Annexure I

Supply of vacuum measurement system as per following schedule and specification:

SN	Item	Quantity
1	Penning/ Cold Cathode Gauge head (Transducer)	14 Nos
2	Pirani/ thermocouple Gauge head (Transducer)	18 Nos
3	Compatible gauge controller(s) suitable for above number of gauges (18 Pirani/thermocouple gauges + 14 Penning/cold cathode gauges)	1 set (Suitable for accommodating the above number of gauges.)
4	Spare measurement boards for gauge controller	1 set (Suitable for 2 Nos of Penning/Cold Cathode gauge and 4 Nos of Pirani/thermocouple gauges)
5	Pirani/ thermocouple Gauge Cable – 25 m long or more	18 Nos
6	Penning/ Cold Cathode Gauge Cable – 25 m long or more	14 Nos
7	Gauges controller power cable	Equal to the number of controllers

GENERAL CONDITIONS

1. Vendor's qualifying Criteria:

i. Offers will be accepted only from OEM or from its authorized supplier. The firm/supplier/bidder should submit their offer along with valid authorization certificate of their Principal/ Manufacture. Without valid authorisation certificate offer will not be considered.

ii. The OEM must have service centre/facility in India for any maintenance required. The address of the service centre/centres and contact details has to be mentioned in the technical offer. Without service centre in India the offer will not be considered.

iii. The vendor must have supplied same branded gauges and controllers to any Government or Government sponsored Institutions like BARC/ISRO/DRDO/IIT/NIT/ PSU etc. previously. A list of customer and their contact details have to be submitted along with the offer.

2. Site acceptance test:

i. All the gauges shall be checked for operation in vacuum at VECC before final acceptance.

Note:

1. *All items will be accepted from single party only. Incomplete offers will be summarily rejected.*
2. *The parties submitting the offer shall fill the technical compliance sheet as per Annexure II.*

Detailed Specification of the Vacuum Measurement System

1	**Penning/ Cold Cathode Gauge (head only)**	**14 Nos**
	Measurement Principle	**Penning /cold cathode** (without any built-in electronics integrated within gauge head; the gauge head should be connected to the display control electronics through sensor interface cable)
	Measurement Rage	$5 \times 10^{-3} – 1 \times 10^{-9}$ (mbar)
	Measurement error (Max)	**± 30% of reading in the range of ($1 \times 10^{-8} – 1 \times 10^{-3}$ mbar)**
	Repeatability	**±** 5%
	Mounting Orientation	Any
	operating temperatures	15 – 50 deg C
	Flange Connection	ISO-25/40 KF
2	**Pirani/ thermocouple Gauge (head only)**	**18 Nos**
	Measurement Principle	**Pirani / thermocouple** (without any built-in electronics integrated within gauge head; the gauge head should be connected to the display control electronics through sensor interface cable)
	Connection Flange	DN 10/16/25 ISO-KF
	Measurement Range	1000-2×10^{-3} mbar
	Accuracy	**±30% of reading in the range of 1×10^{-1} to 10 mbar**
		up to factor 2 of reading in the range of ≤10-2 mbar
	Repeatability	**±** 2% in the range 0.01 – 100 mbar
	overpressure	> 1.5 bar
	Bake Out Temp	> 80 °C
3	**Compatible gauge controller(s) suitable for above number of gauges (18 Pirani/ thermocouple + 14 Penning/ cold cathode)**	**Suitable for accommodating the above number of gauges (4-7 number of gauges per controller). Each controller shall be configured for atleast 2 Nos of Pirani/thermocouple gauges.**
	Number of pirani/thermocouple gauges to be accommodated	18
	Number of penning gauges to be accommodated	14
	Measurement range	$5 \times 10^{-3} – 1 \times 10^{-9}$ mbar for cold cathode
		1000-2×10^{-3} mbar for pirani
	Output signal per gauge	0 to 10V
	Error message	>10V
	Display	LCD/TFT
	Communication	**RS-232/422/485 with protocol details**
	Relay	**Potential free switching contacts**
	Relay switch rating	**30 VDC (max), 2A (max)**

	Relay Setpoints	**Two adjustable thresholds (High and low) for each gauge.**
	Local Panel	**For configuration of controller and gauges**
	Pressure unit	mbar, torr, Pascal
	Power Supply	Single phase as per Indian Standard
4	**Spare measurement boards for gauge controller**	**Suitable for 2 Nos of Penning/Cold Cathode gauge and 4 Nos of Pirani/thermocouple gauges**
5	**Pirani/ thermocouple Gauge Cable – 25 m long or more**	**18 Nos**
6	**Penning/ Cold Cathode Gauge Cable – 25 m long or more**	**14 Nos**
7	**Gauge controller power cable**	**Equal to the number of controllers**

Note: *The supply must contain user manuals for all gauges and controllers, document for communication protocol details and accessories for complete installation."*

ANNEXURE II

GENERAL TERMS COMPLAINCE

SN	DESCRIPTION	Bidders response
1	The supplier is an OEM/ Authorized by the OEM	
2	If Authorized by OEM, whether Valid authorization certificate is attached.	
3	Whether OEM's catalogue supporting the confirmation of our specifications and model/part number is attached	
4	Whether OEM has service centre/facility in India	
5	If yes, whether address and contact information of the service centre/centres is attached	
6	Whether previous Purchase order from any Government or Government sponsored Institutions like BARC/ISRO/DRDO/IIT/NIT/PSU etc. for the offered brand is attached	
7	Whether site acceptance test mentioned in this specification is agreed	

TECHNICAL COMPLAINCE

SN	Item	Specification	Specification of the offered item
1	**Penning/ Cold Cathode Gauge (head only)**		
	Measurement Principle	Penning /cold cathode gauge (without any built-in electronics integrated within gauge head; the gauge head should be connected to the display control electronics through sensor interface cable)	
	Measurement Rage (mbar)	$5 \times 10^{-3} – 1 \times 10^{-9}$ (mbar)	
	Measurement error (Max)	**± 30% of reading in the range of ($1 \times 10^{-8} – 1 \times 10^{-3}$ mbar)**	
	Repeatability	**±** 5%	
	Mounting Orientation	Any	
	operating temperatures	15 – 50 deg C	
	Flange Connection	ISO-25/40 KF	
2	**Pirani/ thermocouple Gauge (head only)**		
	Measurement Principle	Pirani / thermocouple (without any built-in electronics integrated within gauge head; the gauge head should be connected to the display control electronics through sensor interface cable)	
	Connection Flange	DN 10/16/25 ISO-KF	
	Measurement Range	$1000\text{-}2\times10^{-3}$ mbar	

	Accuracy	**±30% of reading in the range of 1×10^{-1} to 10 mbar**	
		up to factor 2 of reading in the range of ≤10-2 mbar	
	Repeatability	**±** 2% in the range 0.01 – 100 mbar	
	overpressure	> 1.5 bar	
	Bake Out Temp	> 80 °C	
3	**Compatible gauge controller(s) suitable for above number of gauges (18 Pirani/ thermocouple + 14 Penning/ cold cathode)**		
	Compatible gauge controller(s) suitable for above number of gauges (18 Pirani/ thermocouple + 14 Penning/ cold cathode)	**Suitable for accommodating the above number of gauges (4-7 number of gauges per controller). Each controller shall be configured for atleast 2 Nos of Pirani/thermocouple gauges.**	
	Number of pirani/thermocouple gauges to be accommodated	18	
	Number of penning gauges to be accommodated	14	
	Measurement range	$5 \times 10^{-3} – 1 \times 10^{-9}$ mbar for cold cathode	
		$1000-2\times10^{-3}$ mbar for pirani	
	Output signal per gauge	0 to 10V	
	Error message	>10V	
	Display	LCD/TFT	
	Communication	**RS-232/422/485 with protocol details**	
	Relay	**Potential free switching contacts**	
	Relay switch rating	**30 VDC (max), 2A (max)**	
	Relay Setpoints	**Two adjustable thresholds (High and low) for each gauge.**	
	Local Panel	**For configuration of controller and gauges**	
	Pressure unit	mbar, torr, Pascal	
	Power Supply	Single phase as per Indian Standard	