

# Technical Specifications & Other Allied Requirements

**PUR/54/DMSE/MP/E/2020-21**

## **Supply, Installation, Testing, Commissioning and Trial run of Dynamometer at CSIR-CMERI, Durgapur**

### **1. End use:**

The Dynamometer test set up will be installed at CSIR-CMERI, Mahatma Gandhi Road, opposite NIT, Durgapur, and West Bengal - 713209. It will be used to experimentally evaluate draft power requirement of different farm machinery as per BIS. Regular operation of this testing facility will be done by CMERI

### **2 Detailed-specification:**

**ITEM NO. 1:** Wireless Draft Force Dynamometer with Wireless Remote display/Unit,  
Capacity- 5 KN (~ 500 Kgf) ----- **01 No.**

**ITEM NO. 2:** Wireless Draft Force Dynamometer with Wireless Remote display/Unit,  
Capacity-10 KN (~ 1000 Kgf)----- **01 No.**

**ITEM NO. 3:** Wireless Draft Force Dynamometer with Wireless Remote Display/Unit,  
Capacity- 20 KN (~ 2000 Kgf)----- **01 No.**

### **Specifications for Item 1, Item 2, Item 3:**

#### **a) Wireless Remote**

##### **Features:**

- Alpha Numeric LCD display & Soft touch key pad
- Digital: O/P RS232, with 2-10 sample per second
- Data logging: Data logging up to 60,000 reading

##### **Technical Specifications:**

- Power supply: Inbuilt rechargeable Li-polymer Battery
- Operating Temp. Range Digitizer: -10 to + 50°C

#### **b) Load Sensor (Telemetry type)**

- Rated Output: 24 Bit
- Accuracy :  $\pm 0.1\%$  of RO
- Safe overload: 150% or Rated capacity
- Power supply: In built Rechargeable Li-polymer Battery
- Operating Temperature: -20 to 50 °C
- Battery Backup: 8-12 Hours,
- Maximum Wireless link range: >200 Mtr Line of sight
- Sensor Sealing: IP65

**Specifications for Item 4 : PTO Torque Sensor Data-logger and Spline universal Joints of  
PTO, Type I, II & III; Capacity: 1000 Nm-----01 No.**

#### **a) Features:**

- Display parameters: Torque, RPM & Power
- Communication Port: RS232/USB, to transfer Torque, RPM & Power

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- Data Logging : USB Flash drive based data logging with Real Time Clock to log data with Date & Time Stamp & user selectable sampling rate
- Logging capacity: 10 million samples of each Torque, RPM & Power

### b) Technical Specifications:

- Power supply: Inbuilt Li-Polymer rechargeable Battery
- Operating Temp. range Digitizer: 0-55°C
- PTO Attachments: System comes with Spline Universal Joints for PTO type-I, PTO type-II , PTO type-III (As per ISO 500-3)

### Coupling:

- Tractor/Driver side : Spline Type with Universal Joints for PTO type -I,II,II
- Implements/Driven Side: Telescopic Drive shaft , extendible up to 350 mm

### Dimensions :

- Diameter Torque sensor  $\leq 125$  MM
- Minimum Length with Universal joints on Both side & drive shaft  $\leq 750$  MM
- Maximum Length with Universal joints on Both side & drive shaft  $\geq 1100$  MM

### c) Essential Features:

- Direct fitment on PTO shaft
- Facility to directly log/store data during field operation

### d) Scope of Supply:

- Digitizer-Data logger: 1 no.
- PTO Couplings set type-I, type-II , type-III (As per ISO 500-3) Each , 1 Set
- PC Data Logging Software 1 no.

### Specifications for Item 5:

**PTO Torque Sensor (Digital Telemetry Type), Capacity: 1000Nm -----01 No.**

### a) Torque Sensor (Telemetry type)

- Rated Capacity: 1000 Nm
- Safe Over Load 150% of RO
- Accuracy:  $\pm 0.05\%$  of RO
- Operating Temperature: 00 to 50 °C
- Battery Backup > 4 to 6 Hours, when fully charged
- Operating RPM range: 0-10000 RF
- IP Rating (Torque Sensor Protection Rating): IP68 , (Can be used in adverse Muddy, Dirt and sludge conditions)

### b) Essential Features:

- The Sensor is rugged & compact to withstand shock and vibration during field operation
- Sensor connectors are MIL grade

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### c) Scope of Supply:

- Torque sensor: 1 no.
- Battery Charger: 1 no.
- Carrying case: 1 no.
- RPM Sensor: 1 no.

### Specifications for Item 6:

**Tractor 3 Point Hitch Dynamometer (Wired), with Fixture & adapters ----- 01 No.**

**Capacity: 30 KN**

It consists of;

1. Clevis Pin Type Load Cell: 3 Nos.
2. 3 Point Hitch Fixture with attachments for Implements (For Cat-I & Cat-II): 1 No.
3. 3 Point Hitch Fixture with attachments for Trolley or Cart: 1 No.
4. Digital Indicator-Data-logger: 1 No

### a) Specification Digitizer-Controller :

- Alpha Numeric LCD display & Soft touch key pad
- Communication port: RS 232 o/p to transfer real time data

### b) Data Logging:

- Data Logging : USB Flash drive based data logging with Real Time Clock to log data with Date & Time Stamp
- Memory Can Store More Than 10 million readings.
- Sample Rate: 2-10 Sample per second

### c) Specifications Load cell (Clevis Pin Type Load cell)

- Rated Output: 3mv/V
- Safe Over Load: 300% of RC
- Safe Side Load: 150% of RC
- Accuracy :  $\pm 0.02\%$  of RO
- Operating Temperature:  $-10^{\circ}$  to  $70^{\circ}$  C
- Protection: IP68

## 3 Scope of supply & incidental services:

The supplied items, including its instrumentation are required to be installed, commissioned and demonstrated at the buyer's site (i.e. CSIR-CMERI, Durgapur) by factory trained engineer. Maintenance and training manuals should be supplied.

## 4 Inspection and Tests required:

- a) The Director, CSIR-CMERI, Durgapur shall be the final authority to reject full or any part of the supply which is not confirming to the specification and other terms and conditions.

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- b) No payment shall be made for rejected stores. Rejected items must be removed by the Bidders at their own cost and replaced within two weeks of the date of rejection immediately.

### **5 Acceptance test:**

As mentioned in Section 4 (Inspection and Tests required) above.

### **6 Minimum Pre-Qualification Criteria:**

- The bidder must be original manufacturer or its authorized dealer.

### **7. INSTALLATION, COMMISSIONING AND TRAINING**

- 7.1 The ordered goods are to be installed within 30 days of receipt of goods at this Institute. Installation should be carried out only by expert engineers of Supplier / Manufacturer at Free of Cost basis. During the course of installation, necessary training on operation and maintenance of the goods shall be imparted to Institutes, Scientist / Engineers/Technicians.

### **8. WARRANTY**

- 8.1 Comprehensive on-site warranty for a period of one year must be provided to be effective from the date of successful completion of the job and final acceptance of the items / equipment at the user's laboratory / Institute.

9. Non-OEM Bidders must furnish the Manufacturer's Authorisation Form (MAF) in CSIR prescribed format failing which their offer will be rejected.

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