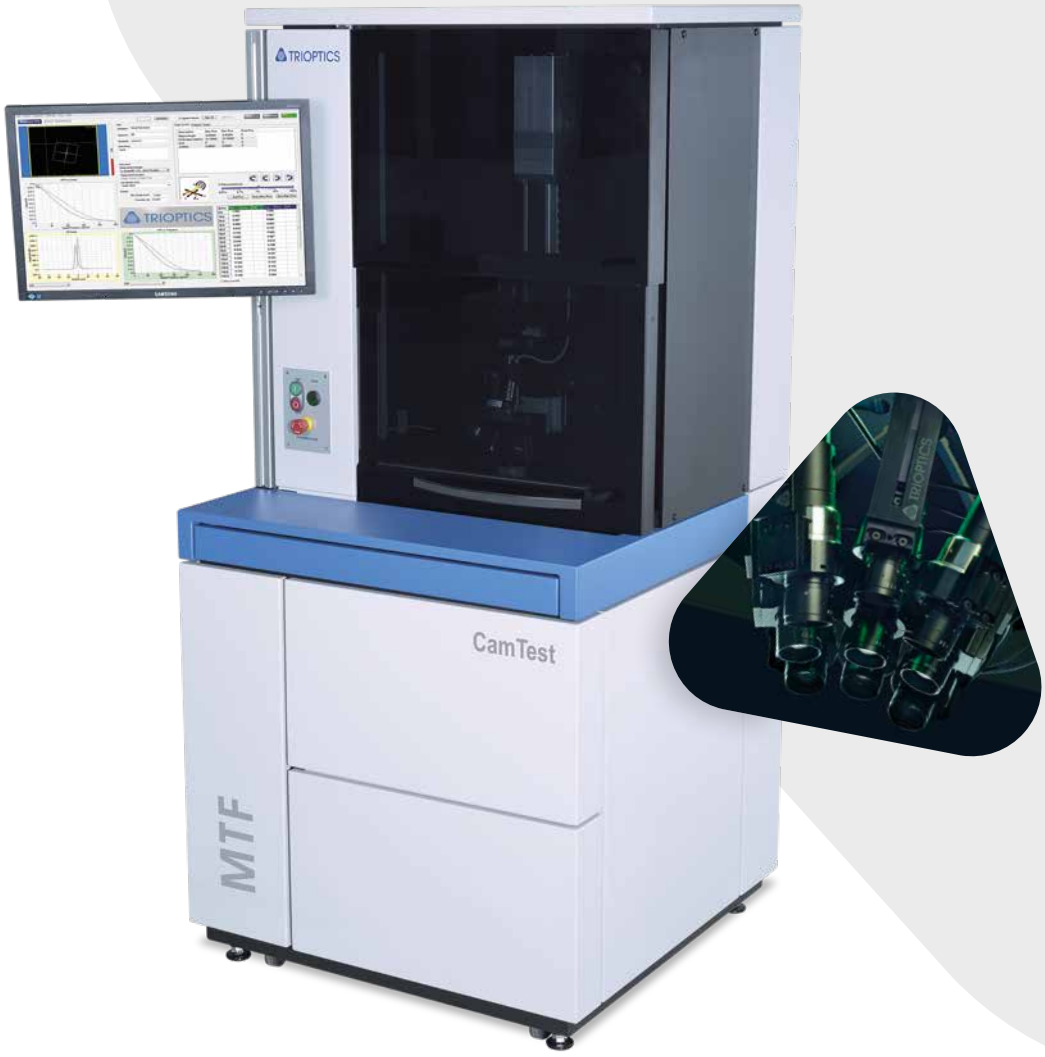
TRIOPTICS

See the Difference.

Image Quality Control of Camera Modules

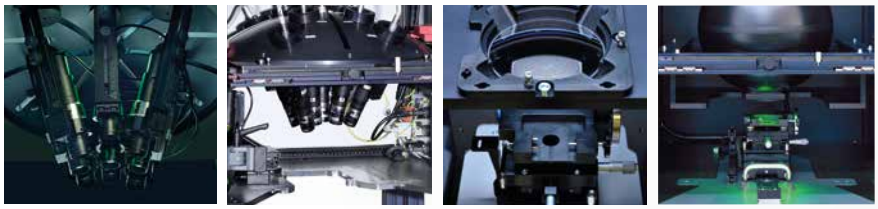
CamTest MTF, Focus, Chart and Spectral



CamTest

The CamTest system allows fast and comprehensive measurements and quality control for camera modules. Through the use of different innovative object generators, a variety of optical, opto-mechanical, color and sensor measurement parameters are available.

Technical Data at a Glance



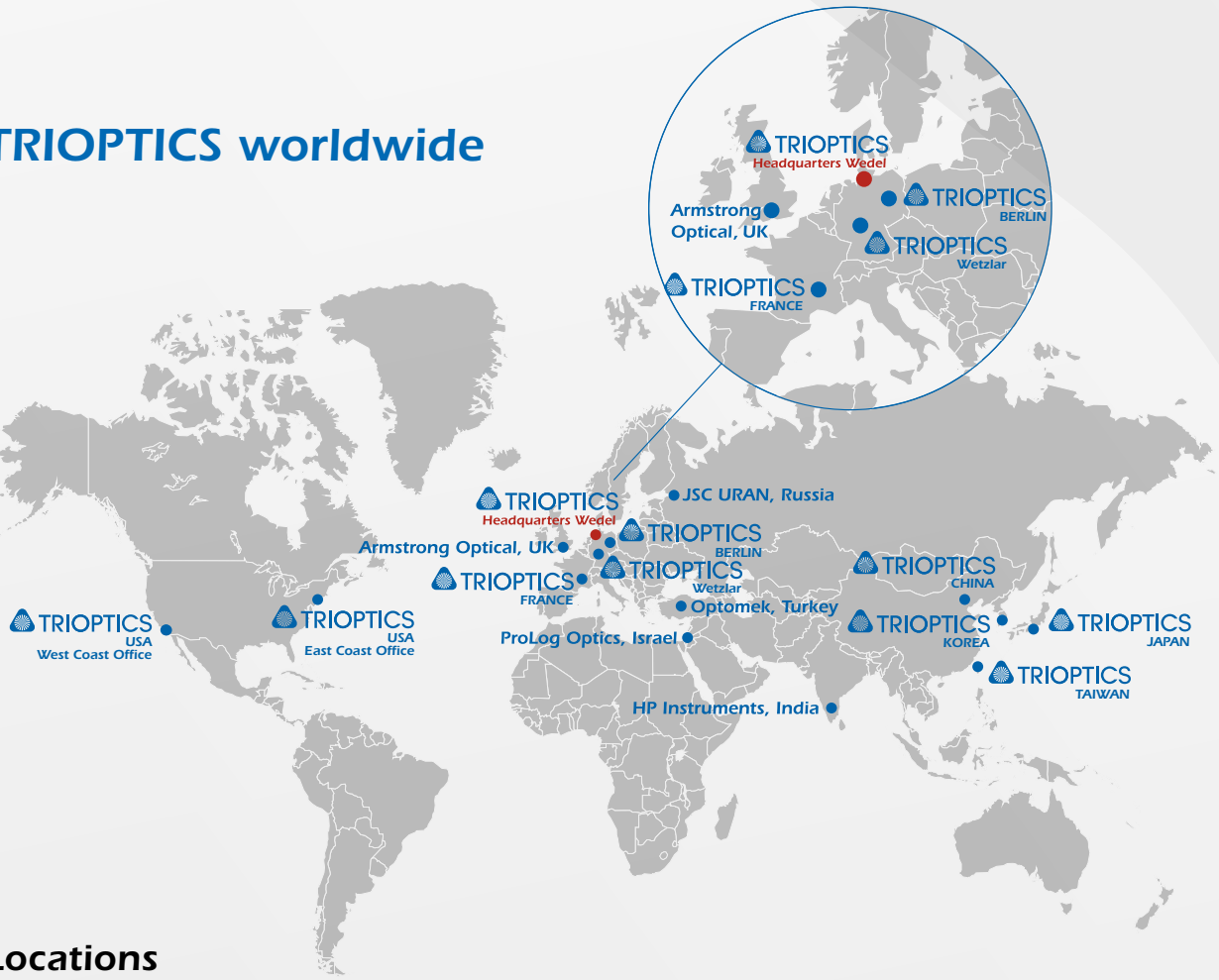
	CamTest MTF	CamTest Focus	CamTest Chart	CamTest Spectral
Systematization				
Description	Inline solution (measurement chamber) or Standalone			
Application	End-of-line production tester			
Target Projection	Fixed collimators	Focussing collimators	Test chart (with or without relay lens)	Integrating sphere
Measurement Parameters				
MTF, LSF, SFR, ESF	●	●	○	–
Tilt, Defocus, DOF	–	●	–	–
Boresight Shift, Roll	●	●	●	–
Optical Centre	–	–	●	–
Distortion, EFL	–	–	●	–
Defect Pixel, Particle, FPN	–	–	○	●
OECF, Dynamic Range, White Balance, SNR	–	–	○	●
Relative Illumination	–	–	○	●
Color Rendering, Crosstalk	–	–	○	●
Spectral Response	–	–	–	●

● core parameter · ○ optional parameter · – not available

	CamTest MTF	CamTest Focus	CamTest Chart	CamTest Spectral
Technical Specifications				
Field of view	Up to +/- 70° diagonal field of view (up to +/- 90° after individual clarification)	Up to +/- 70° diagonal field of view (up to +/- 90° after individual clarification)	Up to +/- 35° diagonal field of view (up to +/- 50° after individual clarification)	Up to +/- 70° diagonal field of view (up to +/- 80° after individual clarification)
Standard illumination wavelength (others on request)	White LED colour temperature 6500 K	White LED colour temperature 6500 K	Backlit LED green narrow spectrum	Adjustable spectrum 420 – 780 nm
Sample effective focal length	1 – 12 mm	1.8 – 12 mm	1 – 12 mm	1 – 12 mm
Object distance	infinity	1000 mm – infinity	Finite / infinite	1000 mm – infinity
Typ. measurement time	< 2 s	< 15 s	< 5 s	< 5 s particle & defect pixel, < 5 s shading, < 10 s OECF, < 15 s spectral response
Sample diameter / Free aperture	n.a. / < 5 mm	n.a. / < 5 mm	n.a. / < 5 mm	2 – 20 mm / n.a.
Camera interface	Software Development Kit provided enabling to connect customer camera with own framegrabber to all standard interfaces (either MIPI, analog or directly to e. g. USB, FireWire, CamLink, GigE).			
Dimensions				
Depth	653 mm			
Height	1338 mm (measurement chamber), 2200 mm (Standalone)			
Width	604 mm			
Weight (approx.)	200 kg (measurement chamber), 250 kg (Standalone)			
External Supplies				
Voltage	100 – 130 VAC or 220 – 230 VAC			
Power consumption	typ. 100 W – 500 W			
Compressed air	5bar – 7bar (optional for sample fixation)			
External Communication Interface	TCP – IP OPC – UA			

MTF: Modulation Transfer Function, SFR: Spatial Frequency Response,
OECF: Opto-Electronic Conversion Function, n.a.: not applicable

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