

## ENCLOSURE-I

→ Amended

## Technical Specifications: Ultra Precision Capacitive Sensors with Signal Conditioner

Sl.No	Description	Essential Specifications & Criteria	Supplier's Compliance /remarks
1	The desired range of dynamic motion detection	$\leq \pm 250 \mu\text{m}$ in Low sensitivity mode $\leq \pm 50 \mu\text{m}$ in High sensitivity mode	
2	Standoff distance/ near gap	$\leq 200 \mu\text{m}$ for low sensitivity	
3	Resolution	$\leq 10 \text{ nm}$ for low-sensitivity mode $\leq 1 \text{ nm}$ for high-sensitivity mode Specify the sensitivity values in the quote.	
4	Linearity	$\leq \pm 0.1\%$ for full scale	
5	Repeatability	$\leq 0.2\%$ FSO	
6	Bandwidth	8.5 kHz or above at 3dB cutoff, Should be user configurable. 15kHz Preferable	
7	Signal Conditioner	Should give an output of $\pm 10\text{V}$ differential or 0-10V single ended ( differential is preferable)	
8	Casing diameter of the sensor	8 mm Preferably, in case of deviation, the supplied should supply with suitable fixture/sleeve for making it 8mm.	
9	Sensing the diameter of the sensor	should be 2 – 4mm, not greater than 4 mm. Should have a guard ring to avoid erratic measurements	
10	Thermal Drift	0.04% F.S./ $^{\circ}\text{C}$	
11	Operating Temperature	15 to 45-degree Cent	
12	Option for changing sensitivity Switch on the Signal conditioner	High and Low. A hardware switch is preferable. Software-based configuration is also acceptable.	

13	Range indication on the signal conditioner	Essential [Far- near Range indicator] LED-based indication is preferable	
14	National Instruments DAQ interface option	Essential	
15	Warranty	1-year unconditional warranty Essential, three years preferable	
16	Accessories	All necessary [fixures & mounting brackets] for the operation of the sensors are to be included and quoted separately.	
17	Sensor Cable, length	Should be shielded and immune to external noises and EMI. PTFE or FEP shielded. Length should not be less than 2 meters.	

#### Most Important Terms and Conditions:

1. All the technical specifications are “Essential” unless otherwise mentioned as “Specify”.
2. The vendor should meet all technical specifications to qualify the bid.
3. According to the terms and conditions, the bidder should submit all necessary technical information documents as per the technical specifications
4. The vendor shall submit their quote in INR, preferably. Otherwise, they should submit a certificate stating that 20% of local content contribution present in the supplied item
5. A warranty certificate is to be provided by the OEM only, mentioning that his authorized local distributor/service centre will repair and maintain the supplied sensors and their accessories as per the warranty terms.
6. Two sets of Hardcopies of Operation Manuals in English should be supplied
7. A calibration report from NPL / PTB or a similar standard accredited laboratory is to be provided.
8. If the bidder is not a manufacturer, the bidder must provide an authorized distributor certificate signed by the manufacturer.
9. The OEM/ bidder should have local [Indian] service and maintenance support centres operating for at least three years or more.
10. The end application is strictly for high-speed dynamic measurements, and the vendor/OEM has to quote for the sensor and signal conditioners suitable for dynamic and static measurements.
11. CMTI requirements are only for high bandwidth ultra-precision capacitive sensors and associated signal conditioners, which can produce raw measurement signals



at the output port, which will be validated with existing 24-bit high-speed NI DAQs at CMTI.

12. CMTI Payment terms: 80% at the time of Delivery, and the remaining 20% will be cleared after inspection testing and validation of the supplied sensors against the dynamic measurement application. No advance payment will be made.

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