

Magnification and size

Mag. (x)	IF (mm)	WD (mm)	Maximum Field of View			Model name
			H	V	D	
0.026	8	470	246	185	308	MTL-31008C-003
0.030	8	540	213	160	267	MTL-26508C-003
0.033	8	375	194	145	242	MTL-24008C-003
0.035	11	470	251	189	314	MTL-31011C-004
0.041	8	365	156	117	195	MTL-19508C-004
0.041	11	540	215	161	268	MTL-26511C-004
0.045	8	350	142	107	178	MTL-18008C-004
0.046	11	375	191	143	239	MTL-24011C-005
0.053	8	300	121	91	151	MTL-15008C-005
0.056	11	365	157	118	196	MTL-19511C-006
0.059	8	260	108	81	136	MTL-13508C-006
0.060	18.5	470	235	172	302	MTL-31018C-006
0.061	11	350	144	108	180	MTL-18011C-006
0.067	8	175	96	72	119	MTL-12008C-007
0.070	18.5	540	201	147	259	MTL-26518C-007
0.073	11	300	121	90	151	MTL-15011C-007
0.074	23	470	245	184	305	MTL-31023P-007
0.077	18.5	375	183	134	235	MTL-24018C-008
0.080	8	220	80	60	100	MTL-10008C-008
0.082	11	260	107	80	134	MTL-13511C-008
0.087	23	540	208	156	260	MTL-26523P-009
0.089	8	120	72	54	90	MTL-9008C-009
0.092	11	175	96	72	120	MTL-12011C-009
0.095	18.5	365	148	108	191	MTL-19518C-009
0.096	23	375	189	142	235	MTL-24023P-010
0.103	18.5	350	137	100	176	MTL-18018C-010
0.110	11	220	80	60	100	MTL-10011C-011
0.113	35	470	274	213	310	MTL-31035P-011
0.118	23	365	153	115	192	MTL-19523P-012
0.122	11	120	72	54	90	MTL-9011C-012
0.123	18.5	300	115	84	147	MTL-15018C-012
0.128	23	350	141	106	177	MTL-18023P-013
0.132	35	540	235	183	265	MTL-26535P-013
0.137	18.5	260	103	75	132	MTL-13518C-014
0.140	43.5	470	257	171	311	MTL-31043M58-014
0.146	35	375	212	165	240	MTL-24035P-015
0.153	23	300	118	89	148	MTL-15023P-015
0.154	18.5	175	92	67	118	MTL-12018C-015
0.164	43.5	540	220	146	265	MTL-26543M58-016
0.171	23	260	106	80	132	MTL-13523P-017
0.180	35	365	172	134	194	MTL-19535P-018
0.182	43.5	375	198	132	239	MTL-24043M58-018
0.185	18.5	220	76	56	98	MTL-10018C-019
0.185	57.3	470	263	157	306	MTL-31057V74-019
0.192	23	175	94	71	118	MTL-12023P-019
0.195	35	350	159	124	179	MTL-18035P-019
0.206	18.5	120	68	50	88	MTL-9018C-021
0.216	57.3	540	225	134	263	MTL-26557V74-022
0.223	43.5	365	161	108	195	MTL-19543M58-022
0.230	23	220	79	59	98	MTL-10023P-023
0.231	18.5	165	61	45	78	MTL-8018C-023
0.234	35	300	132	103	150	MTL-15035P-023
0.240	57.3	375	203	121	236	MTL-24057V74-024
0.242	43.5	350	149	99	180	MTL-18043M58-024
0.256	23	120	71	53	88	MTL-9023P-026
0.260	35	260	119	93	135	MTL-13535P-026
0.265	82	470	-	-	309	MTL-31082M95-026

Mag. (x)	IF (mm)	WD (mm)	Maximum Field of View			Model name
			H	V	D	
0.285	18.5	135	49	36	64	MTL-6518C-029
0.288	23	165	63	47	78	MTL-8023P-029
0.290	43.5	300	124	83	150	MTL-15043M58-029
0.292	35	175	106	83	120	MTL-12035P-029
0.294	57.3	365	166	99	193	MTL-19557V74-029
0.309	82	540	-	-	265	MTL-26582M95-031
0.319	57.3	350	153	91	178	MTL-18057V74-032
0.323	43.5	260	111	74	135	MTL-13543M58-032
0.335	18.5	135	42	31	54	MTL-5518C-034
0.342	82	375	-	-	240	MTL-24082M95-034
0.351	35	220	88	69	100	MTL-10035P-035
0.354	23	135	51	38	64	MTL-6523P-035
0.363	43.5	175	99	66	120	MTL-12043M58-036
0.382	57.3	300	127	76	148	MTL-15057V74-038
0.390	35	120	79	62	90	MTL-9035P-039
0.410	18.5	110	34	25	44	MTL-4518C-041
0.417	23	135	43	33	54	MTL-5523P-042
0.421	82	365	-	-	195	MTL-19582M95-042
0.426	57.3	260	114	68	133	MTL-13557V74-043
0.435	43.5	220	83	55	100	MTL-10043M58-044
0.438	35	165	71	55	80	MTL-8035P-044
0.456	82	350	-	-	180	MTL-18082M95-046
0.477	57.3	175	102	61	119	MTL-12057V74-048
0.484	43.5	120	74	50	90	MTL-9043M58-048
0.510	23	110	35	27	44	MTL-4523P-051
0.527	18.5	95	27	20	34	MTL-3518C-053
0.540	35	135	57	45	65	MTL-6535P-054
0.543	43.5	165	66	44	80	MTL-8043M58-054
0.547	82	300	-	-	150	MTL-15082M95-055
0.574	57.3	220	85	51	99	MTL-10057V74-057
0.607	82	260	-	-	135	MTL-13582M95-061
0.635	35	135	49	38	55	MTL-5535P-064
0.638	57.3	120	76	45	89	MTL-9057V74-064
0.655	23	95	28	21	35	MTL-3523P-066
0.670	43.5	135	54	36	65	MTL-6543M58-067
0.683	82	175	-	-	120	MTL-12082M95-068
0.716	57.3	165	68	41	79	MTL-8057V74-072
0.740	18.5	65	19	14	24	MTL-2518C-074
0.776	35	110	40	31	45	MTL-4535P-078
0.788	43.5	135	46	30	55	MTL-5543M58-079
0.820	82	220	-	-	100	MTL-10082M95-082
0.884	57.3	135	55	33	64	MTL-6557V74-088
0.911	82	120	-	-	90	MTL-9082M95-091
0.920	23	65	20	15	25	MTL-2523P-092
0.964	43.5	110	37	25	45	MTL-4543M58-096
0.999	35	95	31	24	35	MTL-3535P-100
1.025	82	165	-	-	80	MTL-8082M95-103
1.040	57.3	135	47	28	55	MTL-5557V74-104
1.240	43.5	95	29	19	35	MTL-3543M58-124
1.262	82	135	-	-	65	MTL-6582M95-126
1.272	57.3	110	38	23	45	MTL-4557V74-127
1.400	35	65	22	17	25	MTL-2535P-140
1.491	82	135	-	-	55	MTL-5582M95-149
1.636	57.3	95	30	18	35	MTL-3557V74-164
1.740	43.5	65	21	14	25	MTL-2543M58-174
1.822	82	110	-	-	45	MTL-4582M95-182
2.292	57.3	65	21	13	25	MTL-2557V74-229

Bi Telecentric Lenses and Telecentric Illuminators

MTL Series

MTI Series

Bi-Telecentric Lenses and Telecentric Illuminators

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Bi-Telecentric Lenses

∴ **114** types of bi - telecentric lenses
∴ **13** types of parallel beam back lights

Bi-Telecentric Lenses MTL Series

Bi-telecentric lens offered by MORITEX is cutting-edge products designed with technology proven by legacy telecentric lens.

Our bi-telecentric lens has wide range of selection and is capable of fitting to many cameras available in the market, and shows the best fit to wide range of precise measurement application.

Our unique optical design capabilities result in the tightest object and image side telecentricity in the market and enable near-zero distortion performance with the highest resolution from the center to the edge along the system FOV.

This enables an optimized measurement condition for the highest accuracy that can be easily achieved by coupling these lenses with matched telecentric backlight illuminators.

∴ High resolution design Designed for 3.5 μ m/pixel sensor

∴ Offering **16** FOVs

25mm, 35mm, 45mm, 55mm, 65mm, 80mm, 90mm, 100mm
120mm 135mm, 150mm, 180mm, 195mm, 240mm, 265mm, 310mm

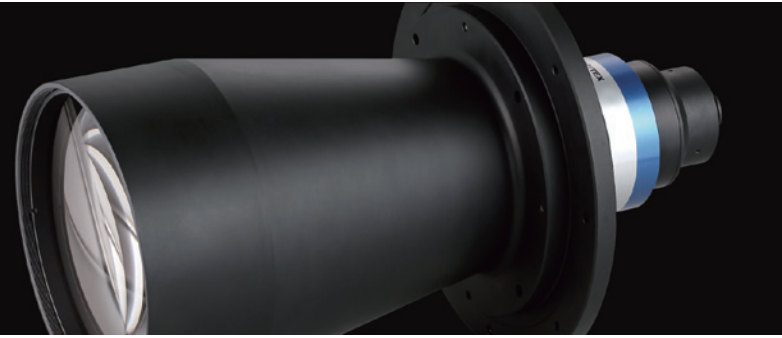
∴ Supporting **8** different sensor sizes Maximum sensor size 82mm

∴ Inspection report provided for each unit, proving that MORITEX achieves the best performance



Telecentric Illuminators

MTI Series



Large area telecentric illuminator for silhouette inspection, provides optimized parallel beam to best match the MTL Series.

Straight type

LINEUP			
MTI-45	Lighting Area	φ45mm	
MTI-65	Lighting Area	φ65mm	
MTI-100	Lighting Area	φ100mm	
MTI-120	Lighting Area	φ120mm	
MTI-135	Lighting Area	φ135mm	
MTI-150	Lighting Area	φ150mm	
MTI-180	Lighting Area	φ180mm	
MTI-195	Lighting Area	φ195mm	
MTI-265	Lighting Area	φ265mm	

L shape type

LINEUP			
MTI-45-L	Lighting Area	φ45mm	
MTI-65-L	Lighting Area	φ65mm	
MTI-100-L	Lighting Area	φ100mm	
MTI-120-L	Lighting Area	φ120mm	



Model Description

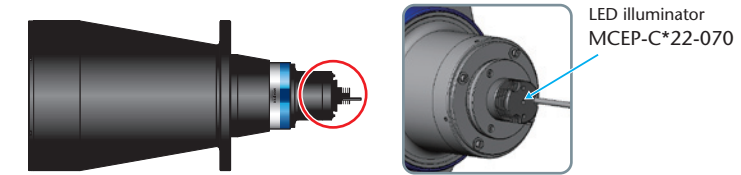
MTI - 45 - C G - 070
Lighting Area 45mm Color

Model name	Color	Optical specifications		Mechanical specifications		
		Lighting Area (φmm)	WD (mm)	Length *1 (mm)	Outer dia. (φmm)	Weight (kg)
MTI-45-CG-070	● Green	45	110	140	71	0.58
MTI-45-CW-070	○ White	45	110	148	71	0.58
MTI-45-CG-070-L	● Green	45	110			
MTI-65-CG-070	● Green	65	140	175	86	0.76
MTI-65-CW-070	○ White	65	140	183	86	0.76
MTI-65-CG-070-L	● Green	65	140			
MTI-100-CG-070	● Green	100	220	279	125	1.7
MTI-100-CW-070	○ White	100	220	287	125	1.7
MTI-100-CG-070-L	● Green	100	59.5	228	160x129	2.6
MTI-120-CG-070	● Green	120	175			
MTI-120-CW-070	○ White	120	175			
MTI-120-CG-070-L	● Green	120				
MTI-135-CG-070	● Green	135	260	367	160	3.5
MTI-135-CW-070	○ White	135	260	369	160	3.5
MTI-150-CG-070	● Green	150	300	392	180	4.5
MTI-150-CW-070	○ White	150	300	400	180	4.5
MTI-180-CG-070	● Green	180	350	445	210	7.1
MTI-180-CW-070	○ White	180	350	453	210	7.1
MTI-195-CG-070	● Green	195	365	489	230	7.9
MTI-195-CW-070	○ White	195	365	497	230	7.9
MTI-265-CG-070	● Green	265	540	673	300	15.1
MTI-265-CW-070	○ White	265	540	681	300	15.1

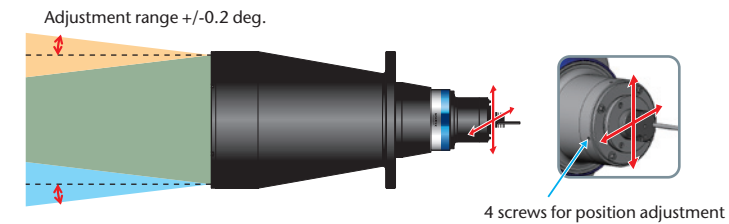
Maximum rated current is 700mA and electrical power consumption is 3W. Recommended controller is MLEP-B070W Series
Blue color and red color is production on demand basis
Constant voltage operation type is available on your request
*1 Lens tube length includes LED illumination unit, and adjustable length allowance is 12.5mm maximum depends on LED

Beam angle adjustment function

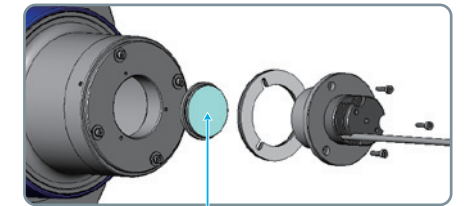
The telecentric illuminators for the bi-telecentric lenses have a beam angle adjustment function so that the beam angle can be fine tuned when the LED lamp is replaced. This enables optimum position adjustment.



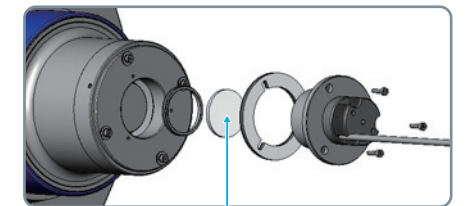
Utilizes the special features of a telecentric lens to make it possible to adjust beam angle irradiation by up to 0.2 degrees by changing the position of the LED element.



Filter insertion function

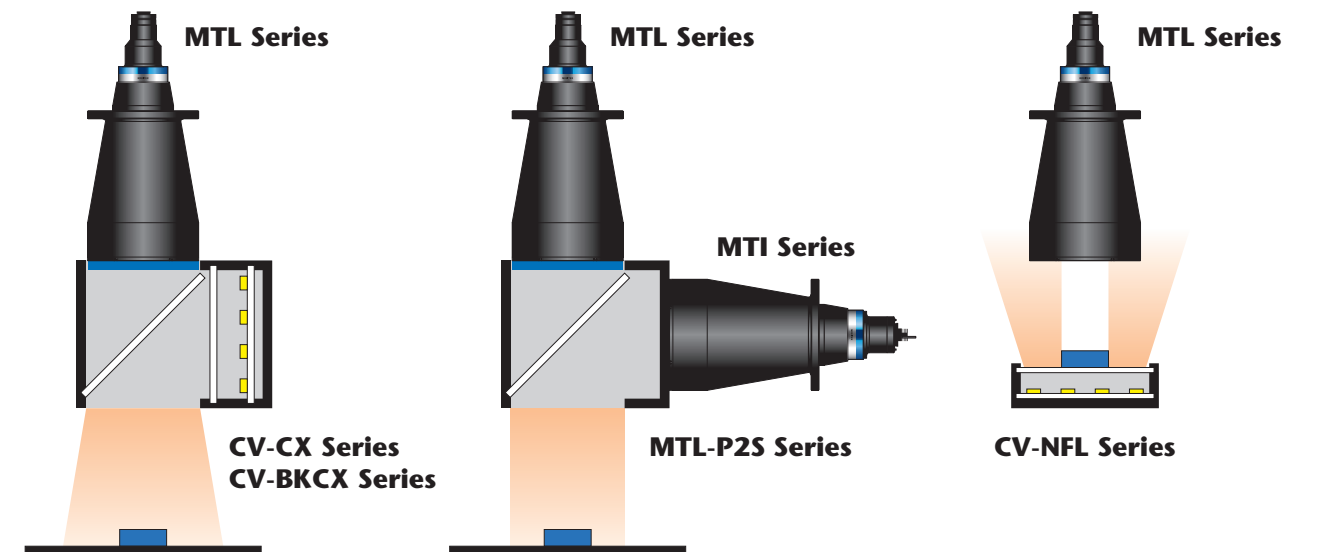


Compatible with most ND filters, color filters and edge filters sold in stores, etc.(M25.5xP0.75)



Achieve even more uniform images by inserting a diffuser. (Non white light illumination MTL***-CW-070 available as an optional product)
*Some measurement accuracy will be affected. Contact us if you would like to use a diffuser.

Other illuminators

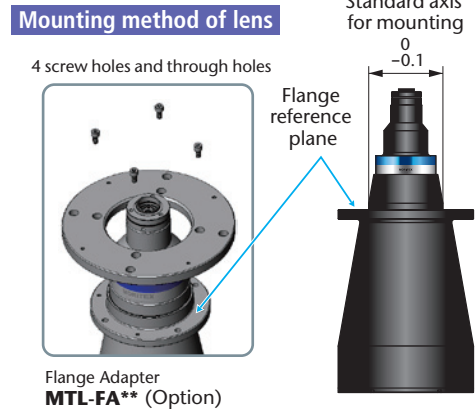
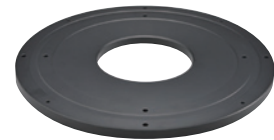


FOV Type	Model name		
	Coaxial Box	45 deg. mirror unit *1	Narrow angle back light
25, 35, 45	CV-CX-120X84X79	MTL-P2S45	CV-NFL-51X51
55, 65	CV-CX-120X84X79	MTL-P2S65	CV-NFL-63X60
80, 90, 100	CV-BKCX-100 *1	MTL-P2S100	CV-NFL-100X96
120, 135	CV-BKCX-135 *1	MTL-P2S135	CV-NFL-150X146
150	CV-BKCX-195 *1	MTL-P2S150	CV-NFL-150X146
180, 195	CV-BKCX-195 *1	MTL-P2S195	CV-NFL-230X230
240, 265	—	—	CV-NFL-230X230

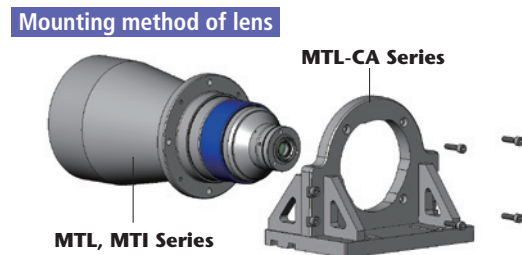
*1 Production on demand basis

Accessories

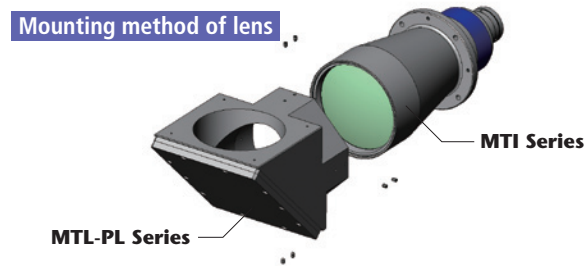
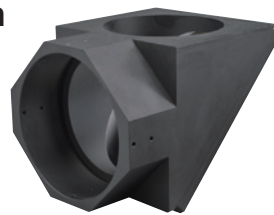
Flange Adapter
MTL-FA Series



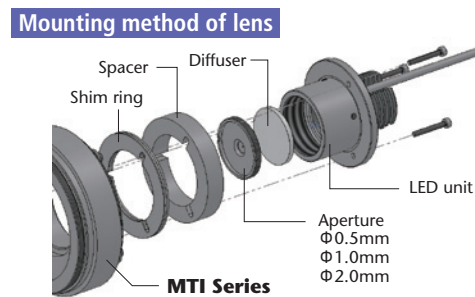
Clamping Holder
MTL-CH Series



90° Mirror Prism
MTL-PL Series



Apertures for Lighting
MTI-APS



FOV Type	Model name			
	Flange Adapter	Clamping holder	90deg. Mirror prism ^{*1}	MTI-Aperture
25, 35	—	—	MTL-PL35	MTI-APS φ0.5, 1, 2mm Spacer
45, 55	—	—	MTL-PL55	
65	—	—	MTL-PL65	
80	—	—	MTL-PL80	
90, 100	MTL-FA100	MTL-CH100	MTL-PL100	
120	MTL-FA120	MTL-CH120	MTL-PL120	
135	MTL-FA135	MTL-CH135	MTL-PL135	
150	MTL-FA150	MTL-CH150	MTL-PL150	
180	MTL-FA180	MTL-CH180	MTL-PL180	
195	MTL-FA195	MTL-CH195	MTL-PL195	
240, 265	MTL-FA265	MTL-CH265	MTL-PL265	

*1 Production on demand basis

Customizing example

Customizing is available for your specific needs.

Two FOVs type of lens



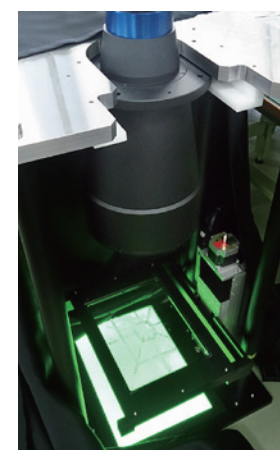
FOV : 100mm / 30mm
Magnification : 0.12x / 0.56x
WD : 110mm

Coaxial illumination type of lens



FOV : 53mm
Magnification : 0.30x
WD : 110mm

Quality Assurance



Inspection report data provided for every single unit.

- [Lens]
- Telecentricity measurement
 - Distortion measurement
 - MTF measurement

- [Illuminator]
- Parallelism
 - Uniformity testing

* MTF (Modulation Transfer Function) is spatial frequency.
It indicates contrast degradation of B/W pattern at 1mm area on image surface when B/W pattern chart with continuously changing spatial frequency and this is a characteristics evaluation method of reproductivity of the contrast.
This method provides the quality of image forming and contrast at same time, and inspected area covers from center to the edges.