6Z1218M3 Series

Full Motorized

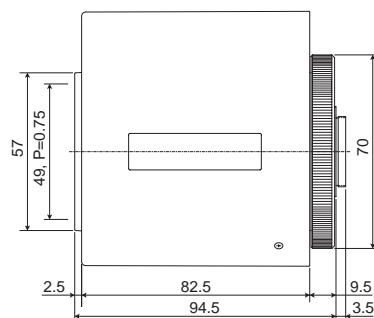
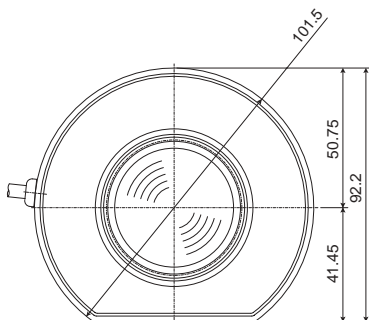


Motorized Zoom Lens

Specifications Code		Standard C31211	
Model	Zoom Operation	Type 1	C6Z1218M3-1
		Type 2	C6Z1218M3-2
		Type 3	C6Z1218M3-3
		Type 5	C6Z1218M3-5
Format Size		2/3 format	
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	16.07 ~ 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	
Back Focal Length		18.41mm	
Filter Size		49mm P=0.75mm	
Dimensions		101.5 x 92.2 x 94.5mm	
Iris Operation		Motorized Iris (DC motor)	
Response Speed of Video Iris (Close - Open)		Approx. 4.0 sec.	
Speed of Focus (Near - Far)		Approx. 5.0 sec. (Type 1&3: Approx. 5.5 sec.)	
Speed of Zoom (Wide - Tele)		Approx. 5.0 sec. (Type 1&3: Approx. 5.5 sec.)	
Weight		820g	
Remarks			

For details of control voltage, current and connection diagrams of each zoom operation type, please refer to page 49.

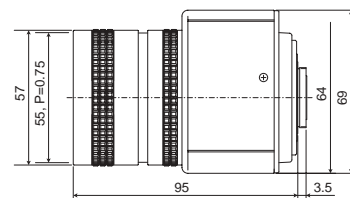
Unit:mm





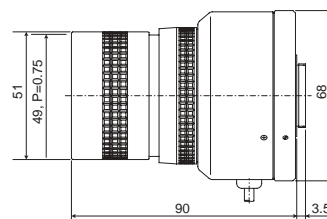
Model Code	H6ZBE C60811	
Format Size	1/2 format	
Focal Length	8.0 ~ 48mm	
Max. Aperture Ratio	1:1.0 ~ 1.2	
Iris Range	1.0 ~ 720	
Mount	C	
Horizontal Angle of View	1/4 format	24.92 ~ 4.42 °
	1/3 format	32.98 ~ 5.86 °
	1/2 format	43.24 ~ 7.73 °
	3/2 format	
Min. Object Distance	0.75m	
Back Focal Length	13.65mm	
Filter Size	55mm P=0.75mm	
Dimensions	69 × 64 × 95mm	
Weight	465g	
Remarks	Video or DC Iris	

Unit:mm



Model Code	C6ZE C31219	
Format Size	2/3 format	
Focal Length	12.5 ~ 75mm	
Max. Aperture Ratio	1:1.8	
Iris Range	1.8 ~ 720	
Mount	C	
Horizontal Angle of View	1/4 format	16.05 ~ 2.75 °
	1/3 format	21.36 ~ 3.66 °
	1/2 format	28.38 ~ 4.87 °
	3/2 format	38.72 ~ 6.67 °
Min. Object Distance	1.0m	
Back Focal Length	18.41mm	
Filter Size	49mm P=0.75mm	
Dimensions	68 × 90mm	
Weight	385g	
Remarks	Video Iris	

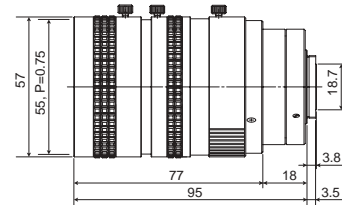
Unit:mm





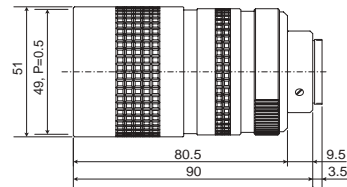
Model Code	H6Z810 C60812	
Format Size	1/2 format	
Focal Length	8.0 ~ 48mm	
Max. Aperture Ratio	1:1.0 ~ 1.2	
Iris Range	1.0 ~ 22	
Mount	C	
Horizontal Angle of View	1/4 format	24.92 ~ 4.42 °
	1/3 format	32.99 ~ 5.86 °
	1/2 format	43.26 ~ 7.73 °
	3/2 format	
Min. Object Distance	0.75m	
Back Focal Length	13.65mm	
Filter Size	55mm P=0.75mm	
Dimensions	57 x 95mm	
Weight	430g	
Remarks	Manual Iris, Lock Screws	

Unit:mm



Model Code	C6Z1218 C31204	
Format Size	2/3 format	
Focal Length	12.5 ~ 75mm	
Max. Aperture Ratio	1:1.8	
Iris Range	1.8 ~ 22	
Mount	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 °
	3/2 format	38.76 ~ 6.67 °
Min. Object Distance	1.0m	
Back Focal Length	18.41mm	
Filter Size	49mm P=0.75mm	
Dimensions	51 x 90mm	
Weight	320g	
Remarks	Manual Iris	

Unit:mm



For Security

Vari-Focal Lens

Vari-Focal Lens



TS3V310ED

Vari-Focal Lens

Feature (TS3V310ED)

Minimized focus shift to an unrecognizable level

Clear and sharp image with high contrast

Ultra-fast aperture that transmits twice as much light when compared with a F1.4 lens

Outstanding optical quality and performance in a wide range from visible light to near IR wavelengths.

Best-selling Day & Night Lens for surveillance applications

Applications:

Surveillance of stores, ATM, office buildings, elevators, etc.

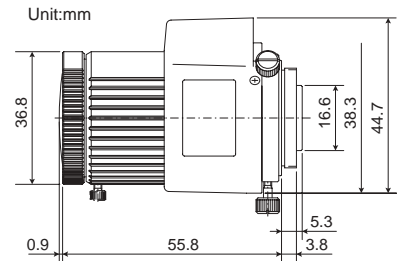
Day & Night Camera Lens		Ordinary Lens	

Ordinary lenses are designed to correct chromatic aberration in the visible light wavelength range from 400nm to 700nm. Day & Night lenses are designed to make all light rays from visible to near IR wavelengths converge on the camera's CCD at the same focusing point. This means that Day & Night lenses do not require the focus to be readjusted even when the lighting conditions change from daylight to night-time, under near IR illumination.

Fish-Eye



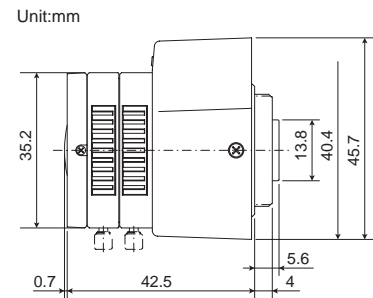
Model Code	TS2V114E C70100	
Format Size	1/3 format	
Focal Length	1.6 ~ 3.4mm	
Max. Aperture Ratio	1:1.4	
Iris Range	1.4 ~ 64	
Mount	CS	
Horizontal Angle of View	1/4 format	180 ~ 64.89 °
	1/3 format	180 ~ 89.55 °
	1/2 format	
	2/3 format	
Min. Object Distance	0.5m	
Back Focal Length	8.07mm	
Filter Size		
Dimensions	38.3 × 44.7 × 56.7mm	
Iris Operation	DC	
Weight	140g	
Remarks	Fish-Eye	



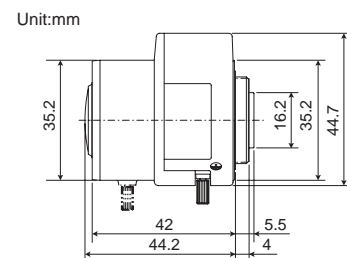
Day & Night



Model Code	TS2V214AED C70220	
Format Size	1/3 format	
Focal Length	2.8 ~ 6.0mm	
Max. Aperture Ratio	1:1.4	
Iris Range	1.4 ~ 300	
Mount	CS	
Horizontal Angle of View	1/4 format	72.26 ~ 35.35 °
	1/3 format	96.70 ~ 47.04 °
	1/2 format	
	2/3 format	
Min. Object Distance	0.3m	
Back Focal Length	7.54mm	
Filter Size		
Dimensions	40.4 × 45.7 × 43.2mm	
Iris Operation	Video or DC	
Weight	59g	
Remarks	Day & Night	



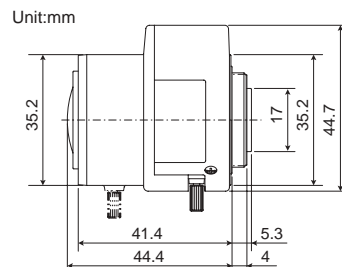
Model Code	TS2V314CED C70319	
Format Size	1/3 format	
Focal Length	3.5 ~ 8.0mm	
Max. Aperture Ratio	1:1.4	
Iris Range	1.4 ~ 300	
Mount	CS	
Horizontal Angle of View	1/4 format	60.52 ~ 26.54 °
	1/3 format	82.41 ~ 35.42 °
	1/2 format	
	2/3 format	
Min. Object Distance	0.35m	
Back Focal Length	7.67mm	
Filter Size		
Dimensions	38.3 × 44.7 × 44.2mm	
Iris Operation	DC	
Weight	52g	
Remarks		



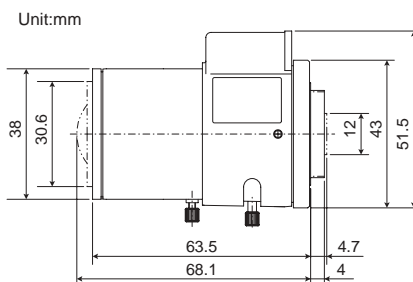
Day & Night



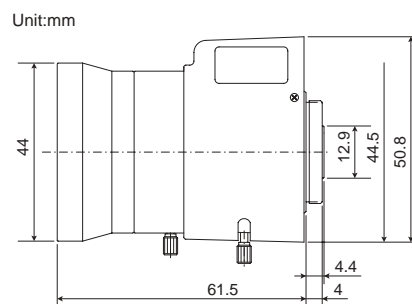
Model Code	TS3V310ED C70315	
Format Size	1/3 format	
Focal Length	3.0 ~ 8.0mm	
Max. Aperture Ratio	1:1.0	
Iris Range	1.0-360	
Mount	CS	
Horizontal Angle of View	1/4 format	68.98 ~ 26.44 °
	1/3 format	93.22 ~ 35.26 °
	1/2 format	
2/3 format		
Min. Object Distance	0.3m	
Back Focal Length	7.50mm	
Filter Size		
Dimensions	38.3 x 44.7 x 44.4mm	
Iris Operation	Video or DC	
Weight	60g	
Remarks	Day & Night	



Model Code	TS4V214ED C70223	
Format Size	1/3 format	
Focal Length	2.8 ~ 12mm	
Max. Aperture Ratio	1:1.4	
Iris Range	1.4 ~ 360	
Mount	CS	
Horizontal Angle of View	1/4 format	71.82 ~ 18.05 °
	1/3 format	93.29 ~ 23.50 °
	1/2 format	
2/3 format		
Min. Object Distance	0.25m	
Back Focal Length	8.57mm	
Filter Size		
Dimensions	43.0 x 51.5 x 68.1mm	
Iris Operation	DC	
Weight	83g	
Remarks		



Model Code	TS10V518AED C70509	
Format Size	1/3 format	
Focal Length	5.0 ~ 50mm	
Max. Aperture Ratio	1:1.8	
Iris Range	1.8 ~ 360	
Mount	CS	
Horizontal Angle of View	1/4 format	37.80 ~ 4.14 °
	1/3 format	50.00 ~ 5.52 °
	1/2 format	
2/3 format		
Min. Object Distance	0.6m	
Back Focal Length	7.60mm	
Filter Size		
Dimensions	44.5 x 50.8 x 61.5mm	
Iris Operation	DC	
Weight	140g	
Remarks		

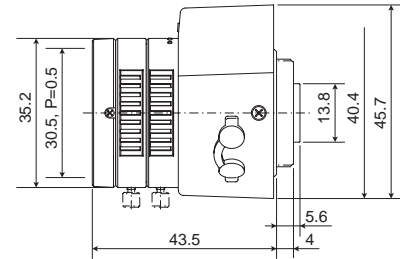


Day & Night



Model Code	HS2V616ED C60635	
Format Size	1/2 format	
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 °
Horizontal Angle of View	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	
Iris Operation	Video or DC	
Weight	57g	
Remarks	Day & Night	

Unit:mm



Vari-Focal Lens

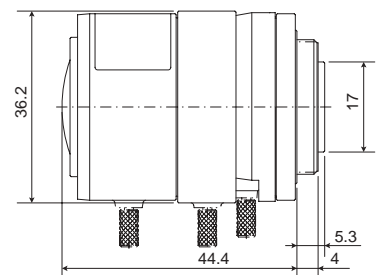
Manual Iris Vari-Focal Lens

Day & Night



Model Code	TS3V310 C70316	
Format Size	1/3 format	
Focal Length	3.0 ~ 8.0mm	
Max. Aperture Ratio	1:1.0	
Iris Range	1.0 ~ C	
Mount	CS	
Horizontal Angle of View	1/4 format	68.98 ~ 26.44 °
	1/3 format	93.22 ~ 35.26 °
	1/2 format	
Horizontal Angle of View	2/3 format	
	Min. Object Distance	0.3m
	Back Focal Length	7.50mm
Filter Size		
Dimensions	36.2 × 44.4mm	
Iris Operation	Manual Iris	
Weight	47g	
Remarks	Day & Night, Manual Iris	

Unit:mm



For Security

Board Camera Lens



QD3ZMED

Board Camera Lens

Board Camera Lens

Feature (QD3ZMED)

- Clear focus for all object distances
- Clear focus across the entire zooming range
- High resolution images continuously provided at all focal lengths
- Smallest zoom in security field

Applications:

Surveillance of convenience stores, office buildings, schools.
Ideal for Pan, Tilt & Zoom Board Cameras.

Pan-Focus zoom lens



The large depth of field delivers clear focus for all object distances across the entire picture area. Clear pictures are maintained during panning, tilting and zooming.

Ordinary Vari-Focal lens



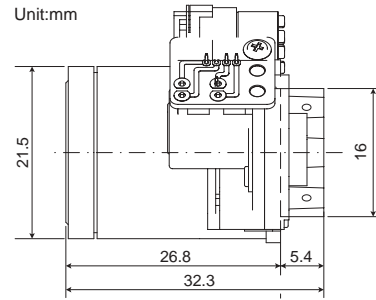
Only the primary object is optimally focused. Focus adjustment is manually required every time the focal length is changed.

Motorized
Pan-Focus Zoom



Model Code	QD3ZMED C40219	
Format Size	1/4 format	
Focal Length	2.8 ~ 7.3mm	
Max. Aperture Ratio	1:1.9 ~ 3.1	
Iris Range	1.9 ~ 200	
Mount	Special	
Horizontal Angle of View	1/4 format	73.42 ~ 28.74 °
	1/3 format	
	1/2 format	
	2/3 format	
Min. Object Distance	0.75m	
Back Focal Length	4.90 ~ 9.41mm	
Filter Size		
Dimensions	35.1 × 29.7 × 26.8mm	
Weight	18g	
Remarks	DC Iris	

Unit:mm

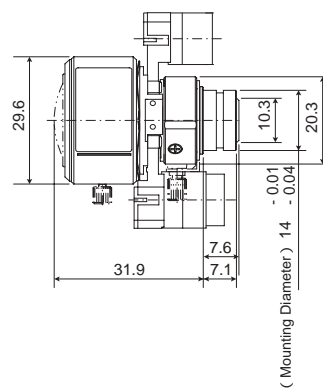


Day & Night



Model Code	QD2V2214BE-DN C40218	
Format Size	1/4 format	
Focal Length	2.2 ~ 4.5mm	
Max. Aperture Ratio	1:1.4	
Iris Range	1.4 ~ 200	
Mount	14	
Horizontal Angle of View	1/4 format	92.84 ~ 45.88 °
	1/3 format	
	1/2 format	
	2/3 format	
Min. Object Distance	0.2m	
Back Focal Length	6.44 ~ 9.98mm	
Filter Size		
Dimensions	29.6 x 50.2 x 31.9mm	
Weight	34g	
Remarks	DC Iris ,Day & Night	

Unit:mm

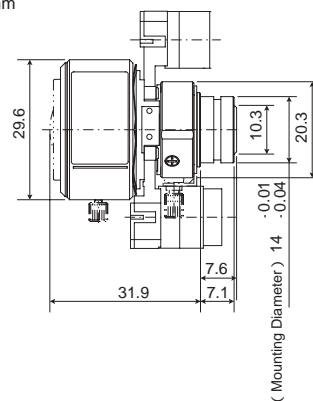


Day & Night



Model Code	QD2V2814BE-DN C40217	
Format Size	1/4 format	
Focal Length	2.8 ~ 5.8mm	
Max. Aperture Ratio	1:1.4	
Iris Range	1.4 ~ 200	
Mount	14	
Horizontal Angle of View	1/4 format	74.67 ~ 35.86 °
	1/3 format	
	1/2 format	
	2/3 format	
Min. Object Distance	0.2m	
Back Focal Length	6.43 ~ 9.96mm	
Filter Size		
Dimensions	29.6 x 50.2 x 31.9mm	
Weight	33g	
Remarks	DC Iris ,Day & Night	

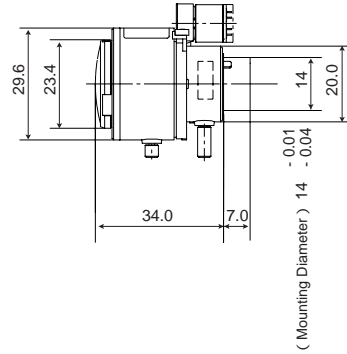
Unit:mm





Model Code	TD3V212ED C70225	
Format Size	1/3 format	
Focal Length	2.9 ~ 9.0mm	
Max. Aperture Ratio	1:1.2 ~ 2.3	
Iris Range	1.2 ~ 300	
Mount	14	
Horizontal Angle of View	1/4 format	70.91 ~ 23.67 °
	1/3 format	96.88 ~ 31.54 °
	1/2 format	
	2/3 format	
Min. Object Distance	0.35m	
Back Focal Length	5.98 ~ 12.85mm	
Filter Size		
Dimensions	29.6 × 37.1 × 34.0mm	
Weight	23g	
Remarks	DC Iris	

Unit:mm



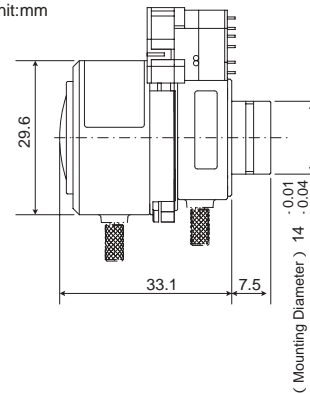
Board Camera Lens

Day & Night



Model Code	TD3V314E-DN C70318	
Format Size	1/3 format	
Focal Length	3.0 ~ 8.0mm	
Max. Aperture Ratio	1:1.4 ~ 2.4	
Iris Range	1.4 ~ 300	
Mount	14	
Horizontal Angle of View	1/4 format	68.67 ~ 26.48 °
	1/3 format	92.52 ~ 35.28 °
	1/2 format	
	2/3 format	
Min. Object Distance	0.3m	
Back Focal Length	7.43 ~ 13.87mm	
Filter Size		
Dimensions	29.6 × 41.2 × 33.1mm	
Weight	29g	
Remarks	DC Iris, Day & Night	

Unit:mm



For Security

Monofocal Auto-Iris Lens



TS212E

Monofocal Auto-Iris Lens

Monofocal Auto-Iris Lens

Feature

- Standard lens for security applications
- A wide range from 2.8mm (1/3 " format) to 75mm (1 " format)
- Durable metal construction of C-mount lenses, Compact design of CS-mount lenses
- Iris override option available for C-Mount lenses

Applications:

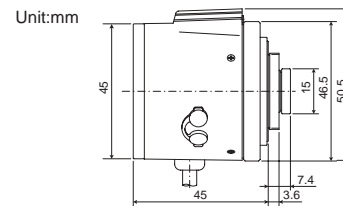
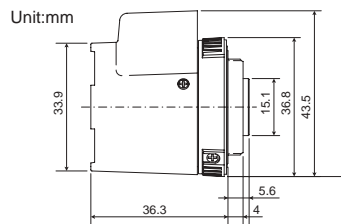
Surveillance of stores, office buildings, elevators



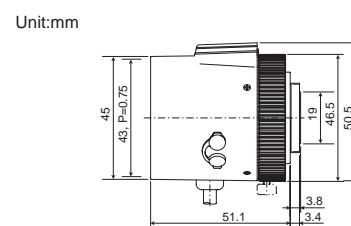
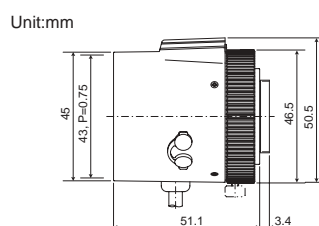
Standard lens for security applications



Model Code	TS212E C70210	Standard H416E C60405	Iris Override H416ER C60404
Format Size	1/3 format		1/2 format
Focal Length	2.8mm		4.2mm
Max. Aperture Ratio	1:1.2		1:1.6
Iris Range	1.2 ~ 200		1.6 ~ 360
Mount	CS		C
Horizontal Angle of View	1/4 format	71.54 °	47.90 °
	1/3 format	94.28 °	64.30 °
	1/2 format		86.78 °
	2/3 format		
Max. Aperture Ratio	0.3m		0.2m
Back Focal Length	7.67mm		10.42mm
Filter Size			
Dimensions	36.8 × 43.5 × 36.3mm		46.5 × 50.5 × 45mm
Iris Operation	DC	Video	Video Iris with Override
Weight	54g		135g
Remarks			



Model Code	Standard H612E C60625	Iris Override H612ER C60624	Standard H1212E C61220	Iris Override H1212ER C61219
Format Size		1/2 format		1/2 format
Focal Length		6.0mm		12.0mm
Max. Aperture Ratio		1:1.2		1:1.2
Iris Range		1.2 ~ 360		1.2 ~ 360
Mount		C		C
Horizontal Angle of View	1/4 format	32.96 °		16.94 °
	1/3 format	43.54 °		22.60 °
	1/2 format	56.91 °		30.19 °
	2/3 format			
Max. Aperture Ratio		0.2m		0.3m
Back Focal Length		14.31mm		13.87mm
Filter Size		43mm P=0.75mm		43mm P=0.75mm
Dimensions		46.5 × 50.5 × 51.1mm		46.5 × 50.5 × 51.1mm
Iris Operation	Video	Video Iris with Override	Video	Video Iris with Override
Weight		140g		140g
Remarks				

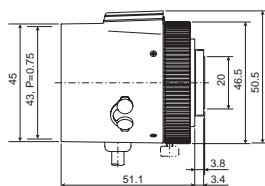


Monofocal Auto-Iris Lens

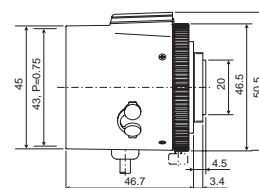


Model Code	Standard C814E C30821	Iris Override C814ER C30820	Standard C1614E C31632	Iris Override C1614ER C31631
Format Size	2/3 format		2/3 format	
Focal Length	8.0mm		16.0mm	
Max. Aperture Ratio	1:1.4		1:1.4	
Iris Range	1.4 ~ 360		1.4 ~ 360	
Mount	C		C	
Horizontal Angle of View	1/4 format	25.10 °	12.72 °	
	1/3 format	33.22 °	16.92 °	
	1/2 format	43.67 °	22.50 °	
	2/3 format	58.25 °	30.76 °	
Max. Aperture Ratio	0.2m		0.5m	
Back Focal Length	14.50mm		13.20mm	
Filter Size	43mm P=0.75mm		43mm P=0.75mm	
Dimensions	46.5 × 50.5 × 51.1mm		46.5 × 50.5 × 46.7mm	
Iris Operation	Video	Video Iris with Override	Video	Video Iris with Override
Weight	140g		110g	
Remarks				

Unit:mm

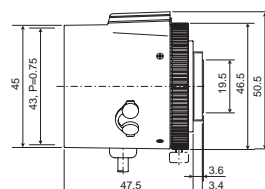


Unit:mm

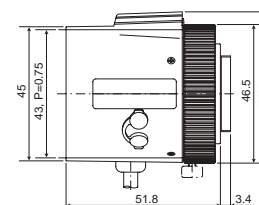


Model Code	Standard B1214E C21223	Iris Override B1214ER C21221	Standard B2514E C22527	Iris Override B2514ER C22526
Format Size	1 format		1 format	
Focal Length	12.5mm		25.0mm	
Max. Aperture Ratio	1:1.4		1:1.4	
Iris Range	1.4 ~ 360		1.4 ~ 360	
Mount	C		C	
Horizontal Angle of View	1/4 format	16.22 °	8.23 °	
	1/3 format	21.55 °	10.97 °	
	1/2 format	28.54 °	14.62 °	
	2/3 format	38.69 °	20.09 °	
Max. Aperture Ratio	0.3m		0.9m	
Back Focal Length	14.40mm		14.98mm	
Filter Size	43mm P=0.75mm		43mm P=0.75mm	
Dimensions	46.5 × 50.5 × 47.5mm		46.5 × 50.5 × 51.8mm	
Iris Operation	Video	Video Iris with Override	Video	Video Iris with Override
Weight	140g		140g	
Remarks				

Unit:mm



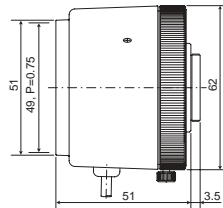
Unit:mm



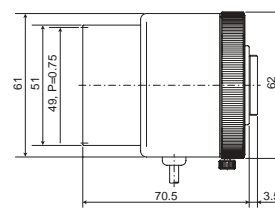


Model Code	Standard B5018E C25018	Iris Override B5018ER C25017	B7518AE C27515
Format Size	1 format		1 format
Focal Length	50.0mm		75.0mm
Max. Aperture Ratio	1:1.8		1:1.8
Iris Range	1.8 ~ 360		1.8 ~ 360
Mount	C		C
Horizontal Angle of View	1/4 format	4.13 °	2.74 °
	1/3 format	5.50 °	3.65 °
	1/2 format	7.32 °	4.87 °
	2/3 format	10.04 °	6.69 °
Max. Aperture Ratio	1.0m		2.5m
Back Focal Length	31.70mm		29.08mm
Filter Size	49mm P=0.75mm		49mm P=0.75mm
Dimensions	62 x 51mm		62 x 70.50mm
Iris Operation	Video	Video Iris with Override	Video
Weight	230g		300g
Remarks	Limited numbers available		

Unit:mm



Unit:mm



For Security

Pinhole Lens

Pinhole Lens



TS420PE

Auto-Iris Pinhole Lens

Feature

- Minimized viewing diameter
- Monitoring through a small opening in the wall or ceiling
- Suitable for covert surveillance

Applications:

Surveillance of ATM user's face or operation, cashiers, etc.

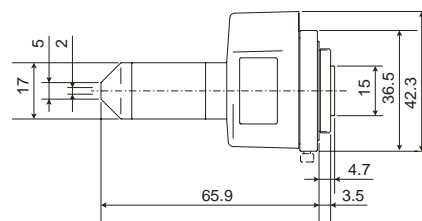


Suitable for covert surveillance



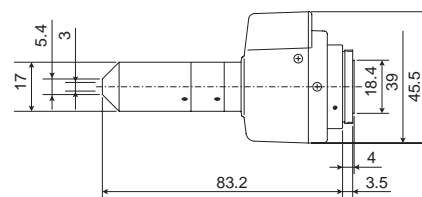
Model Code	TS420PE C70403	
Format Size	1/3 format	
Focal Length	4.0mm	
Max. Aperture Ratio	1:2.0	
Iris Range	2.0-64	
Mount	CS	
Horizontal Angle of View	1/4 format	51.24 °
	1/3 format	68.47 °
	1/2 format	
	2/3 format	
Min. Object Distance	0.3m	
Back Focal Length	8.55mm	
Filter Size		
Dimensions	36.5 × 42.3 × 65.9mm	
Iris Operation	DC	
Weight	79g	
Remarks		

Unit:mm



Model Code	H620PE C60626	
Format Size	1/2 format	
Focal Length	6.2mm	
Max. Aperture Ratio	1:2.0	
Iris Range	2.0 ~ 300	
Mount	C	
Horizontal Angle of View	1/4 format	32.44 °
	1/3 format	42.82 °
	1/2 format	56.12 °
	2/3 format	
Min. Object Distance	0.3m	
Back Focal Length	14.23mm	
Filter Size		
Dimensions	39 × 45.5 × 83.2mm	
Iris Operation	Video or DC	
Weight	100g	
Remarks		

Unit:mm



For Machine Vision

Line-Scan Lens



YF5028A-02

Line-Scan Lens

Line-Scan Lens

Feature

- Ultra-High Resolution-High Contrast
- Abundant Light Distribution
- Minimized distortion
- Reliable Lock Mechanism

Applications:

Inspection of steel, pulp, fiber/textile, film, and other flat materials



F type Mount

K-Mount



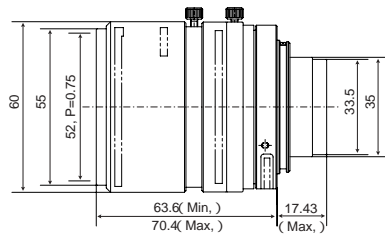
F type Mount

K-Mount

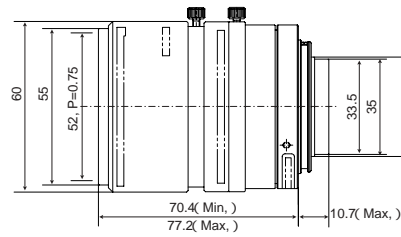


Model Code	YF5028A-02 C52981F	YK5028A-02 C52981K	YF5028A-035 C52980F	YK5028A-035 C52980K
Format Size	45mm Image Circle		45mm Image Circle	
Focal Length	50.0mm		50.0mm	
Max. Aperture Ratio	1:2.8		1:2.8	
Iris Range	2.8 ~ 22		2.8 ~ 22	
Mount	F(NIKON bayonet mount) K		F(NIKON bayonet mount) K	
Min. ~ Max. Magnification	0.15 ~ 0.23X		0.28 ~ 0.4X	
Horizontal Field of View	4,096 x 7 μm 191 ~ 125mm		102 ~ 72mm	
	7,450 x 4.7 μm 234 ~ 152mm		125 ~ 88mm	
	4,096 x 10 μm 273 ~ 178mm		146 ~ 102mm	
Working Distance	361 ~ 242mm		201 ~ 146mm	
Back Focal Length	30.43 ~ 34.54mm		37.16 ~ 43.29mm	
Filter Size	52mm P=0.75mm		52mm P=0.75mm	
Dimensions	60 x 63.6mm	60 x 64.6mm	60 x 70.4mm	60 x 71.4mm
Weight	425g	440g	435g	450g
Remarks	Focus & Iris Lock Screws Not for Photographic Cameras		Focus & Iris Lock Screws Not for Photographic Cameras	

Unit:mm



Unit:mm



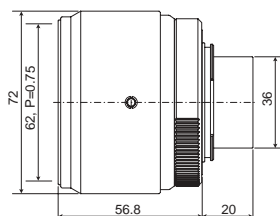
F type Mount

K-Mount



Model Code	YF3528 C52915F	YK3528 C52915K
Format Size	45mm Image Circle	
Focal Length	35.0mm	
Max. Aperture Ratio	1:2.8	
Iris Range	2.8 ~ 22	
Mount	F(NIKON bayonet mount) K	
Min. ~ Max. Magnification	~ 0.5X	
Horizontal Field of View	4,096 x 7 μm 57(Magnification: 0.5x)	
	7,450 x 4.7 μm 70(Magnification: 0.5x)	
	4,096 x 10 μm 81(Magnification: 0.5x)	
Working Distance	190mm	
Back Focal Length	33.22mm	
Filter Size	62mm P=0.75mm	
Dimensions	72 x 56.8mm	72 x 57.8mm
Weight	440g	
Remarks	Focus: Lock Screw, Iris: Click-Stop Not for Photographic Cameras	

Unit:mm



For Machine Vision

UV Lens



H2520-UVM

UV Lens

UV Lens (Ultraviolet Ray)

Feature (H2520-UVM)

High performance UV lens compatible with 2 mega-pixel cameras *

Compact design, ideal for integration into machine vision systems

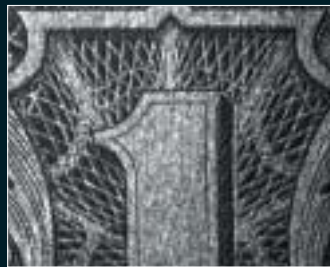
Lockable focus and iris rings prevent movement during vibration and shock *

Extended wavelength range (200nm to 1000nm) *

* H2520-UVM only

Applications:

Detection of forgery, falsified documents, bills and credit cards, surface inspection of circuits for soldering defects



UV Lens (H2520-UVM) with near UV light
The texture of material and unevenness of ink can be recognized.



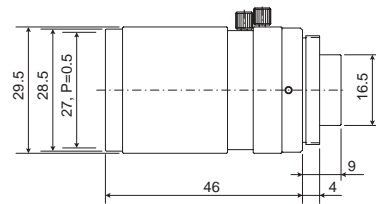
Ordinary Lens with visible light

Mega-Pixel



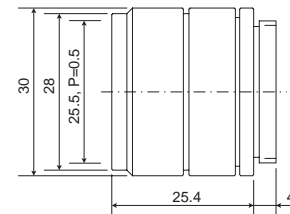
Model Code	H2520-UVM C62500	
Format Size	1/2 format	
Focal Length	25.0mm	
Max. Aperture Ratio	1:2.0	
Iris Range	2.0 ~ 16	
Mount	C	
Horizontal Angle of View	1/4 format	8.24 °
	1/3 format	10.98 °
	1/2 format	14.62 °
	2/3 format	
Min. Object Distance	0.25m	
Back Focal Length	12.01mm(330nm)	
Filter Size	27.0mm P=0.5mm	
Dimensions	29.5 × 46mm	
Weight	78g	
Remarks	200nm-1000nm Ray (280nm-365nm for 2 Mega-Pixel) Lock Screws	

Unit:mm



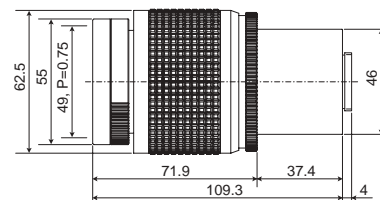
Model Code	B2528-UV C91699	
Format Size	1 format	
Focal Length	25.0mm	
Max. Aperture Ratio	1:2.8	
Iris Range	2.8 ~ 16	
Mount	C	
Horizontal Angle of View	1/4 format	8.30 °
	1/3 format	11.10 °
	1/2 format	14.80 °
	2/3 format	20.40 °
Min. Object Distance	0.23m	
Back Focal Length	22.07mm(266nm)	
Filter Size	25.5mm P=0.5mm	
Dimensions	30 × 25.4mm	
Weight	33g	
Remarks	365nm (230nm-800nm with Band Pass Filter)	

Unit:mm



Model Code	B7838-UV C91698	
Format Size	1 format	
Focal Length	78.0mm	
Max. Aperture Ratio	1:3.8	
Iris Range	3.8 ~ 16	
Mount	C	
Horizontal Angle of View	1/4 format	2.70 °
	1/3 format	3.50 °
	1/2 format	4.70 °
	2/3 format	6.50 °
Min. Object Distance	0.44m	
Back Focal Length	71.31mm(250nm)	
Filter Size	49mm P=0.75mm	
Dimensions	62.5 × 109.3mm	
Weight	446g	
Remarks	365nm (230nm-800nm with Band Pass Filter)	

Unit:mm



For Machine Vision

Mega-Pixel Lens



C1614-M

Mega-Pixel Lens

Feature

- Ultra-high resolution compatible with 2 mega-pixel cameras
- Optimum optical performance produced at short distance objects
- Compact in design and ideal for integration into machine vision systems
- Lockable focus & iris rings prevent movement during vibration and shock

Applications:

Defect detection of printed circuit boards, wafer, etc.



Mega-Pixel Lens with Mega-Pixel Camera



Ordinary Lens with Mega-Pixel Camera

5 Mega-Pixel



5 Mega-Pixel

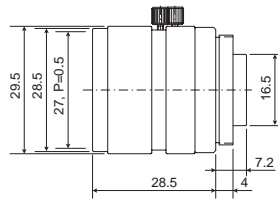


Model Code	C5028A-M02 C35003	C5028A-M035 C35002
Format Size	2/3 format	
Focal Length	50mm	
Max. Aperture Ratio	1:2.8	
Iris Range	2.8 ~ 22	
Mount	C	
Min. ~ Max. Magnification	0.15 ~ 0.23X	0.28 ~ 0.4X
Horizontal Field of View	1/4 format	24 ~ 16mm
	1/3 format	32 ~ 21mm
	1/2 format	43 ~ 28mm
	2/3 format	59 ~ 38mm
Working Distance	361 ~ 242mm	201 ~ 146mm
Back Focal Length	30.43 ~ 34.54mm	37.2 ~ 43.3mm
Filter Size	52.0mm P=0.75mm	
Dimensions		
Weight		
Remarks	Focus & Iris Lock Screws 5 Mega-Pixel (2/3 format) / 4 Mega-Pixel (1.1 format)	

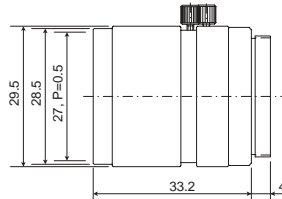


Model Code	H1214-M C61232	C1614-M C31634	C2514-M C32500
Format Size	1/2 format	2/3 format	2/3 format
Focal Length	12.0mm	16.0mm	25.0mm
Max. Aperture Ratio	1:1.4	1:1.4	1:1.4
Iris Range	1.4 ~ 16	1.4 ~ 16	1.4 ~ 16
Mount	C	C	C
Horizontal Angle of View	1/4 format	16.49 °	12.86 °
	1/3 format	21.88 °	17.11 °
	1/2 format	28.91 °	22.72 °
	2/3 format		30.97 °
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 x 28.5mm	29.5 x 33.2mm	29.5 x 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

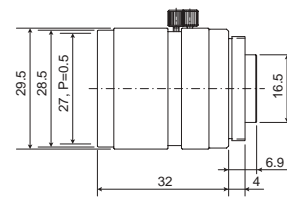
Unit:mm



Unit:mm

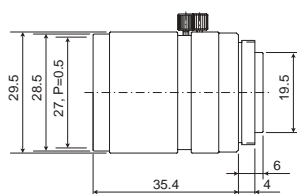


Unit:mm

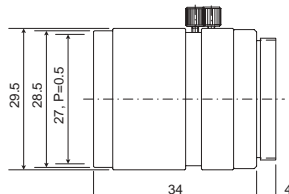


Model Code	C3516-M C33500	C5028-M C35001	C7528-M C37500
Format Size	2/3 format	2/3 format	2/3 format
Focal Length	35.0mm	50.0mm	75.0mm
Max. Aperture Ratio	1:1.6	1:2.8	1:2.8
Iris Range	1.6 ~ 16	2.8 ~ 22	2.8 ~ 32
Mount	C	C	C
Horizontal Angle of View	1/4 format	6.07 °	4.12 °
	1/3 format	8.09 °	5.50 °
	1/2 format	10.76 °	7.32 °
	2/3 format	14.76 °	10.05 °
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 x 35.4mm	29.5 x 34mm	34 x 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

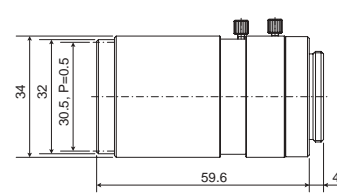
Unit:mm



Unit:mm



Unit:mm



For Machine Vision

Monofocal Manual Iris Lens



B2514D

Monofocal Manual Iris Lens

Feature

- Standard lens for Machine Vision applications
- High resolution compatible with VGA cameras
- A wide product range compatible with cameras from 1/3" to 1" format
- Lockable focus & iris rings prevent movement during vibration and shock

Applications:

Pattern recognition, Gauging, Inspection of pharmaceutical/medical devices, food/beverage inspection

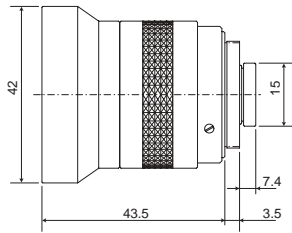


Popularly used in various factories as the standard Machine Vision Lens.

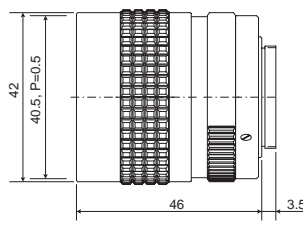


Model Code	H416 C60402	H612A C60607	H1212B C61215
Format Size	1/2 format	1/2 format	1/2 format
Focal Length	4.2mm	6.0mm	12.0mm
Max. Aperture Ratio	1:1.6	1:1.2	1:1.2
Iris Range	1.6 ~ C	1.2 ~ C	1.2 ~ 22
Mount	C	C	C
Horizontal Angle of View	1/4 format	32.97 °	16.93 °
	1/3 format	64.27 °	22.60 °
	1/2 format	86.77 °	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 x 43.5mm	42 x 46mm	30 x 35.5mm
Weight	120g	125g	67g
Remarks	Lock Screws	Lock Screws	Lock Screws

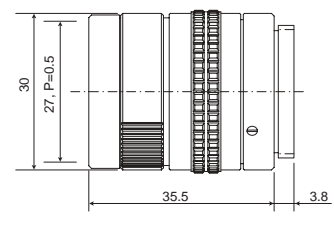
Unit:mm



Unit:mm

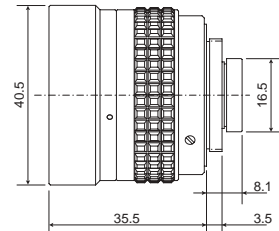


Unit:mm

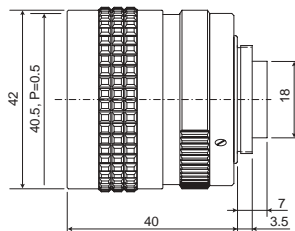


Model Code	C418DX C30405	C815B C30811	C1614A C31630
Format Size	2/3 format	2/3 format	2/3 format
Focal Length	4.8mm	8.5mm	16.0mm
Max. Aperture Ratio	1:1.8	1:1.5	1:1.4
Iris Range	1.8 ~ C	1.5 ~ C	1.4 ~ 22
Mount	C	C	C
Horizontal Angle of View	1/4 format	24.02 °	12.70 °
	1/3 format	55.11 °	31.87 °
	1/2 format	72.37 °	42.09 °
	2/3 format	96.36 °	56.49 °
Min. Object Distance	0.3m	0.2m	0.3m
Back Focal Length	9.71mm	10.88mm	13.22mm
Filter Size		40.5mm P=0.5mm	27.0mm P=0.5mm
Dimensions	40.5 x 35.5mm	42 x 40mm	30 x 33mm
Weight	105g	120g	58g
Remarks	Lock Screws	Lock Screws	Lock Screws

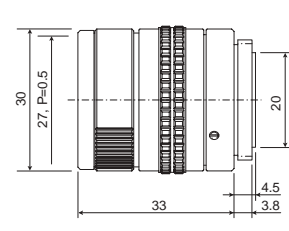
Unit:mm



Unit:mm



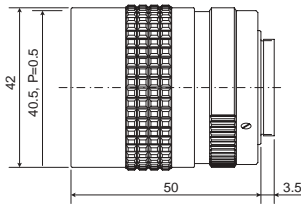
Unit:mm



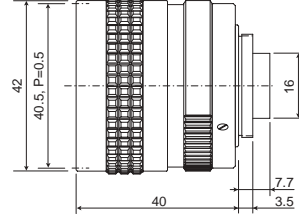


Model Code	B1214D-2 C21211	B1218A C21228	B2514D C22525
Format Size	1 format	1 format	1 format
Focal Length	12.5mm	12.5mm	25.0mm
Max. Aperture Ratio	1:1.4	1:1.8	1:1.4
Iris Range	1.4 ~ C	1.8 ~ C	1.4 ~ 22
Mount	C	C	C
Horizontal Angle of View	1/4 format	16.21 °	8.23 °
	1/3 format	21.53 °	10.97 °
	1/2 format	28.51 °	14.62 °
	2/3 format	38.65 °	20.10 °
Min. Object Distance	0.3m	0.3m	0.3m
Back Focal Length	14.40mm	10.36mm	14.98mm
Filter Size	40.5mm P=0.5mm	40.5mm P=0.5mm	27.0mm P=0.5mm
Dimensions	42 x 50mm	42 x 40mm	30 x 37.3mm
Weight	135g	95g	76g
Remarks	Lock Screws	Lock Screws	Lock Screws

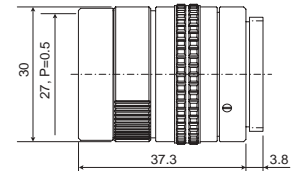
Unit:mm



Unit:mm

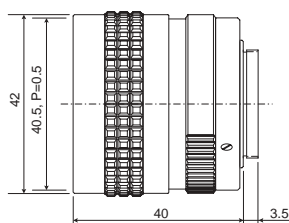


Unit:mm

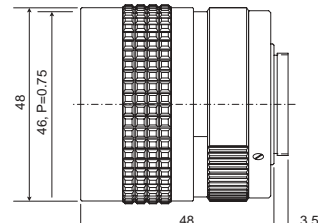


Model Code	B2518 C22516	B5014A C25011	B7514C C27509
Format Size	1 format	1 format	1 format
Focal Length	25.0mm	50.0mm	75.0mm
Max. Aperture Ratio	1:1.8	1:1.4	1:1.4
Iris Range	1.8 ~ C	1.4 ~ C	1.4 ~ C
Mount	C	C	C
Horizontal Angle of View	1/4 format	8.23 °	4.13 °
	1/3 format	10.95 °	5.50 °
	1/2 format	14.55 °	7.32 °
	2/3 format	19.87 °	10.04 °
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 x 40mm	48 x 48mm	62 x 79mm
Weight	87g	180g	450g
Remarks	Lock Screws	Lock Screws	Lock Screws

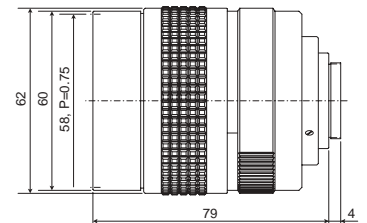
Unit:mm



Unit:mm



Unit:mm



Manual Iris Lens / Machine Vision Lens / Line-Scan Lens / UV Lens

Y K 5 0 2 8 A - 0 2
 ① ② ③ ④ ⑤ ⑥ ⑪

Auto-Iris Lens / Auto-Iris Pinhole Lens

B 5 0 1 8 E R
 ① ② ③ ④ ⑤ ⑥ ⑪

Motorized Zoom Lens / Manual Zoom Lens

T S 1 5 Z A M E - 3 F
 ① ② ⑦ ⑧ ⑤ ⑨ ⑩ ⑪

Vari-Focal Lens

T S 2 V 2 1 4 A E D
 ① ② ⑦ ⑧ ③ ④ ⑤ ⑨

Board Camera Lens

Q D 2 V 2 2 1 4 A E - D N
 ① ② ⑦ ⑧ ③ ④ ⑤ ⑨ ⑪

① Format Size

Sign	Meaning
Y	Larger than 1 format
B	1
C	2/3
H	1/2
T	1/3
Q	1/4

② Mount

Sign	Meaning
-	C
S	CS
D	Integral type
K	K
F	F

③ Focal Length

• Shown in integer, omit fractions

④ Maximum Aperture

• Omit decimal point

⑤ History of improvement

• Shown with a letter in alphabetical order. The signs of ⑥ and ⑨ are not used.

⑥ Focus-Iris 【shown with combination below】

Sign	Meaning
X	Fixed Focus
E	Auto-Iris
P	Pinhole

⑦ Zoom Ratio

• Magnification is shown in integer.

⑧ Variable Focal Length

Sign	Meaning
Z	Zoom Lens
V	Vari-Focal Lens

⑨ Focus-Zoom-Iris

【shown with combination below in M E D order】

Sign	Meaning
M	Motor Driven
E	Auto-Iris
D	DC Iris

⑩ Control Voltage & Method 【shown after- (hyphen)】

Sign	Meaning
1	DC6V Polarity Switching Type
2	DC ± 12V Common Type
3	DC ± 6V Common Type
5	DC12V Polarity Switching Type

⑪ Other Features 【shown after- (hyphen)】

Sign	Meaning
02, 035	Optical Magnification (used for model name of 50mm Line-Scan Lens)
DN	Day & Night Lens
UV	UV Lens
M	Mega-Pixel Lens
R	Video Iris with Override
P	Pre-set
F	Prest & Iris Override
I	IR Coating Lens
H	High Speed Zoom/Focus

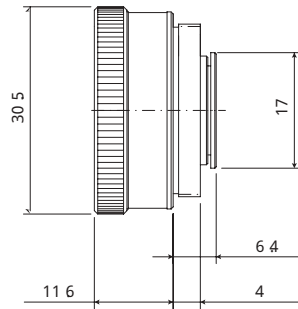
Example

UVM : UV Lens for Mega-Pixel Cameras

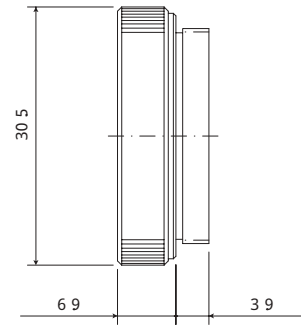
RI : IR Coating Auto-Iris Lens with Iris Override

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

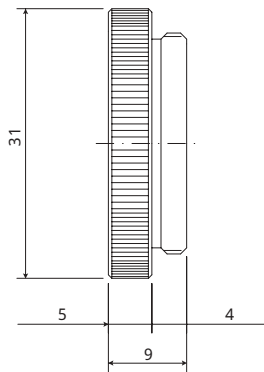
- 1) According to the doubled focal length, the angle of view gets half and F No. will be double.
- 2) Minimum object distance and zoom ratio remains the same.

Mount Adapter

C-CS-A

C-CS Mount Adapter(5mm Ring)

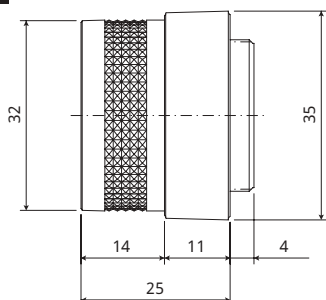
C-CS-A(C80035)



Dummy Lens

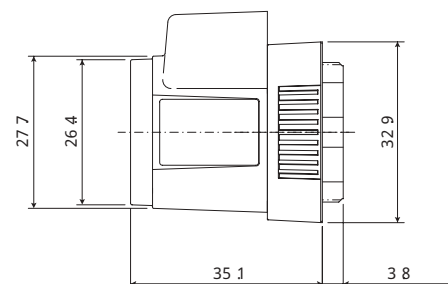
Monofocal type

DM-163(C80039)



Vari-Focal type

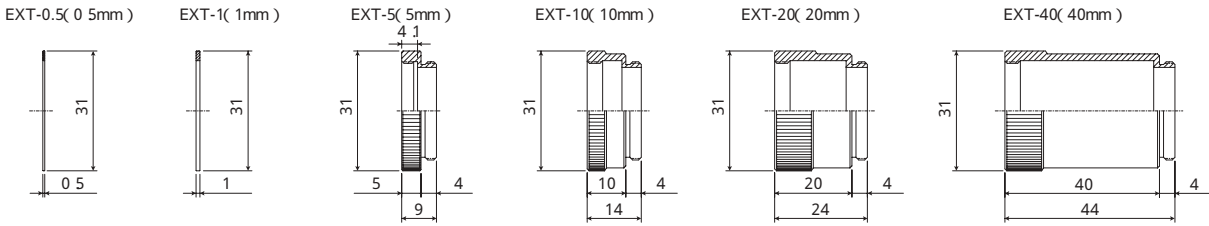
DM-E01(C80040)



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 information about Close-Up Application on Page 56.

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
Dioptre	+ 1	+ 2	+ 3
Focusing Range(Inf.)	1000mm	500mm	333mm

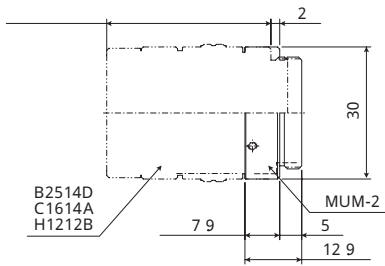
Note

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.

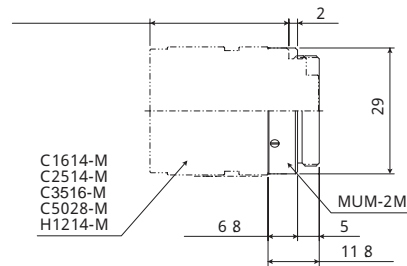
Macro Focus Mount

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

MUM-2(C80038)



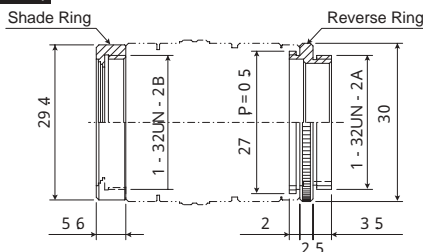
MUM-2M(C80057)



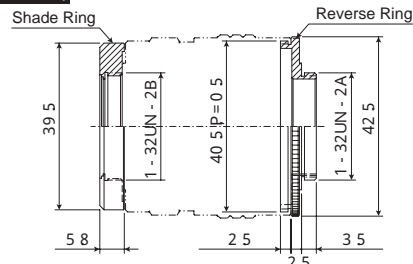
Reverse Ring

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

RR-27(C80036)



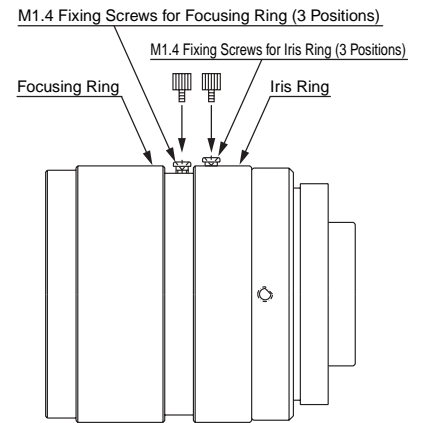
RR-40.5(C80037)



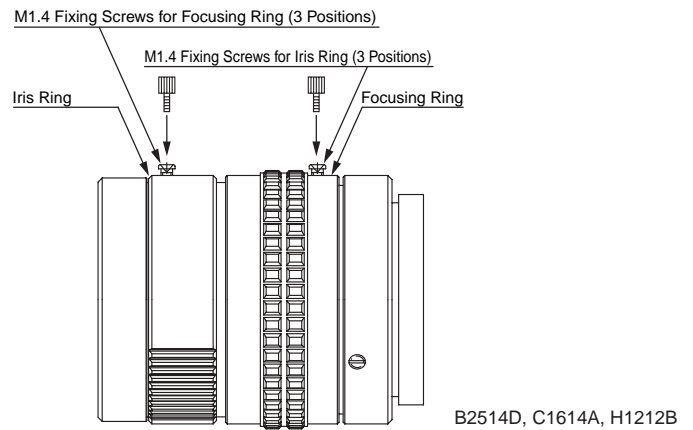
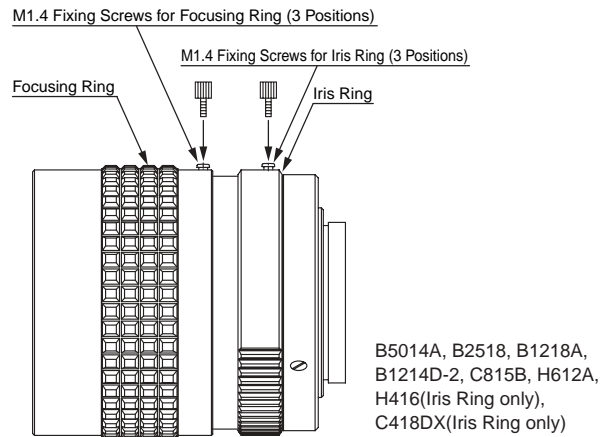
Lock Screws

	Iris	Focus	Supplied	Mount Position
Machine Vision Mega-Pixel Lens				
C7528-M	M2.0 x 2.8	M2.0 x M5.0	Thumb Screw (x2)	Adjustable
C5028-M	M1.4 x 2.2	M1.4 x 3.0		
C3516-M				
C2514-M				
C1614-M				
H1214-M				
C5028A-M02	Thumb Screw	Thumb Screw	-	
C5028A-M035			-	
Monofocal Manual Iris Lens(1 format)				
B1214D-2	M1.4 x 3.5	M1.4 x 1.4	Thumb Screw (x2)	Adjustable
B1218A				
B2514D	M1.4 x 2.8	M1.4 x 2.0		
B2518	M1.4 x 3.5	M1.4 x 1.4		
B5014A	M1.4 x 4.0	M1.4 x 1.6		
B7514C	M1.4 x 4.5	M1.4 x 2.2		
Monofocal Manual Iris Lens(2/3 format)				
C418DX	M1.4 x 3.5	-	Thumb Screw (x1)	Adjustable
C815B		M1.4 x 1.4		
C1614A		M1.4 x 2.8	M1.4 x 2.0	
Monofocal Manual Iris Lens(1/2 format)				
H416	M1.4 x 3.5	-	Thumb Screw (x1)	Adjustable
H612A		M1.4 x 1.4		
H1212B		M1.4 x 2.8	M1.4 x 2.0	
UV Lens				
H2520-UVM	M1.4 x 2.2	M1.4 x 2.2	Thumb Screw (x2)	Adjustable
B2528-UV	-	-	-	-
B7838-UV	-	-	-	-
Line Scan Lens				
YF/YK3528	Click-stop		-	-
YF/YK5028A-02	Thumb Screw	Thumb Screw	-	-
YF/YK5028A-035			-	-

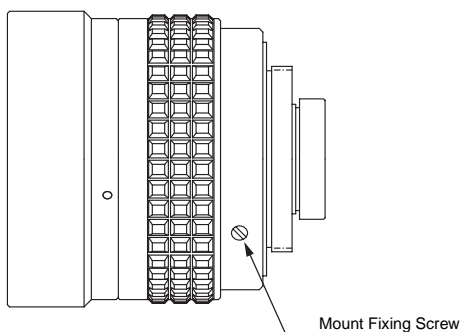
Lens is supplied locked by 6 x M1.4 Fixing Screws. Remove 6 x Fixing Screws and replace with 2 x Thumb Screws (supplied) as required.



C7528-M (M2.0 Fixing Screws), C5028-M, C3516-M, C2514-M, C1614-M, H1214-M, H2520-UVM



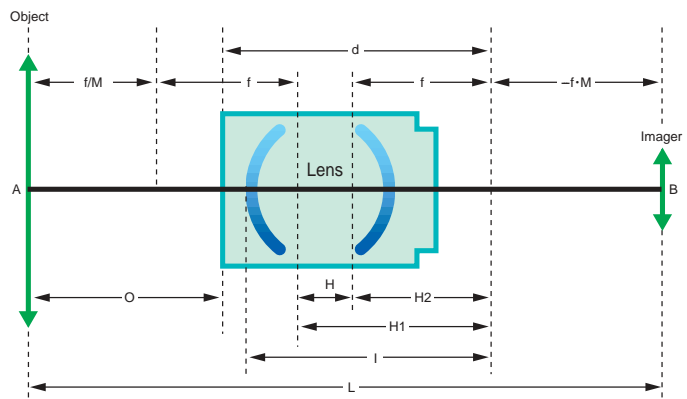
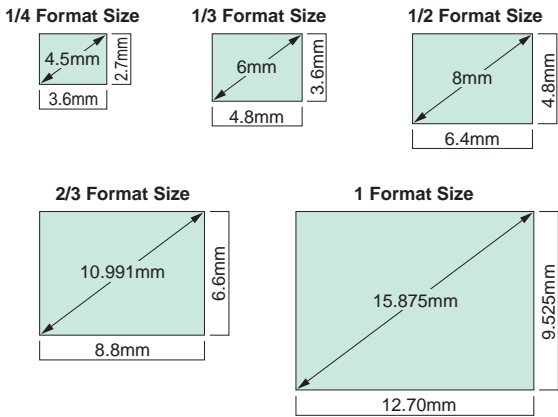
How to adjust Indicator Position by Rotating Mount



The mount position of the lens can be adjusted as follows

1. Loosen the mount fixing screws (3-4 positions) on the mount.
2. Rotate the mount for the suitable indicator position.
3. Tighten the mount fixing screws at torque 8 ~ 12N·cm evenly.

Optical Calculation for Close-Up Monitoring



1. Obtain a rough idea of the focal length required for your application with the object distance and the magnification between the object size and image size by using the following formula :

$$f = O \times M$$

2. Then, select one of the closest PENTAX lenses to the above figure, and then calculate the overall distance, L, by adding up figures indicated in the attached table.

$$L = f / M + f + f + H + f \times M$$

3. Finally, you can get an exact object distance, O, or the length of the extension tube, f x M, by the following subtractions :

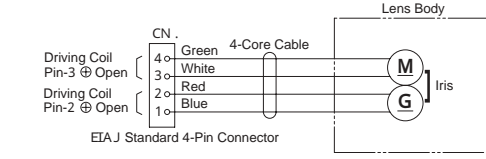
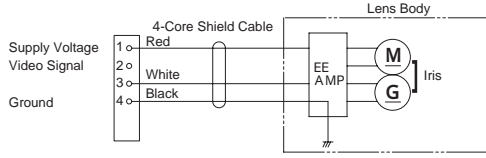
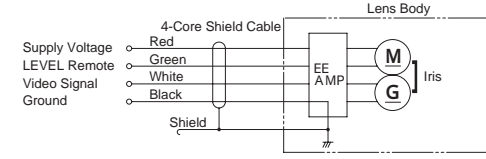
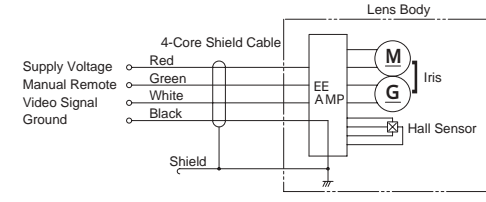
$$O = L - d - f \times M \text{ or } f \times M = L - O - d$$

A	Object Size (Vertical or Horizontal)
B	Imager Format Size (Vertical or Horizontal)
M	Magnification (B/A)
f	Focal Length
H	Interval of Principal Positions
H1	1st Principal Position
H2	2nd Principal Position
d	Distance between the front end of lens barrel and the focal point
l	Distance between the 1st lens element and the focal point
f · M	Length of the extension tube or the spacer to be placed between the camera and the lens
O	Object Distance (Distance between the front end of lens barrel and the object)

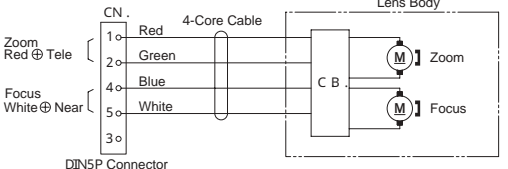
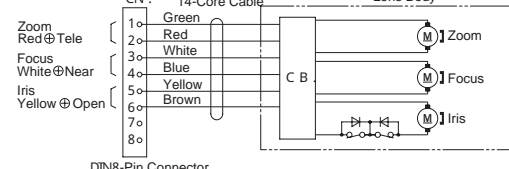
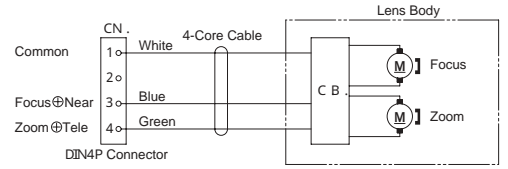
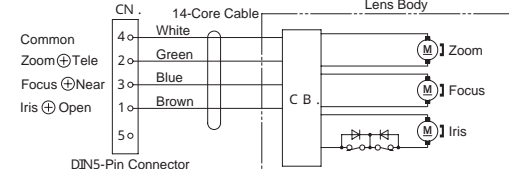
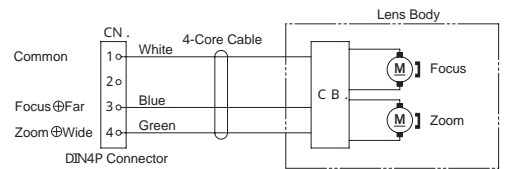
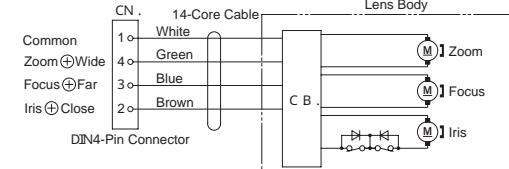
Optical Data

Model	Focal Length (f)	1st Principal Position (H1)	2nd Principal Position (H2)	Distance between H1 and H2 (H)	Optical Path Length (l)	Total Length (d)	Entrance Pupil Position	Diameter of Entrance Pupil	Exit Pupil Position	Diameter of Exit Pupil	Distortion	Vignetting	Back Focus Length (in air)	Mechanical Focus (Adjustable focusing range by rotating focus ring)	Remarks
Line-Scan Lens(7,450 pixel)															
YK3528	36.3	- 61.8	- 36.3	25.5	89.9	103.3	- 72.3	13.2	- 51.0	18.6	0.14	34.0	33.2	20.1	M=-0.2,Diagonal y=22.5
YF3528	36.3	- 61.8	- 36.3	25.5	89.9	103.3	- 72.3	13.2	- 51.0	18.6	0.14	34.0	33.2	20.1	M=-0.2,Diagonal y=22.5
YK5028A-02	51.38	- 80.02	- 61.66	18.36	109.69	76.69	- 77.22	18.14	- 59.00	17.20	- 0.07	65.95	33.01	2.88	M=-0.2,Diagonal y=22.5
YF5028A-02	51.38	- 80.02	- 61.66	18.36	109.69	76.69	- 77.22	18.14	- 59.00	17.20	- 0.07	65.95	33.01	2.88	M=-0.2,Diagonal y=22.5
YK5028A-035	51.12	- 88.05	- 69.01	19.03	116.92	76.19	- 85.65	13.01	- 66.73	17.20	- 0.01	67.77	40.73	3.88	M=-0.35,Diagonal y=22.5
YF5028A-035	51.12	- 88.05	- 69.01	19.03	116.92	76.19	- 85.65	13.01	- 66.73	17.20	- 0.01	67.77	40.73	3.88	M=-0.35,Diagonal y=22.5
UV Lens															
H2520-UV	25.0	- 43.6	- 25.0	18.6	51.2	63.5	- 36.3	12.7	- 19.4	9.8	0	73.4	12.0	3.8	Wave length:330nm,M=0.1
B2528-UV	25.0	- 24.9	- 25.0	0.2	34.9	42.9	- 25.9	-	- 26.1	-	- 4.05	87.7	12.8	4.1	Wave length:266nm,y=8.0
B7838-UV	77.5	- 77.6	- 77.5	0.1	96.8	126.8	- 78.8	-	- 78.8	-	- 0.22	98.4	71.3	23.1	Wave length:250nm,y=8.0
Machine Vision Mega-Pixel Lens(2 Mega-Pixel)															
C7528-M	72.8	- 57.4	- 72.8	- 15.4	72.8	77.2	16.1	25.9	- 36.2	12.9	0	96.5	30.9	10.5	W.D.=250mm,y=5.5
C5028-M	50.0	- 47.4	- 50.0	- 2.6	46.5	51.5	- 3.2	18.2	- 26.5	9.7	- 0.11	79.4	21.0	3.5	W.D.=250mm,y=5.5
C3516-M	34.0	- 10.9	- 34.0	- 23.0	47.1	52.9	- 11.3	20.8	- 34.3	21.0	- 0.92	61.5	11.9	3.5	W.D.=250mm,y=5.5
C2514-M	25.0	- 14.5	- 25.0	- 10.5	39.5	49.5	- 19.6	17.6	- 31.4	22.1	- 1.15	48.0	11.5	3.5	W.D.=250mm,y=5.5
C1614-M	16.0	- 18.0	- 16.0	2.0	46.6	50.7	- 30.2	11.3	- 68.0	47.9	- 1.98	43.9	14.6	1.5	W.D.=250mm,y=5.5
H1214-M	12.4	- 17.8	- 12.4	5.4	41.0	46.0	- 25.8	9.1	- 34.5	25.3	- 0.71	59.0	11.5	1.5	W.D.=250mm,y=4.0
Machine Vision Mega-Pixel Lens(5 Mega-Pixel)															
C5028A-M02	51.38	- 80.02	- 61.66	18.36	109.69	76.69	- 77.22	18.14	- 59.00	17.20	0.00	98.08	33.01	2.88	M=-0.2
C5028A-M035	51.12	- 88.05	- 69.01	19.03	116.92	76.19	- 85.65	18.01	- 66.73	17.20	0.00	98.32	40.73	3.88	M=-0.35
Monofocal Manual Iris Lens(1 format)															
B1214D-2	12.7	- 34.3	- 12.7	21.7	63.5	67.5	- 42.2	8.7	- 33.9	23.4	- 1.68	20.0	14.4	0.7	
B1218A	12.4	- 24.6	- 12.4	12.2	39.5	57.8	- 31.8	6.9	- 29.9	16.6	- 3.81	28.8	10.4	0.6	
B2514D	25.1	- 25.6	- 25.1	0.5	51.4	54.8	- 30.3	18.2	- 30.8	22.4	- 2.77	37.1	15.0	2.6	
B2518	25.0	- 22.1	- 25.0	- 2.9	31.1	57.5	- 12.0	14.6	- 17.8	10.4	1.40	31.7	14.9	1.2	
B5014A	49.9	- 47.3	- 49.9	- 2.6	57.4	65.5	- 8.1	37.5	- 28.0	21.0	0.81	59.3	18.1	2.8	
B7514C	75.0	3.4	- 75.0	- 78.4	94.3	96.5	63.1	55.0	- 41.7	30.6	- 1.74	57.4	18.5	5.2	
Monofocal Manual Iris Lens(2/3 format)															
C418DX	4.9	- 36.9	- 4.9	32.0	51.4	53.0	- 41.2	2.7	- 46.2	25.5	- 29.74	25.9	9.8	-	
C815B	8.5	- 31.2	- 8.5	22.6	53.6	57.5	- 39.1	5.9	- 120.1	82.7	- 4.24	29.2	10.9	0.6	
C1614A	16.2	- 20.1	- 16.2	3.9	41.0	50.5	- 30.3	12.6	- 44.4	34.5	- 1.92	57.0	13.2	1.1	
Monofocal Manual Iris Lens(1/2 format)															
H416	4.3	- 42.0	- 4.3	37.7	59.3	61.0	- 45.9	2.8	- 47.1	29.9	- 35.82	43.0	10.4	-	
H612A	6.2	- 38.9	- 6.2	32.7	58.1	63.5	- 44.5	5.5	- 70.3	62.3	- 5.81	42.0	14.3	0.3	
H1212B	12.2	- 26.7	- 12.2	14.5	47.6	53.0	- 38.5	10.7	- 322.6	282.8	- 4.26	45.9	13.9	1.1	

■ Connection for Auto-Iris

Wiring Diagram	Model
 <p>Driving Coil Pin-3 ⊕ Open Driving Coil Pin-2 ⊕ Open</p> <p>CN . 4-Core Cable 4 Green 3 White 2 Red 1 Blue</p> <p>EIAJ Standard 4-Pin Connector</p> <p>Lens Body EE AMP Iris (M, G)</p>	<p>DC Iris (EIAJ Standard 4-Pin connector)</p>
 <p>Supply Voltage Video Signal Ground</p> <p>4-Core Shield Cable 1 Red 2 White 3 Black 4</p> <p>Lens Body EE AMP Iris (M, G)</p>	<p>Video Iris 1 (EIAJ Standard 4-Pin connector)</p>
 <p>Supply Voltage LEVEL Remote Video Signal Ground</p> <p>4-Core Shield Cable 1 Red 2 Green 3 White 4 Black Shield</p> <p>Lens Body EE AMP Iris (M, G)</p>	<p>Video Iris 2</p>
 <p>Supply Voltage Manual Remote Video Signal Ground</p> <p>4-Core Shield Cable 1 Red 2 Green 3 White 4 Black Shield</p> <p>Lens Body EE AMP Iris (M, G) Hall Sensor</p>	<p>Iris Override</p>

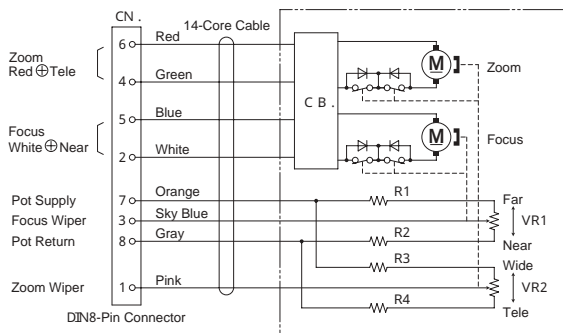
■ Wiring Diagram for Motorized Zoom Lens

Type	Auto-Iris & Motorized Zoom lenses	Full Motorized Zoom lenses
<p>Type 1 (DC6V) Type 5 (DC12V)</p>	 <p>Zoom Red ⊕ Tele Focus White ⊕ Near</p> <p>CN . 4-Core Cable 1 Red 2 Green 3 White 4 Blue</p> <p>DIN5P Connector</p> <p>Lens Body C B Zoom (M) Focus (M)</p>	 <p>Zoom Red ⊕ Tele Focus White ⊕ Near Iris Yellow ⊕ Open</p> <p>CN . 14-Core Cable 1 Green 2 Red 3 White 4 Blue 5 Yellow 6 Brown 7 8</p> <p>DIN8-Pin Connector</p> <p>Lens Body C B Zoom (M) Focus (M) Iris (M)</p>
<p>Type 2 (DC ± 12V)</p>	 <p>Common Focus ⊕ Near Zoom ⊕ Tele</p> <p>CN . 4-Core Cable 1 White 2 Blue 3 Green 4 Green</p> <p>DIN4P Connector</p> <p>Lens Body C B Focus (M) Zoom (M)</p>	 <p>Common Zoom ⊕ Tele Focus ⊕ Near Iris ⊕ Open</p> <p>CN . 14-Core Cable 1 White 2 Green 3 Blue 4 Brown 5</p> <p>DIN5-Pin Connector</p> <p>Lens Body C B Zoom (M) Focus (M) Iris (M)</p>
<p>Type 3 (DC ± 6V)</p>	 <p>Common Focus ⊕ Far Zoom ⊕ Wide</p> <p>CN . 4-Core Cable 1 White 2 Blue 3 Green 4 Green</p> <p>DIN4P Connector</p> <p>Lens Body C B Focus (M) Zoom (M)</p>	 <p>Common Zoom ⊕ Wide Focus ⊕ Far Iris ⊕ Close</p> <p>CN . 14-Core Cable 1 White 2 Green 3 Blue 4 Brown</p> <p>DIN4-Pin Connector</p> <p>Lens Body C B Zoom (M) Focus (M) Iris (M)</p>

Wiring Diagram for P type Zoom Lenses

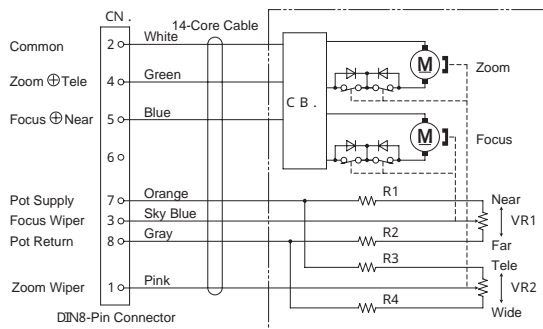
Motorized Zoom and Focus with Preset Auto-Iris

Type 1 (DC6V) / Type 5 (DC12V)



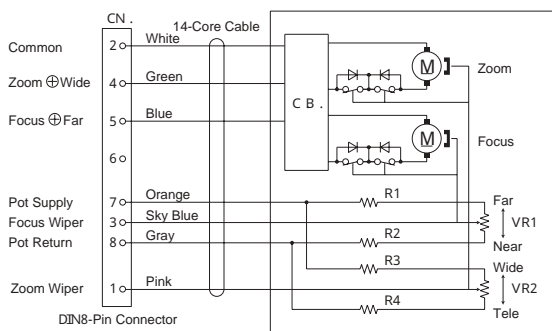
R1, R2, R3, R4	1K ± 1% 0.1W
VR1, VR2	5K ± 15% 0.2W

Type 2 (DC ± 12V)



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

Type 3 (DC ± 6V)

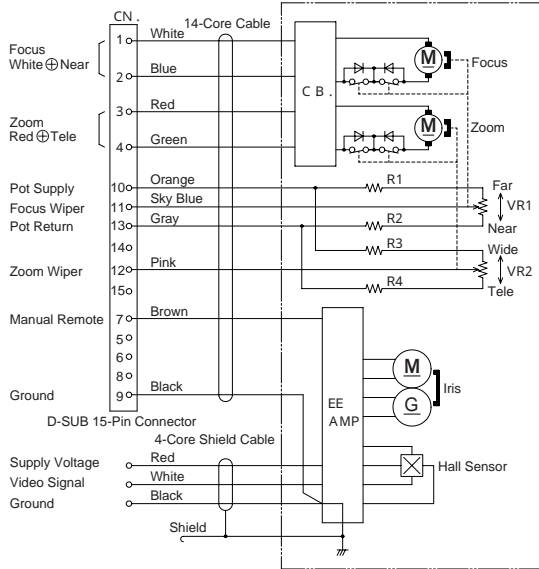


R1, R2, R3, R4	1K ± 1% 0.1W
VR1, VR2	5K ± 15% 0.2W

Wiring Diagram for F Type Zoom Lenses (Full Function)

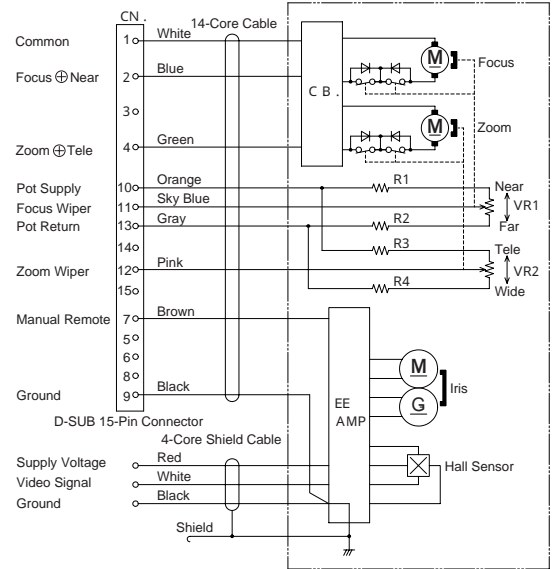
Motorized Zoom and Focus with Preset Video Iris with Override

Type 1 (DC6V) / Type 5 (DC12V)



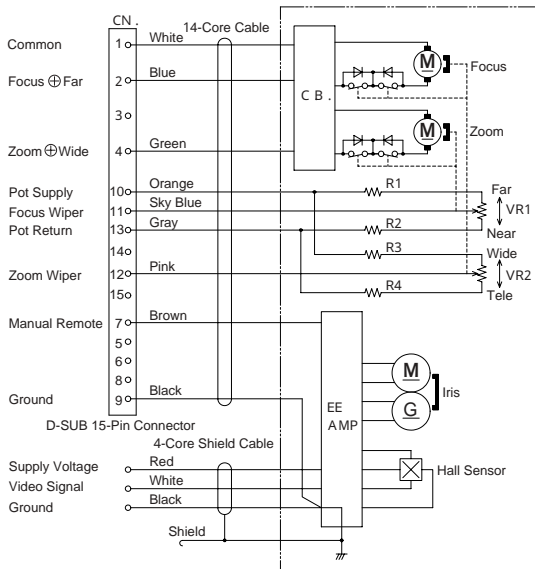
R1, R2, R3, R4	1K ± 1% 0.1W
VR1, VR2	5K ± 15% 0.2W

Type 2 (DC ± 12V)



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

Type 3 (DC ± 6V)



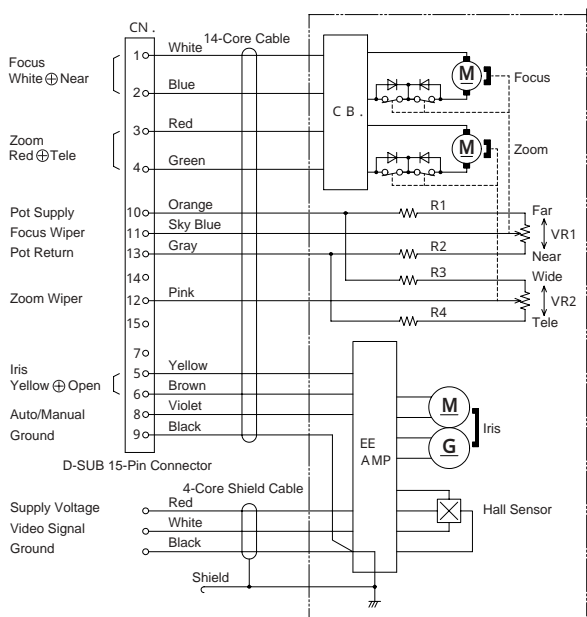
R1, R2, R3, R4	1K ± 1% 0.1W
VR1, VR2	5K ± 15% 0.2W

Wiring Diagram for F Type Zoom Lenses (Full Function) (with D/A Converter)

Motorized Zoom and Focus with Preset Video Iris with Override

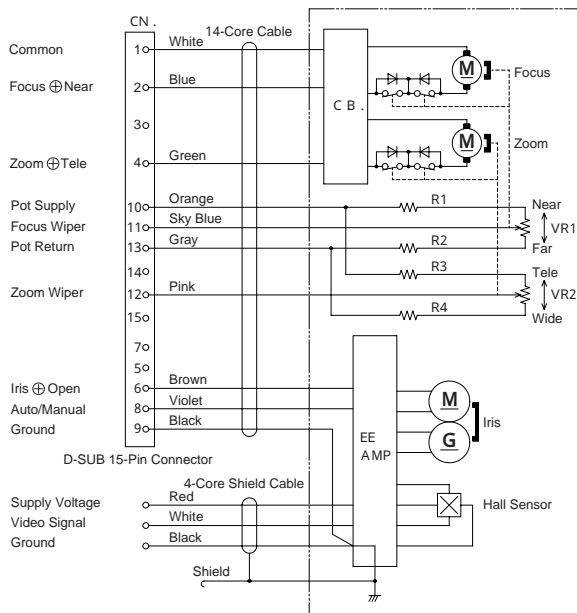
*D/A converter is option for F type of zoom lenses.

Type 1 (DC6V) / Type 5 (DC12V)



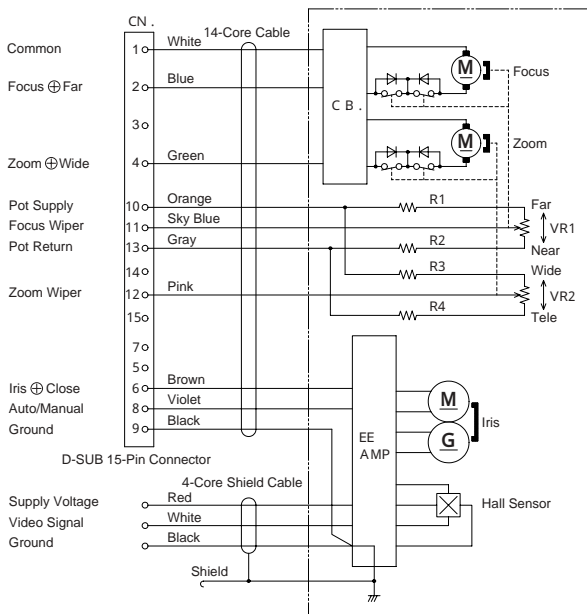
R1, R2, R3, R4	1K ±1% 0.1W
VR1, VR2	5K ±15% 0.2W

Type 2 (DC ±12V)



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

Type 3 (DC ±6V)

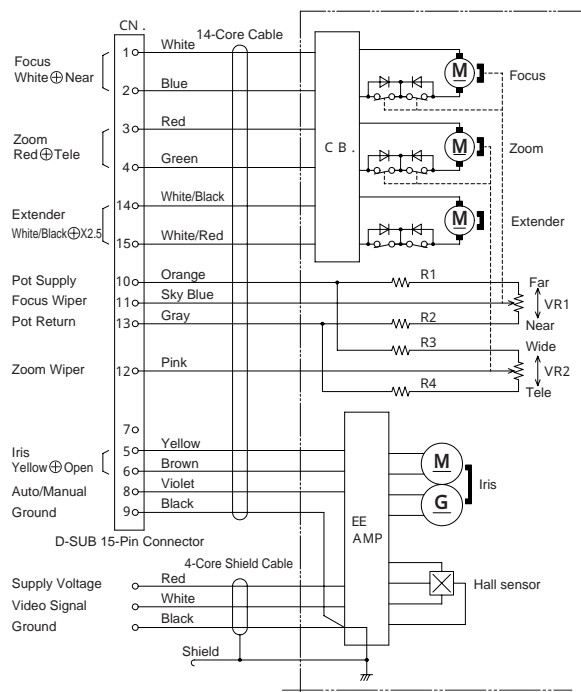


R1, R2, R3, R4	1K ±1% 0.1W
VR1, VR2	5K ±15% 0.2W

Wiring Diagram for H55ZAME-F (Built-In 2.5X Extender)

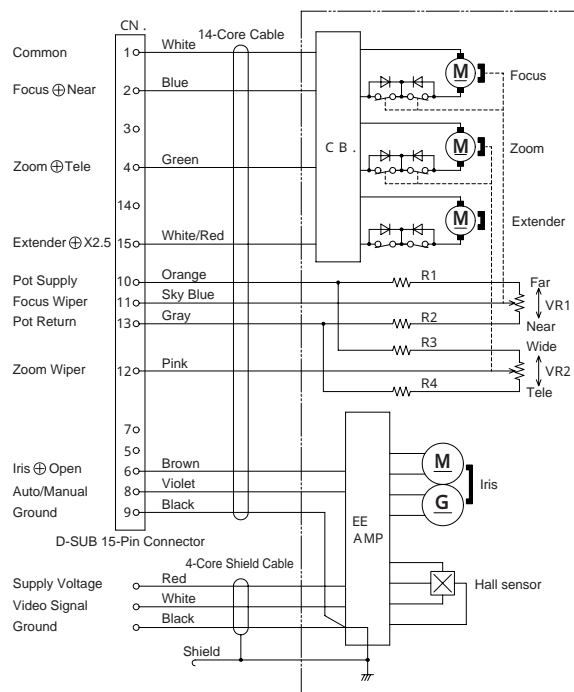
Motorized Zoom and Focus with Preset Video Iris with Override Built-In Motorized 2.5X Extender
 *D/A converter is the standard for H55ZAME-F.

Type 5 (DC12V) with D/A Converter



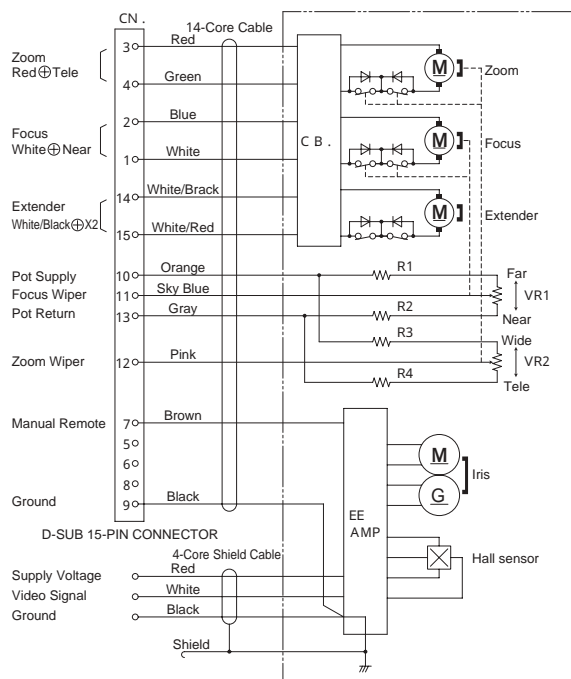
R1, R2, R3, R4	1K ± 1% 0.1W
VR1, VR2	5K ± 15% 0.2W

Type 2(DC ± 12V) with D/A Converter



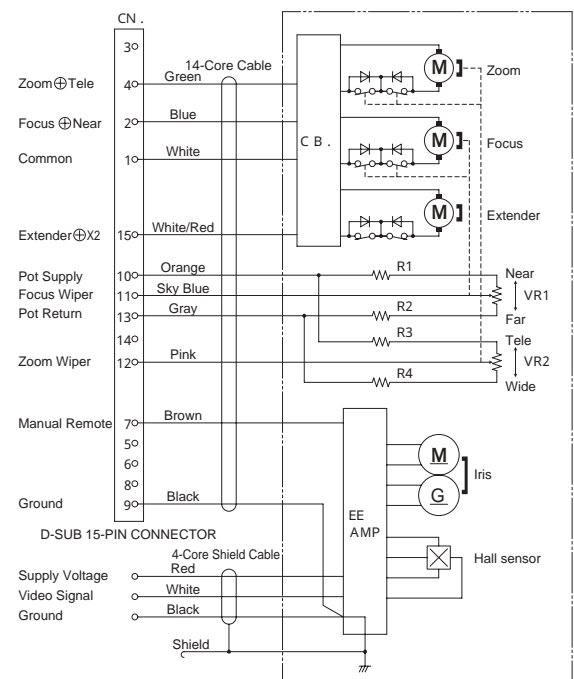
R1, R2, R3, R4	1K ± 1% 0.1W
VR1, VR2	5K ± 15% 0.2W

Type 5 (DC12V)



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

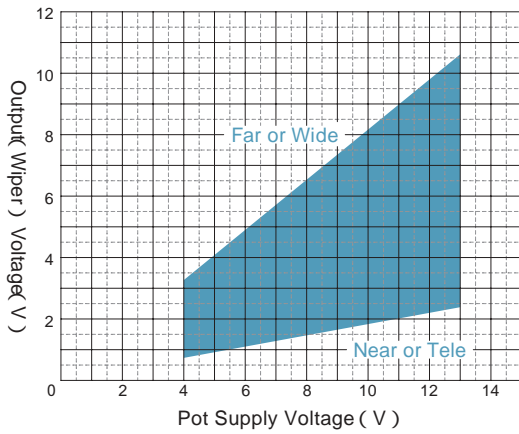
Type 2(DC ± 12V)



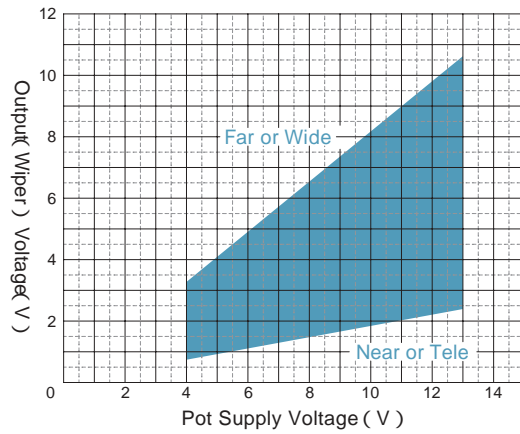
R1, R2, R3, R4	1K ± 1% 0.1W
VR1, VR2	5K ± 15% 0.2W

Pot(Preset)Supply Output Range Characteristics

Type 1 & 3

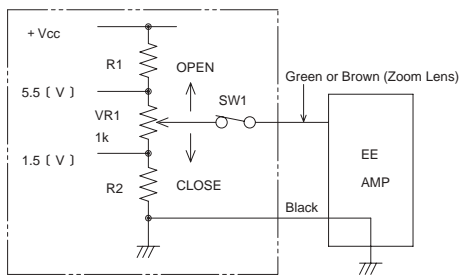


Type 2 & 3



Video Iris with Override(without D/A Converter)

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



Input Voltage(Vcc) (V)	Resistor(R1) (K)	Resistor(R2) (K)
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.

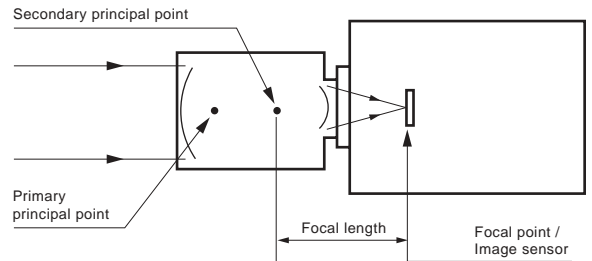
SW(Switch)	IRIS MODE
Open or Ground	Auto
Close	Manual Remote

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.

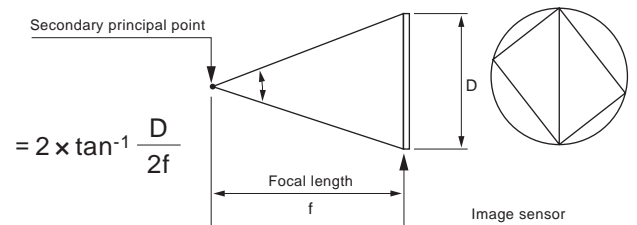
Focal Length

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.



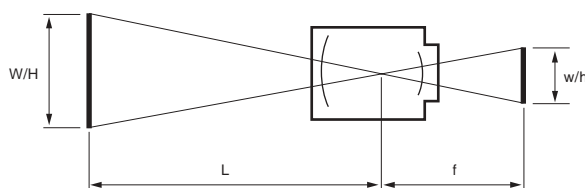
F-Number

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.

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

Field of View

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



$$\frac{w}{W} = \frac{h}{H} = \frac{f}{L}$$

- 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

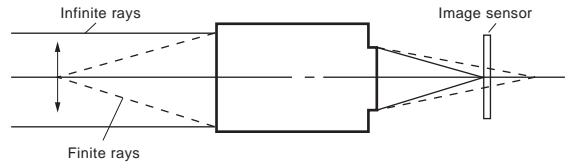
Example : Full image of 4.5m-high object on a TV monitor camera: 1/3 format, Object distance: 10m
 H = 4.5m = 4,500mm L = 10m = 10,000mm

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

Close-Up Application

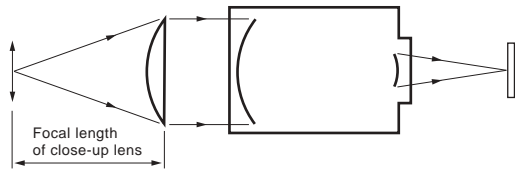
1)Extension Tube(Macro Ring)

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 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 depth of field. When the background is extended to infinity, the object distance (focusing distance) is called hyper focal distance. 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:

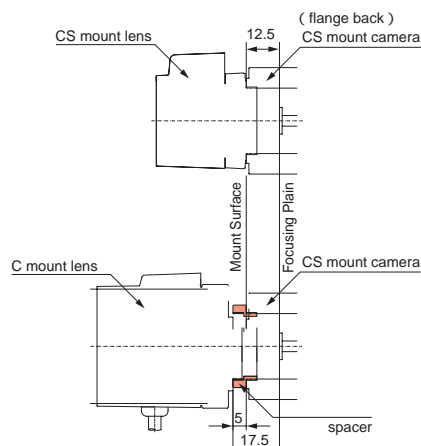
*Focal length is shorter

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

*Object distance is longer

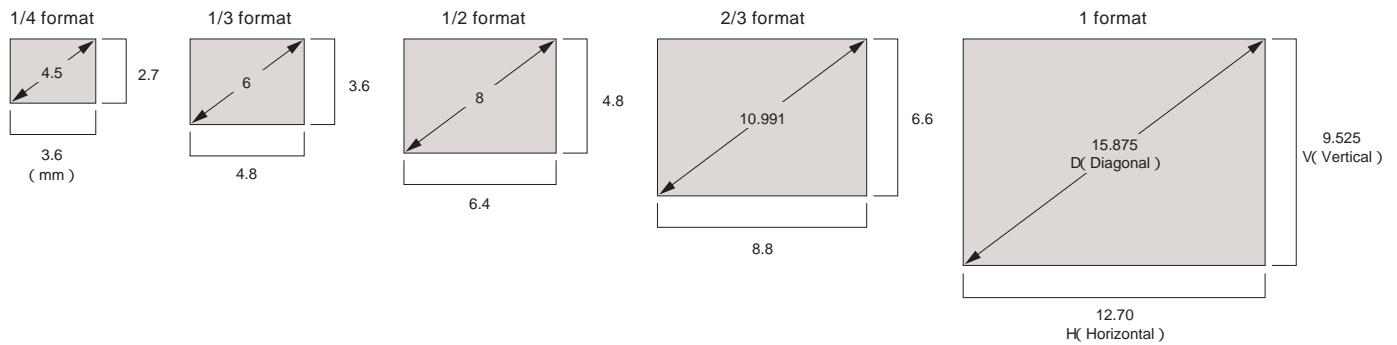
CS and C mount

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).



Angles of View

Format Size



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

Motorized Zoom Lens

1/3 format	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	-	-	-	-	-	-	-	-	-
1/2 format	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	30.84-2.19	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	12.86-0.66	28.81-1.46	22.95-1.17	17.17-0.88	38.89-1.94	30.78-1.56	22.95-1.17	-	-	-	-	-	-
	H5ZAME	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	-	-	-	-	-	-
H5ZAME(w/2.5x)	8.46-0.15	6.76-0.12	5.07-0.09	11.30-0.20	9.03-0.16	6.76-0.12	15.12-0.27	12.06-0.22	9.03-0.16	-	-	-	-	-	-	
2/3 format	C6ZAME	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	-	-	-
	C6Z1218M3	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	-	-	-

Manual Zoom Lens

1/2 format	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	-	-	-	-	-	-
	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	-	-	-	-	-	-
2/3 format	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	-	-	-
	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	-	-	-

Vari-Focal Lens

1/3 format	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	-	-	-	-	-	-	-	-	-
	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	54.07-13.55	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	-	-	-	-	-	-	-	-	-
	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	-	-	-	-	-	-	-	-	-
1/2 format	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	-	-	-	-	-	-

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

Board Camera Lens

1/4 format	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	92.23-35.84	73.42-28.74	54.77-21.59	-	-	-	-	-	-	-	-	-	-	-	-
1/3 format	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	-	-	-	-	-	-	-	-	-
	TD3V212ED	90.16-29.57	70.91-23.67	52.51-17.75	125.81-39.40	96.88-31.54	70.91-23.67	-	-	-	-	-	-	-	-	-

Monofocal Auto-Iris Lens

1/3 format	TS212E	88.60	71.54	54.09	117.79	94.28	71.54	-	-	-	-	-	-	-	-	-
1/2 format	H416E	60.16	47.90	35.78	81.06	64.30	47.90	110.22	86.78	64.30	-	-	-	-	-	-
	H612E	40.93	32.96	24.84	53.67	43.54	32.96	68.87	56.91	43.54	-	-	-	-	-	-
	H1212E	21.18	16.94	12.70	28.28	22.60	16.94	37.85	30.19	22.60	-	-	-	-	-	-
2/3 format	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	-	-	-
	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	-	-	-
1 format	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
	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

Auto-Iris Pinhole Lens

1/3 format	TS420PE	64.14	51.24	38.39	86.17	68.47	51.24	-	-	-	-	-	-	-	-	-
1/2 format	H620PE	40.26	32.44	24.46	52.86	42.82	32.44	68.66	56.12	42.82	-	-	-	-	-	-

UV Lens(Ultraviolet Ray)

1/2 format	H2520-UV	10.30	8.24	6.18	13.71	10.98	8.24	18.24	14.62	10.98	-	-	-	-	-	-
1 format	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

Machine Vision Mega-Pixel Lens

1/2 format	H1214-M	20.54	16.49	12.39	27.17	21.88	16.49	35.69	28.91	21.88	-	-	-	-	-	-
2/3 format	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	-	-	-

Monofocal Manual Iris Lens

1/2 format	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	-	-	-	-	-	-
2/3 format	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	-	-	-
	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	-	-	-
1 format	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
	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	

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