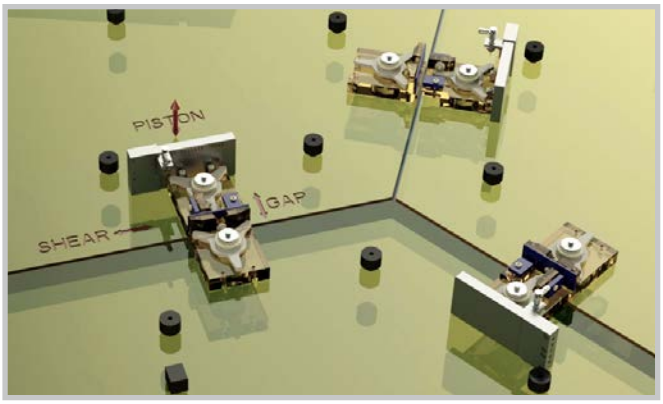
Edge Sensor for mirror segments

The Edge Sensor has specifically been developed for the measurement of mirror segments for large telescopes. In order to enable a highly precise positioning of the individual segments, the Edge Sensor detects quantities such as piston, gap and shear in nanometre resolution. The active temperature compensation reduces temperature-driven disturbances to a minimum.

Model	Piston fine	Piston coars	Gap	Shear
Measuring range	± 400µm	± 1400µm	2000µm - 7000µm	± 1500µm
Resolution	< 0.5nm	< 10nm	< 100nm	< 100nm
Linearity	dPiston measured/dPiston real = 1 ± 1% for relative movements ≤ 1µm	dPiston measured/dPiston real = 1 ± 10%	< 1% for movements ≤ 1000µm	< 1% for movements ≤ 1000µm
Noise	≤ 1nm/sqrt(Hz) from 1-100Hz	≤ 100nm/sqrt(Hz) from 1-10Hz	≤ 100nm/sqrt(Hz) from 1-10Hz	≤ 100nm/sqrt(Hz) from 1-10Hz
Sampling rate	≥ 500Hz	≥ 500Hz	≥ 50Hz	≥ 50Hz
Compensated temperature stability	≤ 5nm/K	≤ 50nm/K	≤ 500nm/K	≤ 500nm/K
Dependence of air humidity	≤ 10nm/ 50% RH	≤ 100nm/ 50% RH	≤ 1µm/ 50% RH	≤ 1µm/ 50% RH
Long-term stability (drift) at constant temperature and air humidity	≤ 10nm/week	≤ 100nm/week	≤ 1µm/week	≤ 1µm/week



Micro-Epsilon

info@micro-epsilon.com
www.micro-epsilon.com

info@micro-epsilon.co.uk
www.micro-epsilon.co.uk

me-usa@micro-epsilon.com
www.micro-epsilon.com

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