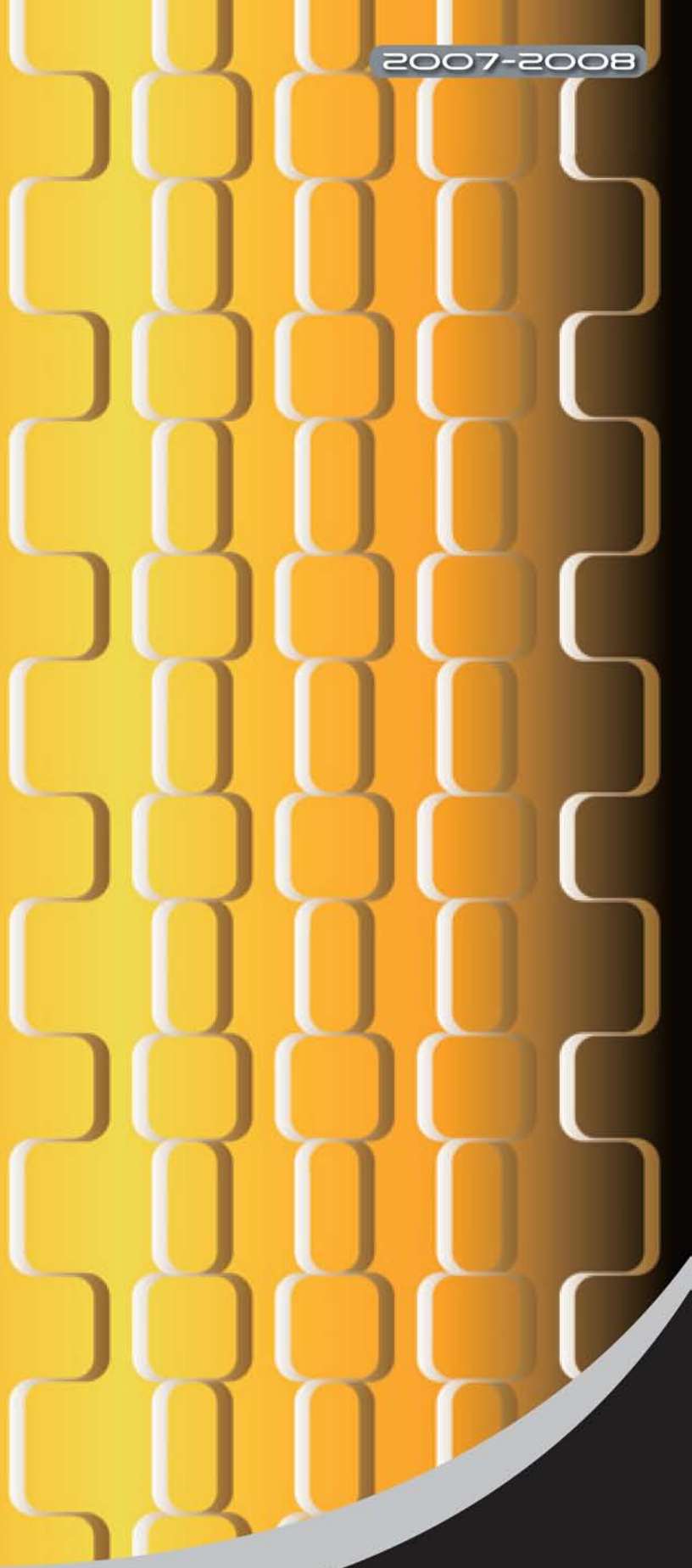


2007-2008

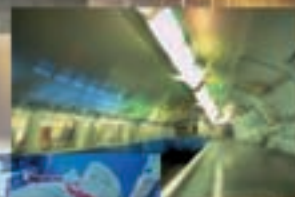


computer[®]

CCTV LENSES



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FEATURE INDICATION P.1

MODEL NAME CODING RULE P.2

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Lens type

FIX	Fixed Focal	Fixed focal length, very simple and compact design
VARI	Vari-Focal	Compact design, focal length adjusted manually
ZOOM	Zoom	Focal length adjusted without focus shift of image plane

Iris type

MANUAL	Manual Iris	Manually operated iris
DC	DC Auto Iris	Auto iris supporting DC controlled cameras
VIDEO	Video Auto Iris	Auto iris supporting Video controlled cameras
3 MOTOR	3 Motors	Operated iris, zoom and focus by electric remote control

Function

F1.0	Wide Aperture Ratio	Large aperture that transmits more light
ASP	Aspherical Lens	Aspherical lens which greatly improves the image quality and compact design
MEGA PIXEL	Mega-pixel Lens	High definition lens which is used mainly with mega-pixel cameras
IR	Day & Night	Lens optimized for both visible and new IR spectrum which eliminates focus shift with Day&Night cameras

Feature of Vari-Focal

WIDE	Wide Angle Vari-Focal	Vari-focal lens provides a wide field of view
TELE	Telephoto Vari-Focal	Vari-focal lens provides a small field of view or magnified image in long range applications

Feature of Zoom

SPOT FILTER	Spot Filter	A neutral density filter inside the lens that attenuates the amount of light transmission from very bright object
PRESET	Preset on Focus & Zoom	The model which has the function of preset on focus and zoom
OVER RIDE	Over-Ride Manual	The model which enables manual control from remote locations

Application of Mega-pixel / FA Lens

SECURITY	Security	For Security, available for monitoring at infinity. Provides good image recognition accuracy
FA	FA-Image Procession	For Factory Automation or Image Procession, used in monitoring at a close proximity

Manual Iris / Auto Iris (DC&Video) / Vari-Focal Manual Iris / Vari-Focal Auto Iris (DC & Video)

T2314FICS	<u>T</u>		<u>23</u>	<u>14</u>		<u>FI</u>	<u>CS</u>	
T3Z2910CS	<u>T</u>	<u>4Z</u>	<u>28</u>	<u>13</u>			<u>CS</u>	
HG3Z4512AFCS-IR	<u>H</u>	<u>G</u>	<u>3Z</u>	<u>45</u>	<u>12</u>	<u>AF</u>	<u>CS</u>	<u>-IR</u>
HG2Z0414FC-MP	<u>H</u>	<u>G</u>	<u>2Z</u>	<u>04</u>	<u>14</u>	<u>F</u>	<u>C</u>	<u>-MP</u>
	①	②	③	④	⑤	⑥	⑦	⑧

① CCD Size	T..... 1/3 inch
	H..... 1/2 inch
	M..... 2/3 inch
② With Galvanometer (Auto Iris)	
③ Zoom Ratio	HG 2Z 0414FCS-MP... 2 times (f=4~8mm)
④ Focal Length	T23 14FICS..... f=2.3 mm
⑤ Aperture	T3Z29 10 CS..... F1.0
⑥ Iris Type	FI / Blank..... Manual Iris
	AF..... Auto Iris (Video)
	F..... Auto Iris (DC)
⑦ Mount Type	CS..... CS-Mount
	C..... C-Mount
⑧ Character	IR..... InfraRed Lens (Day & Night)
	MP..... Mega-Pixel
	P..... Pinhole

Manual Zoom

M6Z1212	<u>M</u>	<u>6Z</u>	<u>12</u>	<u>12</u>				
T6Z5710AIDC-CS	<u>T</u>	<u>6Z</u>	<u>57</u>	<u>10</u>	<u>AI</u>	<u>DC</u>	<u>-CS</u>	
H6Z0812AIVD	<u>H</u>	<u>6Z</u>	<u>08</u>	<u>12</u>	<u>AI</u>	<u>VD</u>		
	①	③	④	⑤	⑨	⑩	⑦	

⑨ Auto Iris	
⑩ Iris Type	DC..... DC Drive
	VD..... Video Drive

Motorized Zoom

T21Z5816M-CS	<u>T</u>	<u>21Z</u>	<u>58</u>	<u>16</u>	<u>M</u>	<u>-CS</u>	
H10Z1218DC	<u>H</u>	<u>10Z</u>	<u>12</u>	<u>18</u>	<u>DC</u>		
H16Z7516AMSPR-IR	<u>H</u>	<u>16Z</u>	<u>75</u>	<u>16</u>	<u>AMSPR</u>	<u>-IR</u>	
	①	③	④	⑤	⑪	⑦	⑧

⑪ Functional Identification	M..... 3 Motors (Iris,Focus & Zoom by Motorized Contorol)
	MP..... 3 Motors + Preset
	MS..... 3 Motors + Spot Filter
	MSP..... 3 Motors + Spot Filter + Preset
	AMS..... Auto Iris (Video)+Spot Filter
	AMSP..... Auto Iris (Video)+Spot Filter + Preset
	AMSR..... Auto Iris (Video)+Spot Filter+ Over-Ride
	AMSPR..... Auto Iris (Video) +Spot Filter+ Preset + Over-Ride
	DC..... Auto Iris (DC)
	PDC..... Auto Iris (DC)+Preset

※ This rule does not apply to some products



Model No.	T2314FICS-3	T2616FICS-4	T0412FICS-3
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	2.3	2.6	4
Aperture (F)	1.4-16C	1.6-11C	1.2-16C
Angle of View (HOR)°	113.3	99.6	63.9
M.O.D. (m)	0.2	0.3	0.2
Effective Aperture Front (φmm)	22.8	16.4	15.5
Rear (φmm)	7.0	8.0	8.5
Front Filter Thread (φMxP=)	-	-	-
Dimensions <small>(DxHmm or DxHxW)mm</small>	φ 34.5x35.4	φ 34.5x34.7	φ 34.5x33
Weight (g)	43	45	36



Model No.	T0812FICS-3	H1214FICS-3	M8513
Format (")	1/3	1/2	2/3
Mount	CS	CS	C
Focal Length (mm)	8	12	8.5
Aperture (F)	1.2-16C	1.4-16C	1.3-16C
Angle of View (HOR)°	34.7	30.4	57.4
M.O.D. (m)	0.2	0.3	0.2
Effective Aperture Front (φmm)	15.0	13.0	20.0
Rear (φmm)	8.8	8.8	12.0
Front Filter Thread (φMxP=)	-	-	-
Dimensions <small>(DxHmm or DxHxW)mm</small>	φ 34.5x33	φ 34.5x33	φ 39x31.6
Weight (g)	37	33	50



Model No.	TG2314FCS-3	TG2616FCS-4	TG0412FCS-3
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	2.3	2.6	4
Aperture (F)	1.4-360C	1.6-360C	1.2-360C
Angle of View (HOR)°	113.3	99.6	63.9
M.O.D. (m)	0.2	0.3	0.2
Effective Aperture Front (φmm)	22.8	16.4	15.5
Rear (φmm)	7.0	8.0	8.5
Front Filter Thread (φMxP=)	-	-	-
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ32x39.8x35.4	φ32x39.8x34.7	φ32x39.8x33
Weight (g)	45	47	38



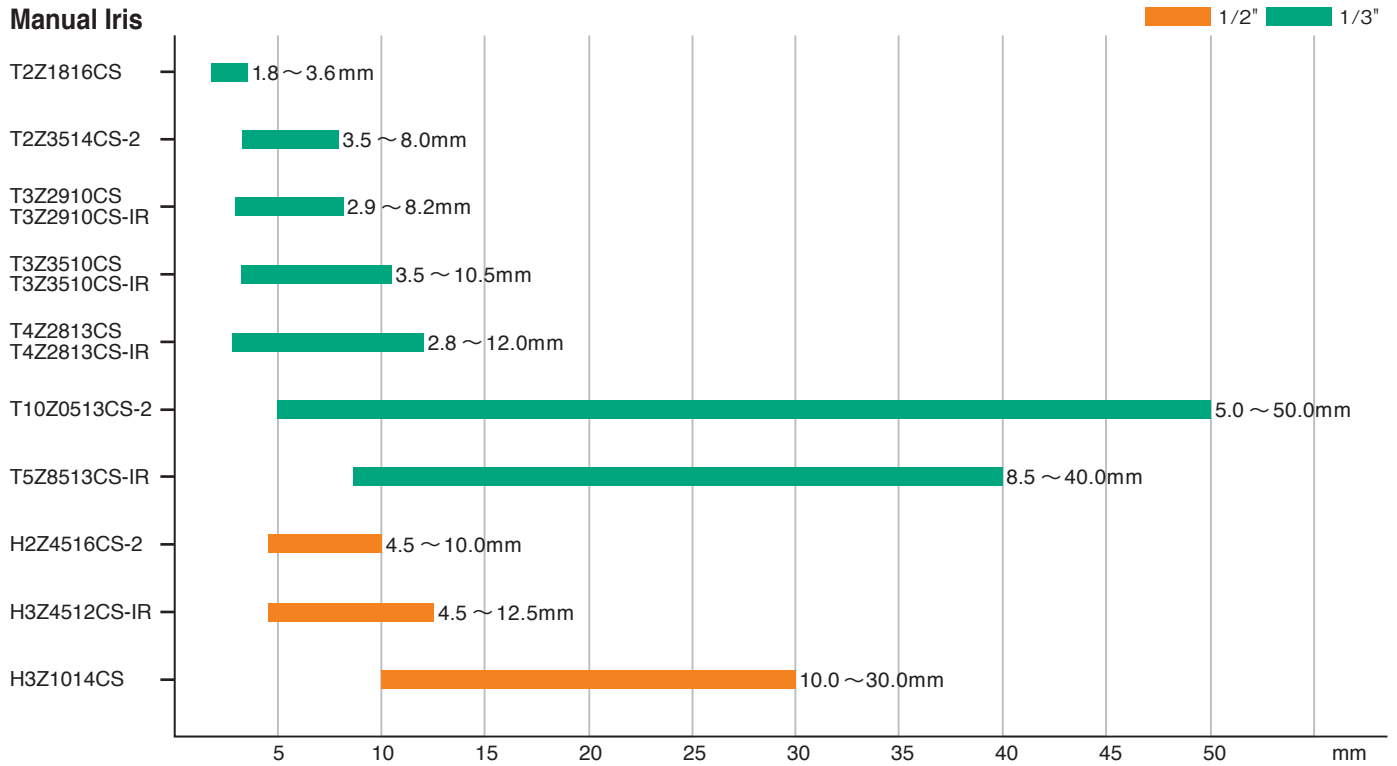
Model No.	TG0812FCS-3	HG1214FCS-3
Format (")	1/3	1/2
Mount	CS	CS
Focal Length (mm)	8	12
Aperture (F)	1.2-360C	1.4-360C
Angle of View (HOR)°	34.7	30.4
M.O.D. (m)	0.2	0.3
Effective Aperture Front (φmm)	15.0	13.0
Rear (φmm)	8.8	8.8
Front Filter Thread (φMxP=)	-	-
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ32x39.8x33	φ32x39.8x33
Weight (g)	39	35



Model No.	TG2314AFCS-3	TG2616AFCS-4	HG1214AFCS-3
Format (")	1/3	1/3	1/2
Mount	CS	CS	CS
Focal Length (mm)	2.3	2.6	12
Aperture (F)	1.4-360C	1.6-360C	1.4-360C
Angle of View (HOR)°	113.3	99.6	30.4
M.O.D. (m)	0.2	0.3	0.3
Effective Aperture Front (φmm)	22.8	16.4	13.0
Rear (φmm)	7.0	8.0	8.8
Front Filter Thread (φMxP=)	-	-	-
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ32x39.8x35.4	φ32x39.8x34.7	φ32x39.8x33
Weight (g)	48	50	39

Vari-Focal Lens Comparison

Manual Iris



VARI-FOCAL MANUAL IRIS



Model No.	T2Z1816CS	T2Z3514CS-2	T3Z2910CS	T3Z2910CS-IR
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	1.8-3.6	3.5-8	2.9-8.2	2.9-8.2
Aperture (F)	1.6-16C	1.4-16C	1.0-16C	1.0-16C
Angle of View (HOR)°	144.2-79.4	77.6-35.4	98.3-35.2	95.0-35.6
M.O.D. (m)	0.2	0.4	0.5	0.5
Effective Aperture Front (φmm)	22.0	16.6	18.8	19.0
Rear (φmm)	7.9	9.0	9.0	8.5
Front Filter Thread (φMxP=)	-	-	-	-
Dimensions (DxHxW)mm or (DxHxW)mm	φ37.4x51	φ34x43.5	φ36.5x44.3	φ33.5x46.6
Weight (g)	68	38	41	44



Model No.	T3Z3510CS	T3Z3510CS-IR	T4Z2813CS
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	3.5-10.5	3.5-10.5	2.8-12
Aperture (F)	1.0-16C	1.0-16C	1.3-16C
Angle of View (HOR)°	81.6-27.2	81.8-27.2	98.2-23.8
M.O.D. (m)	0.3	0.3	0.3
Effective Aperture Front (φmm)	18.5	18.6	22.0
Rear (φmm)	10.1	10.2	8.8
Front Filter Thread (φMxP=)	-	-	-
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ41.6x48.8	φ41.6x48.8	φ40.7x56
Weight (g)	63	63	64



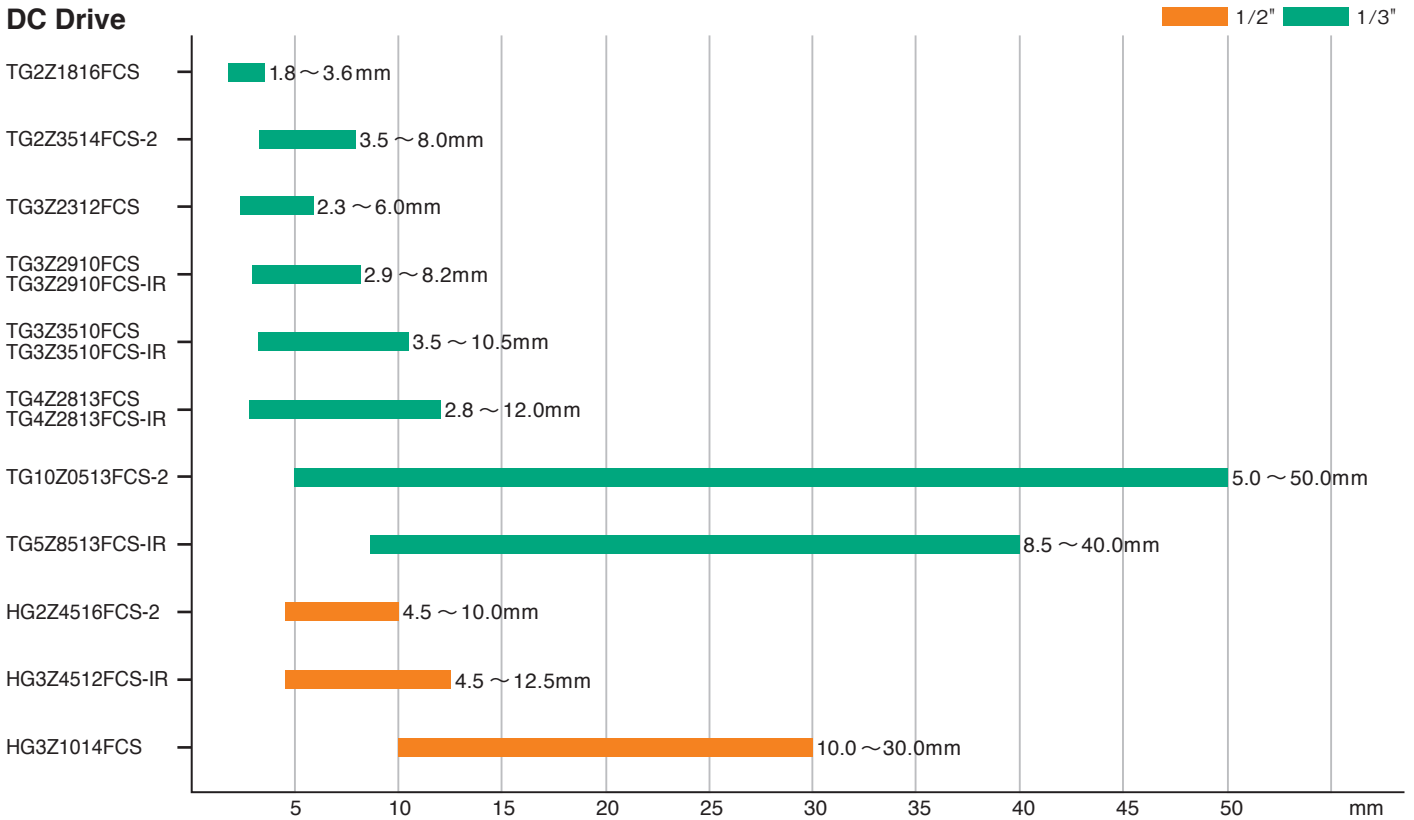
Model No.	T4Z2813CS-IR	T10Z0513CS-2	T5Z8513CS-IR
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	2.8-12	5-50	8.5-40
Aperture (F)	1.3-16C	1.3-16C	1.3-16C
Angle of View (HOR)°	102.2-23.7	51.8-5.6	33.5-7.1
M.O.D. (m)	0.3	0.8	0.8
Effective Aperture Front (φmm)	23.0	29.5	27.0
Rear (φmm)	7.4	8.7	9.3
Front Filter Thread (φMxP=)	-	37.5x0.5	37.5x0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ40.7x56.0	φ47x57.7	φ47.0x62.9
Weight (g)	63	125	126



Model No.	H2Z4516CS-2	H3Z4512CS-IR	H3Z1014CS
Format (")	1/2	1/2	1/2
Mount	CS	CS	CS
Focal Length (mm)	4.5-10	4.5-12.5	10-30
Aperture (F)	1.6-16C	1.2-16C	1.4-16C
Angle of View (HOR)°	81.3-38.2	83.7-30.1	35.8-12.5
M.O.D. (m)	0.3	0.3	0.6
Effective Aperture Front (φmm)	18.6	19.9	26.6
Rear (φmm)	9.0	9.9	9.0
Front Filter Thread (φMxP=)	-	35.5x0.5	37.5x0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ34x43.5	φ41.6x48.8	φ47x57.7
Weight (g)	40	66	125

Vari-Focal Lens Comparison

DC Drive



Model No.	TG2Z1816FCS	TG2Z3514FCS-2	TG3Z2312FCS	TG3Z2910FCS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	1.8-3.6	3.5-8	2.3-6	2.9-8.2
Aperture (F)	1.6-360C	1.4-360C	1.2-360	1.0-360C
Angle of View (HOR)°	144.2-79.4	77.6-35.4	114.8-48.2	98.3-35.2
M.O.D. (m)	0.2	0.4	0.3	0.5
Effective Aperture Front (φmm)	22.0	16.6	19.5	18.8
Rear (φmm)	7.9	9.0	9.0	9.0
Front Filter Thread (φMxP=)	-	-	-	-
Dimensions (DxHxW)mm or (DxHxW)mm	φ37.4x42.6x51	φ33.5x42.6x43.5	φ38.5x48x48.8	φ33.5x46.6x44.3
Weight (g)	78	48	76	47

NEW

VARI
DC
F1.0
ASP
IR



VARI
DC
F1.0
ASP



VARI
DC
F1.0
ASP
IR



VARI
DC
ASP



Model No.	TG3Z2910FCS-IR	TG3Z3510FCS	TG3Z3510FCS-IR	TG4Z2813FCS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	2.9-8.2	3.5-10.5	3.5-10.5	2.8-12
Aperture (F)	1.0-360C	1.0-360	1.0-360	1.3-360
Angle of View (HOR)°	95.0-35.6	81.6-27.2	81.6-27.2	98.2-23.8
M.O.D. (m)	0.5	0.3	0.3	0.3
Effective Aperture Front (φmm)	19.0	18.5	18.6	22.0
Rear (φmm)	8.5	10.1	10.2	8.8
Front Filter Thread (φMxP=)	-	-	-	-
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ33.5x46.6x44.3	φ38.5x48x48.8	φ38.5x48x48.8	φ37.5x48x56
Weight (g)	50	65	65	69

NEW

VARI
DC
ASP
IR



VARI
DC
TELE
ASP



VARI
DC
TELE
ASP
IR



Model No.	TG4Z2813FCS-IR	TG10Z0513FCS-2	TG5Z8513FCS-IR
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	2.8-12	5-50	8.5-40
Aperture (F)	1.3-360C	1.3-360C	1.3-360
Angle of View (HOR)°	102.2-23.7	51.8-5.6	33.5-7.1
M.O.D. (m)	0.3	0.8	0.8
Effective Aperture Front (φmm)	23.0	29.5	27.0
Rear (φmm)	7.4	8.7	9.3
Front Filter Thread (φMxP=)	-	37.5x0.5	37.5x0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ37.5x48x56	φ41.7x57.5x57.7	φ41.7x57.5x62.9
Weight (g)	71	140	114

VARI
DC
IR



VARI
DC
ASP
IR



VARI
DC
TELE
ASP
IR

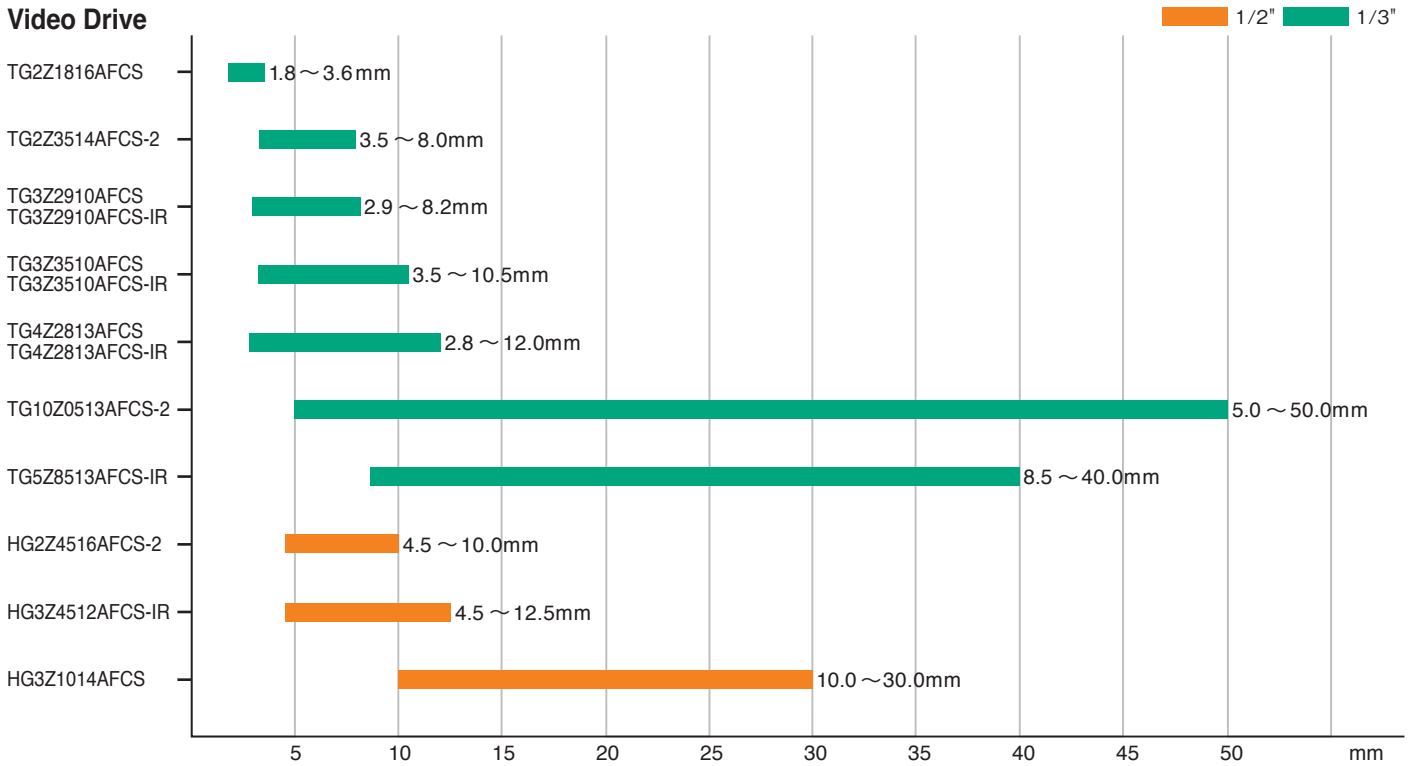


Model No.	HG2Z4516FCS-2	HG3Z4512FCS-IR	HG3Z1014FCS
Format (")	1/2	1/2	1/2
Mount	CS	CS	CS
Focal Length (mm)	4.5-10	4.5-12.5	10-30
Aperture (F)	1.6-360C	1.2-360	1.4-360C
Angle of View (HOR)°	81.3-38.2	83.7-30.1	35.8-12.5
M.O.D. (m)	0.3	0.3	0.6
Effective Aperture Front (φmm)	18.6	19.9	26.6
Rear (φmm)	9.0	9.9	9.0
Front Filter Thread (φMxP=)	-	35.5x0.5	37.5x0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ33.5x42.6x43.5	φ38.5x47.5x48.8	φ41.7x57.5x57.7
Weight (g)	54	68	120

※ HG3Z1014 Series 1/2type lenses have no focus shift with or without IR lighting only when used with 1/2type cameras. If these lenses are used with 1/3type cameras, some focus shift may occur with IR lighting.

Vari-Focal Lens Comparison

Video Drive



Model No.	TG2Z1816AFCS	TG2Z3514AFCS-2	TG3Z2910AFCS	TG3Z2910AFCS-IR
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	1.8-3.6	3.5-8	2.9-8.2	2.9-8.2
Aperture (F)	1.6-360C	1.4-360C	1.0-360C	1.0-360C
Angle of View (HOR)°	144.2-79.4	77.6-35.4	98.3-35.2	95.0-35.6
M.O.D. (m)	0.2	0.4	0.5	0.5
Effective Aperture Front (φmm)	22.0	16.6	18.8	19.0
Rear (φmm)	7.9	9.0	9.0	8.5
Front Filter Thread (φMxP=)	-	-	-	-
Dimensions (DxH:mm or DxHxW:mm)	φ37.4x42.6x51	φ33.5x42.6x43.5	φ33.5x46.6x44.3	φ33.5x46.6x44.3
Weight (g)	83	53	51	54

VARI
VIDEO
F1.0
ASP



VARI
VIDEO
F1.0
ASP
IR



VARI
VIDEO
ASP



Model No.	TG3Z3510AFCS	TG3Z3510AFCS-IR	TG4Z2813AFCS
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	3.5-10.5	3.5-10.5	2.8-12
Aperture (F)	1.0-360	1.0-360	1.3-360
Angle of View (HOR)°	81.6-27.2	81.8-27.2	98.2-23.8
M.O.D. (m)	0.3	0.3	0.3
Effective Aperture Front (φmm)	18.5	18.6	22.0
Rear (φmm)	10.1	10.2	8.8
Front Filter Thread (φMxP=)	-	-	-
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ38.5x48x48.8	φ38.5x48x48.8	φ37.5x48x56
Weight (g)	70	70	72

NEW

VARI
VIDEO
ASP
IR



VARI
VIDEO
TELE
ASP



VARI
VIDEO
TELE
ASP
IR



Model No.	TG4Z2813AFCS-IR	TG10Z0513AFCS-2	TG5Z8513AFCS-IR
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	2.8-12	5-50	8.5-40
Aperture (F)	1.3-360C	1.3-360C	1.3-360
Angle of View (HOR)°	102.2-23.7	51.8-5.6	33.5-7.1
M.O.D. (m)	0.3	0.8	0.8
Effective Aperture Front (φmm)	23.0	29.5	27.0
Rear (φmm)	7.4	8.7	9.3
Front Filter Thread (φMxP=)	-	37.5x0.5	37.5x0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ37.5x48x56	φ41.7x57.5x57.7	φ41.7x57.5x62.9
Weight (g)	74	145	115

VARI
VIDEO
IR



VARI
VIDEO
ASP
IR



VARI
VIDEO
TELE
ASP
IR



Model No.	HG2Z4516AFCS-2	HG3Z4512AFCS-IR	HG3Z1014AFCS
Format (")	1/2	1/2	1/2
Mount	CS	CS	CS
Focal Length (mm)	4.5-10	4.5-12.5	10-30
Aperture (F)	1.6-360C	1.2-360	1.4-360C
Angle of View (HOR)°	81.3-38.2	83.7-30.1	35.8-12.5
M.O.D. (m)	0.3	0.3	0.6
Effective Aperture Front (φmm)	18.6	19.9	26.6
Rear (φmm)	9.0	9.9	9.0
Front Filter Thread (φMxP=)	-	35.5x0.5	37.5x0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ33.5x42.6x43.5	φ38.5x47.5x48.8	φ41.7x57.5x57.7
Weight (g)	56	73	125

※ HG3Z1014 Series 1/2type lenses have no focus shift with or without IR lighting only when used with 1/2type cameras. If these lenses are used with 1/3type cameras, some focus shift may occur with IR lighting.



Model No.	H6Z0812	M6Z1212
Format (")	1/2	2/3
Mount	C	C
Focal Length (mm)	8-48	12.5-75
Aperture (F)	1.2-16C	1.2-16C
Angle of View (HOR)°	44.6-8.0	38.3-6.7
M.O.D. (m)	1.2	1.0
Effective Aperture Front (φmm)	32.9	46.5
Rear (φmm)	16.6	15.6
Front Filter Thread (φMxP=)	49.0x0.75	55.0x0.75
Dimensions <small>(DxHxW)mm or (DxHxW)mm</small>	φ51.8x97	φ59.9x114.5
Weight (g)	305	475



Model No.	T6Z5710AIDC-CS	H6Z0812AIDC	T6Z5710AIVD-CS	H6Z0812AIVD
Format (")	1/3	1/2	1/3	1/2
Mount	CS	C	CS	C
Focal Length (mm)	5.7-34.2	8-48	5.7-34.2	8-48
Aperture (F)	1.0-360C	1.2-560C	1.0-360C	1.2-560C
Angle of View (HOR)°	45.9-8.1	44.6-8.0	45.9-8.1	44.6-8.0
M.O.D. (m)	1.2	1.2	1.2	1.2
Effective Aperture Front (φmm)	41.0	39.2	41.0	39.2
Rear (φmm)	10.2	16.6	10.2	16.6
Front Filter Thread (φMxP=)	49.0x0.75	49.0x0.75	49.0x0.75	49.0x0.75
Dimensions <small>(DxHxW)mm or (DxHxW)mm</small>	φ53x64x82.5	φ52.6x64x97	φ53x64x82.5	φ52.6x64x97
Weight (g)	295	300	295	300



T6Z5710 Series

68.5(D)×76.3(H)×82.5(W)mm

ZOOM
3 MOTOR F1.0

ZOOM F1.0
3 MOTOR PRESET

ZOOM F1.0
3 MOTOR SPOT FILTER

ZOOM F1.0
3 MOTOR SPOT FILTER PRESET

Model No.	T6Z5710M-CS	T6Z5710MP-CS	T6Z5710MS-CS	T6Z5710MSP-CS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	5.7-34.2	5.7-34.2	5.7-34.2	5.7-34.2
Aperture (F)	1.0-16C	1.0-16C	1.0-360C	1.0-360C
Angle of View (HOR)°	45.9-8.1	45.9-8.1	45.9-8.1	45.9-8.1
M.O.D. (m)	1.2	1.2	1.2	1.2
Effective Aperture Front (φmm)	41.0	41.0	41.0	41.0
Rear (φmm)	10.2	10.2	10.2	10.2
Front Filter Thread (φMxP=)	49.0×0.75	49.0×0.75	49.0×0.75	49.0×0.75
Dimensions <small>(D×Hmm or D×H×W)mm</small>	φ68.5×76.3×82.5	φ68.5×76.3×82.5	φ68.5×76.3×82.5	φ68.5×76.3×82.5
Weight (g)	430	470	430	470

ZOOM F1.0
VIDEO SPOT FILTER

ZOOM F1.0
VIDEO SPOT FILTER PRESET

ZOOM F1.0
DC SPOT FILTER

ZOOM F1.0
DC SPOT FILTER PRESET

Model No.	T6Z5710AMS-CS	T6Z5710AMSP-CS	T6Z5710DC-CS	T6Z5710PDC-CS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	5.7-34.2	5.7-34.2	5.7-34.2	5.7-34.2
Aperture (F)	1.0-360C	1.0-360C	1.0-360C	1.0-360C
Angle of View (HOR)°	45.9-8.1	45.9-8.1	45.9-8.1	45.9-8.1
M.O.D. (m)	1.2	1.2	1.2	1.2
Effective Aperture Front (φmm)	41.0	41.0	41.0	41.0
Rear (φmm)	10.2	10.2	10.2	10.2
Front Filter Thread (φMxP=)	49.0×0.75	49.0×0.75	49.0×0.75	49.0×0.75
Dimensions <small>(D×Hmm or D×H×W)mm</small>	φ68.5×76.3×82.5	φ68.5×76.3×82.5	φ68.5×76.3×82.5	φ68.5×76.3×82.5
Weight (g)	450	490	440	480



T10Z5712 Series

68.5(D)×76.3(H)×88(W)mm

ZOOM
3 MOTOR

ZOOM
3 MOTOR PRESET

ZOOM
3 MOTOR SPOT FILTER

ZOOM PRESET
3 MOTOR SPOT FILTER

Model No.	T10Z5712M-CS	T10Z5712MP-CS	T10Z5712MS-CS	T10Z5712MSP-CS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	5.7-57	5.7-57	5.7-57	5.7-57
Aperture (F)	1.2-22C	1.2-22C	1.2-560C	1.2-560C
Angle of View (HOR)°	44.6-4.8	44.6-4.8	44.6-4.8	44.6-4.8
M.O.D. (m)	1.8	1.8	1.8	1.8
Effective Aperture Front (φmm)	45.0	45.0	45.0	45.0
Rear (φmm)	8.6	8.6	8.6	8.6
Front Filter Thread (φMxP=)	49.0x0.75	49.0x0.75	49.0x0.75	49.0x0.75
Dimensions (DxHxW)mm	φ68.5x76.3x88	φ68.5x76.3x88	φ68.5x76.3x88	φ68.5x76.3x88
Weight (g)	450	490	450	490

ZOOM
VIDEO SPOT FILTER

ZOOM PRESET
VIDEO SPOT FILTER

ZOOM
DC SPOT FILTER

ZOOM PRESET
DC SPOT FILTER

Model No.	T10Z5712AMS-CS	T10Z5712AMSP-CS	T10Z5712DC-CS	T10Z5712PDC-CS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	5.7-57	5.7-57	5.7-57	5.7-57
Aperture (F)	1.2-560C	1.2-560C	1.2-560C	1.2-560C
Angle of View (HOR)°	44.6-4.8	44.6-4.8	44.6-4.8	44.6-4.8
M.O.D. (m)	1.8	1.8	1.8	1.8
Effective Aperture Front (φmm)	45.0	45.0	45.0	45.0
Rear (φmm)	8.6	8.6	8.6	8.6
Front Filter Thread (φMxP=)	49.0x0.75	49.0x0.75	49.0x0.75	49.0x0.75
Dimensions (DxHxW)mm	φ68.5x76.3x88	φ68.5x76.3x88	φ68.5x76.3x88	φ68.5x76.3x88
Weight (g)	470	510	460	500



T21Z5816 Series

70(D)×81(H)×126.5(W)mm

ZOOM
3 MOTOR

ZOOM
3 MOTOR PRESET

ZOOM
3 MOTOR SPOT FILTER

ZOOM PRESET
3 MOTOR SPOT FILTER

Model No.	T21Z5816M-CS	T21Z5816MP-CS	T21Z5816MS-CS	T21Z5816MSP-CS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	5.8-121.8	5.8-121.8	5.8-121.8	5.8-121.8
Aperture (F)	1.6-22C	1.6-22C	1.6-560C	1.6-560C
Angle of View (HOR)°	44.8-2.3	44.8-2.3	44.8-2.3	44.8-2.3
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	53.2	53.2	53.2	53.2
Rear (φmm)	10.6	10.6	10.6	10.6
Front Filter Thread (φMxP=)	62.0×0.75	62.0×0.75	62.0×0.75	62.0×0.75
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ 70×81×126.5	φ 70×81×126.5	φ 70×81×126.5	φ 70×81×126.5
Weight (g)	665	700	665	700

ZOOM
VIDEO SPOT FILTER

ZOOM PRESET
VIDEO SPOT FILTER

ZOOM
DC SPOT FILTER

ZOOM PRESET
DC SPOT FILTER

Model No.	T21Z5816AMS-CS2	T21Z5816AMSP-CS2	T21Z5816DC-CS	T21Z5816PDC-CS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	5.8-121.8	5.8-121.8	5.8-121.8	5.8-121.8
Aperture (F)	1.6-560C	1.6-560C	1.6-560C	1.6-560C
Angle of View (HOR)°	44.8-2.3	44.8-2.3	44.8-2.3	44.8-2.3
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	53.2	53.2	53.2	53.2
Rear (φmm)	10.6	10.6	10.6	10.6
Front Filter Thread (φMxP=)	62.0×0.75	62.0×0.75	62.0×0.75	62.0×0.75
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ 70×81×126.5	φ 70×81×126.5	φ 70×81×126.5	φ 70×81×126.5
Weight (g)	700	740	650	690



T34Z5518 Series

82(D)×97.4(H)×160(W)mm

MOTORIZED ZOOM 1/3"



Model No.	T34Z5518AMS-CS	T34Z5518AMSP-CS	T34Z5518AMSR-CS	T34Z5518AMSPR-CS
Format (")	1/3	1/3	1/3	1/3
Mount	CS	CS	CS	CS
Focal Length (mm)	5.5-187	5.5-187	5.5-187	5.5-187
Aperture (F)	1.8-560C	1.8-560C	1.8-560C	1.8-560C
Angle of View (HOR)°	46.6-1.5	46.6-1.5	46.6-1.5	46.6-1.5
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	70.0	70.0	70.0	70.0
Rear (φmm)	9.1	9.1	9.1	9.1
Front Filter Thread (φMxP=)	77.0x0.75	77.0x0.75	77.0x0.75	77.0x0.75
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ82×97.4×160	φ82×97.4×160	φ82×97.4×160	φ82×97.4×160
Weight (g)	1160	1190	1150	1180



Model No.	T34Z5518DC-CS	T34Z5518PDC-CS
Format (")	1/3	1/3
Mount	CS	CS
Focal Length (mm)	5.5-187	5.5-187
Aperture (F)	1.8-560C	1.8-560C
Angle of View (HOR)°	46.6-1.5	46.6-1.5
M.O.D. (m)	1.5	1.5
Effective Aperture Front (φmm)	70.0	70.0
Rear (φmm)	9.1	9.1
Front Filter Thread (φMxP=)	77.0x0.75	77.0x0.75
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ82×97.4×160	φ82×97.4×160
Weight (g)	1110	1150



H6Z0812 Series

66(D)×73.5(H)×97(W)mm

ZOOM
3 MOTOR

ZOOM
3 MOTOR PRESET

ZOOM
3 MOTOR SPOT FILTER

ZOOM PRESET
3 MOTOR SPOT FILTER

Model No.	H6Z0812M	H6Z0812MP	H6Z0812MS	H6Z0812MSP
Format (")	1/2	1/2	1/2	1/2
Mount	C	C	C	C
Focal Length (mm)	8-48	8-48	8-48	8-48
Aperture (F)	1.2-16C	1.2-16C	1.2-560C	1.2-560C
Angle of View (HOR)°	44.6-8.0	44.6-8.0	44.6-8.0	44.6-8.0
M.O.D. (m)	1.2	1.2	1.2	1.2
Effective Aperture Front (φmm)	39.2	39.2	39.2	39.2
Rear (φmm)	16.6	16.6	16.6	16.6
Front Filter Thread (φMxP=)	49.0×0.75	49.0×0.75	49.0×0.75	49.0×0.75
Dimensions <small>(D×H)mm or (D×H×W)mm</small>	φ66×73.5×97	φ66×73.5×97	φ66×73.5×97	φ66×73.5×97
Weight (g)	400	440	400	440

ZOOM
VIDEO SPOT FILTER

ZOOM PRESET
VIDEO SPOT FILTER

Model No.	H6Z0812AMS	H6Z0812AMSP
Format (")	1/2	1/2
Mount	C	C
Focal Length (mm)	8-48	8-48
Aperture (F)	1.2-560C	1.2-560C
Angle of View (HOR)°	44.6-8.0	44.6-8.0
M.O.D. (m)	1.2	1.2
Effective Aperture Front (φmm)	39.2	39.2
Rear (φmm)	16.6	16.6
Front Filter Thread (φMxP=)	49.0×0.75	49.0×0.75
Dimensions <small>(D×H)mm or (D×H×W)mm</small>	φ66×73.5×97	φ66×73.5×97
Weight (g)	420	460



H10Z0812 Series

70(D)×81(H)×123.5(W)mm

ZOOM
3 MOTOR

ZOOM
3 MOTOR PRESET

ZOOM
3 MOTOR SPOT FILTER

ZOOM PRESET
3 MOTOR SPOT FILTER

Model No.	H10Z0812M	H10Z0812MP	H10Z0812MS	H10Z0812MSP
Format (")	1/2	1/2	1/2	1/2
Mount	C	C	C	C
Focal Length (mm)	8-80	8-80	8-80	8-80
Aperture (F)	1.2-22C	1.2-22C	1.2-560C	1.2-560C
Angle of View (HOR)°	44.0-4.7	44.0-4.7	44.0-4.7	44.0-4.7
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	54.0	54.0	54.0	54.0
Rear (φmm)	14.0	14.0	14.0	14.0
Front Filter Thread (φMxP=)	62.0x0.75	62.0x0.75	62.0x0.75	62.0x0.75
Dimensions (DxHmm or DxHxW)mm	φ70×81×123.5	φ70×81×123.5	φ70×81×123.5	φ70×81×123.5
Weight (g)	635	670	635	670

ZOOM
VIDEO SPOT FILTER

ZOOM PRESET
VIDEO SPOT FILTER

Model No.	H10Z0812AMS-2	H10Z0812AMSP-2
Format (")	1/2	1/2
Mount	C	C
Focal Length (mm)	8-80	8-80
Aperture (F)	1.2-560C	1.2-560C
Angle of View (HOR)°	44.0-4.7	44.0-4.7
M.O.D. (m)	1.5	1.5
Effective Aperture Front (φmm)	54.0	54.0
Rear (φmm)	14.0	14.0
Front Filter Thread (φMxP=)	62.0x0.75	62.0x0.75
Dimensions (DxHmm or DxHxW)mm	φ70×81×123.5	φ70×81×123.5
Weight (g)	670	710



H10Z1218 Series

70(D)×81(H)×123.5(W)mm

ZOOM
3 MOTOR

ZOOM
3 MOTOR PRESET

ZOOM
3 MOTOR SPOT FILTER

ZOOM PRESET
3 MOTOR SPOT FILTER

Model No.	H10Z1218M	H10Z1218MP	H10Z1218MS	H10Z1218MSP
Format (")	1/2	1/2	1/2	1/2
Mount	C	C	C	C
Focal Length (mm)	12-120	12-120	12-120	12-120
Aperture (F)	1.8-22C	1.8-22C	1.8-560C	1.8-560C
Angle of View (HOR)°	29.4-3.1	29.4-3.1	29.4-3.1	29.4-3.1
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	54.0	54.0	54.0	54.0
Rear (φmm)	9.2	9.2	9.2	9.2
Front Filter Thread (φMxP=)	62.0×0.75	62.0×0.75	62.0×0.75	62.0×0.75
Dimensions <small>(D×Hmm or D×H×W)mm</small>	φ 70×81×123.5	φ 70×81×123.5	φ 70×81×123.5	φ 70×81×123.5
Weight (g)	635	670	635	670

ZOOM
VIDEO SPOT FILTER

ZOOM PRESET
VIDEO SPOT FILTER

ZOOM
DC SPOT FILTER

ZOOM PRESET
DC SPOT FILTER

Model No.	H10Z1218AMS-2	H10Z1218AMSP-2	H10Z1218DC	H10Z1218PDC
Format (")	1/2	1/2	1/2	1/2
Mount	C	C	C	C
Focal Length (mm)	12-120	12-120	12-120	12-120
Aperture (F)	1.8-560C	1.8-560C	1.8-560C	1.8-560C
Angle of View (HOR)°	29.4-3.1	29.4-3.1	29.4-3.1	29.4-3.1
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	54.0	54.0	54.0	54.0
Rear (φmm)	9.2	9.2	9.2	9.2
Front Filter Thread (φMxP=)	62.0×0.75	62.0×0.75	62.0×0.75	62.0×0.75
Dimensions <small>(D×Hmm or D×H×W)mm</small>	φ 70×81×123.5	φ 70×81×123.5	φ 70×81×123.5	φ 70×81×123.5
Weight (g)	670	710	630	670

MOTORIZED ZOOM 1/2"



H16Z7516 Series

82(D)×97.4(H)×149(W)mm



Model No.	H16Z7516AMS	H16Z7516AMSP	H16Z7516AMSR	H16Z7516AMSPR
Format (")	1/2	1/2	1/2	1/2
Mount	C	C	C	C
Focal Length (mm)	7.5-120	7.5-120	7.5-120	7.5-120
Aperture (F)	1.6-560C	1.6-560C	1.6-560C	1.6-560C
Angle of View (HOR)°	46.6-3.2	46.6-3.2	46.6-3.2	46.6-3.2
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	66.4	66.4	66.4	66.4
Rear (φmm)	13.5	13.5	13.5	13.5
Front Filter Thread (φMxP=)	72.0x0.75	72.0x0.75	72.0x0.75	72.0x0.75
Dimensions <small>(DxHxW)mm or (DxHxW)mm</small>	φ82×97.4×149	φ82×97.4×149	φ82×97.4×149	φ82×97.4×149
Weight (g)	1050	1080	1040	1070



Model No.	H16Z7516DC	H16Z7516PDC
Format (")	1/2	1/2
Mount	C	C
Focal Length (mm)	7.5-120	7.5-120
Aperture (F)	1.6-560C	1.6-560C
Angle of View (HOR)°	46.6-3.2	46.6-3.2
M.O.D. (m)	1.5	1.5
Effective Aperture Front (φmm)	66.4	66.4
Rear (φmm)	13.5	13.5
Front Filter Thread (φMxP=)	72.0x0.75	72.0x0.75
Dimensions <small>(DxHxW)mm or (DxHxW)mm</small>	φ82×97.4×149	φ82×97.4×149
Weight (g)	1010	1050



H16Z7516-IR Series

82(D)×97.4(H)×161.5(W)mm



Model No.	H16Z7516AMS-IR	H16Z7516AMSP-IR	H16Z7516AMSR-IR	H16Z7516AMSPR-IR
Format (")	1/2	1/2	1/2	1/2
Mount	C	C	C	C
Focal Length (mm)	7.5-120	7.5-120	7.5-120	7.5-120
Aperture (F)	1.6-560C	1.6-560C	1.6-560C	1.6-560C
Angle of View (HOR)°	47.0-3.1	47.0-3.1	47.0-3.1	47.0-3.1
M.O.D. (m)	1.5	1.5	1.5	1.5
Effective Aperture Front (φmm)	68	68	68	68
Rear (φmm)	14.3	14.3	14.3	14.3
Front Filter Thread (φMxP=)	77.0×0.75	77.0×0.75	77.0×0.75	77.0×0.75
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ82×97.4×161.5	φ82×97.4×161.5	φ82×97.4×161.5	φ82×97.4×161.5
Weight (g)	1160	1180	1185	1215

Features of H16Z7516-IR Series

Infrared light increases at night because the wavelength distribution changes greatly between day and night. In case of night surveillance with infrared lighting, standard CCTV lenses cause a focus shift because of the difference in wavelength distribution, even when focused properly during the day.

Computar's new IR zoom lens utilizes a special optical glass material which minimizes light dispersion. As a result, refocusing is not required when used at night with infrared lighting. The lens also has a special multi-coating on all lens elements so that the lens transmits more light up to the infrared region. This provides a much more vivid picture when used at night with Day&Night Cameras or Ultra High Sensitivity Cameras.



H30Z1015 Series

125(D)×144.5(H)×246.5(W)mm



Model No.	H30Z1015AMS	H30Z1015AMSP	H30Z1015AMSR	H30Z1015AMSPR
Format (")	1/2	1/2	1/2	1/2
Mount	C	C	C	C
Focal Length (mm)	10-300	10-300	10-300	10-300
Aperture (F)	1.5-560C	1.5-560C	1.5-560C	1.5-560C
Angle of View (HOR)°	35.5-1.25	35.5-1.25	35.5-1.25	35.5-1.25
M.O.D. (m)	2.2	2.2	2.2	2.2
Effective Aperture Front (φmm)	94	94	94	94
Rear (φmm)	14.8	14.8	14.8	14.8
Front Filter Thread (φMxP=)	100×1	100×1	100×1	100×1
Dimensions <small>(D×Hmm or D×H×W)mm</small>	φ 125×144.5×246.5	φ 125×144.5×246.5	φ 125×144.5×246.5	φ 125×144.5×246.5
Weight (g)	3170	3220	3175	3225

Features of H30Z1015 Series

This lens provides powerful zoom ratio(10-300mm) and the fastest F-stop (F1.5) in the CCTV market, making it ideal for long distance or low light surveillance. Typical applications include highway and traffic monitoring, port and harbor surveillance, airport surveillance and border patrol.



Model No.	T2625CS-P	TG2625FCS-P	TG2625AFCS-P
Format (")	1/3	1/3	1/3
Mount	CS	CS	CS
Focal Length (mm)	2.6	2.6	2.6
Aperture (F)	2.5-32C	2.5-360C	2.5-360C
Angle of View (HOR)°	83.2	83.2	83.2
M.O.D. (m)	0.2	0.2	0.2
Effective Aperture Front (φmm)	4.8	4.8	4.8
Rear (φmm)	11.5	11.5	11.5
Front Filter Thread (φMxP=)	-	-	-
Dimensions (DxH)mm or (DxHxW)mm	φ34.5x73.5	φ34.5x39.8x73.5	φ34.5x39.8x73.5
Weight (g)	80	82	85

ACCESSORIES



Model No.	EX1.5CS	EX2CS	EX1.5C	EX2C
Description	1.5X Extender for CS-mount	2X Extender for CS-mount	1.5X Extender for C-mount	2X Extender for C-mount
Application	Attached between lens and camera - Makes focal length 1.5X	Attached between lens and camera - Doubles focal length	Attached between lens and camera - Makes focal length 1.5X	Attached between lens and camera - Doubles focal length



Model No.	VM100	VM400	VM300
Description	Extension Tube Kit 40, 20, 10, 5, 1, 0.5mm	5mm Adapter Ring	View Finder
Application	Attached between lens and camera - Reduces minimum focusing distance	Attached between lens and camera - Adapts C-mount lens to CS-mount camera	Adjustable field of view - Helps determine required focal length

NEW

- VARI
- MANUAL
- MEGA PIXEL
- SECURITY



NEW

- VARI
- DC
- MEGA PIXEL
- SECURITY



- VARI
- MANUAL
- MEGA PIXEL
- SECURITY



Model No.	H2Z0414C-MP	HG2Z0414FC-MP	M3Z1228C-MP
Format (")	1/2	1/2	2/3
Mount	C	C	C
Focal Length (mm)	4-8	4-8	12-36
Aperture (F)	1.4-16C	1.4-360	2.8-16C
Angle of View (HOR)°	90.4-47.0	90.4-47.0	41.0-13.6
M.O.D. (m)	0.5	0.5	0.2
Effective Aperture Front (φmm)	22.2	22.2	27.2
Rear (φmm)	10.7	10.7	12.1
Front Filter Thread (φMxP=)	-	-	35.5×0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ41.6×48.8	φ38.5×48×48.8	φ41.6×53
Weight (g)	72	75	105

- FIX
- MANUAL
- MEGA PIXEL
- SECURITY
- FA



- FIX
- MANUAL
- MEGA PIXEL
- SECURITY
- FA



- FIX
- MANUAL
- MEGA PIXEL
- SECURITY
- FA



Model No.	M0814-MP	M1214-MP	M1614-MP
Format (")	2/3	2/3	2/3
Mount	C	C	C
Focal Length (mm)	8	12	16
Aperture (F)	1.4-16C	1.4-16C	1.4-16C
Angle of View (HOR)°	56.3	40.4	30.8
M.O.D. (m)	0.1	0.15	0.3
Effective Aperture Front (φmm)	21.5	21.0	18.5
Rear (φmm)	12.0	13.0	13.2
Front Filter Thread (φMxP=)	30.5×0.5	30.5×0.5	30.5×0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ33.5×28.2	φ33.5×28.2	φ33.5×28.2
Weight (g)	70	65	65

- FIX
- MANUAL
- MEGA PIXEL
- SECURITY
- FA



- FIX
- MANUAL
- MEGA PIXEL
- SECURITY
- FA



Model No.	M2514-MP	M5018-MP
Format (")	2/3	2/3
Mount	C	C
Focal Length (mm)	25	50
Aperture (F)	1.4-16C	1.8-16C
Angle of View (HOR)°	20.0	10.5
M.O.D. (m)	0.3	0.5
Effective Aperture Front (φmm)	17.8	25.5
Rear (φmm)	12.0	9.6
Front Filter Thread (φMxP=)	30.5×0.5	30.5×0.5
Dimensions <small>(DxH)mm or (DxHxW)mm</small>	φ33.5×36.0	φ33.5×38.1
Weight (g)	75	90

Variety of Application

SECURITY

High-performance mega-pixel lens which is required for high-resolution cameras.

- Advanced optical design provides high-resolution image throughout the focal range.
- Unique varifocal design provides an adjustable angle of view while maintaining mega-pixel resolution.
- High resolution with minimal distortion in both center and corner area of image.

SECURITY

H2Z0414C-MP
HG2Z0414FC-MP
M3Z1228C-MP

M0814-MP
M1214-MP
M1614-MP
M2514-MP
M5018-MP

SECURITY & FA

※ MP = MEGA PIXEL

FA

H0514-MP
MLM-3XMP
MLH-10X
TEC-M55

FA · IMAGE PROCESSION

- Dedicated design emphasis on the performance for close-up applications required in factory automation and image processing areas.
- Low distortion.
- Assured excellent light intensity even in peripheral areas.
- Robust design with built-in locking mechanisms for focus and iris.

FA · IMAGE PROCESSION & SECURITY

- Achieves high level of excellent resolution in both close-up applications required in factory automations, image processing areas. And a high mega-pixel performance for longer applications required in the security field.



Model No.	H0514-MP	MLM-3XMP	MLH-10X	TEC-M55
Format (")	1/2	2/3	1/2	2/3
Mount	C	C	C	C
Focal Length (mm)	5	*0.3-1.0X	*0.084-0.84X	55
Aperture (F)	1.4-16C	4.5-22C	5.6-32C	2.8-32C
Angle of View (HOR)°	65.5	11.8-2.78	18.0-3.6	9.2
M.O.D. (m)	0.1	0.09	0.1524 (6")	0.14
Effective Aperture Front (φmm)	27.8	15.5	30.0	33.0
Rear (φmm)	14.8	7.0	6.4	13.3
Front Filter Thread (φMxP=)	43.0x0.75	34.0x0.5	46.0x0.75	43.0x0.75
Dimensions (DxH ^{mm} or DxHxW ^{mm})	φ44.5x45.5	φ36.5x79.5	φ48x98.5	φ53x92.9
Weight (g)	107	150	223	320
NOTES		Macro Zoom Lens	Macro Zoom Lens	Telecentric Lens

* mark(MLH-10X, MLM-3XMP) shows Maximum Magnification.
TEC-M55 has 0.75X and 2X rear adapters as option.

Model No.	M55-0.75X	M55-2.0X
Description	Rear converter 0.75X (Designed for TEC-M55)	Rear converter 2.0X (Designed for TEC-M55)
Application	Attached between lens and camera Makes focal length 0.75X	Attached between lens and camera Makes focal length 2.0X

CABLE DIAGRAMS OF AUTO IRIS LENSES

FCS series (DC DRIVE)

FCS series Auto Iris Lens, equipped with auto iris mechanism by galvanometer and with ND filter, can be used with only cameras containing amplifier. Connector plug is applied to the end of the cable.

AFCS series (VIDEO DRIVE)

AFCS series Auto Iris Lens is equipped with auto iris mechanism by galvanometer, amplifier and ND spot filter.

	FCS(w/o Amplifier)	AFCS(with Amplifier)
Supplied Power	-	DC8V ~16V 35mA max
Input Signal	-	Video Signal (V or Vs)
Iris Accuracy	-	± 15% (Video Level)
Sensitivity Adjustment	-	0.5V(p-p) ~1.0V(p-p)(Video Signal)
Input Impedance	-	High impedance
Transit Time	-	Approx. 2sec
Light Weighting Method	-	Adjustable between Average-Peak(to be set at Average at factory)
Operating Temperature	-10°C~+50°C	-10°C~+50°C

Pin No.	Color	Function
1	Brown	Control (-)
2	Red	Control (+)
3	Yellow	Drive (+)
4	Orange	Drive (-)

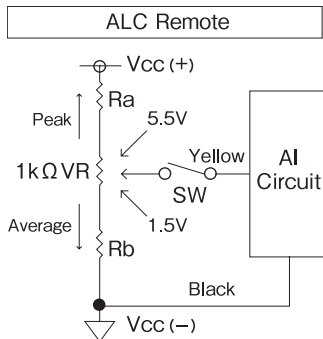
AFCS

- RED : VCC(+)DC8V-16V
- WHITE : Video Signal(V or VS)
- BLACK : Vcc(-)

REMOTE FUNCTIONS

1) LEVEL & ALC Remotes have been functioned on the following models

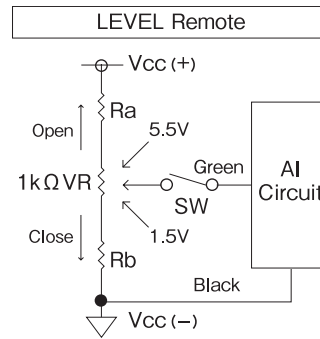
- T21Z5816AMS-CS/AMSP-CS
- H10Z0812AMS/AMSP
- H10Z1218AMS/AMSP



*Vcc represents Input Voltage.
*The ALC should be set at the full Pk position.

2) LEVEL Remote (AS OPTION)

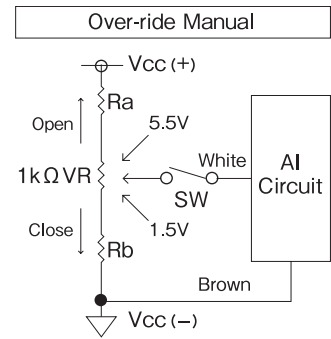
- T6Z5710AMS-CS/AMSP-CS
- T10Z5712AMS-CS/AMSP-CS
- T34Z5518AMS-CS/AMSP-CS
- T34Z5518AMSR-CS/AMSPR-CS
- H6Z0812AMS/AMSP
- H16Z7516AMS/AMSP(IR)
- H16Z7516AMSR/AMSPR(IR)



*Vcc represents Input Voltage.

3) Over-ride Manual

- T34Z5518AMSR-CS/AMSPR-CS
- H16Z7516AMSR/AMSPR(IR)
- H30Z1015AMSR/AMSPR

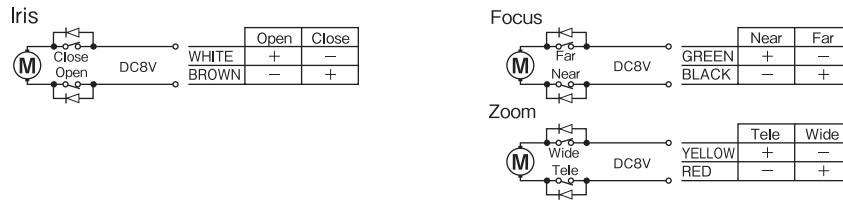


*Vcc represents Input Voltage.
*The Remote Voltage should be set between 1.5 ~ 5.5V, and Level remote should be OFF.

WIRING DIAGRAMS FOR MOTORIZED ZOOM LENSES

Motorized Zoom 3 Motor Type

Iris, Focus & Zoom can be adjusted by controller.



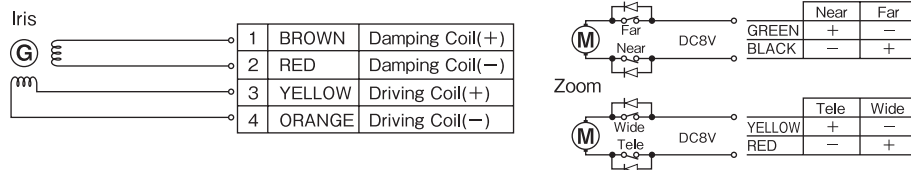
Remarks : Connect together with Iris, Focus and Zoom for common system when necessary.

Motorized Zoom Auto Iris

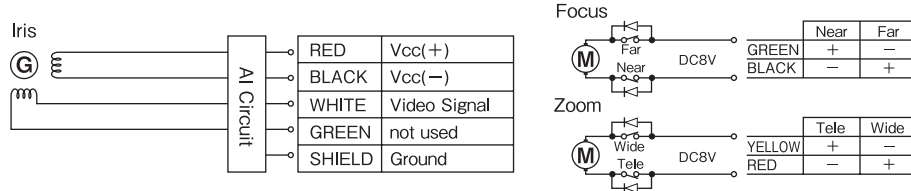
Auto-Iris. Focus & Zoom can be adjusted by controller.

(Some lenses have Level & ALC Remote. Please see Remote Functions at the left page.)

DC Drive



VIDEO Drive



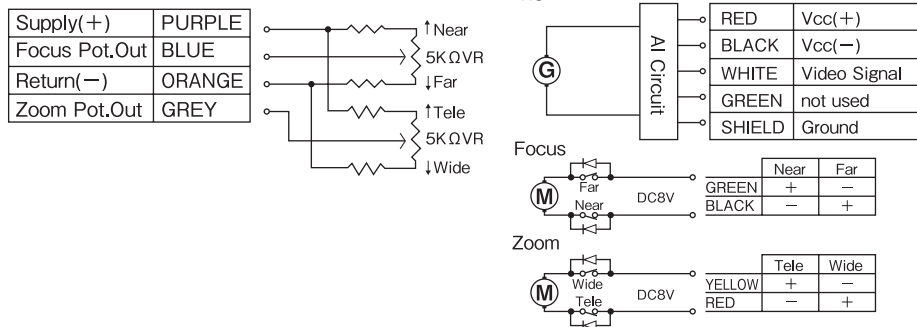
Remarks : Connect together with Iris, Focus and Zoom for common system when necessary.

Motorized Zoom Preset Potentiometer for Focus & Zoom

This preset function has been developed for high requirement to automation in CCTV system using potentiometers as position sensor for focusing & zooming.

(Some lenses have Level, ALC & Over-ride Remote. Please see Remote Functions at the left page.)

Preset Potentiometer

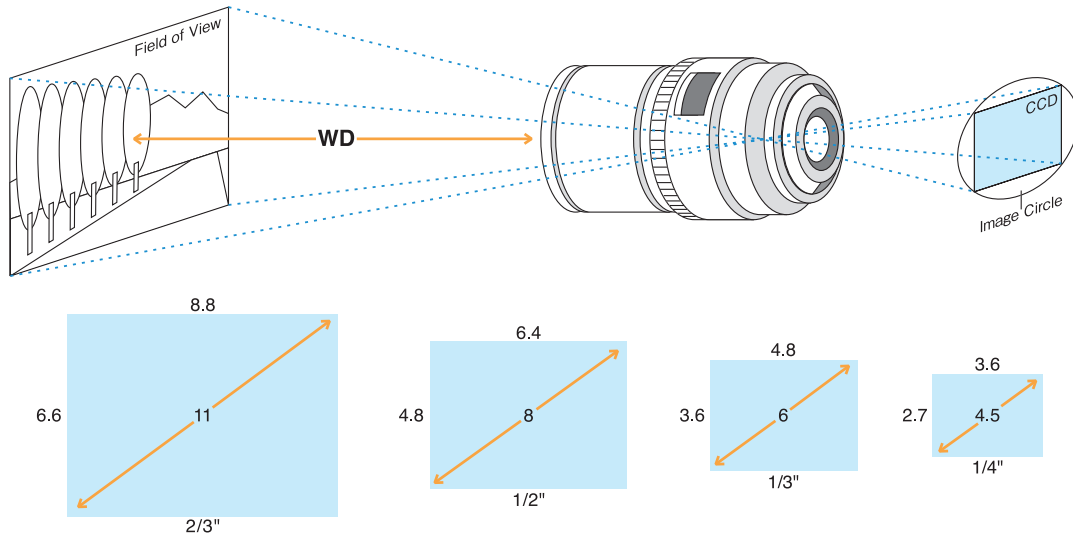


Remarks : Connect together with Iris, Focus and Zoom for common system when necessary.

Note : Wiring Diagram details should follow specifications of each lens.

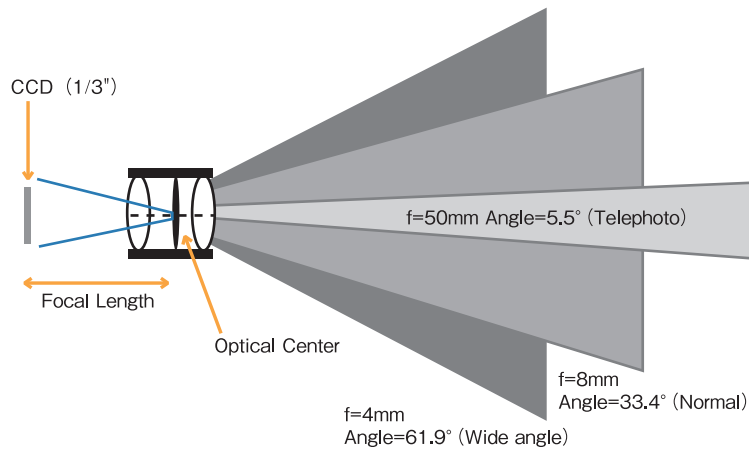
Camera Format

The size of camera's imaging device also affects the angle of view, with the smaller devices creating narrower angles of view when used on the same lens. The format of the lens, however is irrelevant to the angle of view, it merely needs to project an image which will cover the device, i.e.; the same format of the camera or larger. This also means that 1/3" cameras can utilize the entire range of lenses from 1/3" to 2/3" , with a 1/3" 8mm lens giving the same angle as a 2/3" 8mm lens. The latter combination also provides increased resolution and picture quality as only the centre of the lens is being utilized, where the optics can be ground more accurately.



Focal Length

The focal length of the lens is measured in mm and directly relates to the angle of view that will be achieved. Short focal length provides wide angle of view and long focal length becomes telephoto, with narrow angle of view. A "normal" angle of view is similar to what we see with our own eye and has a relative focal length equal to the pick up device. The "computar" range calculator is simple device to use for estimating focal length, object dimension and angle of view, alternatively the VM300 view finder gives an optical way of finding focal length.



F Stop

The lens usually has two measurements of F stop or aperture, the maximum aperture (minimum F stop) when the lens is fully open and minimum aperture(maximum F stop) just before the lens completely closes. The F stop has a number of effects upon the final image; a low minimum F stop will mean the lens can pass more light in dark condition, allowing the camera to produce a better image, and a maximum F stop may be necessary where there is a very high level of light or reflection, this will prevent the camera "whiting out" and maintain constant video level. All auto iris lenses are supplied with Neutral Density filters to increase the maximum F stop. The F stop also directly affects the depth of field.

ANGLE OF VIEW

It is important to know the angle of view of the lens to take in the object. Angle of view changes with focal length of lens and image size of camera. The focal length to cover the object can be calculated from the next formula.

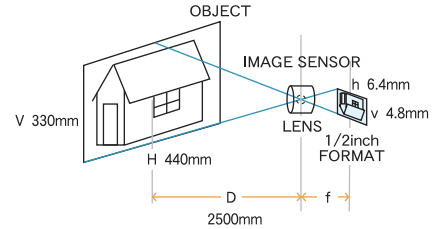
● Formula for calculation

$$f = v \times \frac{D}{V} \dots (1) \quad f = h \times \frac{D}{H} \dots (2)$$

- f : focal length of lens
- V : Vertical size of object
- H : Horizontal size of object
- D : Distance from Lens to object
- v : vertical size of image (see the following table)
- h : horizontal size of image (see the following table)

FORMAT	2/3inch	1/2inch	1/3inch	1/4inch
v	6.6mm	4.8mm	3.6mm	2.7mm
h	8.8mm	6.4mm	4.8mm	3.6mm

● For example



- (1) in case of vertical size
 1/2 inch camera v = 4.8mm
 Vertical size of object V = 330mm(33cm)
 Distance from lens to object D = 2500mm(250cm)
 substitute these datas to formula (1)

$$f = 4.8 \times \frac{2500}{330} \doteq 36\text{mm}$$

- (2) in case of horizontal size
 1/2 inch camera h = 6.4mm
 Horizontal size of object H = 440mm(44cm)
 Distance from lens to object D = 2500mm(250cm)
 substitute these datas to formula (2)

$$f = 6.4 \times \frac{2500}{440} \doteq 36\text{mm}$$

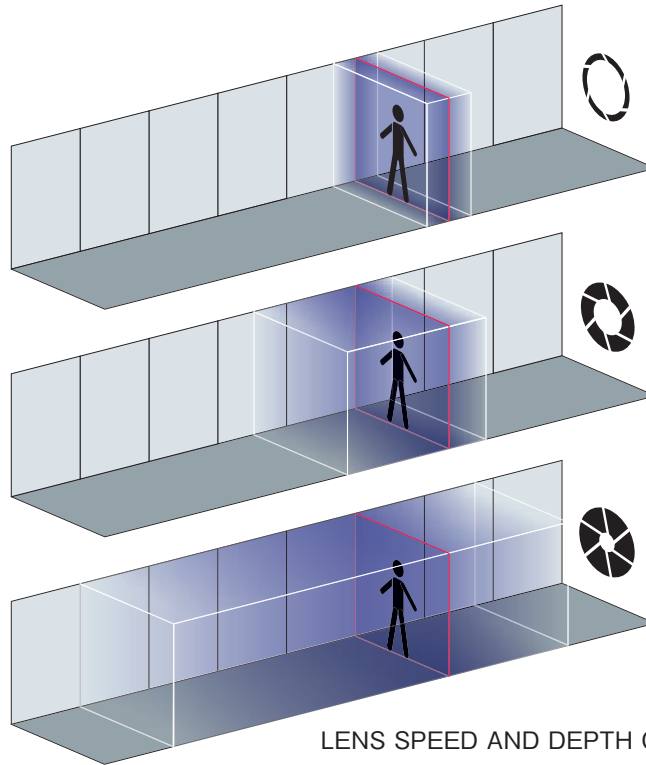
■ COMPARISON OF MONITORING IMAGES

※ Images on 1/3"camera

Object distance \ Focal length	2m	5m	10m	20m
f=2.8mm				
f=3.5mm				
f=8mm				
f=30mm				
f=50mm				

Depth of Field

The depth of field refers to the area within the field of view which is in focus. A large depth of field means that a large percentage of the field of view is in focus. A small depth of field has only a small section of the field of view in focus. The depth of field is influenced by several factors; a wide angle lens generally has a larger depth of field than a telephoto lens, a higher F stop setting also has a larger depth of field, and high resolution cameras have a larger depth of field.



LENS SPEED AND DEPTH OF FIELD IMAGE

Auto or Manual Iris

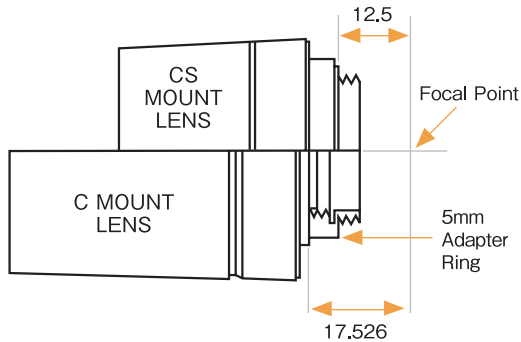
Generally we tend to use auto iris lenses externally where there are variations in the lighting levels, manual iris lenses are normally for internal applications where the light level remains constant. With the introduction of electronic iris cameras it is now possible to use manual iris lenses in varying light conditions and the camera will electronically compensate, however there are several considerations to this option; the setting of the F stop becomes critical, if the iris is opened fully to allow the camera to work at night, the depth of field will be very small and it may be more difficult to achieve sharp focus even during the day, the camera can maintain normal video levels but it cannot affect the depth of field. If the iris is closed to increase the depth of field the low light performance of the camera will now be reduced.

Video Drive or DC Drive

With auto iris lenses it is necessary to control the operation of the iris to maintain perfect picture levels, Video drive lenses contain amplifier circuit to convert the video signal from the camera into iris motor control. With DC drive lenses the camera must contain amplifier circuitry, the lens now only contains the galvanometric iris motor making it less expensive. The deciding factor depends on the auto iris output of the camera, most now have both types.

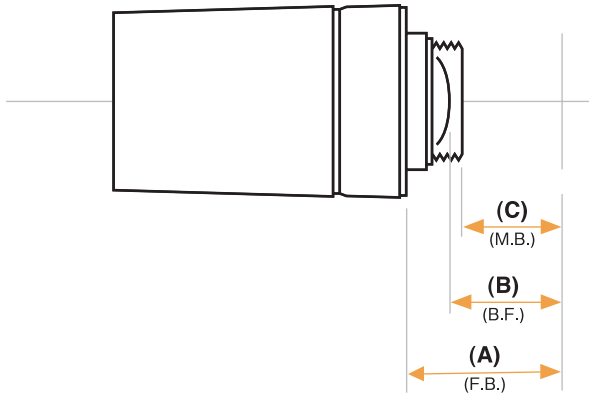
C or CS Mount

Modern cameras and lenses are generally CS mount, with CS mount cameras both types of lenses can be used but the C mount lens requires a 5mm ring (VM400) to be fitted between the camera and lens to achieve a focused image. With C mount cameras it is not possible to use CS mount lenses as it not physically possible to get the lens close enough to the CCD to achieve a focused image.



	C Mount Lens	CS Mount Lens
C Mount Camera	○	×
CS Mount Camera	needs 5mm ring	○

Flange Back, Back Focal Length, and Mechanical Back Focal Length



(A) Flange Back

Distance between the lens flange and CCD focal plane

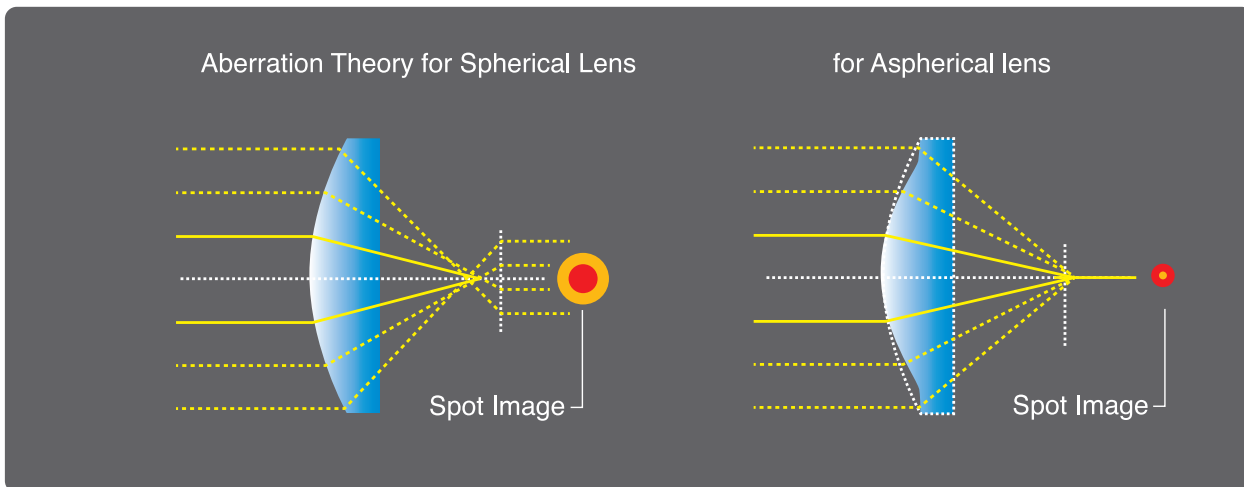
(B) Back Focal Length

Distance between the surface of the rear lens element and CCD focal plane

(C) Mechanical Back Focal Length

Distance between the surface of the lens frame and CCD focal plane

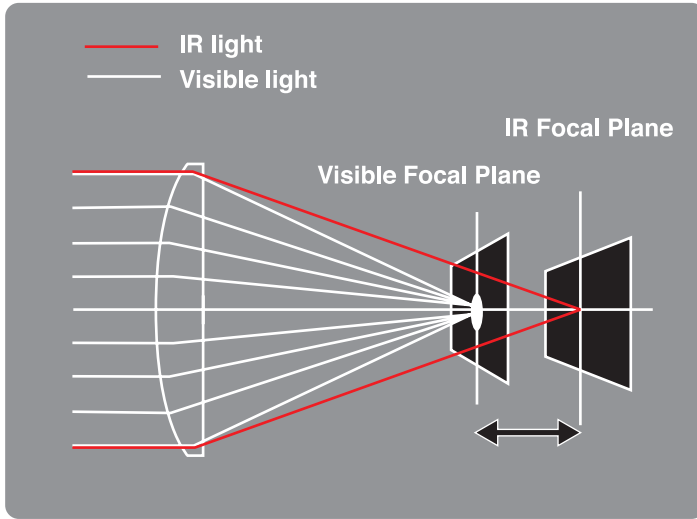
ASPHERICAL LENSES



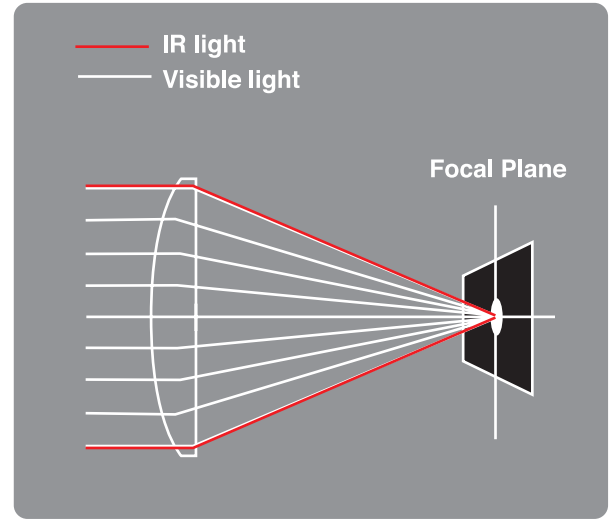
Spherical lenses have constant refractive indices and are commonly used in almost all CCTV lenses. They are designed in such a way so that light passing through the glass and center of a spherical element should fall on a single point on the image plane, but causing some spherical aberration. This problem is resolved by the aspherical lens technology, enabling more light to pass through the element and to focus right on the same point as on the image plane. Supported by more advanced molding technologies, aspherical lenses eliminate the size constraints and improve the overall optical performance compared with more conventional CCTV lenses.

MECHANISM AND ADVANTAGEOUS EFFECT OF IR LENS

■ NON IR LENS



■ IR LENS



Day & Night cameras normally operate in the near-infrared/infrared zones at night, making the image "out of focus" and unsuitable if used with a conventional lens. "Computer" has developed new IR Lenses that utilize a special optical glass material which minimizes light dispersion. As a result, refocusing is not required when used with infrared lighting. The lens is manufactured with a special ED glass (Extra dispersion) which does not widely disperse light of different wavelengths and with "special coating". This combination allows the lens to deliver perfect focus under normal lighting and also under IR illumination by transmitting more light to the infrared region.

TECHNICAL INFORMATION

Daytime



Nighttime

IR Lens



Non IR Lens



※ Monitoring Images with Day&Night cameras

MANUAL IRIS

C-MOUNT/CS-MOUNT

P3

	Model No.	Format	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL)				UNIT: (°)
		inch				2/3" (8.8×6.6mm)	1/2" (6.4×4.8mm)	1/3" (4.8×3.6mm)	1/4" (3.6×2.7mm)	
CS MOUNT	T2314FICS-3	1/3	CS	2.3	1.4-16C	-	-	113.3	86.3	
	T2616FICS-4	1/3	CS	2.6	1.6-11C	-	-	99.6	74.9	
	T0412FICS-3	1/3	CS	4	1.2-16C	-	-	63.9	49.1	
	T0812FICS-3	1/3	CS	8	1.2-16C	-	-	34.7	25.9	
	H1214FICS-3	1/2	CS	12	1.4-16C	-	30.4	22.8	17.0	
C MOUNT	M8513	2/3	C	8.5	1.3-16C	57.4	42.6	32.2	24.2	

AUTO IRIS

DC DRIVE/VIDEO DRIVE

P4

	Model No.	Format	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL)				UNIT: (°)
		inch				2/3" (8.8×6.6mm)	1/2" (6.4×4.8mm)	1/3" (4.8×3.6mm)	1/4" (3.6×2.7mm)	
DC DRIVE	TG2314FCS-3	1/3	CS	2.3	1.4-360C	-	-	113.3	86.3	
	TG2616FCS-4	1/3	CS	2.6	1.6-360C	-	-	99.6	74.9	
	TG0412FCS-3	1/3	CS	4	1.2-360C	-	-	63.9	49.1	
	TG0812FCS-3	1/3	CS	8	1.2-360C	-	-	34.7	25.9	
	HG1214FCS-3	1/2	CS	12	1.4-360C	-	30.4	22.8	17.0	
VIDEO DRIVE	TG2314AFCS-3	1/3	CS	2.3	1.4-360C	-	-	113.3	86.3	
	TG2616AFCS-4	1/3	CS	2.6	1.6-360C	-	-	99.6	74.9	
	HG1214AFCS-3	1/2	CS	12	1.4-360C	-	30.4	22.8	17.0	

VARI-FOCAL MANUAL IRIS

P5 ~ 6

	Model No.	Format	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL)				UNIT: (°)
		inch				2/3" (8.8×6.6mm)	1/2" (6.4×4.8mm)	1/3" (4.8×3.6mm)	1/4" (3.6×2.7mm)	
MANUAL IRIS	T2Z1816CS	1/3	CS	1.8-3.6	1.6-16C	-	-	144.2-79.4	109.5-59.6	
	T2Z3514CS-2	1/3	CS	3.5-8	1.4-16C	-	-	77.6-35.4	57.6-26.6	
	T3Z2910CS (NEW)	1/3	CS	2.9-8.2	1.0-16C	-	-	98.3-35.2	70.7-26.3	
	T3Z2910CS-IR (NEW)	1/3	CS	2.9-8.2	1.0-16C	-	-	95.0-35.6	69.0-26.7	
	T3Z3510CS	1/3	CS	3.5-10.5	1.0-16C	-	-	81.6-27.2	59.4-20.4	
	T3Z3510CS-IR	1/3	CS	3.5-10.5	1.0-16C	-	-	81.8-27.2	59.2-20.4	
	T4Z2813CS	1/3	CS	2.8-12	1.3-16C	-	-	98.2-23.7	73.6-17.8	
	T4Z2813CS-IR (NEW)	1/3	CS	2.8-12	1.3-16C	-	-	102.2-23.7	74.2-17.8	
	T10Z0513CS-2	1/3	CS	5-50	1.3-16C	-	-	51.8-5.6	39.2-4.3	
	T5Z8513CS-IR	1/3	CS	8.5-40	1.3-16C	-	-	33.5-7.1	24.4-5.3	
	H2Z4516CS-2	1/2	CS	4.5-10	1.6-16C	-	81.3-38.2	60.4-28.7	33.6-16.1	
	H3Z4512CS-IR	1/2	CS	4.5-12.5	1.2-16C	-	83.7-30.1	61.3-22.6	45.3-17.0	
	H3Z1014CS	1/2	CS	10-30	1.4-16C	-	35.8-12.5	26.8-9.4	20.1-7.0	

VARI-FOCAL AUTO IRIS

DC DRIVE/VIDEO DRIVE

P7 ~ 10

	Model No.	Format	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL)				UNIT: (°)
		inch				2/3" (8.8x6.6mm)	1/2" (6.4x4.8mm)	1/3" (4.8x3.6mm)	1/4" (3.6x2.7mm)	
DC DRIVE	TG2Z1816FCS	1/3	CS	1.8-3.6	1.6-360C	-	-	144.2-79.4	109.5-59.6	
	TG2Z3514FCS-2	1/3	CS	3.5-8	1.4-360C	-	-	77.6-35.4	57.6-26.6	
	TG3Z2312FCS	1/3	CS	2.3-6	1.2-360	-	-	114.8-48.2	86.0-36.1	
	TG3Z2910FCS (NEW)	1/3	CS	2.9-8.2	1.0-360C	-	-	98.3-35.2	70.7-26.3	
	TG3Z2910FCS-IR (NEW)	1/3	CS	2.9-8.2	1.0-360C	-	-	95.0-35.6	69.0-26.7	
	TG3Z3510FCS	1/3	CS	3.5-10.5	1.0-360	-	-	81.6-27.2	59.4-20.4	
	TG3Z3510FCS-IR	1/3	CS	3.5-10.5	1.0-360C	-	-	81.8-27.2	59.2-20.4	
	TG4Z2813FCS	1/3	CS	2.8-12	1.3-360	-	-	98.2-23.8	73.6-17.8	
	TG4Z2813FCS-IR (NEW)	1/3	CS	2.8-12	1.3-360C	-	-	102.2-23.7	74.2-17.8	
	TG10Z0513FCS-2	1/3	CS	5-50	1.3-360C	-	-	51.8-5.6	39.2-4.3	
	TG5Z8513FCS-IR	1/3	CS	8.5-40	1.3-360	-	-	33.5-7.1	24.4-5.3	
	HG2Z4516FCS-2	1/2	CS	4.5-10	1.6-360C	-	81.3-38.2	60.4-28.7	33.6-16.1	
	HG3Z4512FCS-IR	1/2	CS	4.5-12.5	1.2-360	-	83.7-30.1	61.3-22.6	45.3-17.0	
HG3Z1014FCS	1/2	CS	10-30	1.4-360C	-	35.8-12.5	26.8-9.4	20.1-7.0		
VIDEO DRIVE	TG2Z1816AFCS	1/3	CS	1.8-3.6	1.6-360C	-	-	144.2-79.4	109.5-59.6	
	TG2Z3514AFCS-2	1/3	CS	3.5-8	1.4-360C	-	-	77.6-35.4	57.6-26.6	
	TG3Z2910AFCS (NEW)	1/3	CS	2.9-8.2	1.0-360C	-	-	98.3-35.2	70.7-26.3	
	TG3Z2910AFCS-IR (NEW)	1/3	CS	2.9-8.2	1.0-360C	-	-	95.0-35.6	69.0-26.7	
	TG3Z3510AFCS	1/3	CS	3.5-10.5	1.0-360	-	-	81.6-27.2	59.4-20.4	
	TG3Z3510AFCS-IR	1/3	CS	3.5-10.5	1.0-360C	-	-	81.8-27.2	59.2-20.4	
	TG4Z2813AFCS	1/3	CS	2.8-12	1.3-360	-	-	98.2-23.8	73.6-17.8	
	TG4Z2813AFCS-IR (NEW)	1/3	CS	2.8-12	1.3-360C	-	-	102.2-23.7	74.2-17.8	
	TG10Z0513AFCS-2	1/3	CS	5-50	1.3-360C	-	-	51.8-5.6	39.2-4.3	
	TG5Z8513AFCS-IR	1/3	CS	8.5-40	1.3-360	-	-	33.5-7.1	24.4-5.3	
	HG2Z4516AFCS-2	1/2	CS	4.5-10	1.6-360C	-	81.3-38.2	60.4-28.7	33.6-16.1	
	HG3Z4512AFCS-IR	1/2	CS	4.5-12.5	1.2-360	-	83.7-30.1	61.3-22.6	45.3-17.0	
	HG3Z1014AFCS	1/2	CS	10-30	1.4-360C	-	35.8-12.5	26.8-9.4	20.1-7.0	

MANUAL ZOOM

MANUAL IRIS

P11

	Model No.	Format	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL)				UNIT: (°)
		inch				2/3" (8.8x6.6mm)	1/2" (6.4x4.8mm)	1/3" (4.8x3.6mm)	1/4" (3.6x2.7mm)	
	H6Z0812	1/2	C	8-48	1.2-16C	-	44.6-8.0	33.5-6.1	25.2-4.6	
	M6Z1212	2/3	C	12.5-75	1.2-16C	38.3-6.7	28.3-5.0	21.3-3.8	16.0-2.8	

MANUAL ZOOM WITH AUTO IRIS

DC DRIVE/VIDEO DRIVE

P11

	Model No.	Format	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL)				UNIT: (°)
		inch				2/3" (8.8x6.6mm)	1/2" (6.4x4.8mm)	1/3" (4.8x3.6mm)	1/4" (3.6x2.7mm)	
DC DRIVE	T6Z5710AIDC-CS	1/3	CS	5.7-34.2	1.0-360C	-	-	45.9-8.1	34.8-6.2	
	H6Z0812AIDC	1/2	C	8-48	1.2-560C	-	44.6-8.0	33.5-6.1	25.2-4.6	
VIDEO DRIVE	T6Z5710AIVD-CS	1/3	CS	5.7-34.2	1.0-360C	-	-	45.9-8.1	34.8-6.2	
	H6Z0812AIVD	1/2	C	8-48	1.2-560C	-	44.6-8.0	33.5-6.1	25.2-4.6	

MOTORIZED ZOOM 1/3" 1/2"

P12 ~ 21

	Model No.	Format inch	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL) UNIT: (°)			
						2/3" (8.8x6.6mm)	1/2" (6.4x4.8mm)	1/3" (4.8x3.6mm)	1/4" (3.6x2.7mm)
1/3"	T6Z5710 Series	1/3	CS	5.7-34.2	1.0 ~	-	-	45.9-8.1	34.8-6.2
	T10Z5712 Series	1/3	CS	5.7-57	1.2 ~	-	-	44.6-4.8	34.2-3.7
	T21Z5816 Series	1/3	CS	5.8-121.8	1.6 ~	-	-	44.8-2.3	33.8-1.8
	T34Z5518 Series	1/3	CS	5.5-187	1.8 ~	-	-	46.6-1.5	35.2-1.1
1/2"	H6Z0812 Series	1/2	C	8-48	1.2 ~	-	44.6-8.0	33.5-6.1	25.2-4.6
	H10Z0812 Series	1/2	C	8-80	1.2 ~	-	44.0-4.7	33.3-3.5	25.0-2.6
	H10Z1218 Series	1/2	C	12-120	1.8 ~	-	29.4-3.1	22.2-2.3	16.7-1.7
	H16Z7516 Series	1/2	C	7.5-120	1.6 ~	-	46.6-3.2	35.3-2.4	26.6-1.8
	H30Z1015 Series	1/2	C	10-300	1.5 ~	-	35.5-1.25	26.8-0.94	20.1-0.71

PINHOLE MANUAL IRIS/DC DRIVE/VIDEO DRIVE

P22

	Model No.	Format inch	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL) UNIT: (°)			
						2/3" (8.8x6.6mm)	1/2" (6.4x4.8mm)	1/3" (4.8x3.6mm)	1/4" (3.6x2.7mm)
MANUAL IRIS	T2625CS-P	1/3	CS	2.6	2.5-32C	-	-	83.2	67.5
DC DRIVE	TG2625FCS-P	1/3	CS	2.6	2.5-360C	-	-	83.2	67.5
VIDEO DRIVE	TG2625AFCS-P	1/3	CS	2.6	2.5-360C	-	-	83.2	67.5

MEGA PIXEL & FA SECURITY/FA · IMAGE PROCESSION

P23 ~ 24

	Model No.	Format inch	Mount	Focal Length (mm)	Aperture (F)	Angle of View (HORIZONTAL) UNIT: (°)			
						2/3" (8.8x6.6mm)	1/2" (6.4x4.8mm)	1/3" (4.8x3.6mm)	1/4" (3.6x2.7mm)
SECURITY	H2Z0414C-MP (NEW)	1/2	C	4-8	1.4-16C	-	90.4-47.0	67.0-35.3	50.0-26.5
	HG2Z0414FC-MP (NEW)	1/2	C	4-8	1.4-360	-	90.4-47.0	67.0-35.3	50.0-26.5
	M3Z1228C-MP	2/3	C	12-36	2.8-16C	41.0-13.6	30.2-10.0	22.8-7.6	17.1-5.7
FA/ SECURITY	M0814-MP	2/3	C	8	1.4-16C	56.3	42.5	32.4	24.6
	M1214-MP	2/3	C	12	1.4-16C	40.4	30.0	22.7	17.1
	M1614-MP	2/3	C	16	1.4-16C	30.8	22.7	17.1	12.6
	M2514-MP	2/3	C	25	1.4-16C	20.0	14.6	11.0	8.2
	M5018-MP	2/3	C	50	1.8-16C	10.5	7.6	5.7	4.3
FA	H0514-MP	1/2	C	5	1.4-16C	-	65.5	51.4	39.5
	MLM-3XMP	2/3	C	* 0.3X-1.0X	4.5-22C	11.8-1.2	8.6-0.9	6.5-0.7	4.9-0.5
	MLH-10X	1/2	C	* 0.084-0.84X	5.6-32C	-	18.0-3.6	13.8-2.7	10.6-2.0
	TEC-M55	2/3	C	55	2.8-32C	9.2	6.7	5.0	3.7

* mark (MLH-10X, MLM-3XMP) shows Maximum Magnification.

* SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



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