Bi-Telecentric Lenses

DTCA Series

Ultra-High Resolution Bi-Telecentric Lenses

- COOLENS® unique large Field of View (FOV) ultra-high resolution AOI series, based on bi-telecentric optical path and tailored for specific requirements - DTCA.
- With its ultra-high telecentricity and resolution, the DTCA series has become a pioneer in driving technological innovation in the manufacturing field.

We are dedicated to:

Enhanced product quality

Reduced inspection costs

Increased production efficiency

Advanced innovative technology in intelligent manufacturing



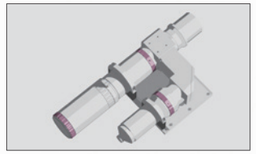
Details for Lens Features

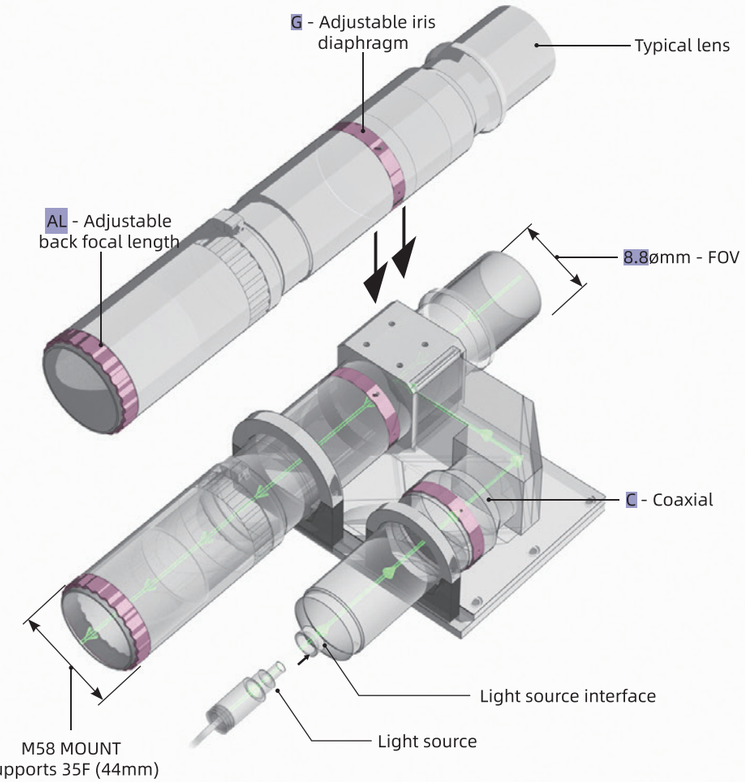
Features of DTCA series

DTCA35F-8.8-G-M58-AL
(typical lens)



DTCA35F-8.8C-G-M58-AL
(Coaxial Lens)





DTCA: The Only High-Quality AOI Lens Designed with One-on-One Bi-Telecentric Design

Ultra-High Resolution AOI The best choice for high-precision inspection in the semiconductor and LED industries.	35F (44mm)
3D AOI Specifically designed for 3D AOI in the PCB/ PCBA industry.	175 (28.2mm) · 185 (30mm) · 210 (33mm)
Line Scan AOI Line scan AOI lens for large image circle cameras	16K (62mm) · 23K (82mm) · 24K (88mm)
C-MOUNT AOI Ultra-high resolution C-mount AOI lens	118 (8.8mm) · 117 (9.4mm) · 230 (11mm) · 138 (14mm) · 110 (16mm) · 111 (18.4mm) · 121 (20mm) · 430 (23mm)

Naming Rule

One-on-One Bi-Telecentric Design | Max. Sensor Size:

DTCA – 35F – 8.8 – C – G – M58 – AL

Mag. β (x)	CCD " (Φmm)		FOV (Φmm)	Coaxial Light	Adjustable Iris	Mount	Adjustable BFL	Model No.	APO
5.0	35F	44	8.8	\	●	M58	●	DTCA35F-8.8-G-M58-AL	●
5.0	35F	44	8.8	●	●		●	DTCA35F-8.8C-G-M58-AL	●
4.0	35F	44	11.0	\	●		●	DTCA35F-11-G-M58-AL	●
4.0	35F	44	11.0	●	●		●	DTCA35F-11C-G-M58-ALV3	●
3.0	35F	44	14.6	\	●		●	DTCA35F-14.6-G-M58-AL	●
3.0	35F	44	14.6	●	●		●	DTCA35F-14.6C-G-M58-AL	●
2.0	35F	44	22	\	●		●	DTCA35F-22-G-M58-AL	●
2.0	35F	44	22	●	●		●	DTCA35F-22C-G-M58-AL	●
1.0	35F	44	44	\	●		●	DTCA35F-44-G-M58-AL	●
1.0	35F	44	44	●	●		●	DTCA35F-44C-G-M58-AL	●
0.53	35F	43.4	82	\	\		●	DTCA35F-82-M58-AL	\
0.53	35F	43.4	82	●	\		●	DTCA35F-82C-M58-AL	\
0.462	35F	43.4	94	\	\		●	DTCA35F-94-M58-AL	\
0.462	35F	43.4	94	●	\		●	DTCA35F-94C-M58-AL	\
1.0	1.75"	28.2	28.2	●	\	M42	●	DTCA175-28.2C-128-M42-AL	\
0.46	1.75"	28.2	61.4	●	●		●	DTCA175-61.4C-G-M42-ALV2	●
0.64	1.85"	30	46.8	\	●	M58	●	DTCA185-46.8-G-M58-AL	●
0.37	1.85"	30	81.1	\	●		●	DTCA185-81-G-M58-AL	●
0.37	1.85"	30	81.1	●	●		●	DTCA185-81C-G-M58-AL	●
0.31	1.85"	30	96.9	\	●		●	DTCA185-96-G-M58-AL	●
0.31	1.85"	30	96.9	●	●		●	DTCA185-96C-G-M58-AL	●
2.8	2"	33	11.8	\	\		\	DTCA210-11.8-M58	\
2.8	2"	33	11.8	●	\		\	DTCA210-11.8C-M58	\
0.875	23K	82	93.7	\	\	M95	●	DTCA23K-93.7-M95-AL	\
1.3	23K	82	63	\	\		●	DTCA23K-63-M95-AL	\
2	24K	88	44	\	●		●	DTCA24K-44-G-M95-AL	\
1.5	24K	88	59.7	\	\		●	DTCA24K-58.7-M95-AL	\
1.5	24K	88	58.7	\	●		●	DTCA24K-58.7-G-M95-AL	\
1.419	24K	88	62	\	\		●	DTCA24K-62-M95-AL	\
1.173	24K	88	75	\	\		●	DTCA24K-75-M95-AL	\
1	24K	88	88	\	●		●	DTCA24K-88-G-M95-AL	\
0.96	24K	88	91.6	\	\		●	DTCA24K-92-M95-AL	\
3.33	24K	82	24.6	\	●		●	APO–DTCA24K–24.6–G–M95–AL	●
5	24K	82	16.6	\	●		●	APO–DTCA24K–16.6–M95–AL	●
0.5	2/3"	11	22	●	\	C	\	DTCA230-22C	\
0.4	2/3"	11	27.5	\	\		\	DTCA230-27.5	\
0.4	2/3"	11	27.5	●	\		\	DTCA230-27.5C	\
4	1.2"	20	5	\	\		\	DTCA121-5V2	●
4	1.2"	20	5	●	●		\	DTCA121-5C-GV2.1	●
3.025	1.2"	20	6.6	\	\		\	DTCA121-6.6	\
3.025	1.2"	20	6.6	●	\		\	DTCA121-6.6C	\
2	1.2"	20	10	\	\		\	DTCA121-10	\
2	1.2"	20	10	●	\		\	DTCA121-10C	\
1	1.2"	20	20.0	\	●		\	DTCA121-20-G	\
0.25	1.2"	20	80	\	●		●	DTCA121-80-G-AL	●
0.25	1.2"	20	80	\	●		●	DTCA121-80C-G-AL	●

Ultra-High Resolution AOI

The best choice for high-precision inspection in the semiconductor and LED industries

- Perfectly matches 65MP and 71MP 44mm full-frame sensors.
- Ultra-high NA, up to 1μm super-high resolution, 1x-5x magnification range.
- A professional high-precision imaging lens that combines a large sensor size, ultra-low distortion, super high resolution, and apochromatic design.
- Superior to normal microscopes, with longer working distance, higher magnification, larger field of view, and ultra-high resolution.

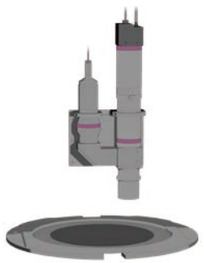


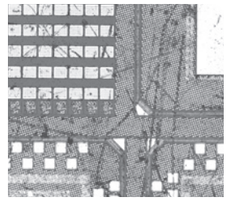
Applications

Die Appearance Inspection

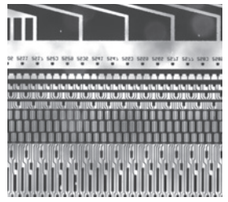
Inspect whether there are scratches, adhesive overflow, chipping, or conduct spacing measurement.

DTCA35F series offers industry-leading NA and superior uniformity. With 1x-5x magnification, it's ideal for large sensor and high-magnification precision inspection, especially in the semiconductor industry.





Chip character inspection

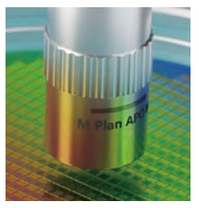


Wafer circuit inspection

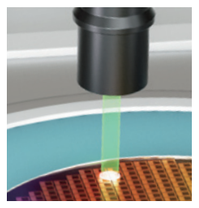
Contact-Based MicroLED Inspection

MicroLED inspection (typically <50μm) requires high-resolution lenses with higher magnification. However, their short working distances create space constraints between contact probes and components.

The lens integrates coaxial illumination in a compact design, maintaining optimal working distance (no extra light source), while maximizing space efficiency and structural flexibility. and structural flexibility.



Working distance of Normal lenses

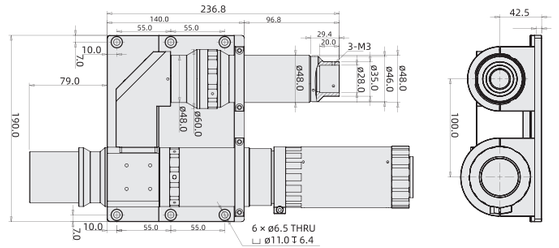


Working distance of DTCA35F series

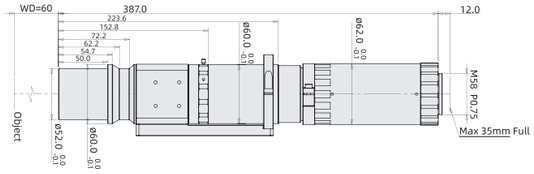
DTCA35F-8.8C-G-M58-AL

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

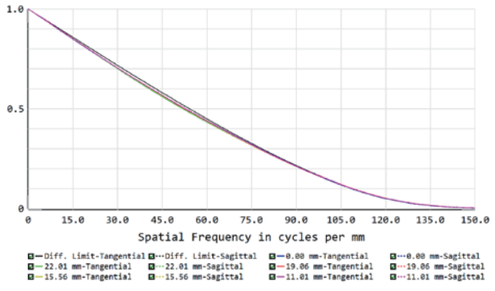
Mag.(x)	5.0	F/#	13-32
CCD (Ømm)	35Full(44)	I/O (mm)	459
FOV (Ømm)	8.8	Lateral chromatic aberration	0.033
NA	0.19-0.07792	DoF (mm)	0.04-0.1
MTF30 (lp/mm)	74-31	Distortion (max) (%)	0.02
WD (mm)	60	Telecentricity (max) (°)	0.01
Image Circle (Φmm)	44	Object side resolution (μm)	1.77-4.3



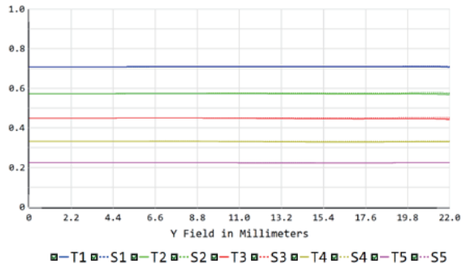




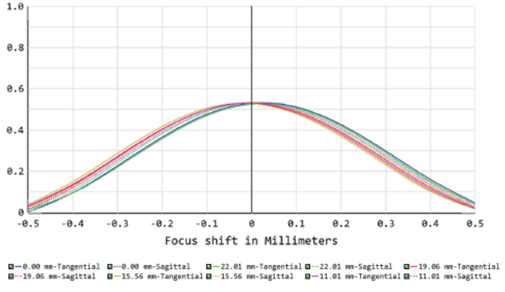
MTF



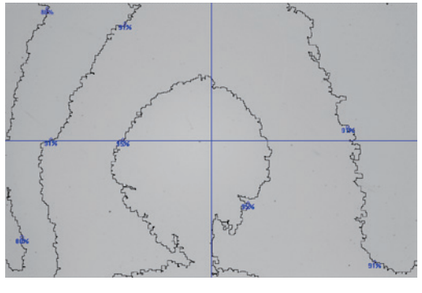
MTF vs. Field



Through Focus MTF



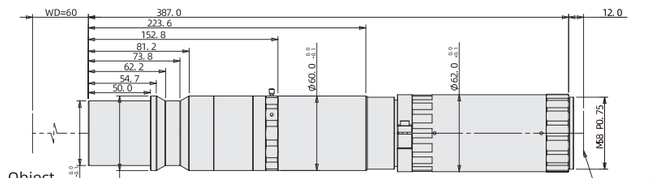
Relative Illumination 88%



DTCA35F-8.8-G-M58-AL

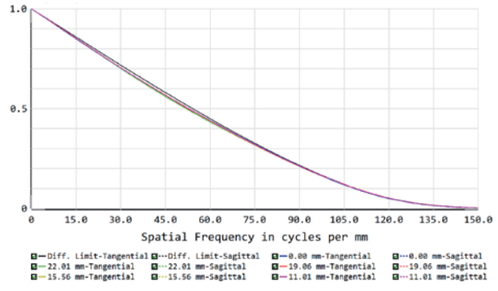
Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

1.77-4.3	5.0	F/#	13-32
CCD (Ømm)	35Full(44)	I/O (mm)	459
FOV (Ømm)	8.8	Lateral chromatic aberration	0.033
NA	0.19-0.07792	DoF (mm)	0.04-0.1
MTF30 (lp/mm)	74-31	Distortion (max) (%)	0.02
WD (mm)	60	Telecentricity (max) (°)	0.01
Image Circle (Φmm)	44	Object side resolution (μm)	1.77-4.3

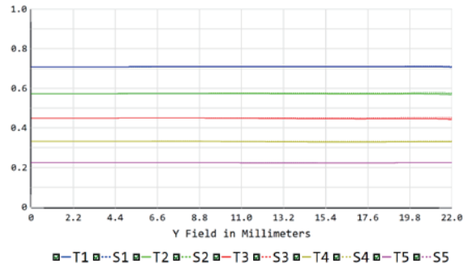




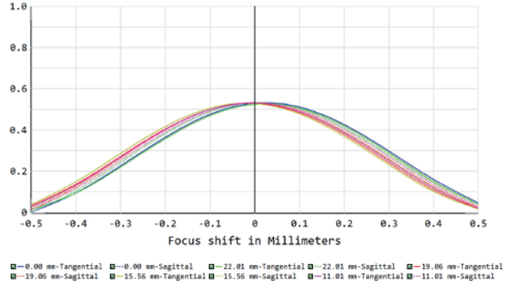
MTF



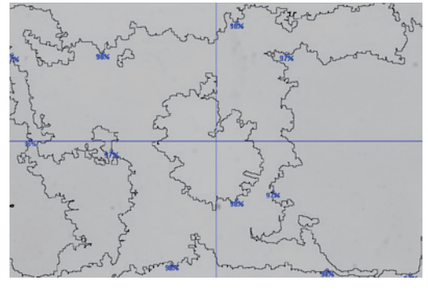
MTF vs. Field



Through Focus MTF



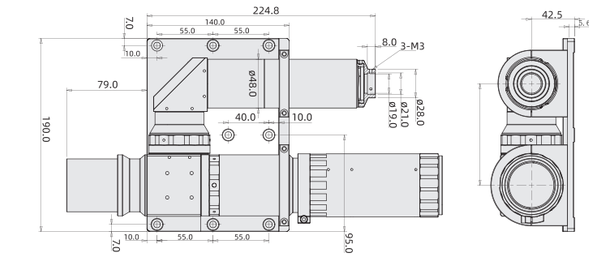
Relative Illumination 97%



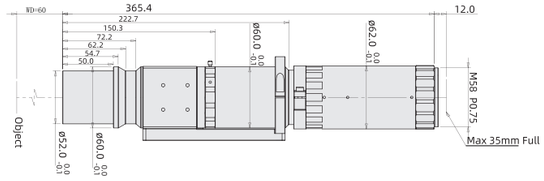
DTCA35F-11C-G-M58-ALV3

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

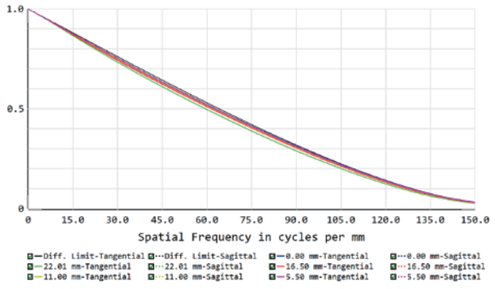
Mag.(x)	4.0	F/#	11-32
CCD (Ømm)	35Full(44)	I/O (mm)	425
FOV (Ømm)	11.0	Lateral chromatic aberration	0.041
NA	0.18-0.0624	DoF (mm)	0.06-0.16
MTF30 (lp/mm)	90-32	Distortion (max) (%)	0.02
WD (mm)	60	Telecentricity (max) (°)	0.02
Image Circle (Φmm)	44	Object side resolution (μm)	1.86-5.37



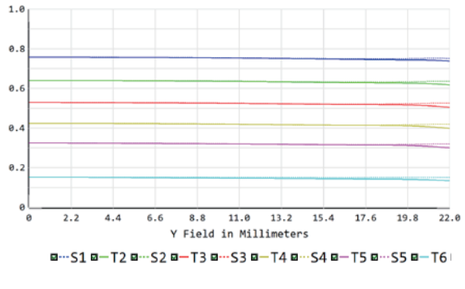




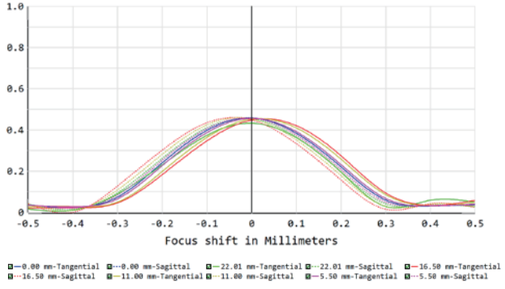
MTF



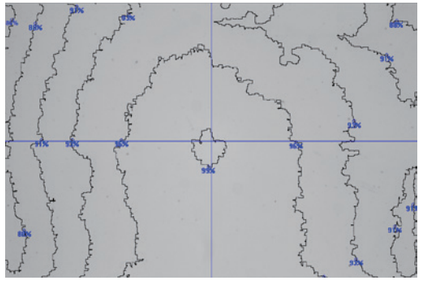
MTF vs. Field



Through Focus MTF



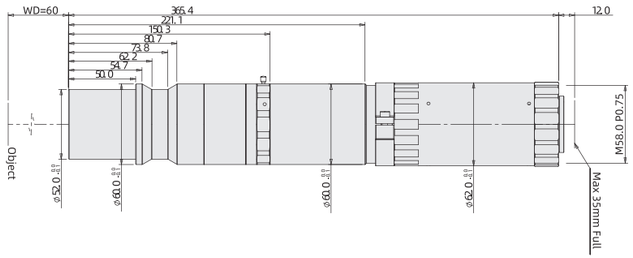
Relative Illumination 86%



DTCA35F-11-G-M58-AL

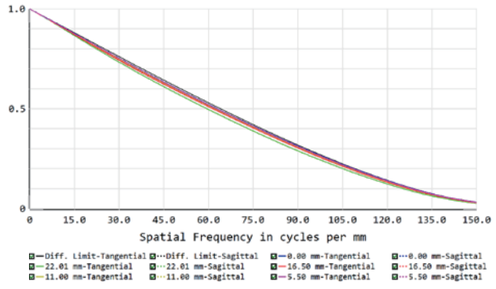
Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

Mag.(x)	4.0	F/#	11-32
CCD (Ømm)	35Full(44)	I/O (mm)	437
FOV (Ømm)	11.0	Lateral chromatic aberration	0.041
NA	0.18-0.0624	DoF (mm)	0.06-0.16
MTF30 (lp/mm)	90-32	Distortion (max) (%)	0.02
WD (mm)	60	Telecentricity (max) (°)	0.02
Image Circle (Φmm)	44	Object side resolution (μm)	1.86-5.37

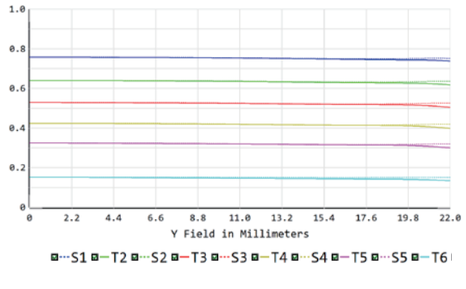




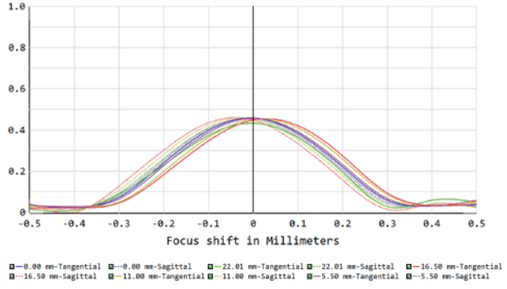
MTF



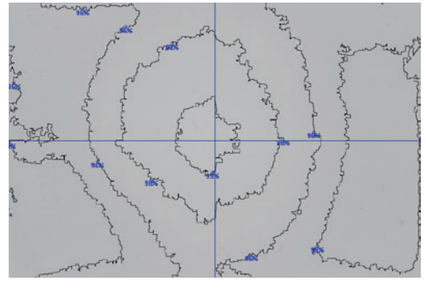
MTF vs. Field



Through Focus MTF



Relative Illumination 95%

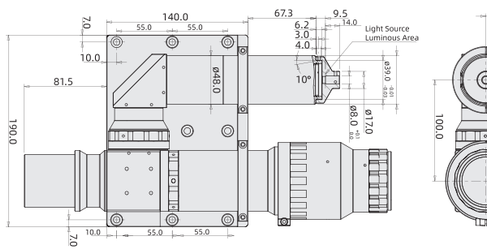


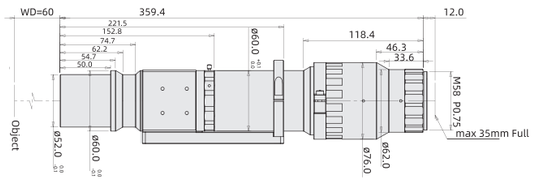
DTCA35F-14.6C-G-M58-AL

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

Mag.(x)	3.0	F/#	8.8-32
CCD (Ømm)	35Full(44)	I/O (mm)	431.4
FOV (Ømm)	14.6	Lateral chromatic aberration	0.009
NA	0.17-0.04693	DoF(mm)	0.08-0.28
MTF30 (lp/mm)	106-33	Distortion (max) (%)	0.045
WD (mm)	60	Telecentricity (max) (°)	0.0065
Image Circle (Φmm)	44	Object side resolution (μm)	1.98-7.1

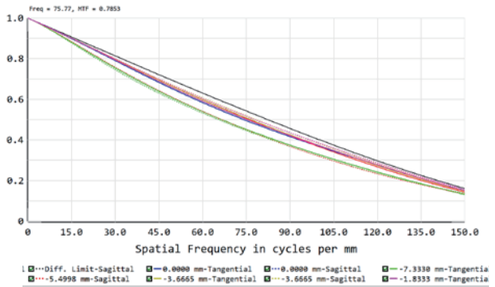
3.0x



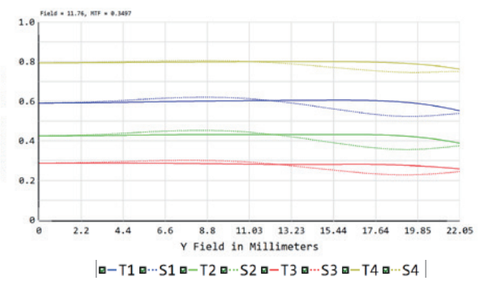




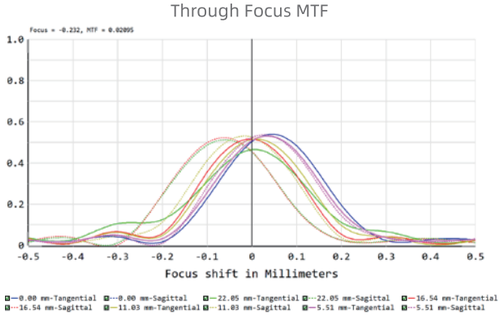
MTF



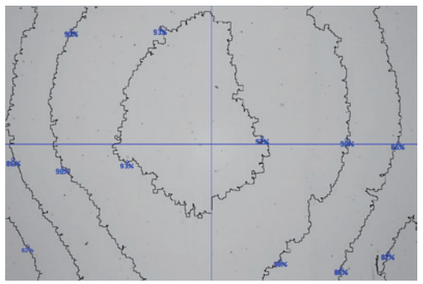
MTF vs. Field



Through Focus MTF



Relative Illumination 82%



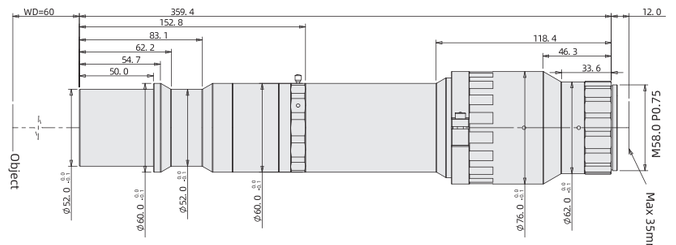
DTCA35F-14.6-G-M58-AL

Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

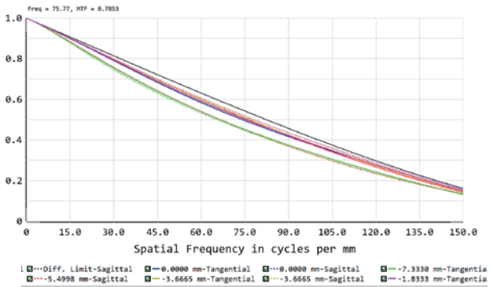
Mag.(x)	3.0	F/#	8.8-32
CCD (Ømm)	35Full(44)	I/O (mm)	431.4
FOV (Ømm)	14.6	Lateral chromatic aberration	0.009
NA	0.17-0.04693	DoF(mm)	0.08-0.28
MTF30 (lp/mm)	106-33	Distortion (max) (%)	0.045
WD (mm)	60	Telecentricity (max) (°)	0.0065
Image Circle (Φmm)	44	Object side resolution (μm)	1.98-7.1

3.0x

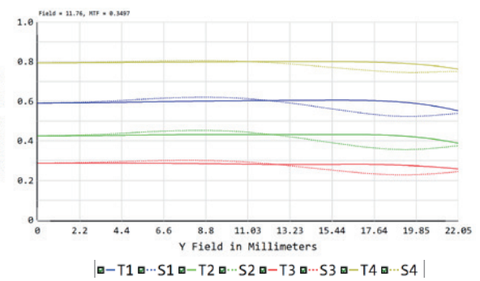




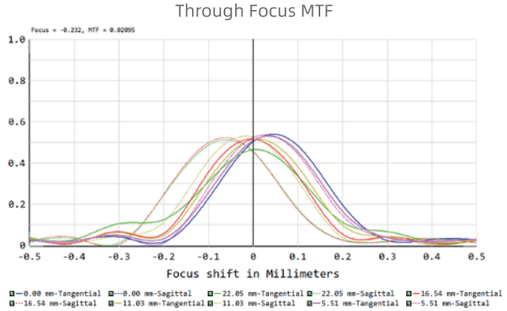
MTF



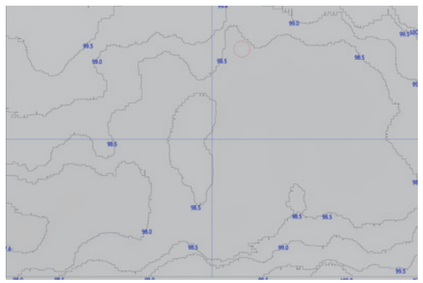
MTF vs. Field



Through Focus MTF



Relative Illumination 94%

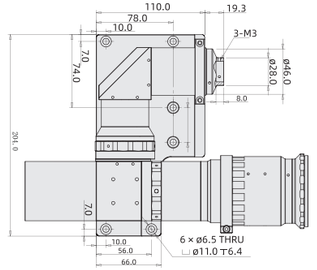


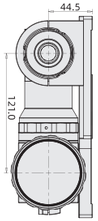
DTCA35F-22C-G-M58-AL

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

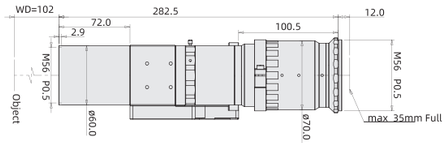
Mag.(x)	2.0	F/#	8-32
CCD (Ømm)	35Full(44)	I/O (mm)	396.5
FOV (Ømm)	22	Lateral chromatic aberration	0.02
NA	0.125-0.03125	DoF (mm)	0.16-0.64
MTF30 (lp/mm)	118-32	Distortion (max) (%)	0.045
WD (mm)	102	Telecentricity (max) (°)	0.0085
Image Circle (Φmm)	44	Object side resolution (μm)	2.7-10.7

2.0x

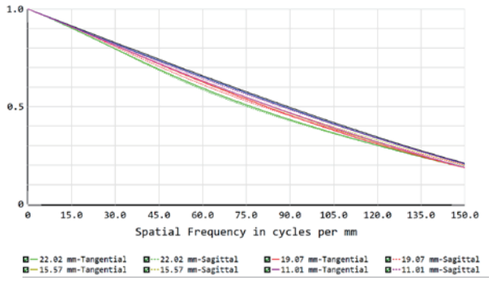




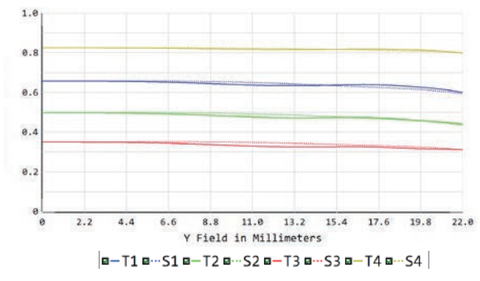




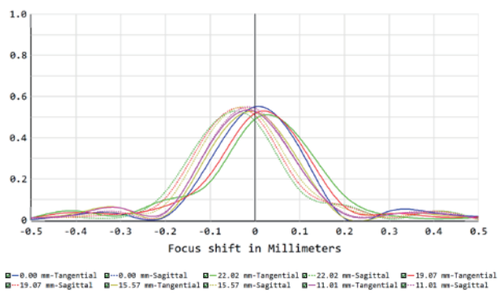
MTF



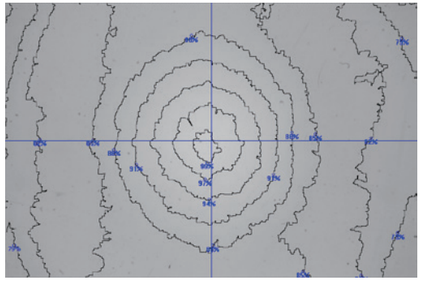
MTF vs. Field



Through Focus MTF



Relative Illumination 79%



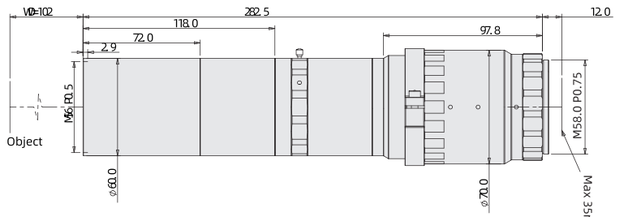
DTCA35F-22-G-M58-AL

Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

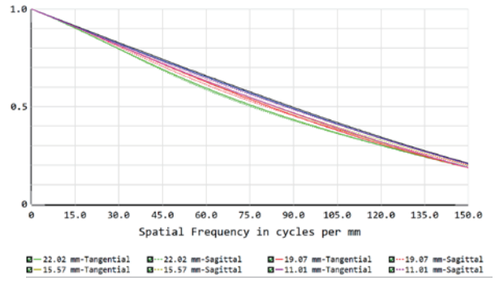
Mag.(x)	2.0	F/#	8-32
CCD (Ømm)	35Full(44)	I/O (mm)	396.5
FOV (Ømm)	22	Lateral chromatic aberration	0.02
NA	0.125-0.03125	DoF (mm)	0.16-0.64
MTF30 (lp/mm)	118-32	Distortion (max) (%)	0.045
WD (mm)	102	Telecentricity (max) (°)	0.0085
Image Circle (Φmm)	44	Object side resolution (μm)	2.7-10.7

2.0x

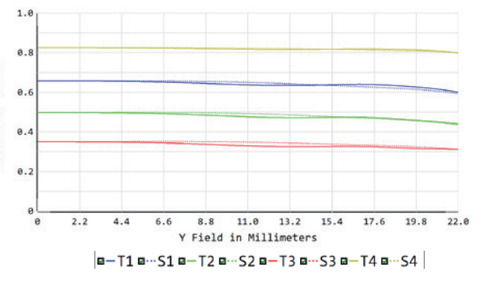




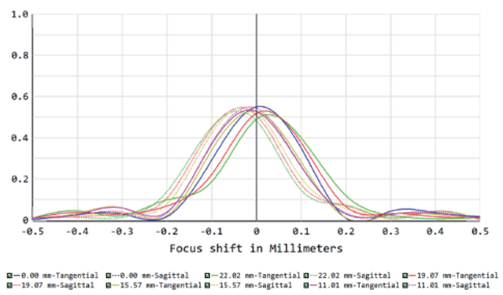
MTF



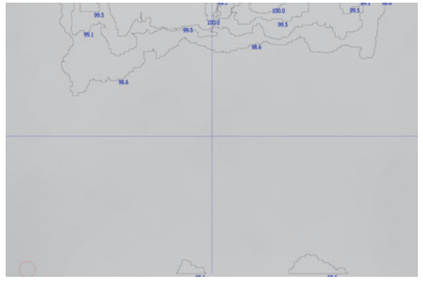
MTF vs. Field



Through Focus MTF



Relative Illumination 93%

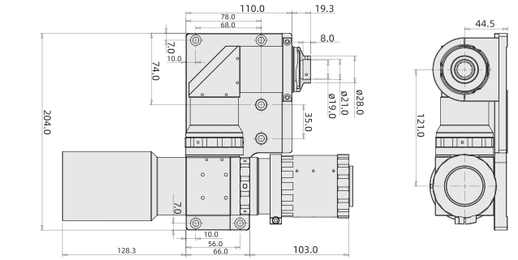


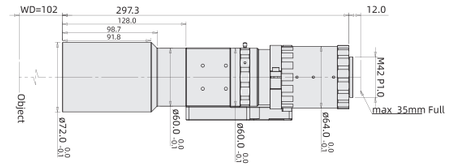
DTCA35F-44C-G-M58-AL

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

Mag.(x)	1.0	F/#	6.1-32
CCD (Ømm)	35Full(44)	I/O (mm)	411.3
FOV (Ømm)	44	Lateral chromatic aberration	0.021
NA	0.083-0.01568	DoF (mm)	0.49-2.56
MTF30 (lp/mm)	150-33	Distortion (max) (%)	0.04
WD (mm)	102	Telecentricity (max) (°)	0.04
Image Circle (Φmm)	44	Object side resolution (μm)	4-21.4

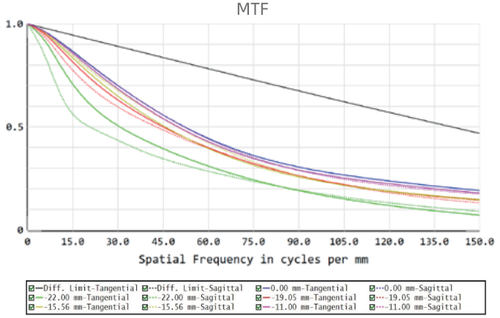
1.0x



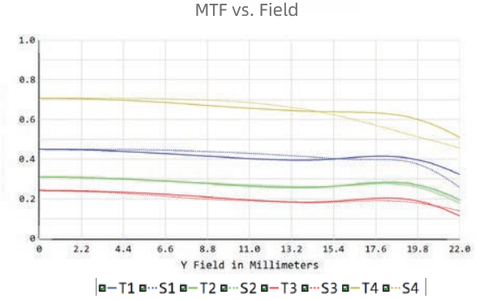




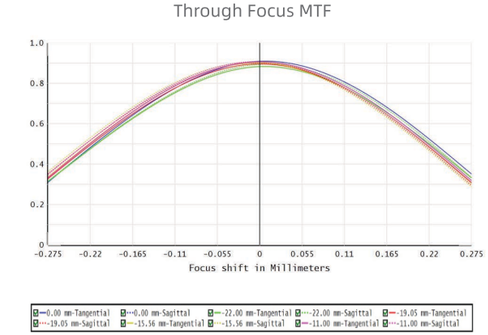
MTF



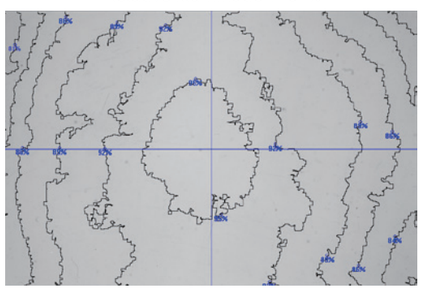
MTF vs. Field



Through Focus MTF



Relative Illumination 81%

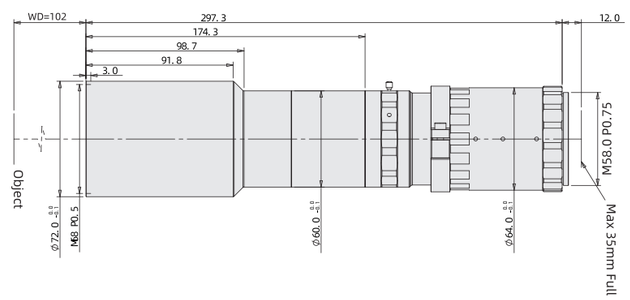


DTCA35F-44-G-M58-AL

Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

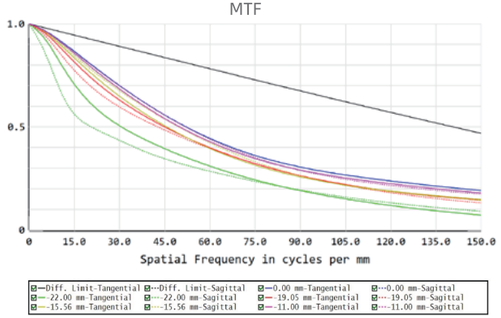
Mag.(x)	1.0	F/#	6.1-32
CCD (Ømm)	35Full(44)	I/O (mm)	411.3
FOV (Ømm)	44	Lateral chromatic aberration	0.021
NA	0.083-0.01568	DoF (mm)	0.49-2.56
MTF30 (lp/mm)	150-33	Distortion (max) (%)	0.04
WD (mm)	102	Telecentricity (max) (°)	0.04
Image Circle (Φmm)	44	Object side resolution (μm)	4-21.4

1.0x

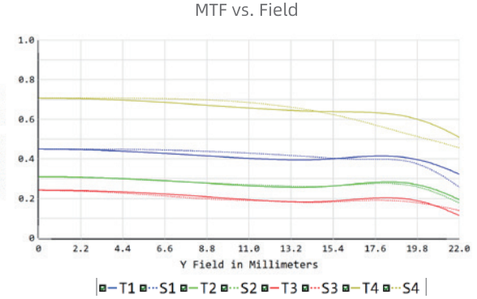




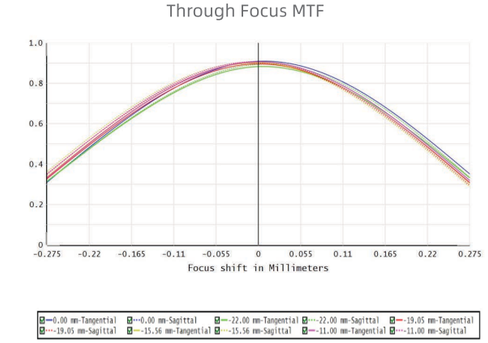
MTF



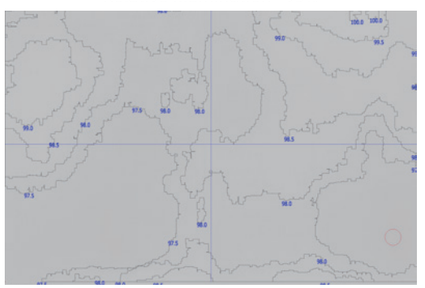
MTF vs. Field



Through Focus MTF



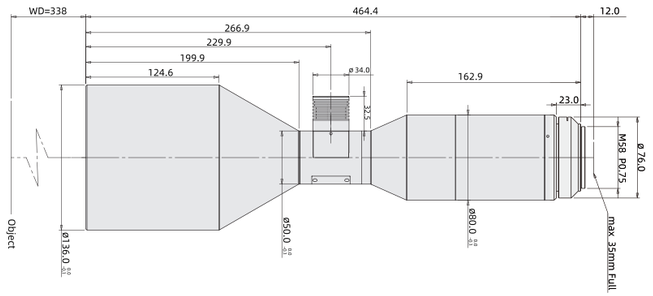
Relative Illumination 95%



DTCA35F-82C-M58-AL

Adjustable Back Focal Length · Coaxial Light · Precision Measurement · Mount

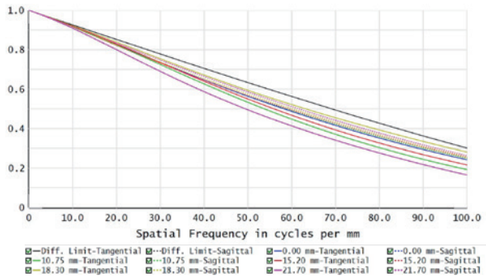
Mag.(x)	0.53	F/#	10.0
CCD (Ømm)	35Full(44)	I/O (mm)	814
FOV (Ømm)	82	Filter thread size	M126 P0.75
NA	0.02649	DoF (mm)	±1.4@F10
MTF30 (lp/mm)	>92	Distortion (max) (%)	<0.1
WD (mm)	338	Telecentricity (max) (°)	0.03
Image Circle (Φmm)	43.4	Object side resolution (μm)	12.7



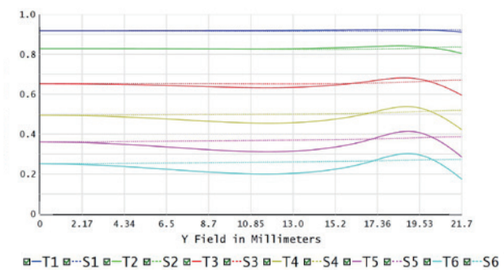


0.53x

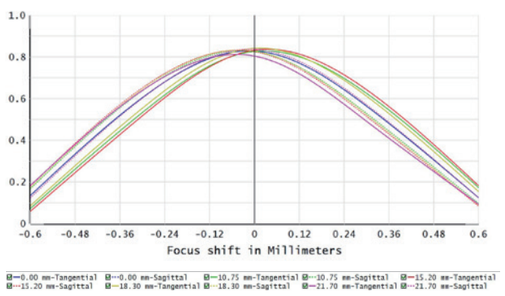
MTF



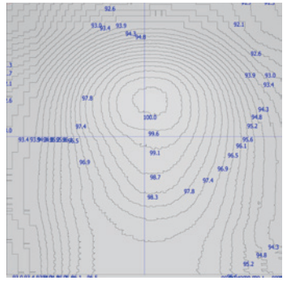
MTF vs. Field



Through Focus MTF



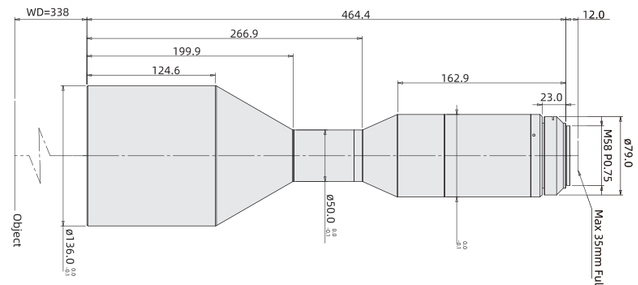
Relative Illumination 82%



DTCA35F-82-M58-AL

Adjustable Back Focal Length · Precision Measurement · Mount

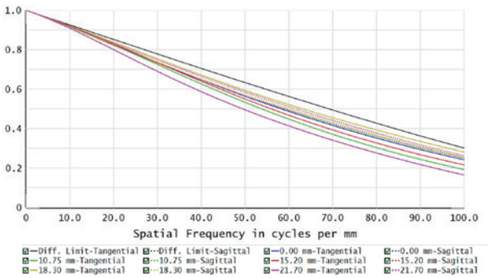
Mag.(x)	0.53	F/#	10.0
CCD (Ømm)	35Full(44)	I/O (mm)	814
FOV (Ømm)	82	Filter thread size	M126 P0.75
NA	0.02649	DoF (mm)	±1.4@F10
MTF30 (lp/mm)	>92	Distortion (max) (%)	<0.1
WD (mm)	338	Telecentricity (max) (°)	0.03
Image Circle (Φmm)	43.4	Object side resolution (μm)	12.7



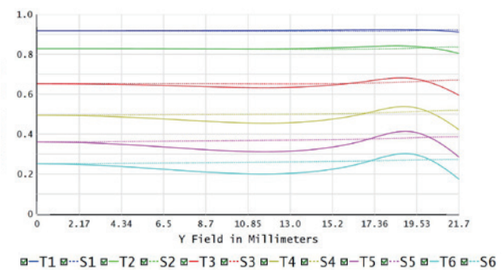


0.53x

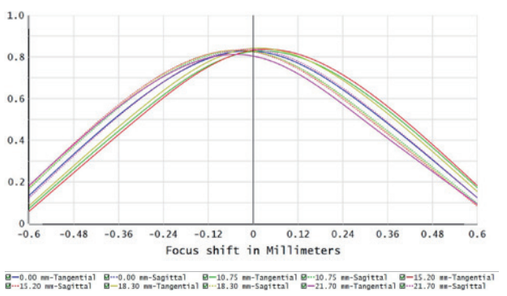
MTF



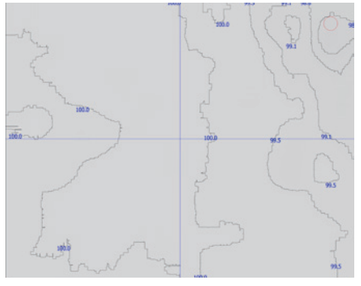
MTF vs. Field



Through Focus MTF



Relative Illumination 95%



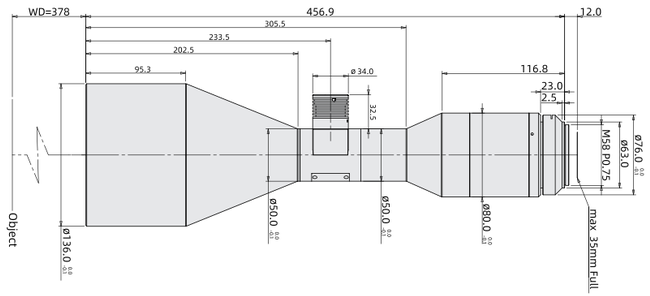
DTCA35F-94C-M58-AL

Adjustable Back Focal Length · Coaxial Light · Precision Measurement · Mount

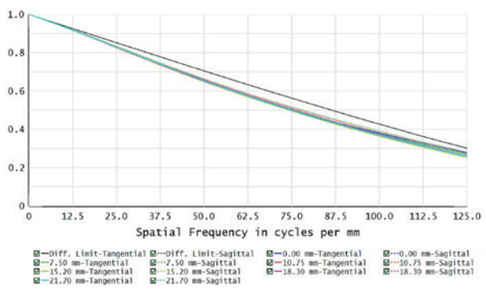
Mag.(x)	0.462	F/#	8.0
CCD (Ømm)	35Full(44)	I/O (mm)	847
FOV (Ømm)	94	Filter thread size	M126 P0.75
NA	0.02889	DoF (mm)	±1.5@F8.0
MTF30 (lp/mm)	>115	Distortion (max) (%)	<0.1
WD (mm)	378	Telecentricity (max) (°)	0.055
Image Circle (Φmm)	43.4	Object side resolution (μm)	11.6



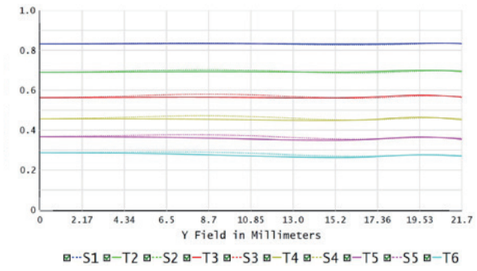
0.462x



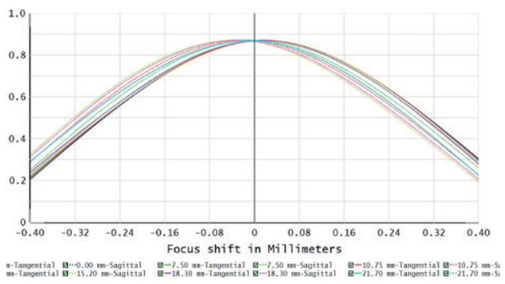
MTF



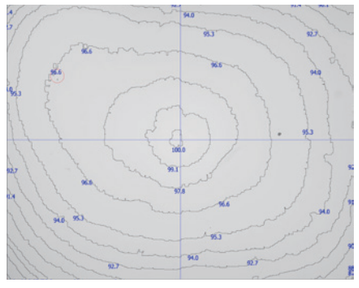
MTF vs. Field



Through Focus MTF



Relative Illumination 78%



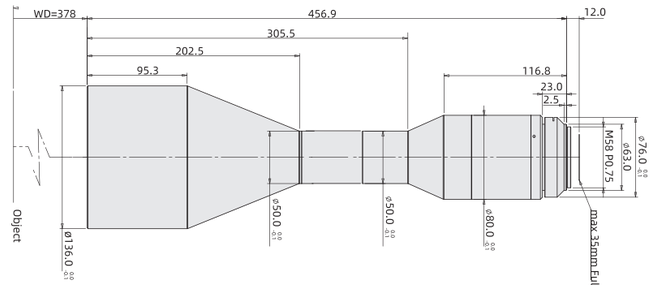
DTCA35F-94-M58-AL

Adjustable Back Focal Length · Precision Measurement · Mount

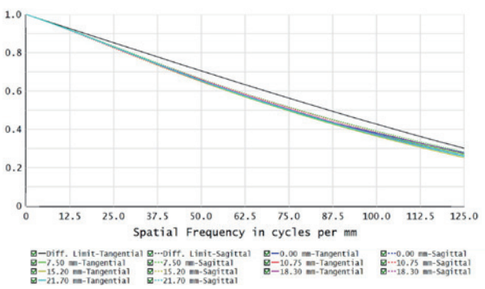
Mag.(x)	0.462	F/#	8.0
CCD (Ømm)	35Full(44)	I/O (mm)	847
FOV (Ømm)	94	Filter thread size	M126 P0.75
NA	0.02889	DoF (mm)	±1.5@F8.0
MTF30 (lp/mm)	>115	Distortion (max) (%)	<0.1
WD (mm)	378	Telecentricity (max) (°)	0.055
Image Circle (Φmm)	43.4	Object side resolution (μm)	11.6



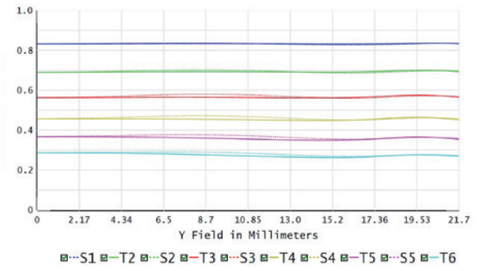
0.462x



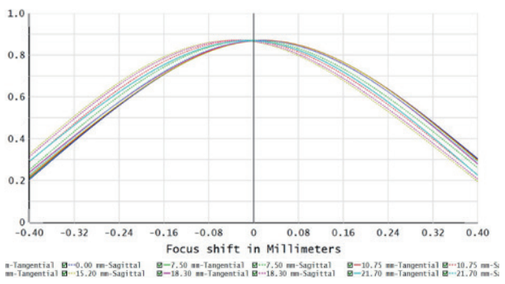
MTF



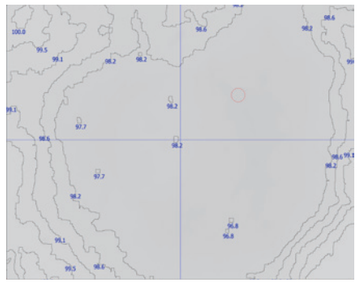
MTF vs. Field



Through Focus MTF



Relative Illumination 86%



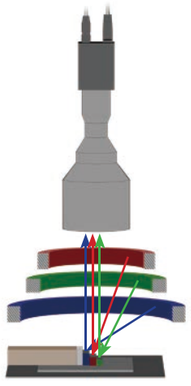
3D AOI Series

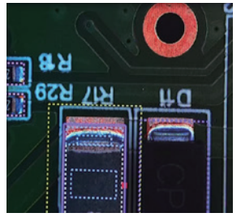
Designed specifically for 3D AOI in the PCB/PCBA industry

- Perfectly matches the 1.75", 1.85", and 2" sensors commonly used in the industry.
- The most suitable working distance for the industry: 150mm, 220mm, and 250mm.
- Apochromatic and bi-telecentric design ensures the most accurate data.

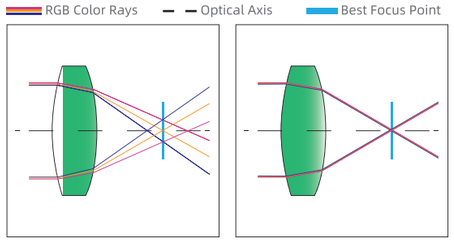


Applications





Minimum level of chromatic aberration, achieved by combining low-dispersion glass aspheric apochromatic design and multi-doublet lens.



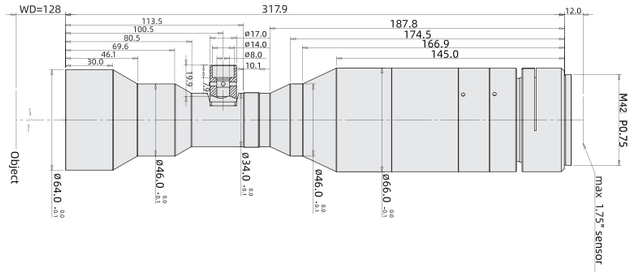
Longitudinal / Axial Chromatic Aberration

Perfect Lens with No Chromatic Aberration

DTCA175-28.2C-128-M42-AL

BFL Adjustable Back Focal Length · Coaxial Light · Precision Measurement · M42 Mount

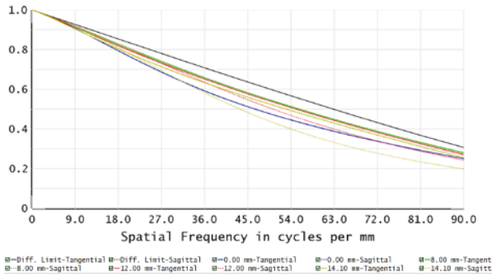
Mag.(x)	1.0	F/#	11.0
CCD (Ømm)	1.75"	I/O (mm)	458
FOV (Ømm)	28.2	Filter thread size	M60 P0.5
NA	0.04538	DoF(mm)	±0.45@F11
MTF30 (lp/mm)	76	Distortion (max) (%)	0.02
WD (mm)	128	Telecentricity (max) (°)	0.066
Image Circle (Φmm)	28.2	Object side resolution (μm)	7.4



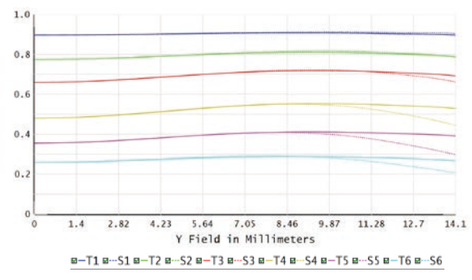


1.0X

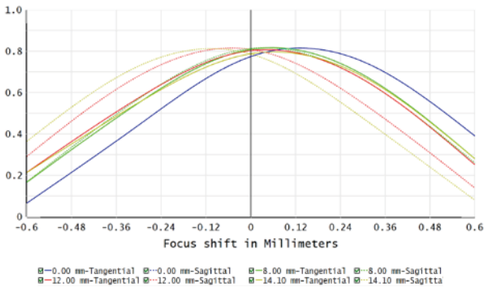
MTF



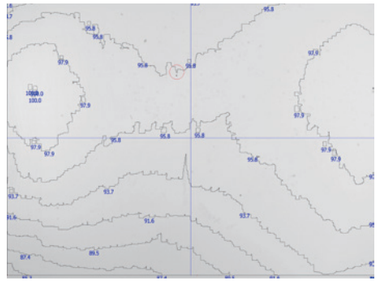
MTF vs. Field



Through Focus MTF



Relative Illumination 87%

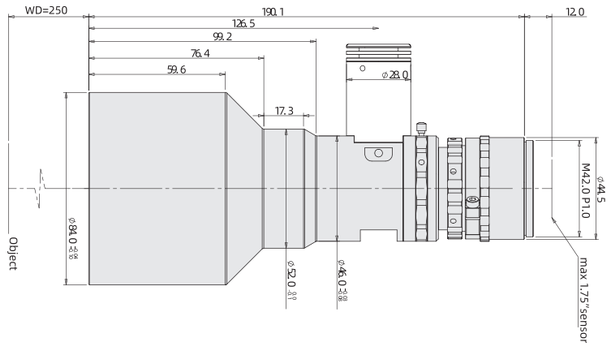


DTCA175-61.4C-G-M42-ALV2

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

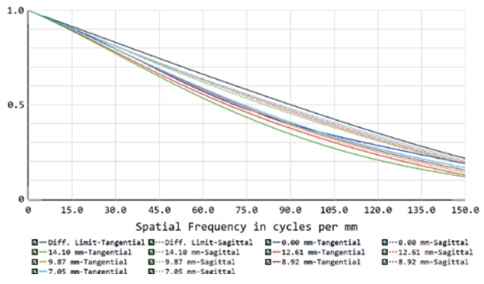
Mag.(x)	0.46	F/#	8.0
CCD (Ømm)	1.75"	I/O (mm)	452
FOV (Ømm)	61.4	Filter thread size	M80 P0.75
NA	0.0288	DoF (mm)	±1.5@F8.0
MTF30 (lp/mm)	>115	Distortion (max) (%)	<0.1
WD (mm)	250	Telecentricity (max) (°)	0.055
Image Circle (Φmm)	28.2	Lateral chromatic aberration	0.041
Length (mm)	190.1	Object side resolution (μm)	11.6

0.46X

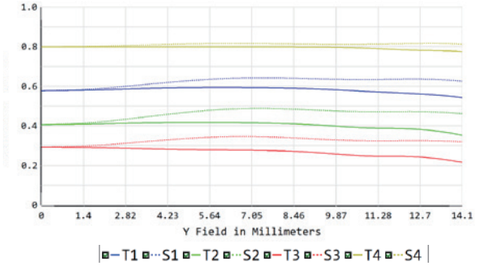




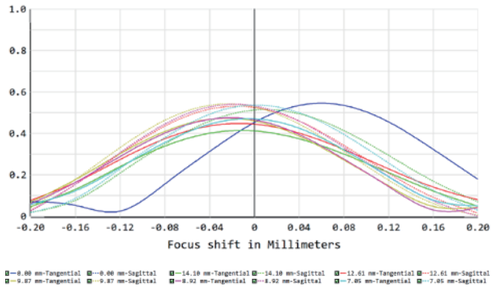
MTF



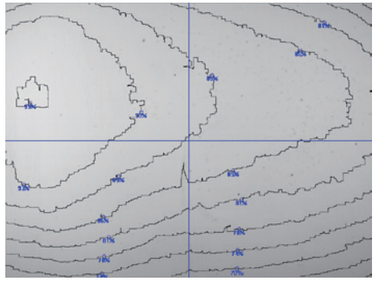
MTF vs. Field



Through Focus MTF



Relative Illumination 70%

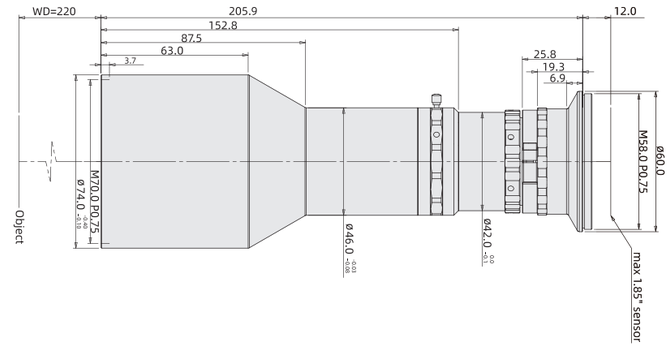


DTCA185-46.8-G-M58-AL

Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

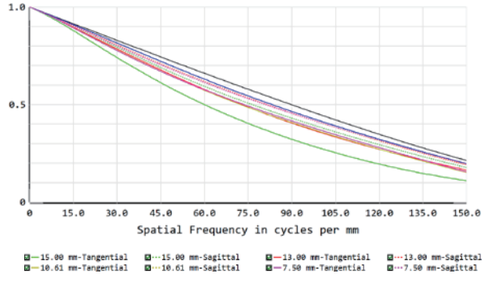
Mag.(x)	0.64	F/#	8-32
CCD (Ømm)	1.85"	I/O (mm)	437.9
FOV (Ømm)	46.8	Filter thread size	M70 P0.75
NA	0.04	DoF (mm)	1.6-6.3
MTF30 (lp/mm)	121-31	Distortion (max) (%)	0.01
WD (mm)	220	Telecentricity (max) (°)	0.02
Image Circle (Φmm)	30	Lateral chromatic aberration	0.063
Length (mm)	205.9	Object side resolution (μm)	8.4-3.6

0.64X

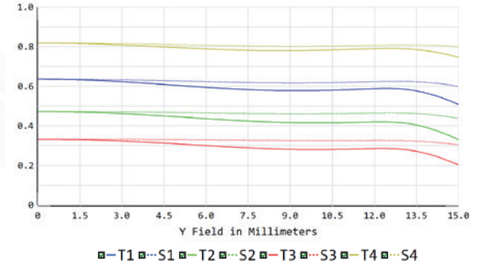




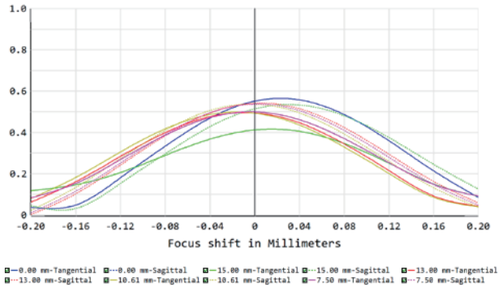
MTF



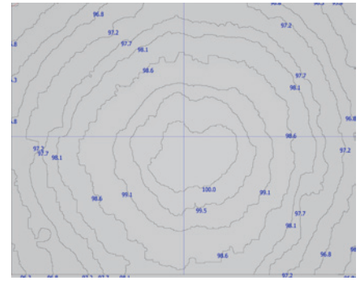
MTF vs. Field



Through Focus MTF



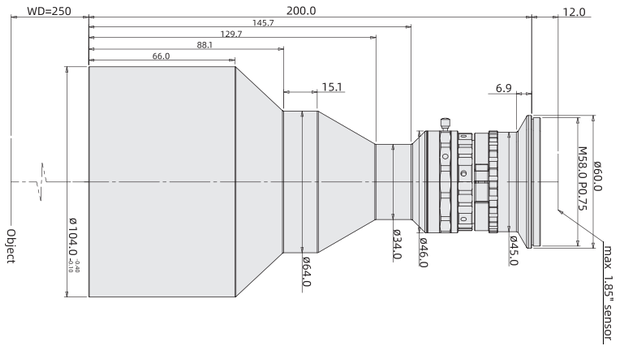
Relative Illumination 89%



DTCA185-81C-G-M58-AL

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

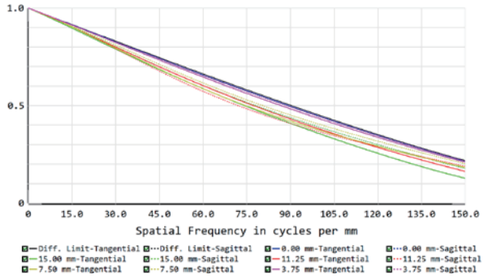
Mag.(x)	0.37	F/#	8-32
CCD (Ømm)	1.85"	I/O (mm)	462
FOV (Ømm)	81.1	Filter thread size	M100 P0.75
NA	0.02312-0.00578	DoF (mm)	4.7-18.7
MTF30 (lp/mm)	114-30	Distortion (max) (%)	0.02
WD (mm)	250	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	30	Lateral chromatic aberration	0.034
Length (mm)	200	Object side resolution (μm)	14.5-58



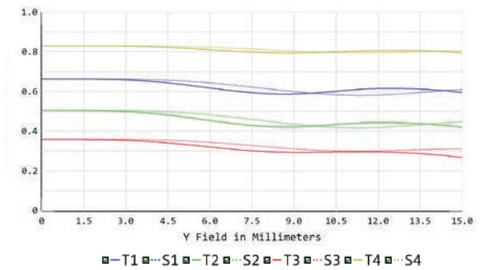


0.37X

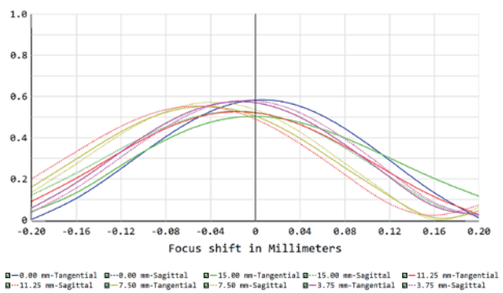
MTF



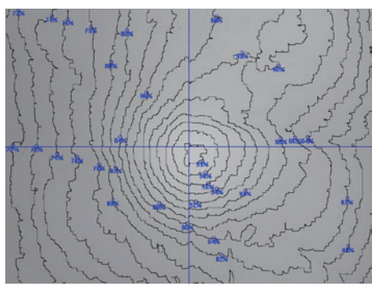
MTF vs. Field



Through Focus MTF



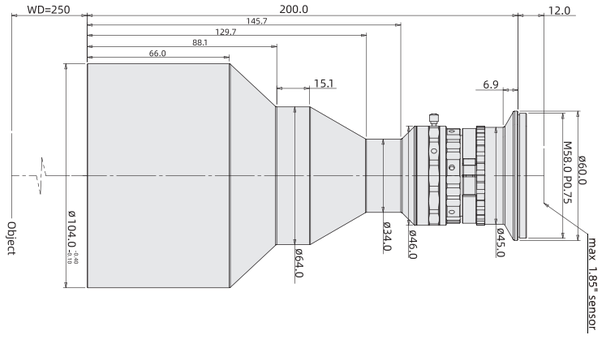
Relative Illumination 70%



DTCA185-81-G-M58-AL

Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

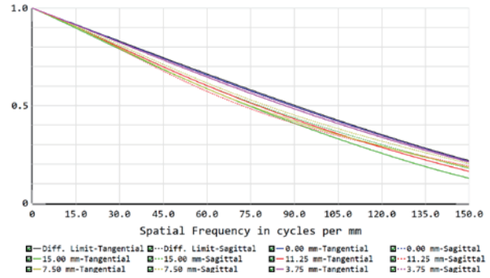
Mag.(x)	0.37	F/#	8-32
CCD (Ømm)	1.85"	I/O (mm)	462
FOV (Ømm)	81.1	Filter thread size	M100 P0.75
NA	0.02312-0.00578	DoF(mm)	4.7-18.7
MTF30(lp/mm)	114-30	Distortion (max) (%)	0.02
WD(mm)	250	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	30	Lateral chromatic aberration	0.034
Length (mm)	200	Object side resolution (μm)	14.5-58



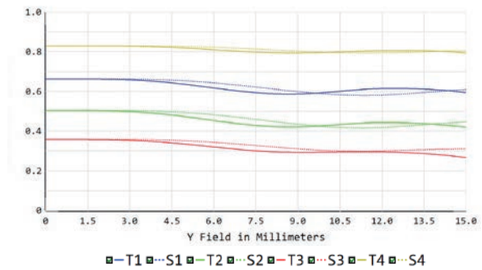


0.37X

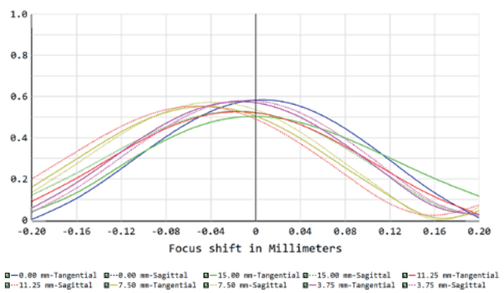
MTF



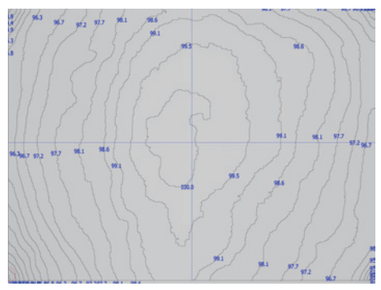
MTF vs. Field



Through Focus MTF



Relative Illumination 87%

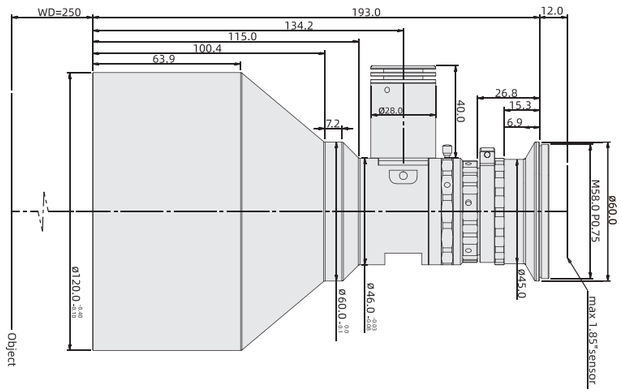


DTCA185-96C-G-M58-AL

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

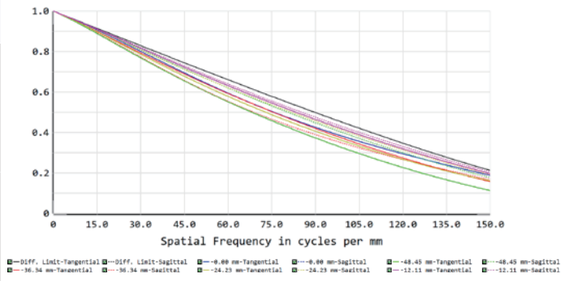
Mag.(x)	0.31	F/#	8-32
CCD (Ømm)	1.85"	I/O (mm)	455
FOV (Ømm)	96.9	Filter thread size	/
NA	0.01936-0.0484	DoF (mm)	6.7-26.6
MTF30 (lp/mm)	110-30	Distortion (max) (%)	0.035
WD (mm)	250	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	30	Lateral chromatic aberration	0.02
Length (mm)	193	Object side resolution (μm)	17.3-69.3

0.31x

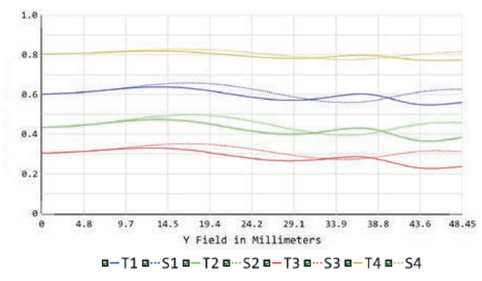




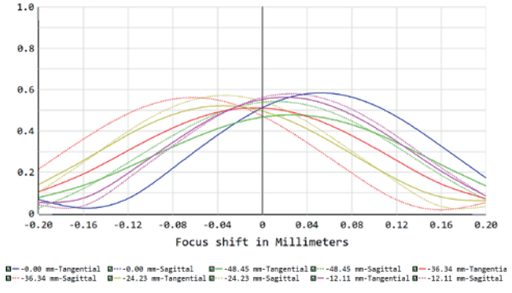
MTF



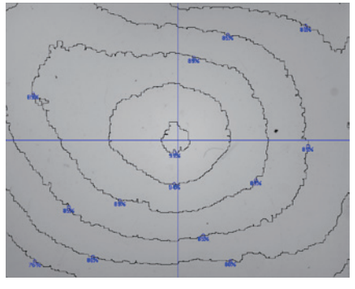
MTF vs. Field



Through Focus MTF



Relative Illumination 76%

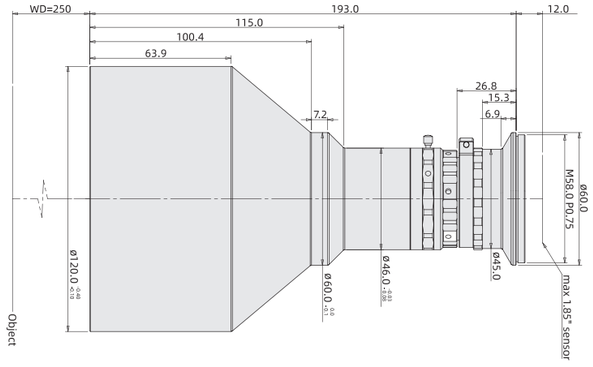


DTCA185-96-G-M58-AL

Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

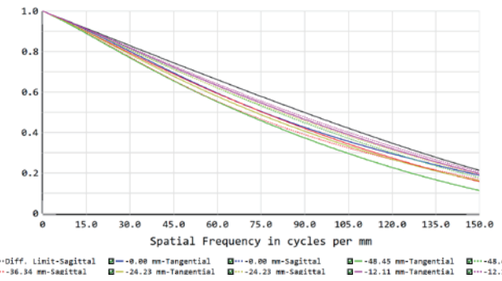
Mag.(x)	0.31	F/#	8-32
CCD (Ømm)	1.85"	I/O (mm)	455
FOV (Ømm)	96.9	Filter thread size	/
NA	0.01936-0.0484	DoF (mm)	6.7-26.6
MTF30 (lp/mm)	110-30	Distortion (max) (%)	0.035
WD (mm)	250	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	30	Lateral chromatic aberration	0.02
Length (mm)	193	Object side resolution (μm)	17.3-69.3

0.31x

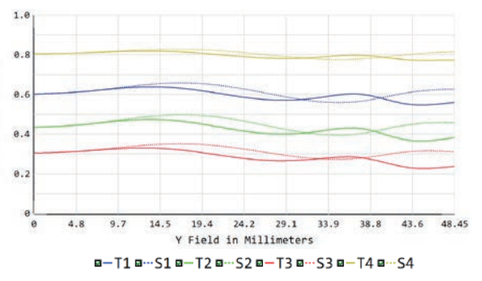




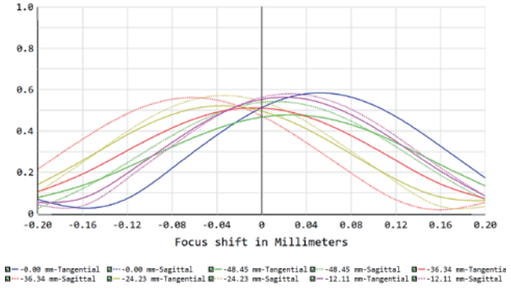
MTF



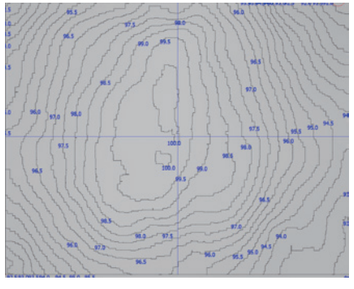
MTF vs. Field



Through Focus MTF



Relative Illumination 88%

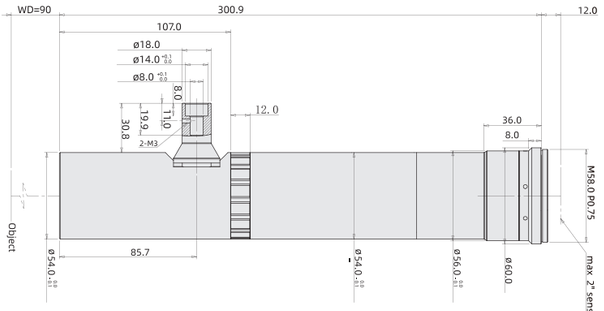


Quick Guide
DTCA35F Series
DTCA175 Series
DTCA185 Series
DTCA210 Series
DTCA23K Series
DTCA24K Series
DTCA230 Series
DTCA121 Series

DTCA210-11.8C-M58

Coaxial Light · Precision Measurement · Mount

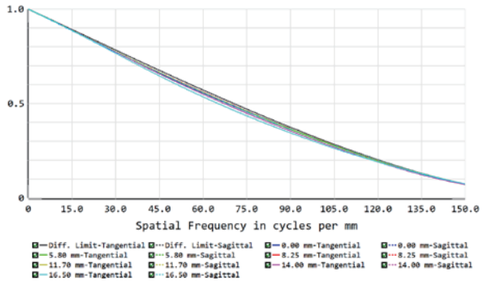
Mag.(x)	2.8	F/#	11.0
CCD (Ømm)	2"	I/O (mm)	403±1
FOV (Ømm)	11.8	Filter thread size	M48x0.5
NA	0.1421921	DoF (mm)	±0.05@F11
MTF30 (lp/mm)	>90	Distortion (max) (%)	<0.02
WD (mm)	90	Telecentricity (max) (°)	0.043
Image Circle (Φmm)	33	Lateral chromatic aberration	/
Length (mm)	300.9	Object side resolution (μm)	2.4



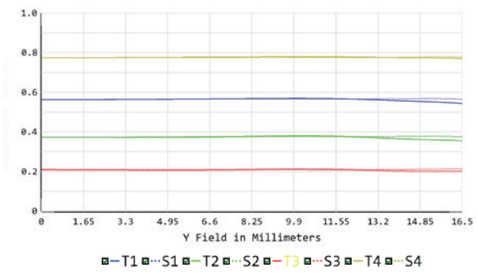


2.8x

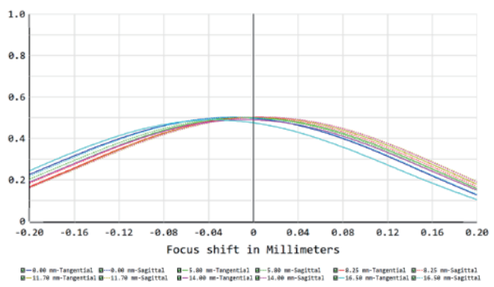
MTF



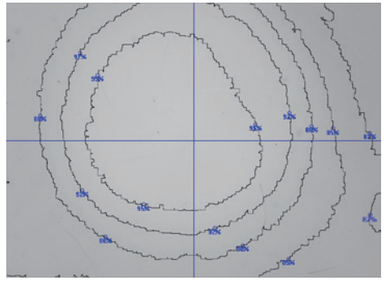
MTF vs. Field



Through Focus MTF



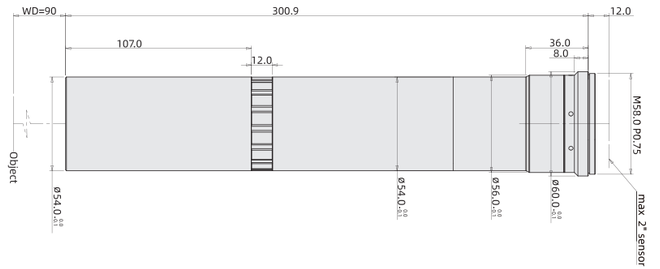
Relative Illumination 82%



DTCA210-11.8-M58

APO · Precision Measurement · Mount

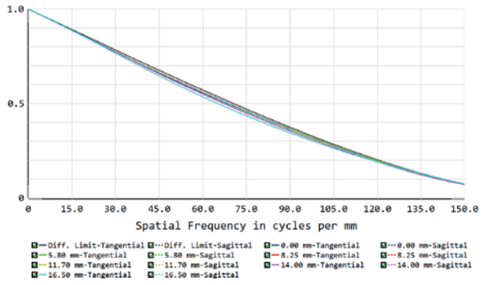
Mag.(x)	2.8	F/#	11.0
CCD (Ømm)	2"	I/O (mm)	403±1
FOV (Ømm)	11.8	Filter thread size	M48x0.5
NA	0.1421921	DoF (mm)	±0.05@F11
MTF30 (lp/mm)	>90	Distortion (max) (%)	<0.02
WD (mm)	90	Telecentricity (max) (°)	0.043
Image Circle (Φmm)	33	Lateral chromatic aberration	/
Length (mm)	300.9	Object side resolution (μm)	2.4



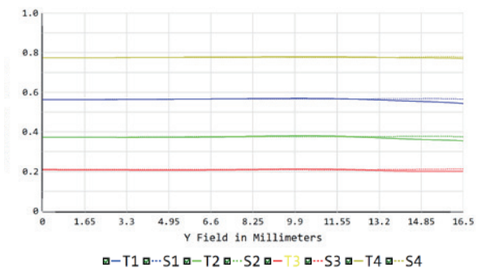


2.8x

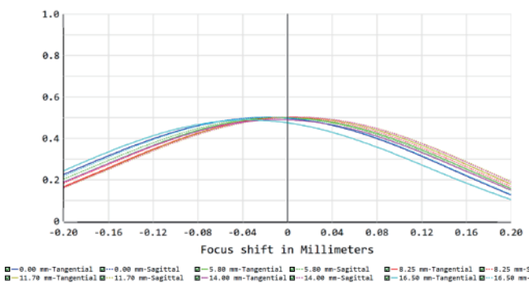
MTF



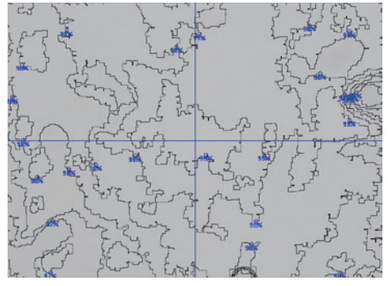
MTF vs. Field



Through Focus MTF



Relative Illumination 96%



Line Scan

Line scan AOI lens for large image circle camera

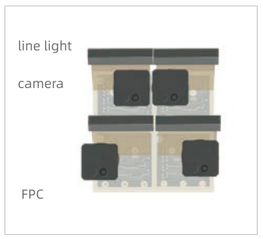


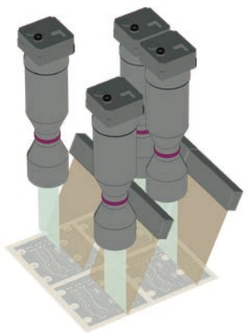
- Perfectly matches 24K 88mm line scan cameras.
- Ultra-high resolution, ultra-high contrast, and super-low distortion make it ideal for image stitching.
- Optimal configurations: 0.7-2x magnification, 102-150mm working distance, and Φ44-95mm FOV (based on application experience).

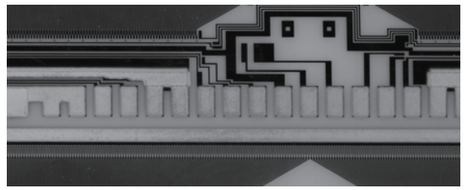
Applications

Flexible Printed Circuit (FPC) Inspection

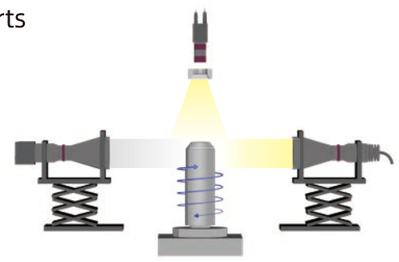
High-precision imaging ensures that every tiny defect is detected.







Large Metal Parts Measurement and Inspection



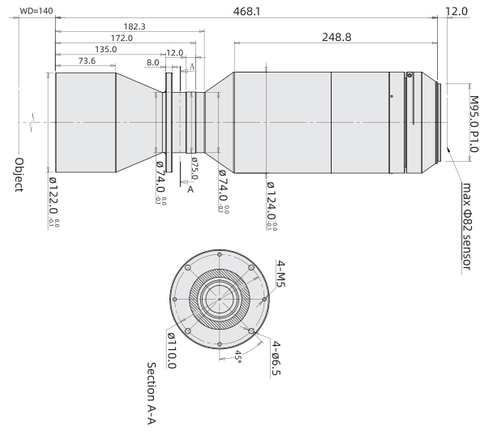


Cylindrical side shot by line scan lens

DTCA23K-93.7-M95-AL

Adjustable Back Focal Length | Precision Measurement | M95 Mount

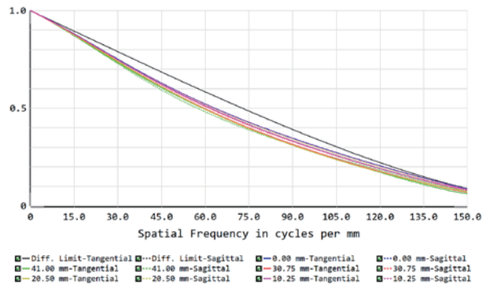
Mag.(x)	0.875	F/#	9.5
CCD (Ømm)	23K	I/O (mm)	620
FOV (Ømm)	93.7	Filter thread size	M95x1.0
NA	0.04601	DoF (mm)	±0.5@F9.5
MTF30 (lp/mm)	>97	Distortion (max) (%)	0.03
WD (mm)	140	Telecentricity (max) (°)	0.08
Image Circle (Φmm)	82	Object side resolution (μm)	7.3



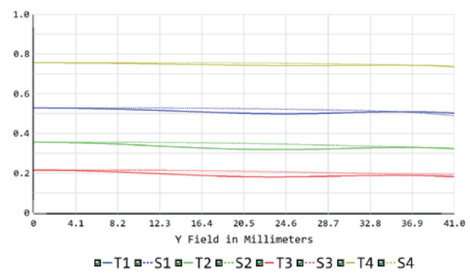


0.875x

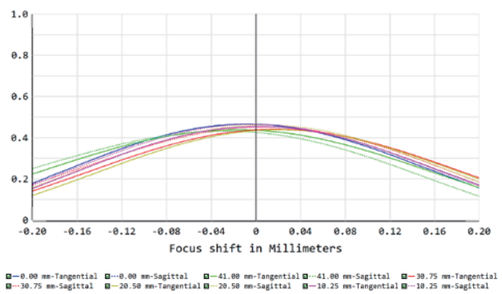
MTF

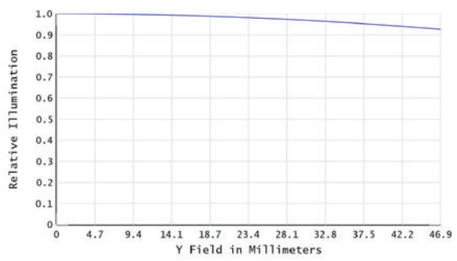


MTF vs. Field



Through Focus MTF





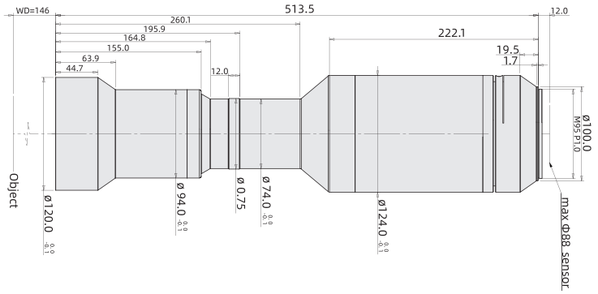
Quick Guide
DTCA35F Series
DTCA175 Series
DTCA185 Series
DTCA210 Series
DTCA23K Series
DTCA24K Series
DTCA230 Series
DTCA121 Series

DTCA23K-63-M95-AL

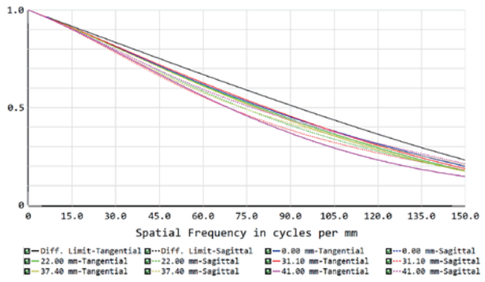
Adjustable Back Focal Length · Precision Measurement · Mount

Mag.(x)	1.3	F/#	7.5
CCD (Ømm)	23K	I/O (mm)	672
FOV (Ømm)	63	Filter thread size	M90x1.0
NA	0.08685	DoF (mm)	±0.2@F7.5
MTF30 (lp/mm)	>124	Distortion (max) (%)	0.03
WD (mm)	146	Telecentricity (max) (°)	0.04
Image Circle (Φmm)	82	Object side resolution (μm)	3.86

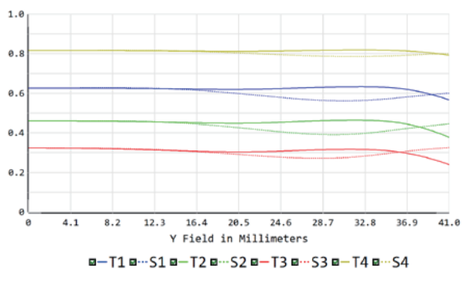
1.3X



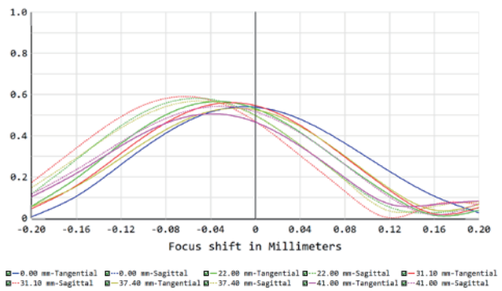
MTF

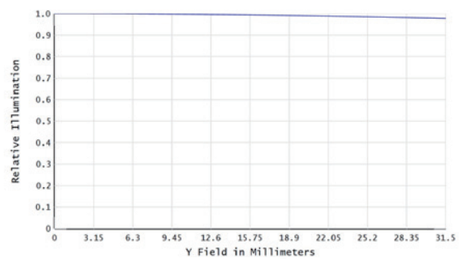


MTF vs. Field



Through Focus MTF



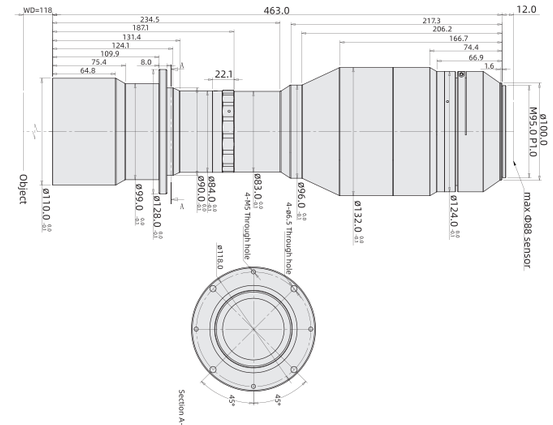


DTCA24K-44-G-M95-AL

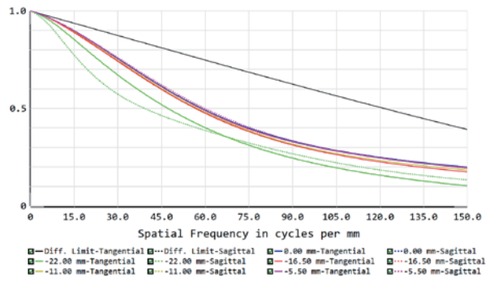
Iris · Adjustable Back Focal Length · Precision Measurement · Mount

Mag.(x)	2.0	F/#	4.8-32
CCD (Ømm)	24K	I/O (mm)	593
FOV (Ømm)	44	Filter thread size	/
NA	0.20814-0.03124	DoF (mm)	0.1-0.6
MTF30 (lp/mm)	64-32	Distortion (max) (%)	0.045
WD (mm)	118	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	88	Object side resolution (μm)	1.6-10.7

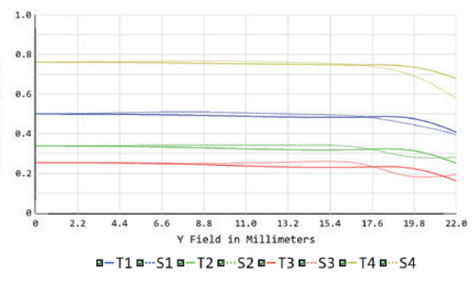
2.0X



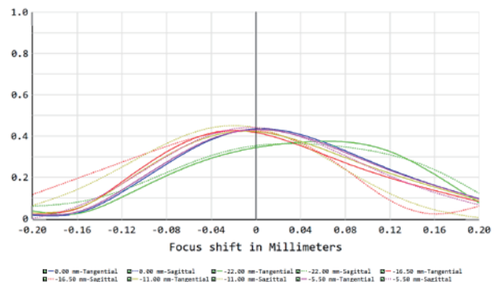
MTF

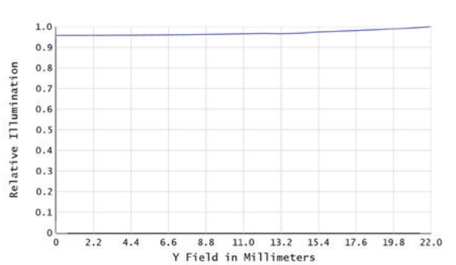


MTF vs. Field



Through Focus MTF



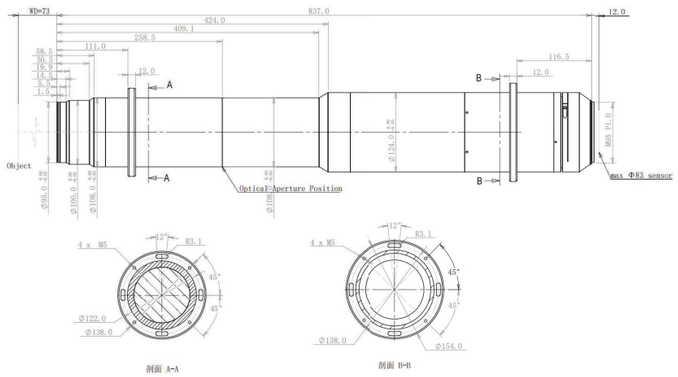


APO-DTCA24K-16.6-M95-AL

NEW

BFL Adjustable Back Focal Length · Precision Measurement · M95 Mount

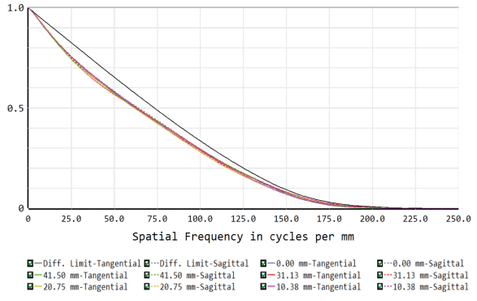
Mag.(x)	5	F/#	9.7
CCD (Ømm)	83	I/O (mm)	922
FOV (Ømm)	16.6	Filter thread size	M95×1.0
NA	0.25	DoF (mm)	0.03
MTF30 (lp/mm)	>97	Distortion (max) (%)	0.05
WD (mm)	73	Telecentricity (max) (°)	0.22
Image Circle (Φmm)	82	Object side resolution (μm)	1.34



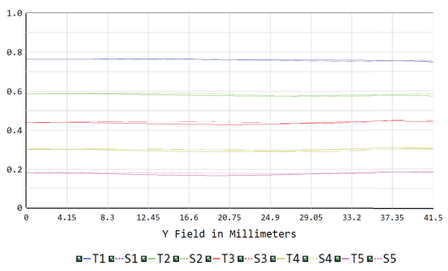


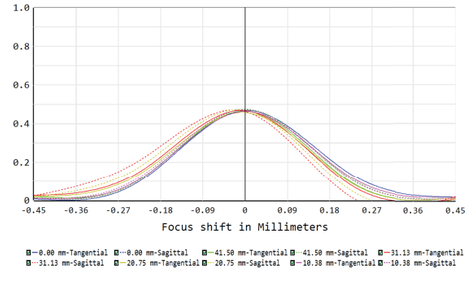
5X

MTF



MTF vs. Field



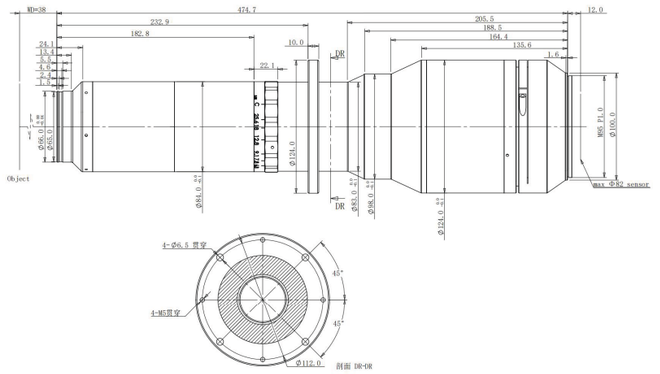


APO-DTCA24K-24.6-G-M95-AL

NEW

Iris · BFL Adjustable Back Focal Length · Precision Measurement · M95 Mount

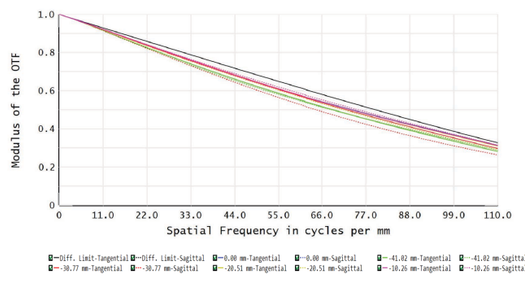
Mag.(x)	3.33	F/#	6.7~32
CCD (Ømm)	82	I/O (mm)	524.7
FOV (Ømm)	24.6	Filter thread size	M95×1.0
NA	0.249~0.05	DoF (mm)	0.048~0.23
MTF30 (lp/mm)	66~32	Distortion (max) (%)	0.035
WD (mm)	38	Telecentricity (max) (°)	0.18
Image Circle (Φmm)	82	Object side resolution (μm)	1.35~6.45



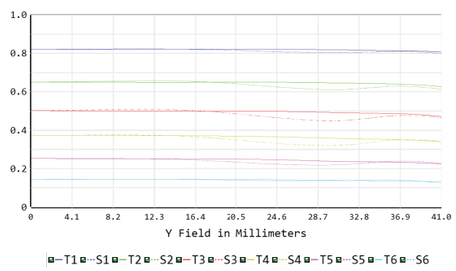


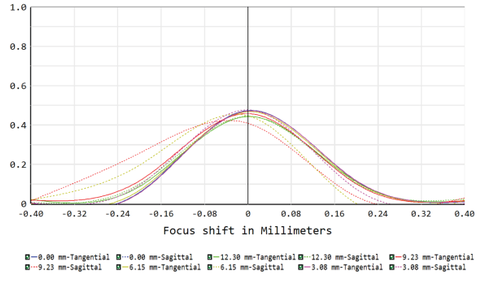
3.33X

MTF



MTF vs. Field

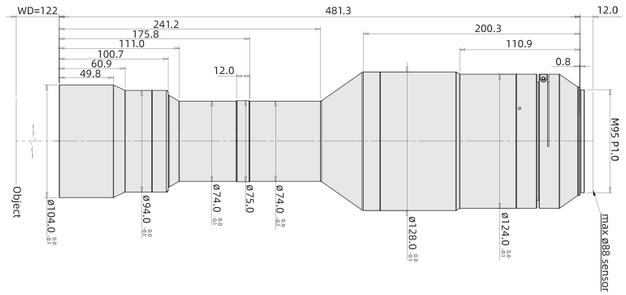




DTCA24K-58.7-M95-AL

Adjustable Back Focal Length · Precision Measurement · Mount

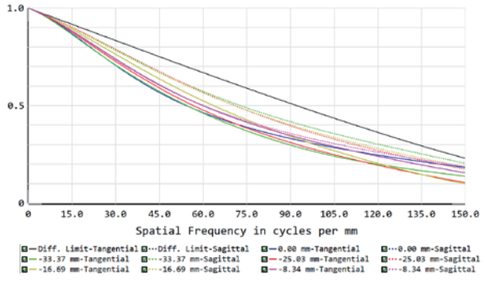
Mag.(x)	1.5	F/#	7.3
CCD (Ømm)	24K	I/O (mm)	615
FOV (Ømm)	58.7	Filter thread size	/
NA	0.10244	DoF (mm)	±0.15@F7.3
MTF30 (lp/mm)	118	Distortion (max) (%)	0.05
WD (mm)	122	Telecentricity (max) (°)	0.04
Image Circle (Φmm)	88	Object side resolution (μm)	3.3



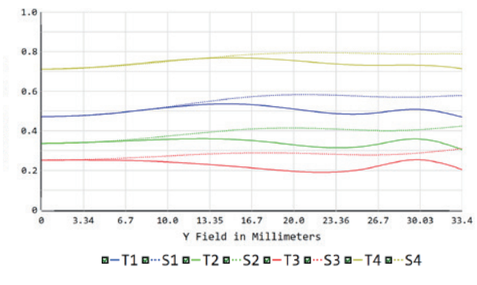


1.5x

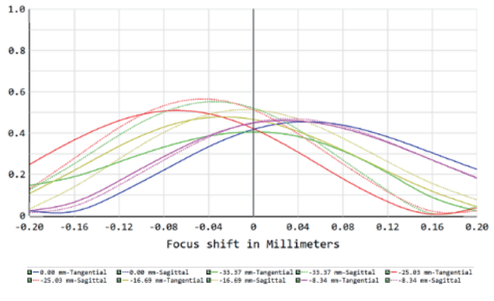
MTF

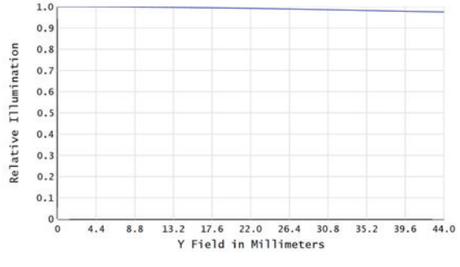


MTF vs. Field



Through Focus MTF

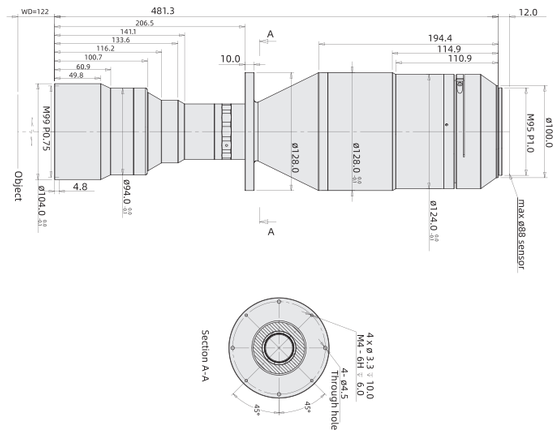




DTCA24K-58.7-G-M95-AL

Iris · Adjustable Back Focal Length · Precision Measurement · Mount

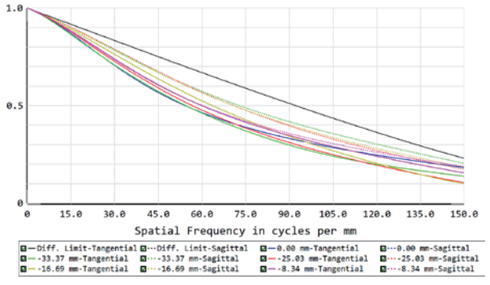
Mag.(x)	1.5	F/#	7.3-32
CCD (Ømm)	24K	I/O (mm)	615
FOV (Ømm)	58.7	Filter thread size	M99 P0.75
NA	0.10244-0.02342	DoF (mm)	0.3-1.1
MTF30 (lp/mm)	117-31	Distortion (max) (%)	0.05
WD (mm)	122	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	88	Object side resolution (μm)	3.3-1.1



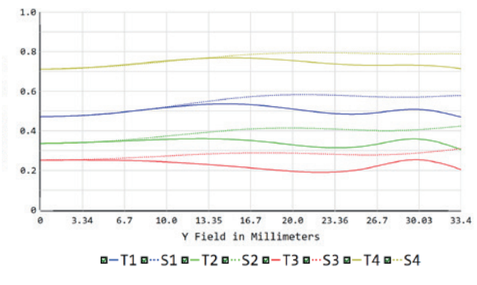


1.5x

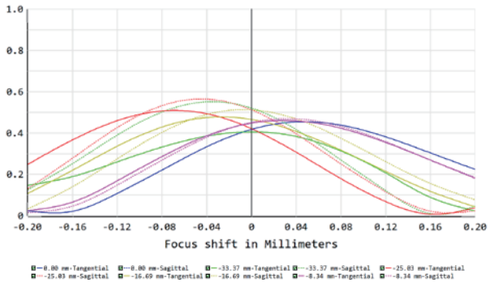
MTF

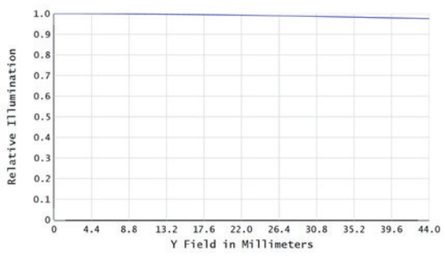


MTF vs. Field



Through Focus MTF



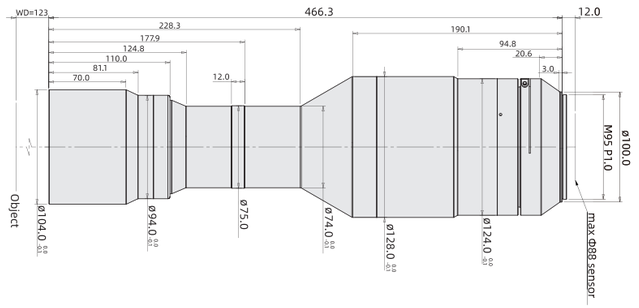


DTCA24K-62-M95-AL

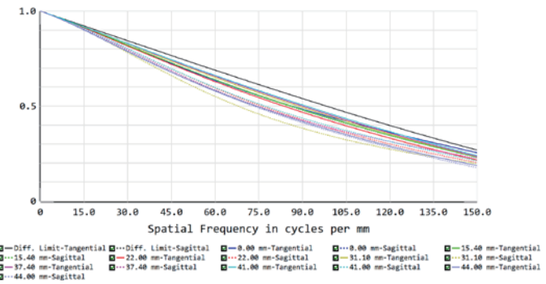
Adjustable Back Focal Length · Precision Measurement · Mount

Mag.(x)	1.419	F/#	7.0
CCD (Ømm)	24K	I/O (mm)	601
FOV (Ømm)	62	Filter thread size	M95 P1.0
NA	0.10066	DoF (mm)	±0.1@F7.0
MTF30 (lp/mm)	>115	Distortion (max) (%)	<0.1
WD (mm)	123	Telecentricity (max) (°)	0.05
Image Circle (Ømm)	88	Object side resolution (μm)	3.3

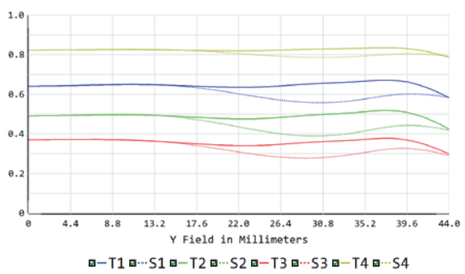
1.419X



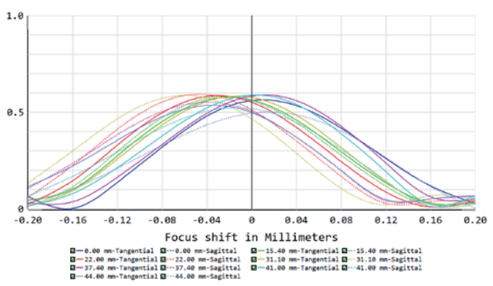
MTF

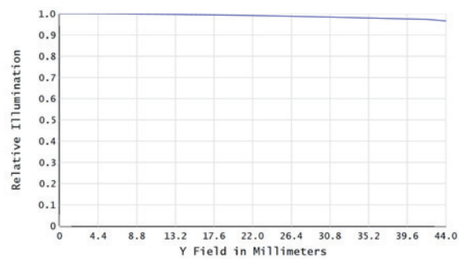


MTF vs. Field



Through Focus MTF



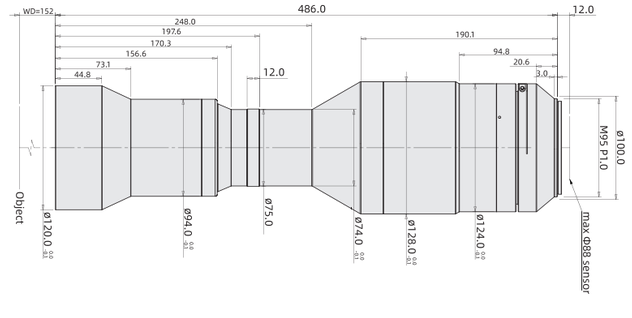


DTCA24K-75-M95-AL

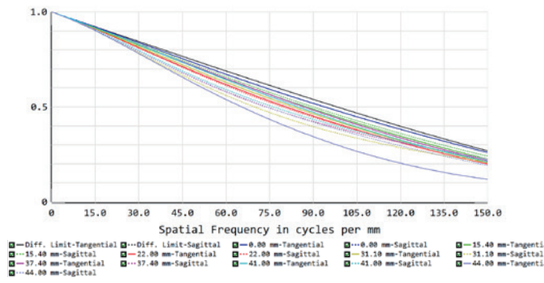
Adjustable Back Focal Length · Precision Measurement · Mount

Mag.(x)	1.173	F/#	7.0
CCD (Ømm)	24K	I/O (mm)	650
FOV (Ømm)	75	Filter thread size	M95 P1.0
NA	0.08334	DoF (mm)	±0.2@F7.0
MTF30 (lp/mm)	>118	Distortion (max) (%)	<0.01
WD (mm)	152	Telecentricity (max) (°)	0.05
Image Circle (Φmm)	88	Object side resolution (μm)	4.0

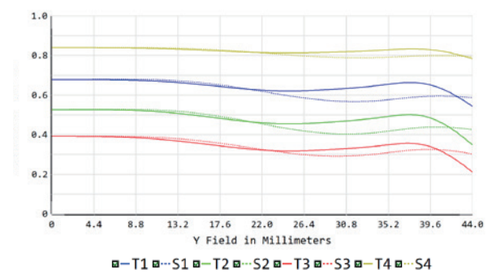
1.173X



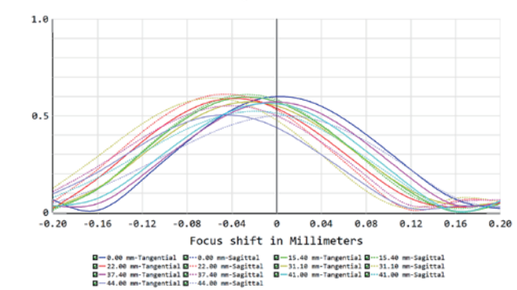
MTF

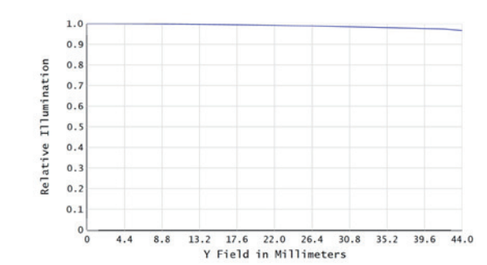


MTF vs. Field



Through Focus MTF

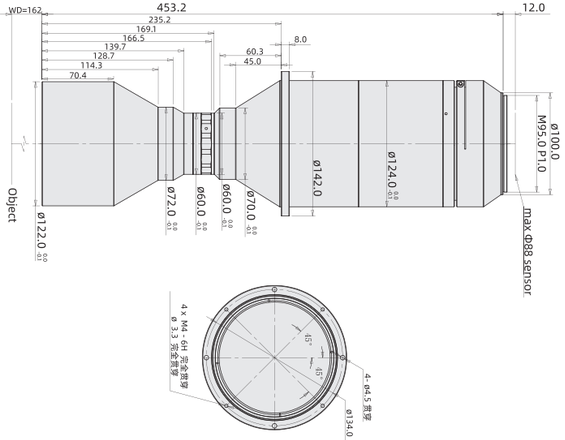




DTCA24K-88-G-M95-AL

Iris · Adjustable Back Focal Length · Precision Measurement · Mount

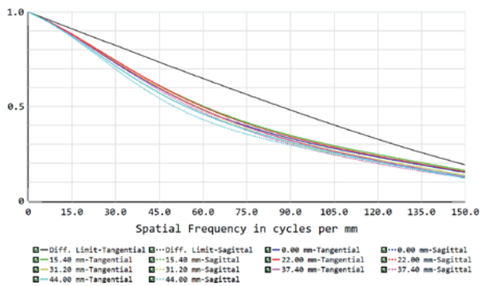
Mag.(x)	1.0	F/#	8-32
CCD (Ømm)	24K	I/O (mm)	627
FOV (Ømm)	88	Filter thread size	/
NA	0.0625-0.0227	DoF (mm)	0.64-1.76
MTF30 (lp/mm)	90-41	Distortion (max) (%)	0.01
WD (mm)	162	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	88	Object side resolution (μm)	5.368-14.762



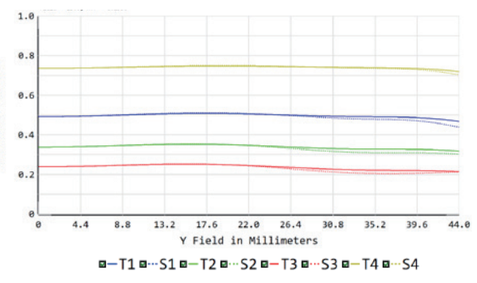


1.0x

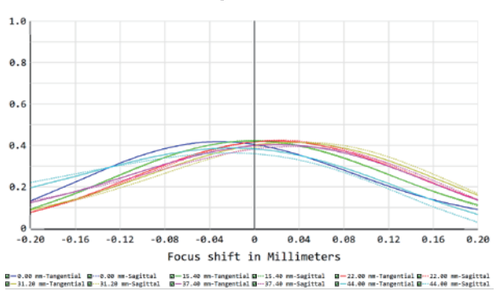
MTF

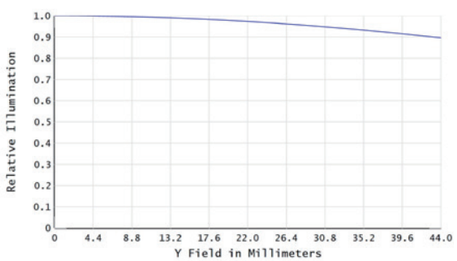


MTF vs. Field



Through Focus MTF

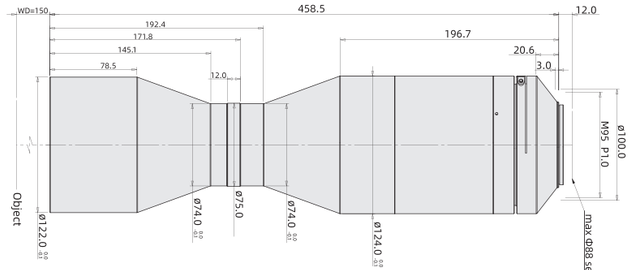




DTCA24K-92-M95-AL

Adjustable Back Focal Length · Precision Measurement · Mount

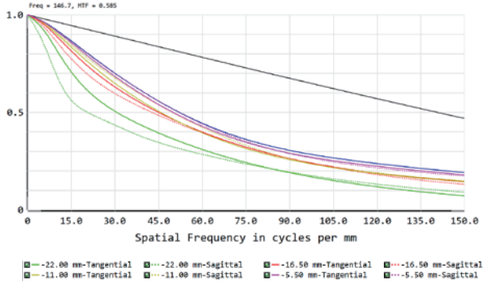
Mag.(x)	0.96	F/#	8.0
CCD (Ømm)	24K	I/O (mm)	621
FOV (Ømm)	91.6	Filter thread size	M95 P1.0
NA	0.06238	DoF (mm)	±0.3@F8.0
MTF30 (lp/mm)	>90	Distortion (max) (%)	<0.1
WD (mm)	150	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	88	Object side resolution (μm)	5.4



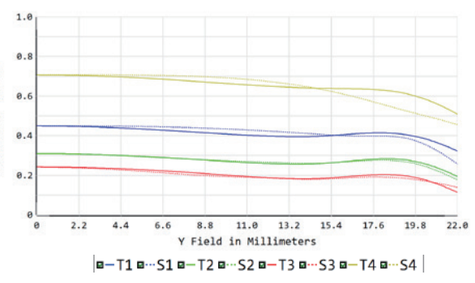


0.96x

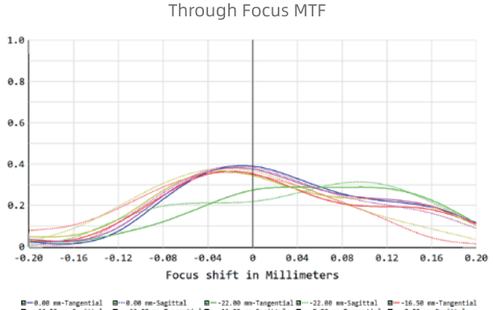
MTF

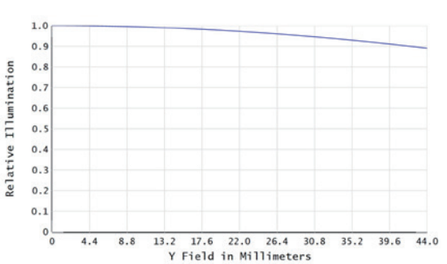


MTF vs. Field



Through Focus MTF





C-Mount

High-performance bi-telecentric lens

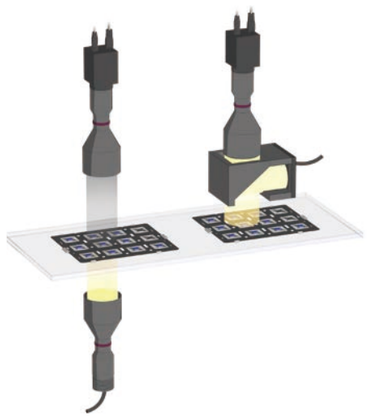
- Perfectly matches 24K 88mm line scan cameras.
- Ultra-high resolution, ultra-high contrast, and super-low distortion make it ideal for image stitching.
- Optimal configurations: 0.7-2x magnification, 102-150mm working distance, and Φ44-95mm FOV (based on application experience).



Applications

IC Dimensional Inspection

With a telecentric illumination, the lens precisely measures IC dimensions and detects surface scratches and defects with the front lighting.

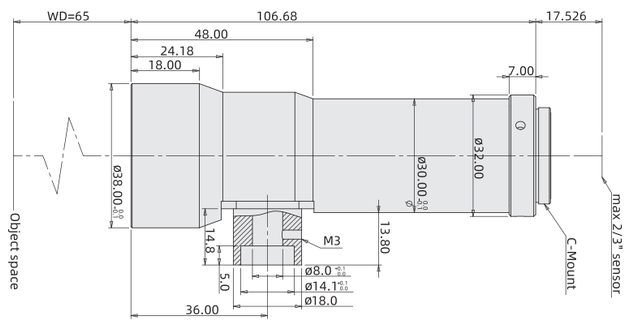


DTCA230-22C

Coaxial Light | Precision Measurement | C Mount

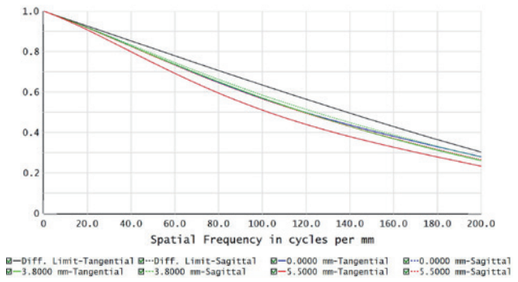
0.5x

Mag.(x)	0.5	F/#	5.0
CCD (Ømm)	2/3"	I/O (mm)	189
FOV (Ømm)	22	Filter thread size	M34 P0.5
NA	0.05	DoF (mm)	±0.8@F5.0
MTF30 (lp/mm)	>160	Distortion (max) (%)	<0.1
WD (mm)	65	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	11	Object side resolution (μm)	6.71

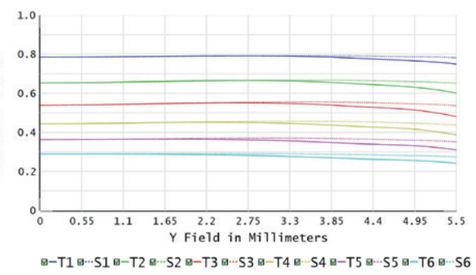




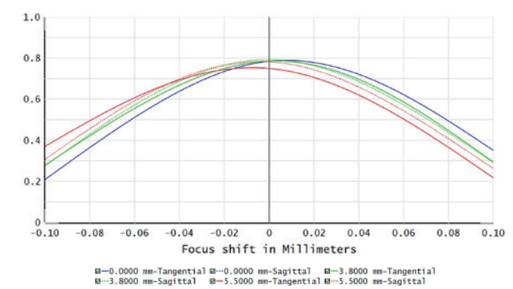
MTF

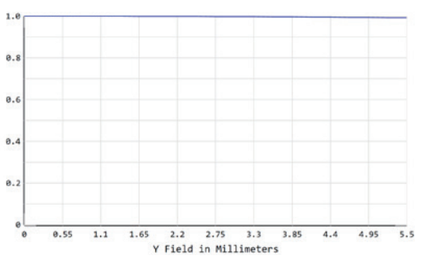


MTF vs. Field



Through Focus MTF

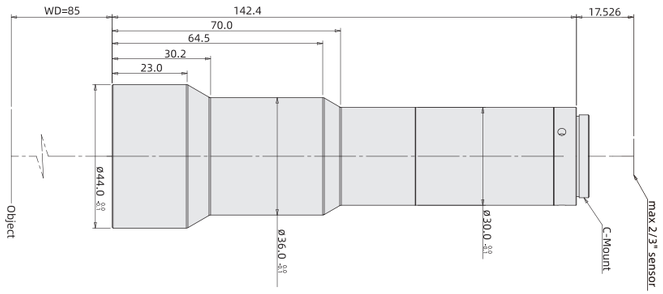




DTCA230-27.5

Precision Measurement · Mount

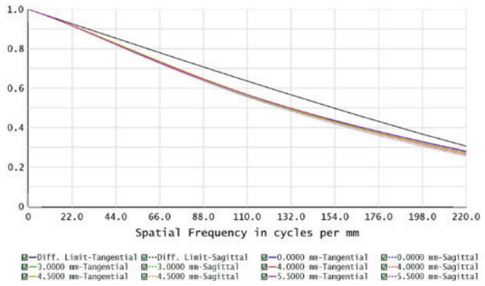
Mag.(x)	0.4	F/#	4.5
CCD (Ømm)	2/3"	I/O (mm)	245
FOV (Ømm)	27.5	Filter thread size	M34 P0.5
NA	0.04439	DoF (mm)	±1.1@F4.5
MTF30 (lp/mm)	>205	Distortion (max) (%)	<0.03
WD (mm)	85	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	11	Object side resolution (μm)	7.6



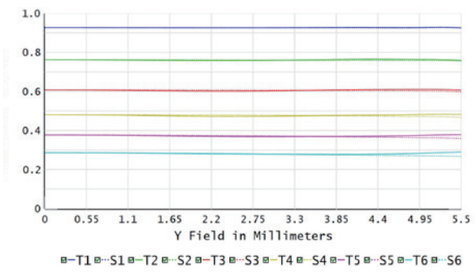


0.4x

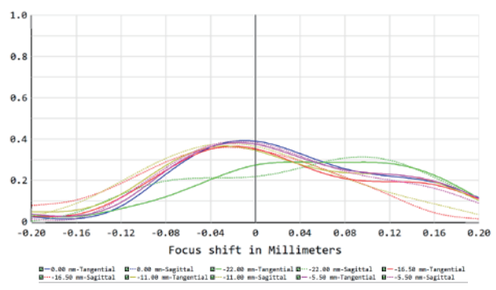
MTF



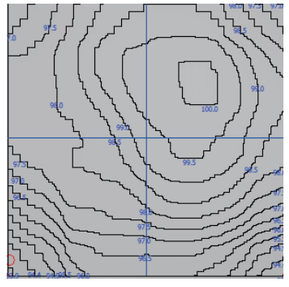
MTF vs. Field



Through Focus MTF



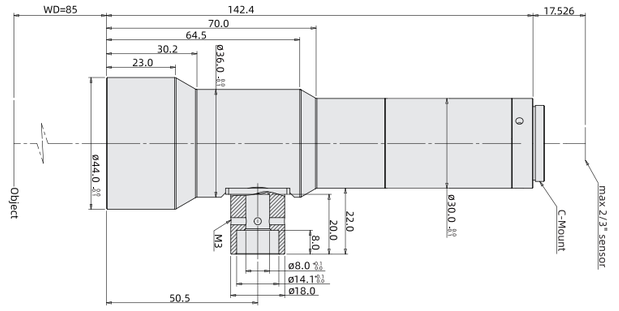
Relative Illumination 91%



DTCA230-27.5C

Coaxial Light · Precision Measurement · Mount

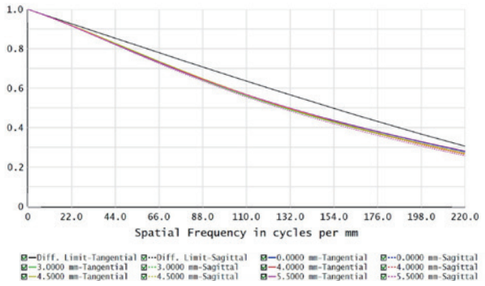
Mag.(x)	0.4	F/#	4.5
CCD (Ømm)	2/3"	I/O (mm)	245
FOV (Ømm)	27.5	Filter thread size	M34 P0.5
NA	0.04439	DoF (mm)	±1.1@F4.5
MTF30 (lp/mm)	>205	Distortion (max) (%)	<0.03
WD (mm)	85	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	11	Object side resolution (μm)	7.6



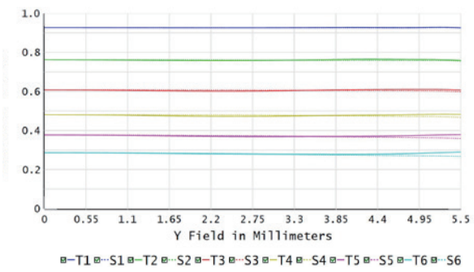


0.4x

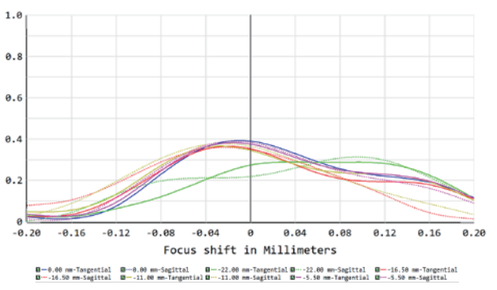
MTF



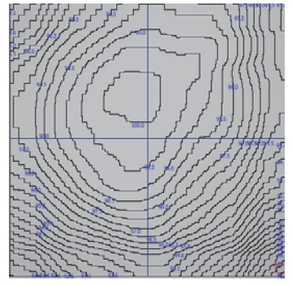
MTF vs. Field



Through Focus MTF



Relative Illumination 78%

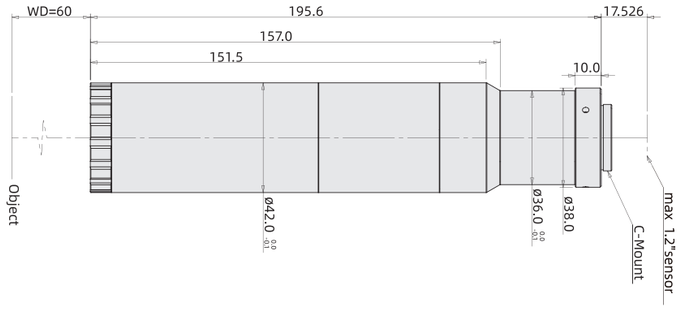


DTCA121-5V2

APO · Precision Measurement · Mount

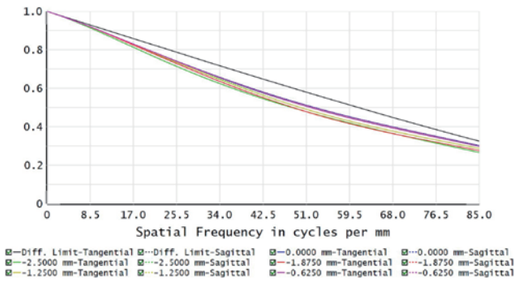
Mag.(x)	4.0	F/#	9.9
CCD (Ømm)	1.2"	I/O (mm)	273
FOV (Ømm)	5.0	Lateral chromatic aberration	0.055
NA	0.2	DoF (mm)	±0.025@F9.9
MTF30 (lp/mm)	95	Distortion (max) (%)	0.05
WD (mm)	60	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	20	Object side resolution (μm)	1.7

4.0x

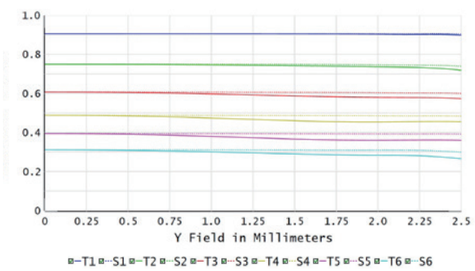




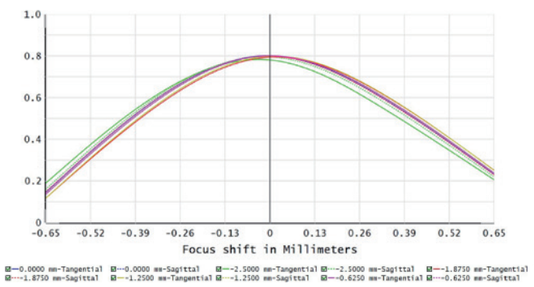
MTF



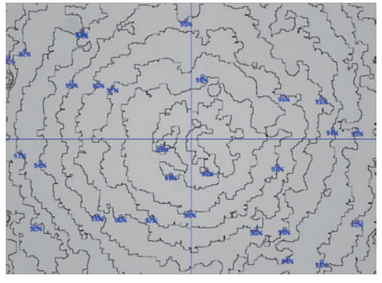
MTF vs. Field



Through Focus MTF



Relative Illumination 92%

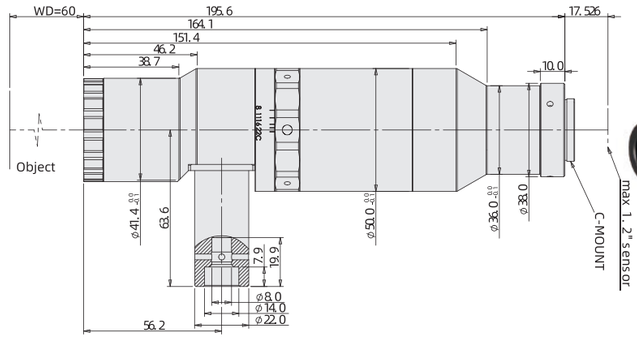


DTCA121-5C-GV2.1

Coaxial Light · Iris · APO · Precision Measurement · Mount

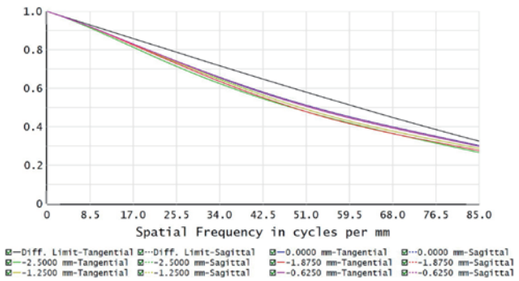
Mag.(x)	4.0	F/#	9.9-32
CCD (Ømm)	1.2"	I/O (mm)	273
FOV (Ømm)	5.0	Lateral chromatic aberration	0.055
NA	0.2-0.06232	DoF (mm)	0.05-0.16
MTF30 (lp/mm)	95-31	Distortion (max) (%)	0.0005
WD (mm)	60	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	20	Object side resolution (μm)	1.7-5.4

4.0x

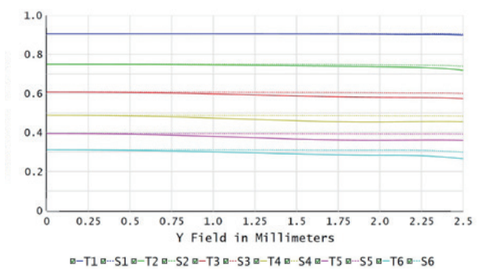




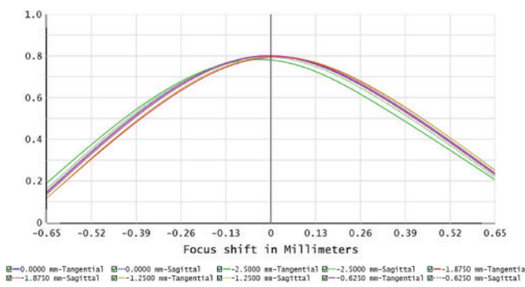
MTF



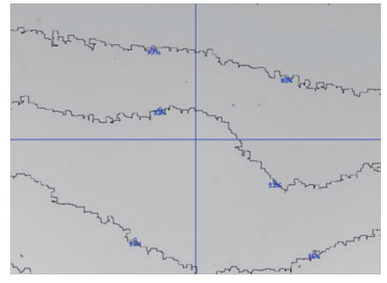
MTF vs. Field



Through Focus MTF



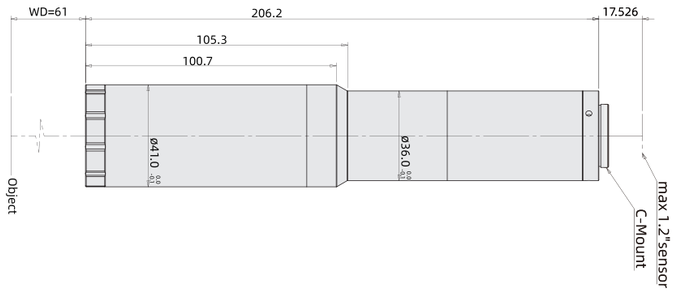
Relative Illumination 90%



DTCA121-6.6

Precision Measurement · Mount

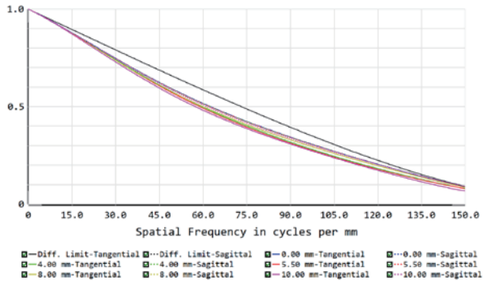
Mag.(x)	3.025	F/#	9.4
CCD (Ømm)	1.2"	I/O (mm)	285
FOV (Ømm)	6.6	Filter thread size	M38 P0.5
NA	0.16	DoF (mm)	±0.05@F6.6
MTF30 (lp/mm)	>96	Distortion (max) (%)	0.1
WD (mm)	61	Telecentricity (max) (°)	0.01
Image Circle (Φmm)	20	Object side resolution (μm)	2.1



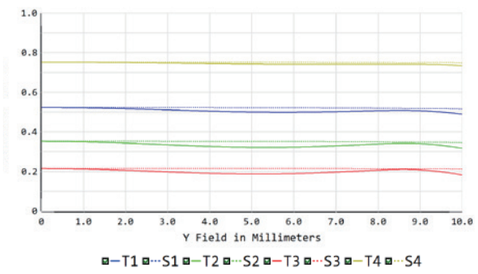


3.025x

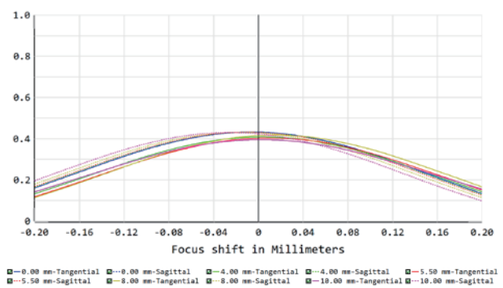
MTF



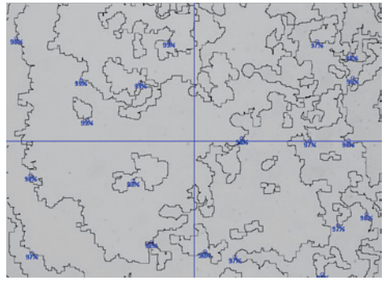
MTF vs. Field



Through Focus MTF



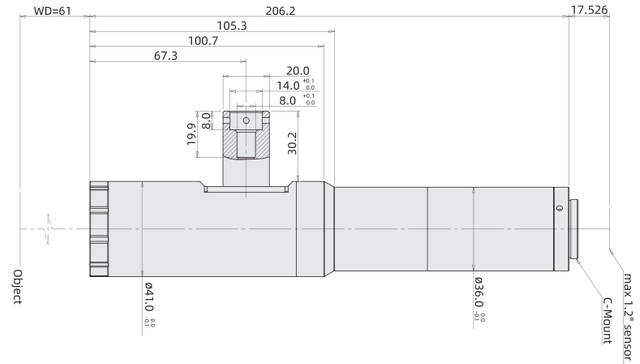
Relative Illumination 95%



DTCA121-6.6C

Coaxial Light · Precision Measurement · Mount

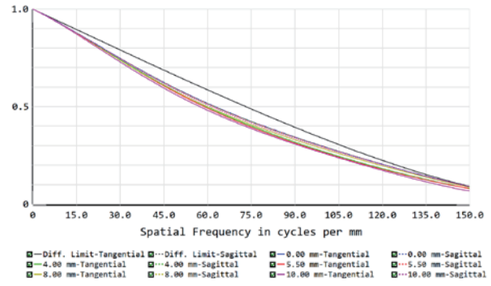
Mag.(x)	3.025	F/#	9.4
CCD (Ømm)	1.2"	I/O (mm)	285
FOV (Ømm)	6.6	Filter thread size	M38 P0.5
NA	0.16	DoF (mm)	±0.05@F6.6
MTF30 (lp/mm)	>96	Distortion (max) (%)	0.1
WD (mm)	61	Telecentricity (max) (°)	0.01
Image Circle (Φmm)	20	Object side resolution (μm)	2.1



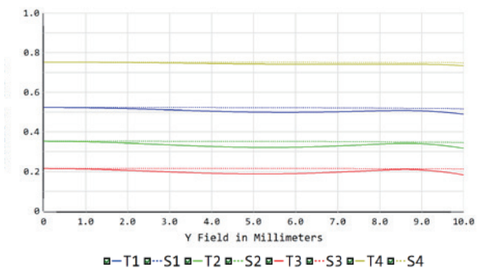


3.025x

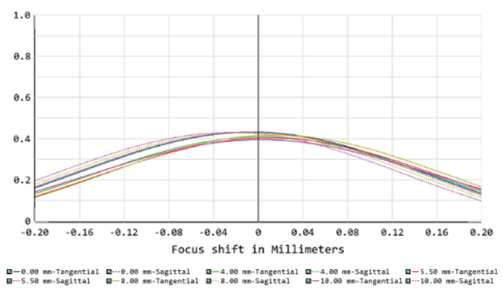
MTF



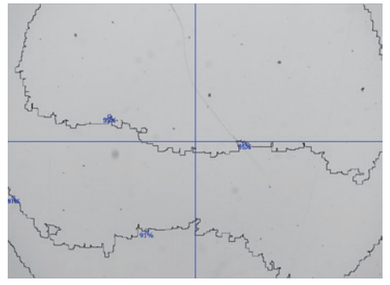
MTF vs. Field



Through Focus MTF



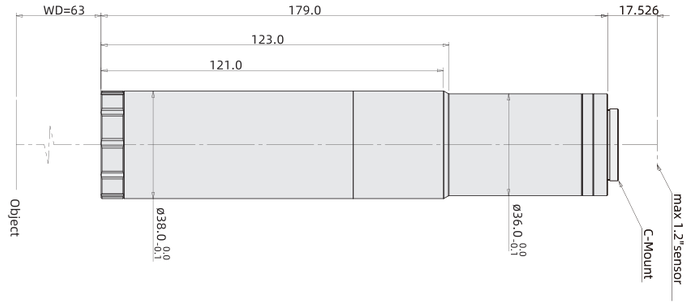
Relative Illumination 91%



DTCA121-10

Precision Measurement · Mount

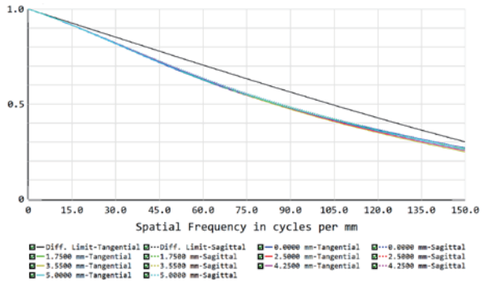
Mag.(x)	2.0	F/#	6.6
CCD (Ømm)	1.2"	I/O (mm)	260
FOV (Ømm)	10	Filter thread size	M36 P0.5
NA	0.15	DoF (mm)	±0.07@F6.6
MTF30 (lp/mm)	>142	Distortion (max) (%)	0.02
WD (mm)	63	Telecentricity (max) (°)	0.03
Image Circle (Φmm)	20	Object side resolution (μm)	2.2



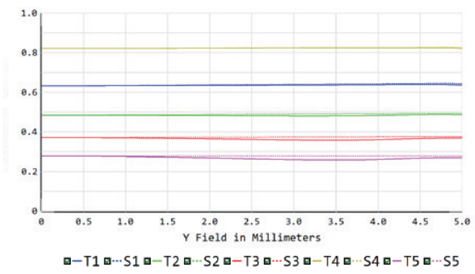


2.0x

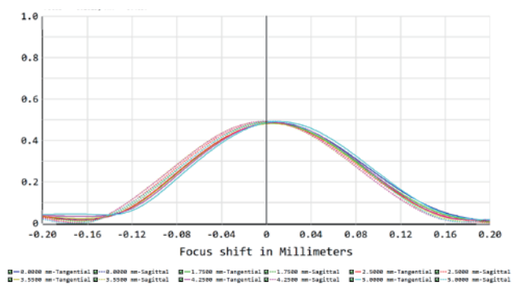
MTF



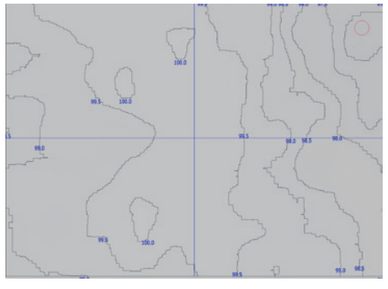
MTF vs. Field



Through Focus MTF



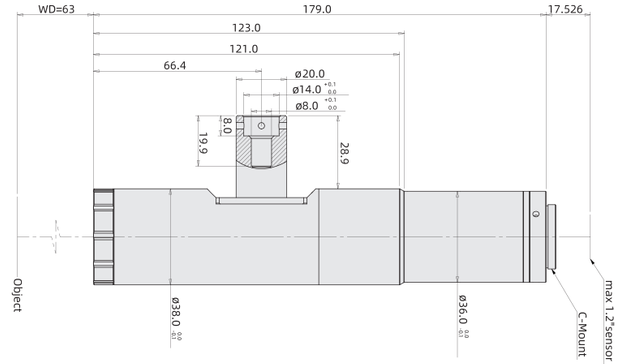
Relative Illumination 96%



DTCA121-10C

Coaxial Light · Precision Measurement · Mount

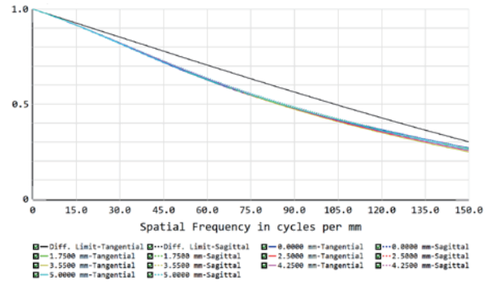
Mag.(x)	2.0	F/#	6.6
CCD (Ømm)	1.2"	I/O (mm)	260
FOV (Ømm)	10	Filter thread size	M36 P0.5
NA	0.15	DoF (mm)	±0.07@F6.6
MTF30 (lp/mm)	>142	Distortion (max) (%)	0.02
WD (mm)	63	Telecentricity (max) (°)	0.03
Image Circle (Φmm)	20	Object side resolution (μm)	2.2



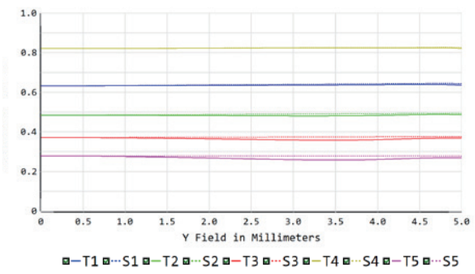


2.0x

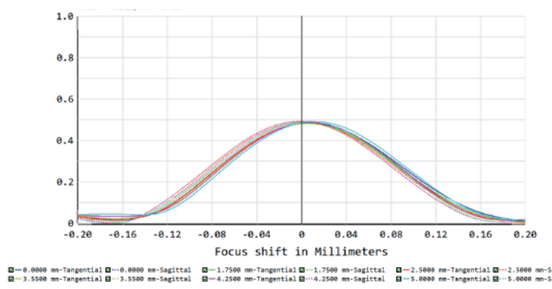
MTF



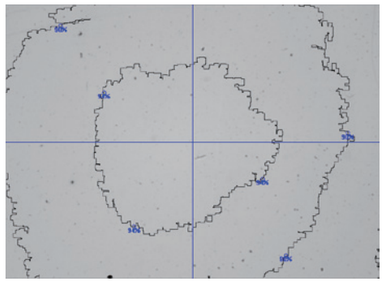
MTF vs. Field



Through Focus MTF



Relative Illumination 90%

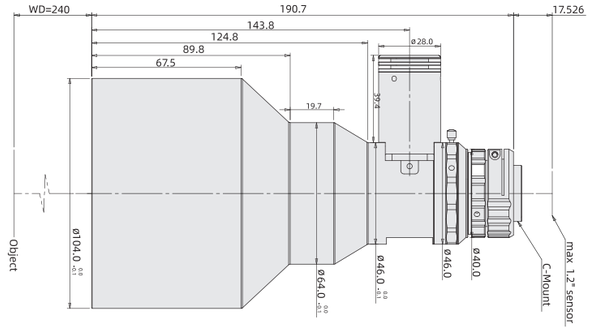


DTCA121-80C-G-AL

Adjustable Back Focal Length · Coaxial Light · Iris · APO · Precision Measurement · Mount

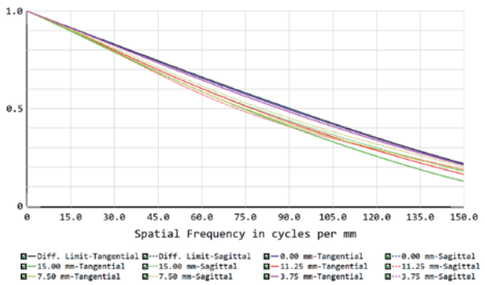
Mag.(x)	0.25	F/#	6.0
CCD (Ømm)	1.2"	I/O (mm)	448.2
FOV (Ømm)	80	Filter thread size	M36 P0.5
NA	0.02091	DoF (mm)	±0.07@F6.6
MTF30 (lp/mm)	>142	Distortion (max) (%)	0.02
WD (mm)	240	Telecentricity (max) (°)	0.03
Image Circle (Φmm)	20	Lateral chromatic aberration	0.038
Length (mm)	190.7	Object side resolution (μm)	16.1

0.25x

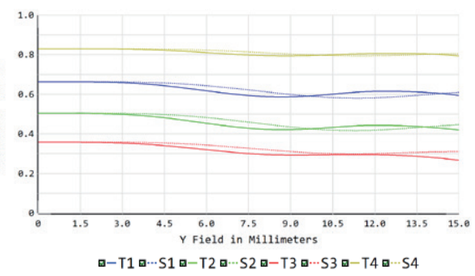




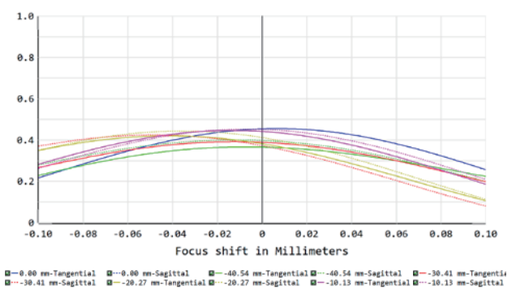
MTF



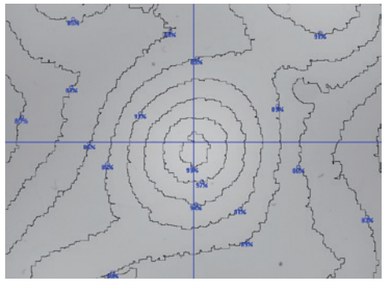
MTF vs. Field



Through Focus MTF



Relative Illumination 80%

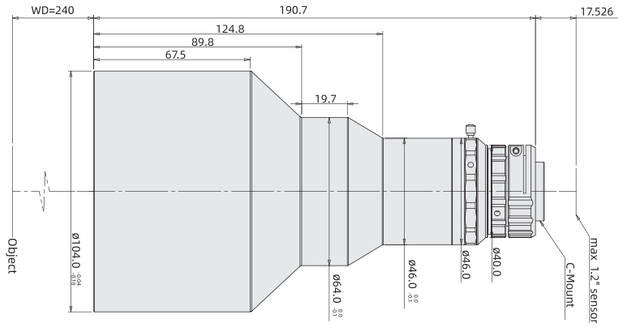


DTCA121-80-G-AL

Adjustable Back Focal Length · Iris · APO · Precision Measurement · Mount

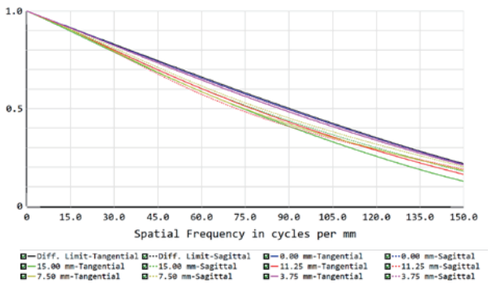
Mag.(x)	0.25	F/#	6.0
CCD (Ømm)	1.2"	I/O (mm)	448.2
FOV (Ømm)	80	Filter thread size	M36 P0.5
NA	0.02091	DoF (mm)	±0.07@F6.6
MTF30 (lp/mm)	>142	Distortion (max) (%)	0.02
WD (mm)	240	Telecentricity (max) (°)	0.03
Image Circle (Φmm)	20	Lateral chromatic aberration	0.038
Length (mm)	190.7	Object side resolution (μm)	16.1

0.25x

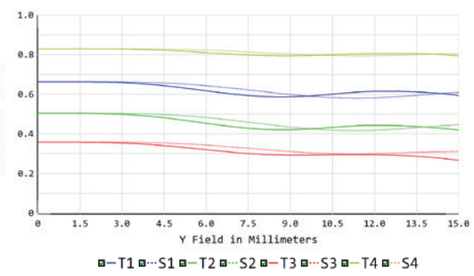




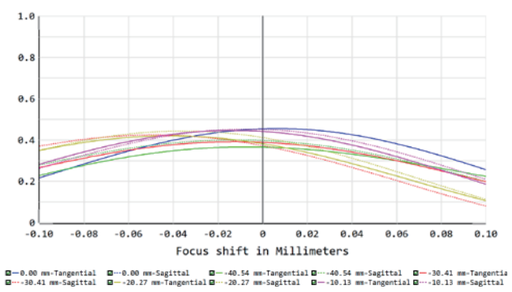
MTF



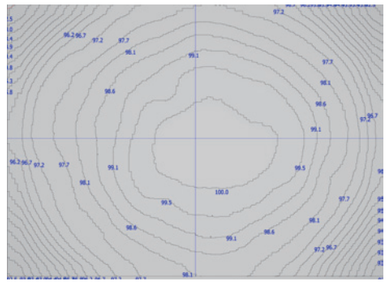
MTF vs. Field



Through Focus MTF



Relative Illumination 88%



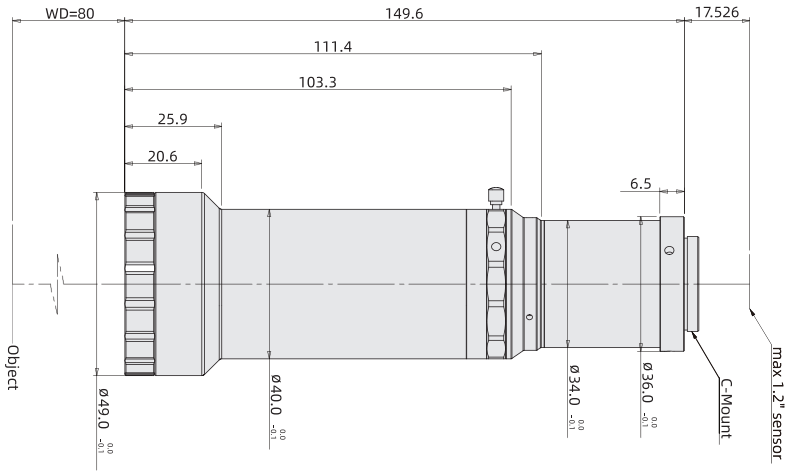
DTCA121-20-G

Iris | Precision Measurement | Mount

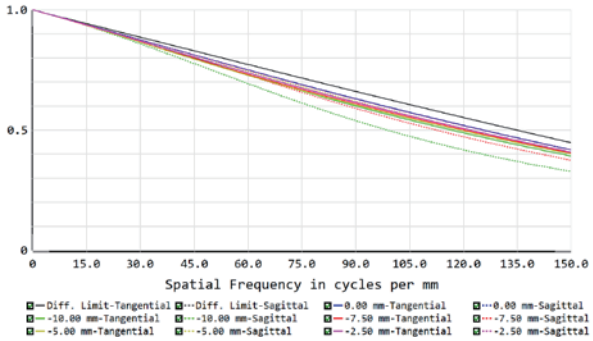
Mag.(x)	1.0	F/#	5.3-32
CCD (Ømm)	1.2"	I/O (mm)	247
FOV (Ømm)	20	Filter thread size	/
NA	0.095-0.0156	DoF (mm)	0.4-2.56
MTF30 (lp/mm)	171-32.5	Distortion (max) (%)	0.045
WD (mm)	80	Telecentricity (max) (°)	0.1
Image Circle (Φmm)	20	Object side resolution (μm)	3.5-21.472



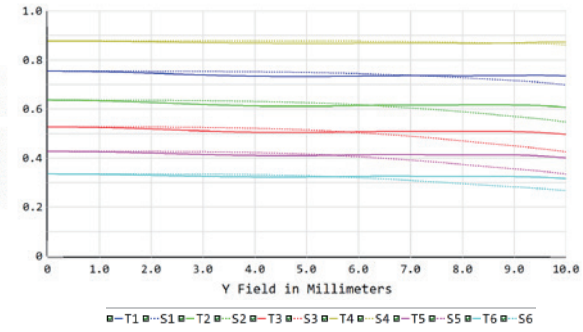
1.0x



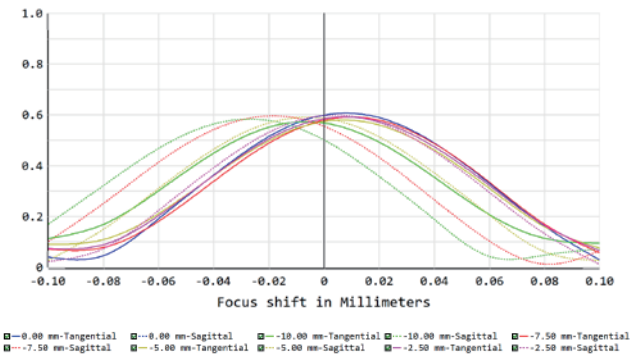
MTF



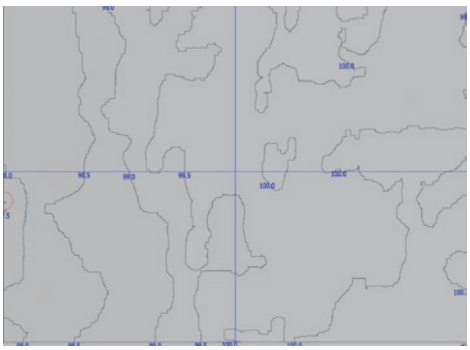
MTF vs. Field



Through Focus MTF



Relative Illumination 96%



Quick Guide
DTCA35F Series
DTCA175 Series
DTCA185 Series
DTCA210 Series
DTCA23K Series
DTCA24K Series
DTCA230 Series
DTCA121 Series