OPTO ENGINEERING
THE TELECENTRIC COMPANY

TC16M SERIES

Bi-telecentric lenses for 35mm and 4kpix line detectors

TC16M Series bi-telecentric Lenses have been specifically designed to fit 11MPix and 16Mpix cameras integrating 35 mm format (36 x 24 mm) matrix detectors.
This combination is the typical choice for extremely accurate measurement of large parts (i.e. engine parts, metal sheets, extruded parts, ...).
TC16M Lenses are also perfectly suitable for 4kpix and 2kpix linescan cameras and can be succesfully used to determine the diameter of cylindrical objects (shafts, turned metal parts, machine tools, ...).
Besides the standard F-mount any other mechanical interface can be easily supplied on request.

		detector type					optical specs						dimensions		
		35 mm	line - 4k	line - 4k	line - 2k	line - 2k									
part number	magn. (x)	w x h 36 x 24 (mm x mm)	4k x 10 um 40,96 (mm)	4k x 7um 28,67 (mm)	2k x 14um 28,67 (mm)	2k x 14um 20,48 (mm)	w.d. (1) (mm)	F/N (2)	telecentricity (3) (deg)	distortion (%)	field depth (4) (mm)	CTF @ 50 lp/mm %	mount	length (5) (mm)	diam. (mm)
		object field of view (mm x mm)													
TC 16M 036	1,000	36,0 x 24,0	41,0	28,7	28,7	20,5	103,0	16	< 0,05	<0,02	1,0	> 30	F	309,0	61,0
TC 16M 048	0,751	48,0 x 32,0	54,6	38,2	38,2	27,3	127,0	16	< 0,1	<0,1	2,0	> 30	F	315,2	75,0
TC 16M 056	0,641	56,2 x 37,5	63,9	44,7	44,7	31,9	150,0	16	< 0,08	<0,1	2,5	> 40	F	338,5	80,0
TC 16M 064	0,561	64,3 x 42,9	73,1	51,1	51,1	36,5	182,3	16	< 0,08	<0,15	4	> 30	F	358,6	100,0
TC 16M 080	0,463	77,8 x 51,9	88,4	61,9	61,9	44,2	198,0	16	< 0,08	<0,2	5	> 30	F	405,4	116,0
TC 16M 096	0,380	94,8 x 63,2	107,7	75,4	75,4	53,9	263,0	16	< 0,08	<0,15	9	> 40	F	481,2	143,0
TC 16M 120	0,289	124,9 x 83,3	141,9	99,3	99,3	70,9	333,0	16	< 0,08	<0,1	15	> 40	F	538,0	180,0
TC 16M 144	0,245	147,1 x 98,1	167,1	117,0	117,0	83,6	398,0	16	< 0,08	<0,2	19	> 40	F	597,8	200,0

1. Working Distance: distance between the front lens and the object. Set this distance within +/- 3% of the nominal value for maximum resolution and minimum distortion
2. Working F-number: the real F-number of a lens when used as a macro. Lenses with smaller apertures can be supplied on request
3. Maximum slope of principal rays inside the lens: when converted to millirad, it gives the maximum measurement error for any millimiter of object displacement
4. At the borders of the field depth the image can be still used for measurement but, to get a very sharp image, only half of the nominal field depth should be considered
5. Measured from the front end of the mechanics to the camera flange