

## **Detailed Specifications of Global Tender Notice No: 04/2015**

<b>S. NO</b>	<b>TENDER NO.</b>	<b>BRIEF DETAILS OF ITEM(S)</b>	<b>PAGE NOS.</b>
<b>1.</b>	<b>14-VII/SSK(2483)15-PB/ T-43</b>	3MN Build-up system	<b>2</b>
<b>2.</b>	<b>14-VII/PJ(2500)15-PB/ T-44</b>	CH <sub>4</sub> & CO <sub>2</sub> Analyzer	<b>3</b>
<b>3.</b>	<b>14-VII/PJ(2501)15-PB/ T-45</b>	CO Analyzer	<b>4</b>
<b>4.</b>	<b>14-VI/CS(769)15-PB/ T-46</b>	Green House Gas (CHG) Analyzer	<b>5-6</b>

Specifications for 3 MN build-up system

Essential:

The build-up system should comprise of a base plate and three identical precision force transducers of capacity 1MN with individual aligning compression pads and a top connection flange with suitable provision for lifting and handling of the system. The output of the build-up system should be compatible to DMP-40 indicator.

- The build-up system should comply with the class 00 requirements of ISO 376 : 2011, including Relative repeatability error, Relative reproducibility error, Relative interpolation error, Relative zero error, Relative creep and Relative reproducibility over the force range 20% - 100% of nominal force.
- Nominal sensitivity 2 mV/V or more
- Reference excitation voltage 5 V
- Temperature effect on sensitivity (per 10K) ≤ 0.01 %
- Relative linearity error ≤ 0.025%
- Effect of eccentricity per mm ≤ 0.02 %
- Should be able to calibrate all the individual load cells separately using DMP 40 indicator
- Total height of the system should be ≤ 325 mm from the bottom of the base plate to the top of the upper flange.
- Top flange diameter should be ≥ 240 mm
- Warranty one year.

Optional:

Additional top flange of diameter 380 mm and 100mm thickness with provision to sit centrally on the top flange.

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**CH<sub>4</sub> and CO<sub>2</sub> Analyzer Specifications Finalized by the Technical Committee**

**CH<sub>4</sub> and CO<sub>2</sub> analyzer based on CRDS principles for measurement of CH<sub>4</sub> and CO<sub>2</sub> in matrix of dry air or inert pure gases in cylinders, with required accessories and data acquisition system**

**CH<sub>4</sub>**

Working Range: 0 - 20 ppm or better

Precision :  $\leq 10$  ppb

**CO<sub>2</sub>**

Working Range: 0 - 1000 ppm or better

Precision :  $\leq 150$  ppb

Power Requirement: 230 $\pm$ 10%VAC / 50 $\pm$ 5%Hz

Instrument should be capable of operating under following environmental condition :

Temperature: 25  $\pm$  5 $^{\circ}$ C;

Relative Humidity: 50 $\pm$ 10%

Original service & operating manuals ( in both soft and hard copy)

Onsite demonstration and training for two weeks after installation

Two years warranty after installation or commissioning of instrument

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**CO Analyzer Specifications Finalized by the Technical Committee**

**CO analyzer based on CRDS principles for measurement of CO in matrix of dry air or inert pure gases in cylinders, with required accessories & data acquisition system**

Working Range: 0 - 5 ppm or better

Precision :  $\leq 100$  ppb

Power Requirement:  $230 \pm 10\%$  VAC /  $50 \pm 5\%$  Hz

Instrument should be capable of operating under following environmental condition :

Temperature:  $25 \pm 5^\circ\text{C}$ ;

Relative Humidity:  $50 \pm 10\%$

Original service & operating manuals ( in both soft and hard copy)

Onsite demonstration and training for two weeks after installation

Two years warranty after installation or commissioning of instrument

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**Technical specifications for Greenhouse Gas (GHG) Analyzer for continuous Carbon dioxide and Methane measurement in ambient air**

The GHG Analyzer will be installed at western Himalayan monitoring site at IHBT Campus, Palampur (H.P.) and will be integrated with the NPL's Continuous Ambient Air Monitoring Station (CAAMS)' for remote monitoring, data acquisition and transmission of data to NPL via GPRS and/or LAN.

S.No.	Item	Specifications
1	Name of instrument	Greenhouse Gas (GHG) Analyzer for continuous measurement of ambient carbon dioxide (CO <sub>2</sub> ) and methane (CH <sub>4</sub> ) using CRDS based technique. The GHG analyzer should be supplied with complete ambient air sampling system (with provision to draw the ambient air samples from a height of ~ 15 meters, and removal of ambient moisture etc), sequencer and other required accessories and spares for continuous operation. The GHG analyzer should have capability to provide dry mole fractions of CO <sub>2</sub> and CH <sub>4</sub> along with water vapor correction values. Quotation should include itemized quote for each component.
2	Working range	<ul style="list-style-type: none"><li>• CO<sub>2</sub> operating range from 200 to 1000 ppm or better</li><li>• CH<sub>4</sub> operating range from 0.5 to 20 ppm or better</li></ul>
3	Precision	<ul style="list-style-type: none"><li>• ± 0.1 ppm or better for CO<sub>2</sub></li><li>• ± 2 ppb or better for CH<sub>4</sub></li></ul>
4	Accuracy	± 4%, or better
5	Power requirement	230 ± 10% VAC / 50 ± 5% Hz
6	Output signals (Either A or B)	A. Industrial output signals of 4-20 mA current loop to be provided for integration of GHG analyzer's data acquisition system with that of CAAMS data system for transmission of data to NPL from remote location through GPRS and/or LAN. Vendor will ensure technical help in integration of data acquisition system with that of CAAMS system.



		B. Otherwise vendor should provide a complete and compatible data transmission & receiving system for using GPRS from monitoring site to NPL . All SIM recurring rental and modem charges (for first year) will be borne by vendor
7	Warranty	Two year's on-site warranty after installation and commissioning
8	Installation and training	Onsite demonstration and training for at least two persons for five working days or more (as per requirement )
9	Instrument manual	Operating manuals should be provided
10	Calibration cylinders (Optional)	Eight GHG calibration mixtures covering the range of mole fractions of CO <sub>2</sub> from 350 ppm to 500 ppm and CH <sub>4</sub> from 1500 ppb to 3000 ppb traceable to NMI in eight cylinders of size ≥ 30 liters with Two-Stage High-Purity Nickel Plated Brass Regulators- (Noncorrosive Model).
11	Additional Spares and accessories (optional)	Sufficient for two years of operations. Provide itemized list of spares.
12	Onsite Extended Warranty (optional)	For two years after warranty period
13	AMC (optional)	AMC should be quoted for two years after the warranty period

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