

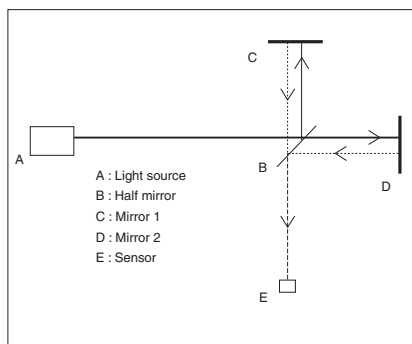
MICRO LASER INTERFEROMETER



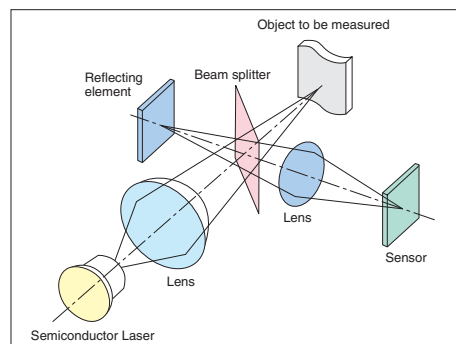
The Canon DS-80 Micro Laser Interferometer is a non-contact displacement and vibration sensor capable of ultra-high resolution of 0.08nm with high speed response.

PRINCIPLE

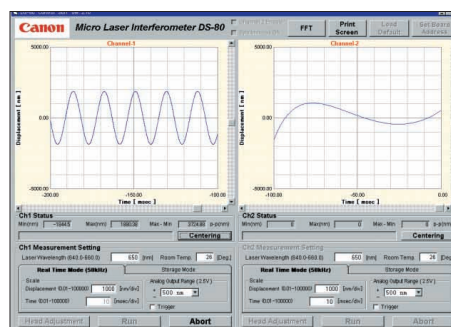
- The DS-80 employs the Michelson interference method, discovered in the Michelson-Morley experiments, to make highly accurate measurements based on the laser's wavelength.



Michelson interferometer



DS-80 Optical Structure

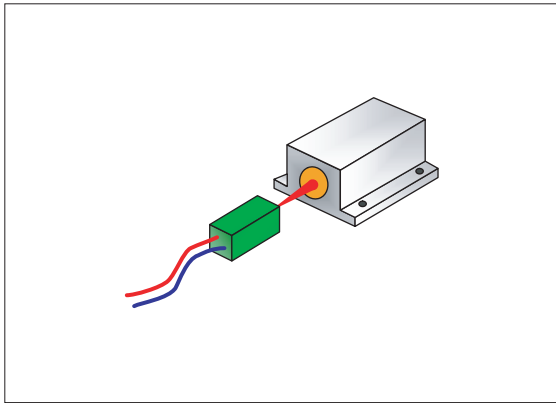


MLI CONTROL SOFTWARE

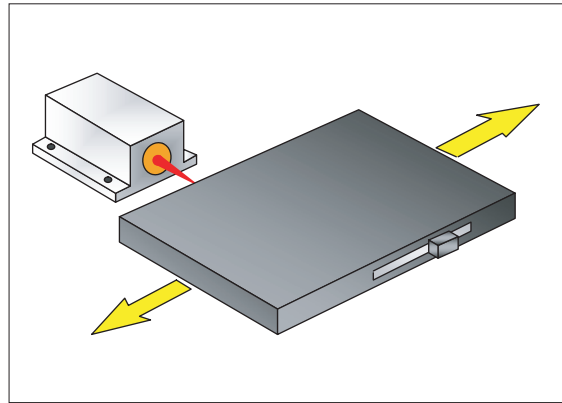
FEATURES

- In the world of ultra-precision equipment which demand movements in units of nanometers, continuous and accurate detection of movement status is essential.
- Canon has realized a Michelson interferometer, including both the light source and sensor, in a space of only 47x32x19mm using its precision optical technology.
- Canon has created two types of sensors - A-type with a working distance of 10mm and B-type with a working distance of 2.5mm - to support a wide range of needs.

APPLICATION EXAMPLES



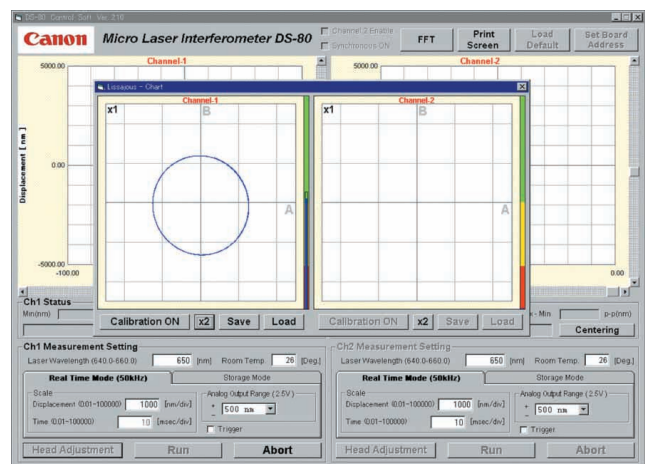
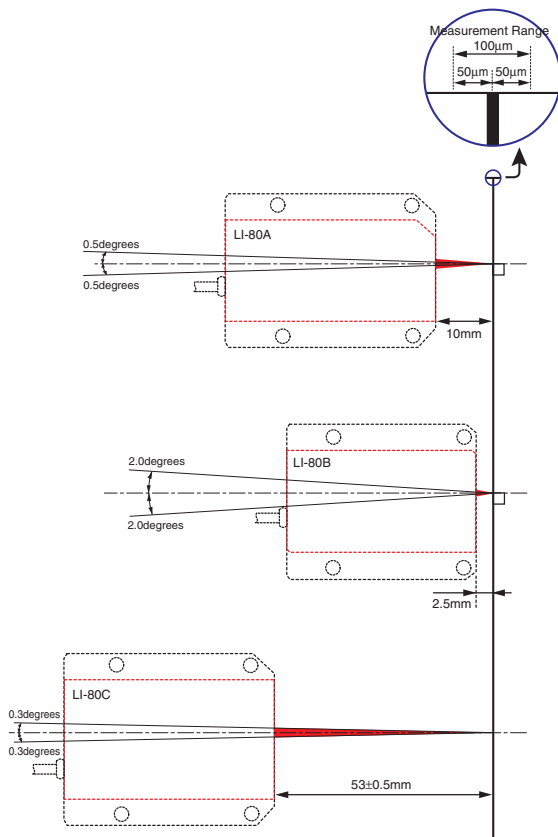
Evaluation of Piezo actuator



Precise detection of stage oscillation

Sensor Head Installation

1. Start up the exclusive software of Micro Laser Interferometer DS-80, then select Head Adjustment mode.
2. Position the sensor head toward the measurement object so as to make the Lissajous pattern as large as possible.
3. If the sensor head is detecting an oscillation with an amplitude greater than 325nm, the Lissajous function will trace a circle. If the amplitude is less than 325nm, a complete circle cannot be drawn.

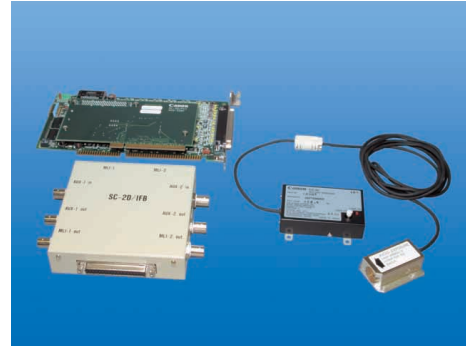


MICRO LASER INTERFEROMETER

DS-80

Compact, High-resolution, High-accuracy

- Ultra-high resolutions of 0.08nm with high-speed response.
- Linearity of $\pm 0.02\%$ of full scale.
- Microscopic object can be measured by small beam spot.



SPECIFICATIONS

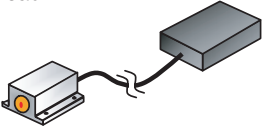

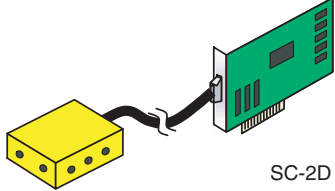
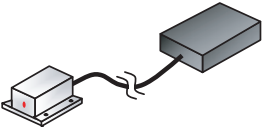
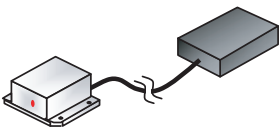

■ SENSOR HEAD

- Measurement System Michelson interferometer
- Light source Semiconductor Laser (wavelength 650nm)
- Measuring range $\pm 50\mu\text{m}$
- Working distance 10mm (A-type), 2.5mm (B-type), 53mm $\pm 0.5\text{mm}$ (C-type)
- Laser spot diameter $\varnothing 20 \times 10\mu\text{m}$ (A-type), $\varnothing 5 \times 2.5\mu\text{m}$ (B-type), $\varnothing 50 \times 25\mu\text{m}$ (C-type)
- Alignment tolerance $\pm 0.5\text{deg}$ (A-type), $\pm 2.0\text{deg}$ (B-type), $\pm 0.3\text{deg}$ (C-type)
- Resolution max. 0.08nm
- Linearity less than $\pm 0.02\%$
- Response frequency max. 500kHz (at 0.1 μm_{p-p} or less)
- Object surface Mirror reflection surface

■ DSP BOARD UNIT

- Bus type ISA bus or PCI bus
- OS Windows95, 98, NT4.0, 2000
- Sensor input 2ch
- Displacement output Graphical Display on screen, Data file creation (CSV format), Analog voltage output
- Sampling speed Real Time mode: 1ch: 50kHz (fixed) 2ch simultaneous: 25kHz (fixed) Storage mode: 1ch: $\sim 100\text{kHz}$ (adjustable) 2ch simultaneous: $\sim 50\text{kHz}$ (adjustable)
- Storage data size max. 30,000 points (Up to 65,536 points can be measured in some PC environments)
- External trigger One sample per trigger, TTL level
- Analog output $\pm 2.5\text{V}$

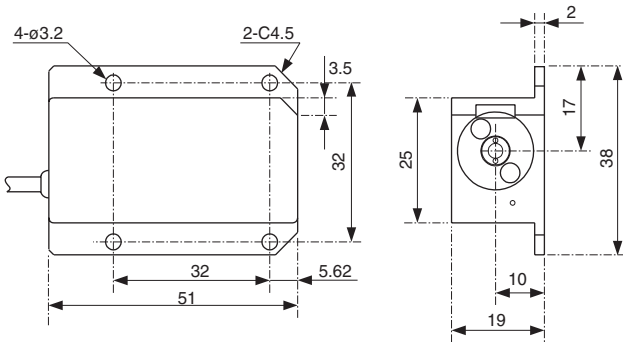
COMPONENTS

LI-80 (Sensor Head)	Cable	DAQ unit
A-type head 	2m Cable 	 SC-2D unit
B-type head 		
C-type head 	4m Cable 	

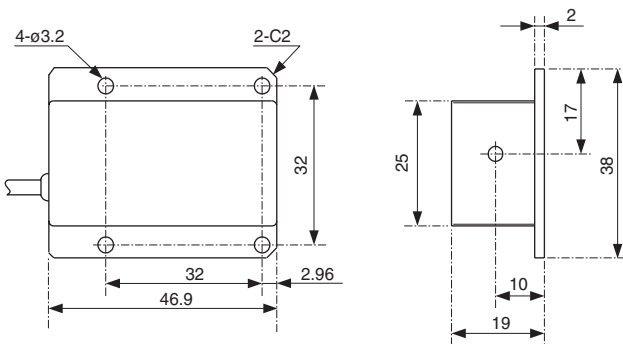
MICRO LASER INTERFEROMETER

EXTERNAL DIMENSIONS

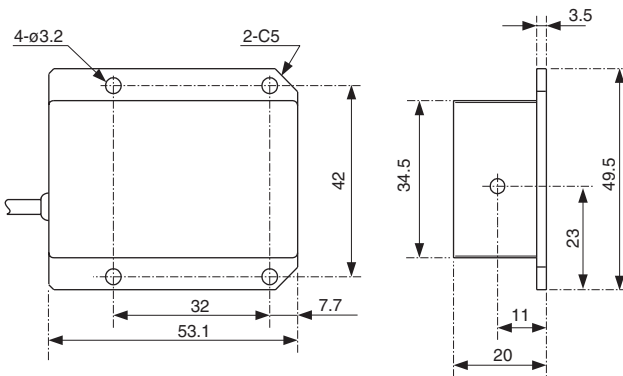
●A-type sensor head



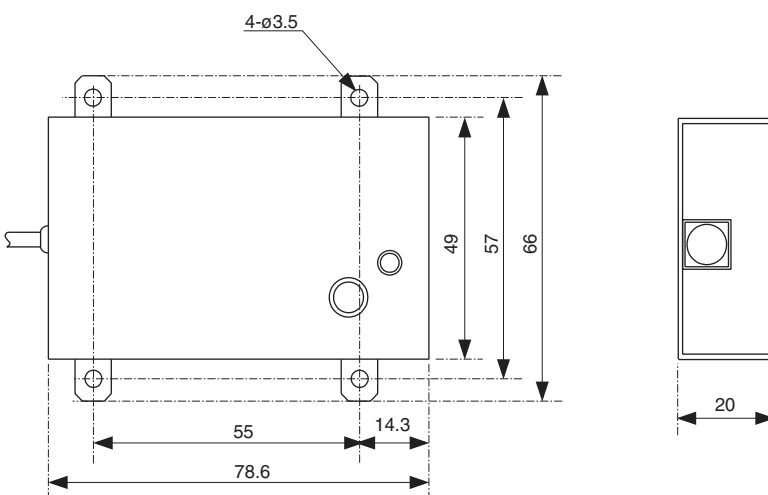
●B-type sensor head



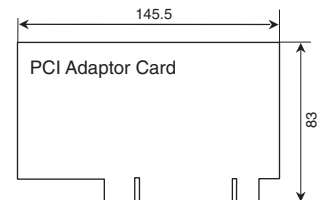
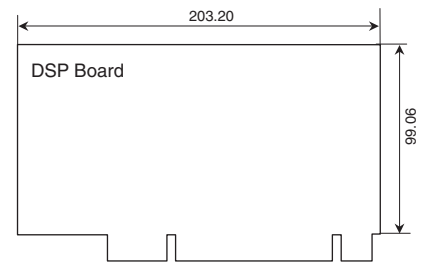
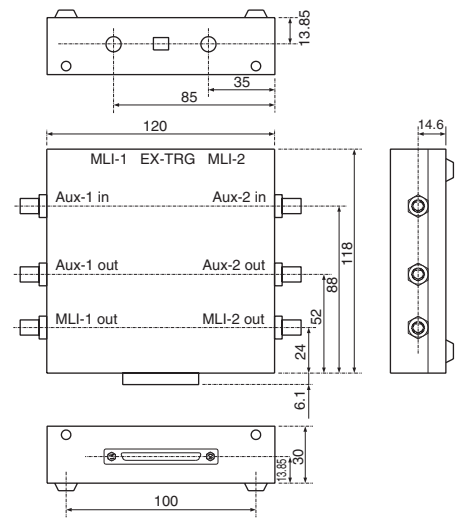
●C-type sensor head



●Sensor's Amp. Box



●Standard version ISA/PCI board unit (I/F box + PCI board)



The interval between DSP Board and PCI Adaptor Card: 10mm