

**TECHNICAL SPECIFICATIONS AND OTHER ALLIED REQUIREMENTS**

Sl No.	Description of items	Quantity
PUR/53/SET/CK/P/2021-22		
01.	Supply and Installation of Probing System Including Electronics and Control Unit for UCMM	01 No.
02.	Chip Replacement Set (Detailed specification as per Attached Annex.-I)	03 Sets

**1. INSTALLATION/COMMISSIONING**

1.1. To be done by the Supplier.

**2. WARRANTY**

2.1. 12 months warranty for item Sl. No. 1 (one) shall be effective from the date of successful installation.

## Annexure - I

1. **End Use:** To be used in the development of ultra-precision coordinate measuring machine (UCMM)

### 2. **Detailed Specifications:**

#### A. Probing system including electronics and control unit for ultra-precision coordinate measuring machine (UCMM) – 1

No.

- i. Touch and scanning mode of probing
- ii. Linear Measurement Range: 10  $\mu\text{m}$
- iii. Resolution: 1 nm
- iv. Repeatability in one-dimension < 4 nm
- v. Probe uncertainty of measurement in 3-D ( $3\sigma$ ): 10 nm or better
- vi. Isotropic stiffness: 400 N/m to 500 N/m
- vii. Probing force or contact force < 0.4 mN at 1  $\mu\text{m}$  tip deflection
- viii. Associated control unit (CU)
- ix. Associated cables having SUB-D connectors: a. 1.5 m length for CU to Probe and b. 3 m length for CU to UCMM controller
- x. Combined 3-D uncertainty (includes 3D probe uncertainty ( $3\sigma$ ), thermal deviation ( $\Delta T < 0.1 \text{ K}$ ), tip and workpiece deformation, Calibration of tip and probe, other deviations) < 50 nm

#### B. Chip replacement set – 3 Nos.

- i. Associated chip replacement sets (3 Nos.) consisting of chip with styli having ruby spheres probes of diameters 120  $\mu\text{m}$ , 300  $\mu\text{m}$  and 500  $\mu\text{m}$
- ii. 3 probe caps, 3 protecting caps
- iii. 1 storage flight case for protecting the ultra-precision and sophisticated equipment at the time of transport, storage and handling

### 3. **Scope of supply & incidental services:**

- A. Probing system including electronics, related control unit (CU) and associated cables having SUB-D connectors, (a. 1.5 m length for CU to Probe, b. 3 m length for CU to CMM controller): One Set.
- B. Associated Chip replacement consisting of chip with styli having ruby spheres probes of diameters 120  $\mu\text{m}$ , 300  $\mu\text{m}$  and 500  $\mu\text{m}$  – Three Nos., Associated Replacement set consists of 3 probe caps, 3 protecting caps and 1 storage flight case for protecting the ultra-precision and sophisticated equipment at the time of transport, storage and handling

At CSIR-CMERI, Durgapur, India

4. **Inspection and Tests required:** Requirement of calibration certificate

### 5. **Acceptance test:**

- As per the calibration certificate
- As per the combined 3-D uncertainty (coverage factor of 2 at 95% confidence level) < 50 nm

6. **Warranty:** 12 months

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