Calibration of LVDT Sensor

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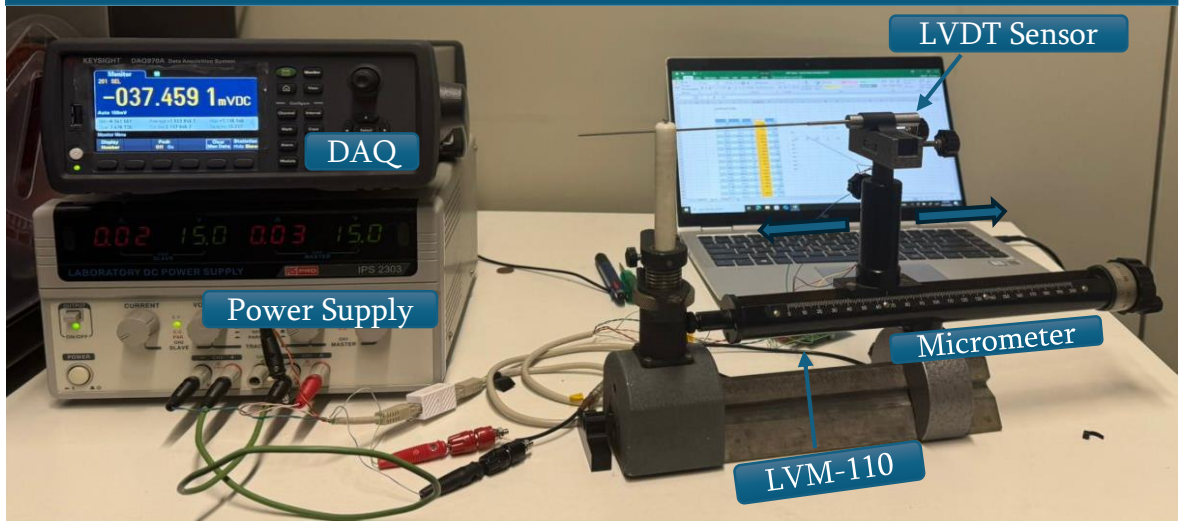
Measurement Method and Experimental Data

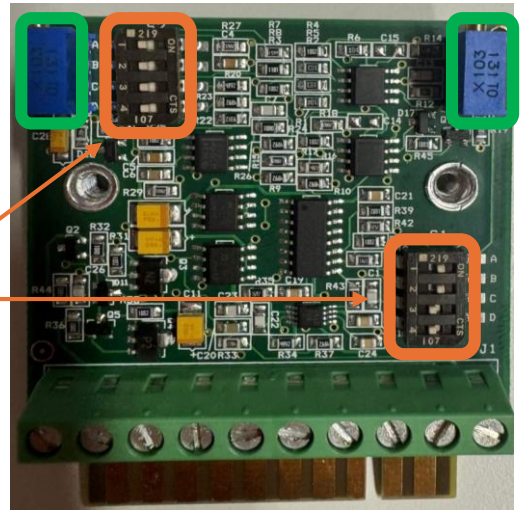
Setup for Calibration of LVDT Sensor Min. Step: 10 µm

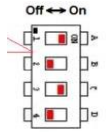


LVM-110 controller for LVDT Sensor

Zero Adjustment

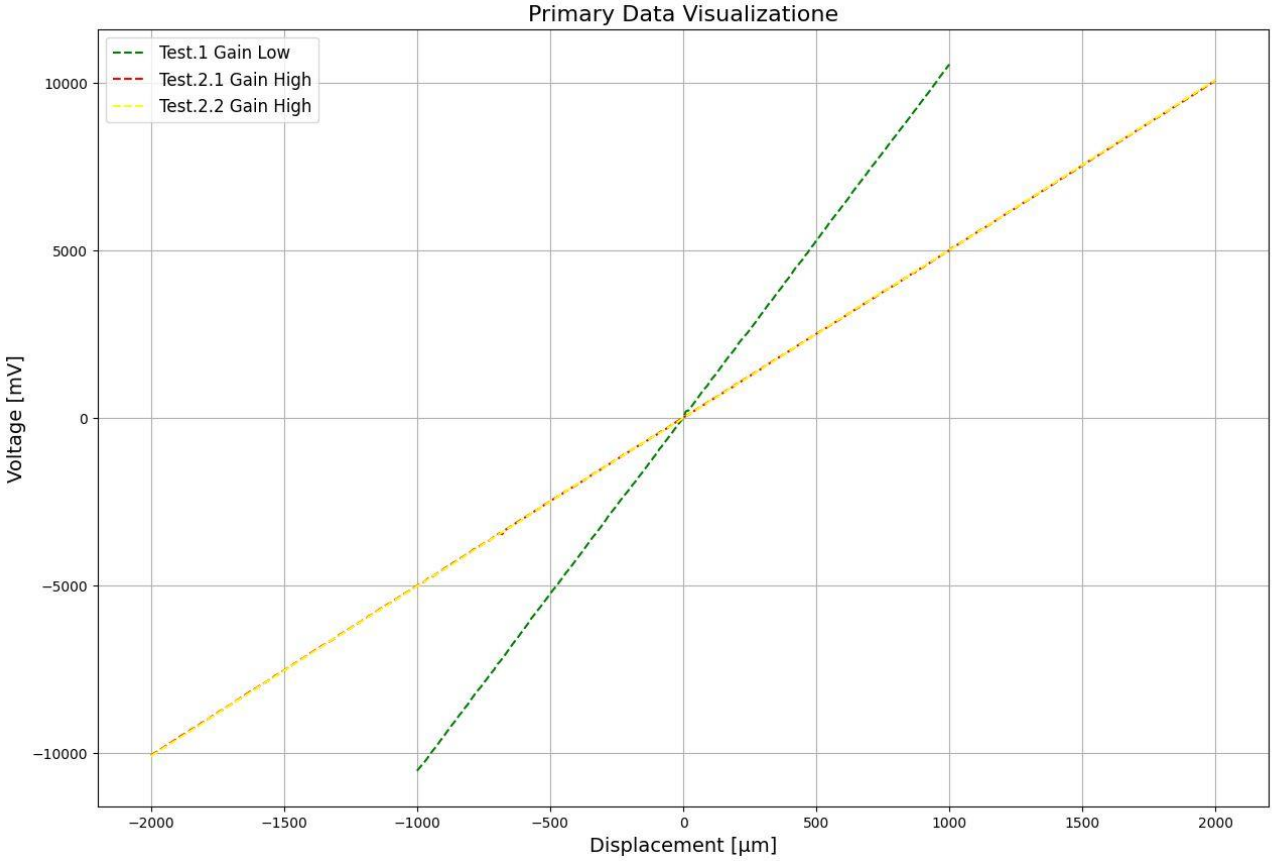
GAIN





Single or multi sensors

S1-B	Mode
OFF	SLAVE
ON	MASTER

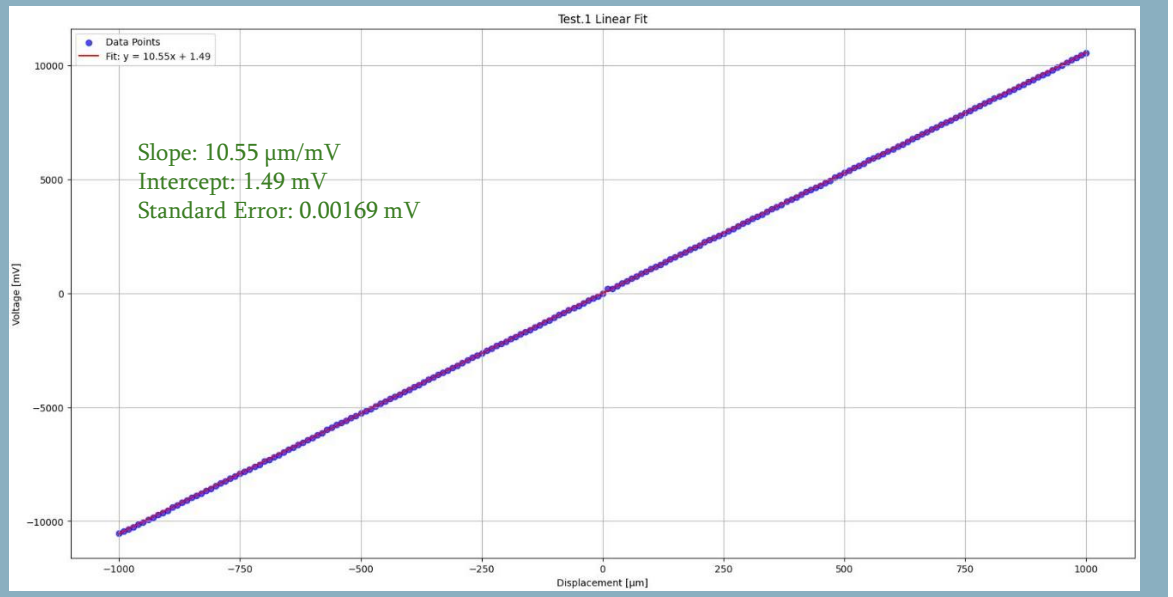


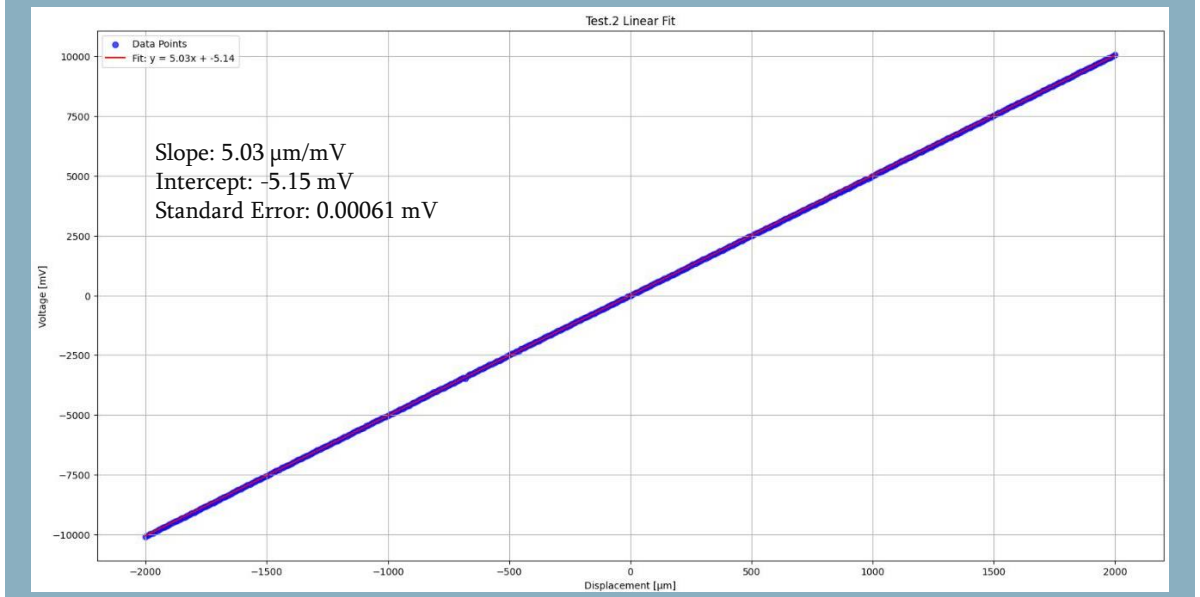
Test.1 Gain Low

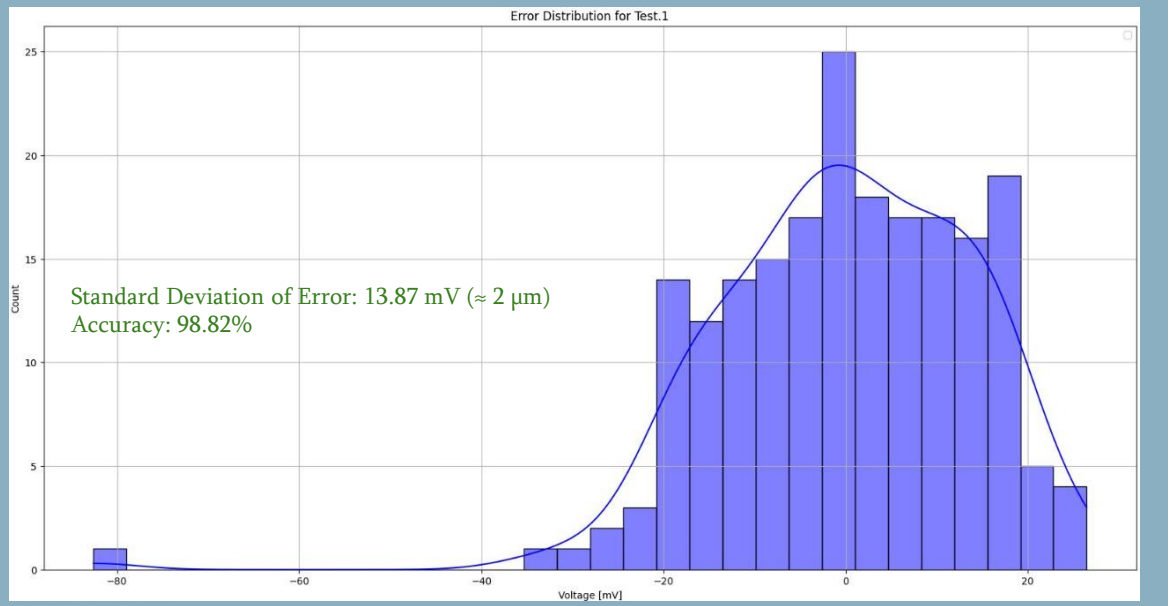
Test.2 Gain High

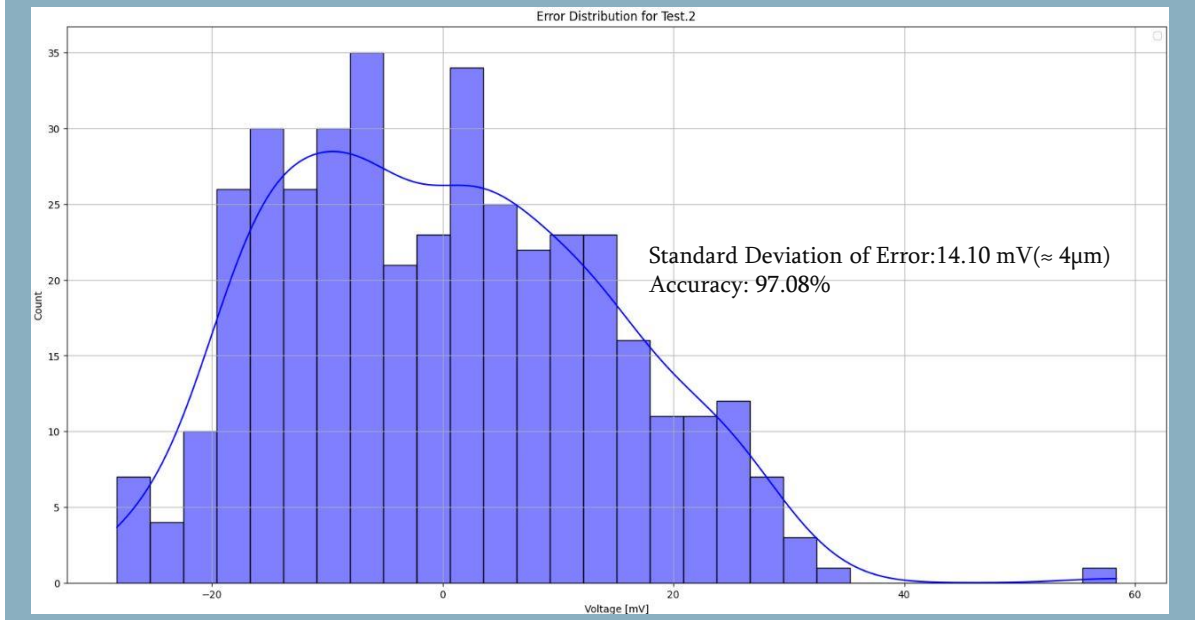
First Stage			Second Stage		LVDT Full Scale Output
Gain	S2-A	S2-B	Gain Lo/Hi	S1-A	for ±10VDC output
x0.2	OFF	OFF	LOW	ON	2.10 to 5.55 VRMS
x0.2	OFF	OFF	HIGH	OFF	1.00 to 2.64 VRMS
x0.5	ON	OFF	LOW	ON	0.84 to 2.22 VRMS
x0.5	ON	OFF	HIGH	OFF	0.40 to 1.00 VRMS
x2	OFF	ON	LOW	ON	0.21 to 0.55 VRMS
x2	OFF	ON	HIGH	OFF	0.10 to 0.26 VRMS

Analysis of Experimental Data









Resu
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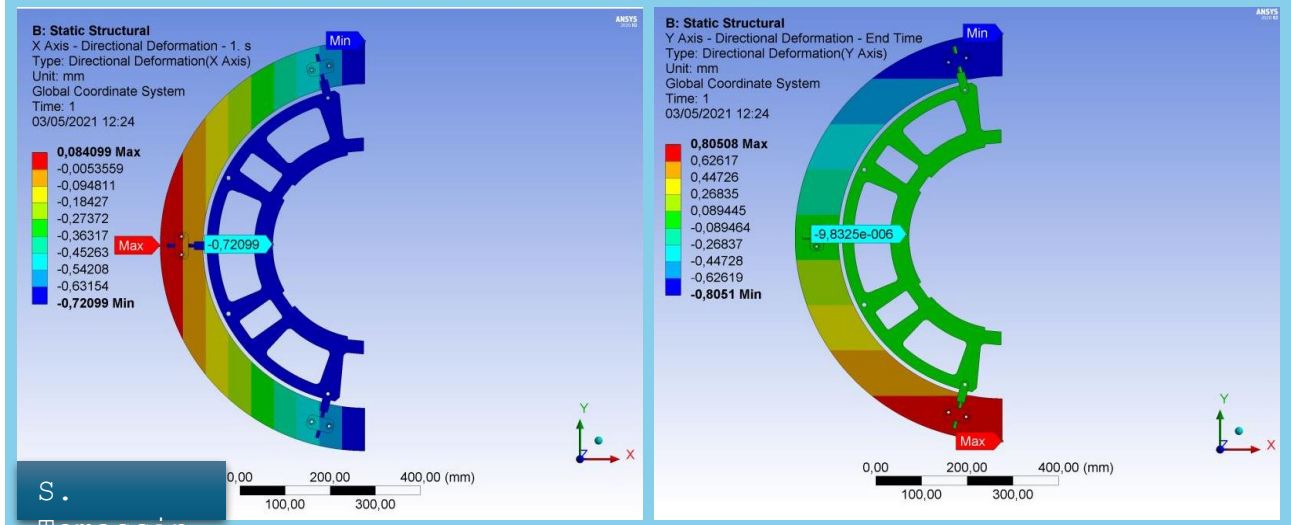
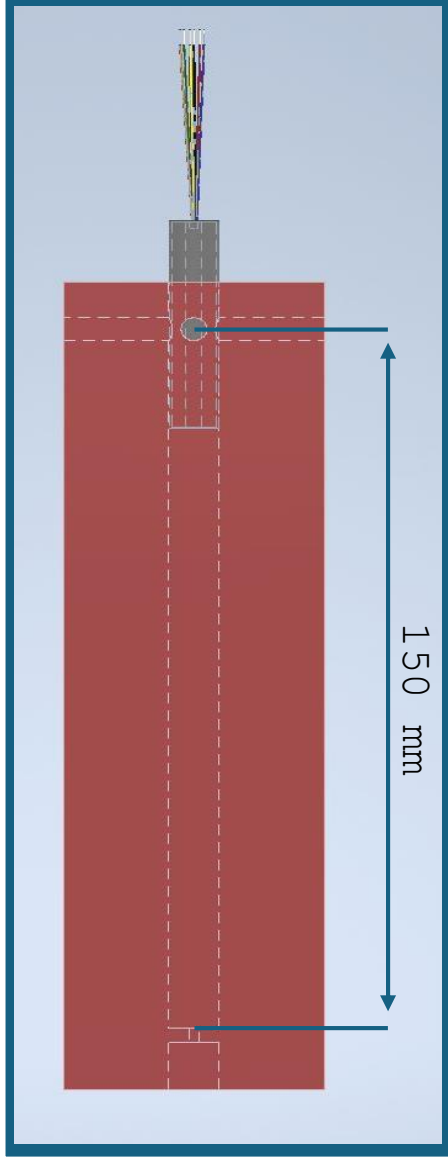
In the simulation, the max expected deformation is 700 µm



S. Tomassin

1. High Gain mode and 2 mm range, Accuracy - 97%, Sensitivity: 10.55 mV/µm
2. Low Gain mode and 1 mm range, Accuracy – 98.8%, Sensitivity: Sensitivity: 5.04 mV/µm
3. Both results fully meet the requirements.

Plans



The thermal expansion of the 150mm aluminm from -40°C to 40°C is about 260 µm, which allows us to calibrate the sensor for temperature.

1. Order aluminum 50X50X180 mm support
2. Put LVDT sensor in small Climate Chamber
3. Put LVM-110 controller in small Climate Chamber
4. Make a calibration in small CC with aluminum support