I/105717/2023

**KSCSTE - Jawaharlal Nehru Tropical Botanic Garden & Research Institute**

(An Institute of Kerala State Council for Science, Technology and Enviornment, National Centre of Excellance, Govt of India) Palode
Thiruvananthapuram- 695 562, Kerala, India
Tel : + 91 (0)472 2869626, 2869628,
Fax : + 91 (0) 472 2869646, 2869226

## e- tender notice

**Tender No. JNTBGRI/1742/VGY/P14/PS/23 21-12-2023**
**E-tender Id: 2023_KCSTE_635159_1**

e- tenders are invited from competent vendors for the supply of Carbon dioxide ($CO_2$) Incubator with the following specifications at JNTBGRI, Palode, Thiruvananthapuram.

| Sl. No. | Item with complete Description | Qty |
|---|---|---|
| 1 | **Carbon dioxide (CO2) Incubator and other accessories**<br>A. **Carbon dioxide ($CO_2$) Incubator**<br>• $CO_2$ incubator with 170 litres capacity.<br>• LED display with Keypad.<br>• Fan-less, six-sided direct heating with seamless, deep drawn stainless steel chamber.<br>• High temperature decontamination [HTD] at 140 °C, 3 perforated shelves with position shelving rack, upgradable to 8 shelves<br>• Should contain IR sensor for specific measurement of $CO_2$ and control of $CO_2$ levels.<br>• Include auto-calibration feature of sensor automatically ensuring $CO_2$ level accuracy.<br>• Should contain sealed inner glass door for conservation of inner chamber ambience.<br>• Field upgradation of copper shelves and humidity tray for preventing contaminations.<br>• Include connections / communication ports: 2x USB 2.0.<br>• User & 1x Service; with BMS relays 0-5V.<br>• Stackable up to 2 units high (one over other)<br>• Large volume humidification pan with dedicated independent heater.<br>• Should include HEPA filtration of gas supply inlets to minimize contamination risk.<br>**Technical specifications:**<br>a. **Temperature Management:**<br>• Range: 4 °C above ambient to 50 °C, control increment: ± 0.1°C<br>• Accuracy: ± 0.4 °C at 37 °C as per 27 points in the chamber.<br>• Uniformity: ± 0.3 °C at 37 °C and ambient 22 °C.<br>• Stability: ± 0.1°C at 37 °C and ambient 22 °C.<br>• High Temperature Disinfection: 140 °C 2-hour 14 hours cycle.<br>• High Temperature Disinfection [HTD] 140 °C, 2-hour cycle with the process completed in 14 hours, while the CO2 sensor remains in the chamber during HTD.<br>**b) $CO_2$ Gas Management:**<br>• Dual channel IR NDIR type $CO_2$ sensor with auto-calibration ensures accurate $CO_2$ calibration measurements.<br>• $CO_2$ range: 0.1 – 20% with control increment of 0.1%. | 1 unit |

- Accuracy: + 0.3% at the specified Relative Humidity (RH) at 37°C and ambient 22 °C.
- Stability: + 0.1% at 37 °C and ambient 22 °C.
- Uniformity: + 0.1% at 37 °C and ambient 22 °C.
- $CO_2$ recovery after door opening: Approx 5 min.
- Connections: Gas tubing Inner diameter of 6.5 mm and outer diameter of 10 mm with filter.
- Gas service Pressure required: 0.1 MPa (1 bar/ 14.4 PSI)
- $CO_2$ Pressure range: 0.05 to 0.2 MPa (0.5- 2.0 bar/ 7.2 – 29 PSI).

**c) Humidity: RH (37 °C) up to 95%**

**d) Reservoir:** removable Stainless Steel pan volume = 2.5 L.

**e) Shelf thickness:** 1.5 mm with flatness tolerance 1 mm.

**f) Controller:**

- Capability to quickly change both environmental and alarm settings through controller.
- Diagnostic interface to show system parameters and functions.
- Password protection for secure programmable settings and alarm set points.
- On screen trouble shooting facility.

**g) Other features needed:**

- Building Management System (BMS) relay for integration into centralized building alarm system.
- 2x 25 mm Access Port for adding instrumentation or probes.
- High quality door gasket to maintain leak-free seal.
- 2x USB 2.0 for communication and external instrument Logging.
- In-line filters (0.027 µ) for gas supply inlets to ensure sterility.
- Space-saving stackable (x2) design.

B. **$CO_2$ Cylinder filled with 99.9% purity carbon dioxide**

**Specifications:**

- Seamless Steel $CO_2$ cylinder.
- Filled with 99.9% purity carbon dioxide.
- Capacity: 46.7 water capacity.
- Volume: 31 KG $CO_2$.
- Cylinder Size: Outer diameter– 232mm, Overall length – 1370mm (without cap),Wall thickness – 5.5 mm (minimum).

**(C) Two stage $CO_2$ pressure regulators suitable for 46.7 water capacity $CO_2$ cylinders.**

**(D) Suitable, shake free and heavy-duty stainless-steel table of 3 feet height to place the $CO_2$ incubator.**

Specifications: Top area should be 5 inches larger than the base of $CO_2$ incubator quoted for supply**,** Top area should be made with 14-gauge stainless stees sheet. Legs and frames should be with stainless steel grade round or square pipe of 1.5 inches diameter or more.

| |
|---|
| Tender Form fee : Rs.1500/-+ GST 12% |
| EMD – Rs. 6,000/- |
| Place and date of issue of the tender form: Online (www.etenders.kerala.gov.in) |
| Last date & time of receipt of filled tender bids: 12.01.2024 Upto 5.00PM |
| Date & time of opening of tender bids : 15.01.2024 at 10.00 AM |
| **DR. S PRADEEP KUMAR.**<br>**DIRECTOR(I/C)JNTBGRI** |