

Optical pens for chromatic confocal "point" sensors (Continued)

- The **CL-MG** Line consists of modular optical pens, comprising a chromatic lens (**CL**) and a magnifier lens (**MG**)
- Performance specifications supply for optical pens calibrated on STIL certified bench for a particular controller

CL-MG Line Specifications for CCS Prima Controller																
Model		CL0 ⁽¹⁵⁾		CL1		CL2		CL3		CL4		CL5		CL6		
Measuring range ⁽¹⁾	µm	100		150		400		1400		4000		12000		24000		
Working distance ⁽²⁾	mm	2.69		3.35		10.8		12.0		16.2		25.9		21.5		
Max. sample slope ⁽³⁾	deg	±42°		±42.5°		±28°		±25°		±21°		±14°		±8.5°		
Reference plate ⁽⁴⁾	-	No		No		Yes		Yes		Yes		Yes		No		
Axial model ⁽⁵⁾	-	Standard Optional														
Radial model ⁽⁵⁾	-															
Magnifier model		MG 210	MG 140	MG 210	MG 140	MG 210	MG 140	MG 70	MG 140	MG 70	MG 35	MG 20	MG 35	MG 20	MG 35	MG 20
NUMERICAL APERTURE																
Beginning of M.R.	-	0.76	0.76	0.72	0.72	0.47	0.47	0.47	0.43	0.43	0.35	0.35	0.25	0.25	0.19	0.19
Mid-range	-	0.75	0.75	0.71	0.71	0.46	0.46	0.46	0.41	0.41	0.33	0.33	0.21	0.21	0.14	0.14
End of M.R.	-	0.75	0.75	0.71	0.71	0.46	0.46	0.46	0.41	0.41	0.32	0.32	0.20	0.20	0.12	0.12
LATERAL (XY) PROPERTIES																
Spot size ⁽¹²⁾																
Beginning of MR	µm	1.6	2.0	2.4	3.2	3.5	4.6	8.1	6.0	10.8	10.7	17.6	19.6	32.8	18.6	30.5
Center of MR	µm	1.8	2.2	2.7	3.5	4.0	5.2	8.8	6.8	11.9	12.3	19.9	24.3	40.0	26.8	43.0
End of MR	µm	1.9	2.4	3.0	3.8	4.4	5.7	9.3	7.4	12.6	13.4	21.3	27.2	44.2	32.7	51.4
Lateral resolution ⁽⁶⁾	µm	1.1	1.0	1.1	1.3	1.7	1.8	3.7	2.6	4.5	4.6	7.0	11	14	11	18
PHOTOMETRIC EFFICIENCY⁽⁷⁾																
Collected energy (relative)		0.5	1.7	3.3	10	2.8	7.9	41	10	57	25	91	33	100	9.8	43
MECHANICAL INTERFACE																
Length ⁽⁸⁾	mm	263.6	229	253.1	217.1	243.3	208.9	176.1	205.9	176.1	145.5	131.7	145.5	131.7	167.6	151.8
Diameter	mm	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
Weight ⁽⁸⁾	g	227	192	268	195	248	190	189	215	214	155	140	175	160	195	180
Performances																
DISTANCE MEASUREMENT																
Static Noise ⁽⁹⁾																
With no averaging	nm	5.0	6.0	7.0	8.0	17	20	25	50	60	110	135	370	425	700	800
With averaging 10	nm	1.7	2.0	2.3	2.8	2.7	6.7	8.3	17	20	37	45	123	142	233	277
Accuracy ⁽¹⁰⁾	nm	16	14	25	20	55	45	40	150	130	300	250	750	550	1600	1200
Measuring rough metal surfaces ⁽¹¹⁾	-	R	R	R	R	R	R	R	R	NR	NR	NR	NR	NR	NR	NR
THICKNESS MEASUREMENT⁽¹³⁾																
Min. measurable thick ⁽¹⁴⁾	µm	≤5	≤5	7.5	9	14	14	22	38	40	110	120	350	550	590	725
Max. measurable thick ⁽¹⁴⁾	µm	≤100	≤100	175	175	510	510	510	2000	2000	5700	5700	16500	16500	34000	34000

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