



**TENDER DOCUMENT FOR SUPPLY OF
CALIBRATION LAB. INSTRUMENTS / EQUIPMENT**

(THERMAL, PRESSURE AND ET PARAMETER)

**NSIC TECHNICAL SERVICES CENTRE,
THE NATIONAL SMALL INDUSTRIES CORPORATION LTD.
(A GOVT OF INDIA ENTERPRISE)
SECTOR B – 24, GUINDY INDUSTRIAL ESTATE,
EKKADUTHANGAL, CHENNAI- 600 032.**

TEL: 22252335/6/7/8

Email-ntscche@nsic.co.in

FAX: 22254500

TENDER NOTICE FOR SUPPLY OF

CALIBRATION LAB INSTRUMENTS / EQUIPMENT (THERMAL, PRESSURE AND ET PARAMETER)

TENDER NOTICE NO. NTSC(C): CAL/05/2016

Date: 02-05-2016

Sealed tenders are hereby invited on behalf of Chairman Cum Managing Director of NSIC Ltd., under two-bid system (technical & price bid) from eligible and reputed manufacturers/Authorized dealers, for the following items.

Name of the items	Est. Cost (Rs Lacs)	EMD (Rs)	Delivery time	Issue of tender	Last Date of submission
Manufacture, Supply and Installation of Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter) with standard Features, Spares and Accessories.	9.75	10,000/-	4 weeks	05-05-2016 to 19-05-2016 Upto 4.30 PM	19-05-2016 upto 5.00 P.M.

1. Blank Tender documents (non-transferable) for the above Calibration lab Instruments / Equipment shall be issued from 05-05-2016 to 19-05-2016 (upto 4.30 P.M.) on all working days from the address given below on payment of required tender fee of Rs.500/- (non-refundable) in cash/DD in favour of NSIC – A/c. NTSC, payable at Chennai. The intending tenderers can also download complete tender documents from NSIC website www.nsic.co.in and can submit the same along with required tender cost and earnest money.
2. While submitting the Tender Documents, the tenderers shall furnish company profile, list of clients, performance certificate from the recent supplies (i.e, within the last one year) and net work of after-sales-service., etc.
3. The Tender issuing authority reserves the right to issue or refuse to issue the tender documents to any party without assigning any reason thereof.
4. Tenders not accompanied by Earnest Money Deposit and tender cost (if downloaded from NSIC website) in the prescribed form shall be summarily rejected.
5. NSIC reserves the right to reject all or any Tender wholly or partly without assigning any reason whatsoever.

**General Manager,
NSIC Technical Services Centre,
B-24, Guindy Indl. Estate,
Ekkaduthangal, Chennai-32**

NSIC TECHNICAL SERVICES CENTRE
THE NATIONAL SMALL INDUSTRIES CORPORATION LTD.
B-24, GUINDY INDUSTRIAL ESTATE,
EKKADUTHANGAL, CHENNAI-32

TENDER NOTICE NO. NTSC(C): CAL/05/2016

Date: 02-05-2016

M/s. -----

Sub: Manufacture, Supply and Installation of Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter)

Sir,
Tender documents in respect of the above supply of Calibration Lab Instruments / Equipment as detailed in the schedule of rates are forwarded herewith. Please note that tender is to be delivered in the office of the General Manager at NSIC Technical services Centre, B-24, Guindy Indl. Estate, Ekkaduthangal, Chennai-32 **upto 5.00 P.M. on 19.05.2016**

The Tender should be signed, dated and witnessed in all places provided for in the documents, all other papers should be initialed.

The tender should be accompanied by Earnest Money Deposit. Tenders without earnest money deposit shall be summarily rejected. The Technical bid of the bidders will be opened at **5.30 P.M. on 19-05-2016** and price bid of the technically qualified bidders will be opened on a later date. All technically qualified bidders will be intimated accordingly.

The person, signing the tender on behalf of another person or on behalf of firm shall attach with tender a certified copy of the power of attorney on a non-judicial stamp paper of requisite value duly executed in his favour by such person or all the partners of the firm and must state specifically that he has authority to sign such tenders for and on behalf of other person or firm as the case may be, and in all matters pertaining to the supply including arbitration clause.

This letter shall be signed and returned along with the tender documents.

Yours faithfully

GENERAL MANAGER-NTSC

SIGNATURE OF THE SUPPLIER

Encl.: 19 Pages

NSIC TECHNICAL SERVICES CENTRE
THE NATIONAL SMALL INDUSTRIES CORPORATION LTD.
B-24, GUINDY INDUSTRIAL ESTATE,
EKKADUTHANGAL, CHENNAI-32

TENDER NOTICE NO. NTSC(C): CAL/05/2016

Date: 02-05-2016

INDEX OF TENDER DOCUMENTS

SL. NO.	DESCRIPTION	PAGES
1	INSTRUCTION TO TENDERERS	5-8
2	GENERAL CONDITIONS	9-10
3	DEFINITION	11
4	TECHNICAL SPECIFICATIONS FOR Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter)	12-18
5	SCHEDULE OF RATES	19

INSTRUCTIONS TO TENDERERS

1.0 GENERAL

Tenderers are advised to acquaint themselves fully with the specifications of Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter), scope of services, delivery schedule and terms and conditions including all the provisions of the Tender Document before framing up their tender.

2.0 SUBMISSION OF TENDER

- a) The tender complete in all respects shall be submitted along with Earnest Money as stipulated in the Notice Inviting Tender. Tenders without Earnest Money Deposit will be out rightly rejected.
- b) Tenders shall be submitted in two separate sealed envelopes in the following manner, duly superscribed as below.

ENVELOPE – I (TECHNICAL BID)

Name of the Calibration Lab
Instruments / Equipment
(Thermal, Pressure & ET Parameter) :

Tender no. :

Due date & time of opening :

Addressed to : **The General Manager,
NSIC Technical Services Centre,
B-24, Guindy Indl. Estate,
Ekkaduthangal, Chennai-32**

From:
Name & address
of the tenderer :

This envelope shall contain the following:-

- Complete technical specifications/list of standard items, to be supplied along with the Instruments/Equipment/ machine, other accessories required for normal running of the Instruments/ machine for two years and optional items are to be quoted separately.
- EMD shall be accepted only in the form of Demand Draft drawn on a nationalized bank in favour of “NSIC Ltd, A/c. NTSC” payable at Chennai.

- List of at least five clients where the party has supplied the similar kind of Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter) of quoted specifications during last two years, preferably within Tamilnadu.
- Company profile
- Standard catalogue with detailed specifications for the quoted model of the Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter).
- AFTER SALE SERVICE: Availability of local support and please specify the service network
- DELIVERY PERIOD: within 4 weeks from the date of confirm order.

ENVELOPE – II

(PRICE BID)

Name of Calibration Lab
Instruments / Equipment
(Thermal, Pressure & ET Parameter) :

Tender No. :

Addressed to : **General Manager,
NSIC Technical Services Centre,
B-24, Guindy Indl. Estate,
Ekkaduthangal, Chennai-32**

From:
Name & address
of the tenderer :

Note: This part shall contain total price including taxes, statutory levies as applicable with break-up of packing, transport, transit insurance, training, erection / commissioning and Warranty etc.

3.0 QUALIFYING CRITERIA

Bidders having following valid documents will be technically qualified and considered for opening their price bid. Technically qualified party has no right to claim for award of the tender. Corporation reserves the right to cancel or award the order to any party / bidders.

- Registration with Sales Tax Department for supply of Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter)
- Authorised dealers should enclose a copy of certificate in support of their dealership from manufacturer.

4.0 VALIDITY OF OFFER

Tender submitted by tenderers shall remain valid for acceptance for a minimum period of 60 days from the date of opening of the tenders. The tenderers shall not be entitled during the said period of 60 days, to revoke or cancel their Tender or to vary the Tender given or any term thereof, without the consent in writing of the Corporation. In case of tenderers revoking or cancelling their tenders or varying any terms in regard thereof without the consent of the corporation in writing, the Corporation shall forfeit the Earnest money paid by them along with their tender without giving any notice.

5.0 PURCHASE PREFERENCE TO PUBLIC SECTOR ENTERPRISES

Corporation reserves the right to allow purchase preference facilities to public sector enterprises as admissible under the existing Government policy.

6.0 ACCEPTANCE / REJECTION OF TENDER

- i) Corporation does not bind itself to accept the lowest tender.
- ii) Corporation also reserves the right to accept or reject any tender in part or full without assigning any reason whatsoever.
- iii) Corporation also reserves the absolute right to reject any or all the tenders at any time solely based on the past unsatisfactory performance by the bidder(s) the opinion/decision of NSIC TSC regarding the same shall be final and conclusive.
- iv) The quality of materials used, finishing, aesthetic appearance, maintainability, maintenance support and reputation of the organisation will be given preference.

7.0 CORRECTIONS

No corrections or overwriting will be entertained in schedule of rates by using correcting fluid.

8.0 FIRM RATES

The rates quoted by bidder shall remain firm till the completion of all supply / commissioning, even during the extended period if any, on any account whatsoever. It may be noted that no deviation on this account will be acceptable and the offer not containing firm price shall not be considered.

9.0 LIQUIDATED DAMAGES

Time is the essence of the contract. In case the CONTRACTOR fails to deliver the instruments/machine / materials, complete the work within the stipulated period and clear the site, he shall be liable to pay liquidated damages @ 0.5% (One Half of one percent only) of the value of contract per week and or part thereof of the delay subject to a maximum of 10% (ten percent only) of the value of the contract. The parties agree that this is a genuine pre-estimate loss / damage which will be suffered on account of delay on the part of the Contractor and the said amount will be payable on demand without there being any proof of the actual loss of damages caused by such delay.

The amount of Compensation may be adjusted or set-off against any sum payable to the Contractor.

General Manager-NTSC

GENERAL CONDITIONS

1. The parties submitting the tenders are assumed that they are fully aware about the site conditions, specification of the Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter) etc. and no claims whatsoever in this account shall be entertained.
2. The EMD amount of the successful tenderer shall be retained and adjusted later on. The EMD of the other parties shall be returned.
3. If the successful tenderer fails to deliver / supply the Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter) within the stipulated period, from the date of confirm order, the Corporation shall be at liberty to forfeit the EMD deposited by the party and place the supply order on the other party.
4. The payment shall be released in stages as mentioned below:
 - a) 70% of the accepted order value against receipt of Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter) at our centre in good condition, 25% of order value after installation ,commissioning and satisfactory report of working and balance 5% after completion of guarantee period of one year.

The statutory deductions as applicable shall be deducted from each running bill.

5. The supply of the items may be splitted and supply order may be placed on more than one party. The decision of the General Manager- NTSC shall be final and binding upon the party.
6. The Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter) and accessories shall be delivered at NSIC Technical Services Centre, B-24, Guindy Indl. Estate, Ekkaduthangal, Chennai-32 and the party has to quote their rates including taxes, duties, transportation, loading-unloading, charges for transit insurance etc. (FOR NTSC, Chennai basis) as mentioned in schedule of rates.
7. The Centre will not be held liable for any postal delay or any other reasons beyond its control in any of the communication in respect of this tender.
8. The tenderer must ensure that the price quoted shall not be higher than those quoted to any other Government Department for the same item in the last one year from the date of submitting this offer.
9. Tenderer must invariably indicate their full address, telephone, Mail ID and fax numbers, website etc. in the tender.
10. **REJECTION OF ITEM / ITEMS:** All the liabilities on the account of rejection of the items supplied, short packing defect, transit damages and loss etc. will be on the supplier's account and this Centre will not be liable in any manner on this account.

11. **ARBITRATION:**

Except where otherwise provided for, all questions and disputes relating to the meaning of the specifications, designs, and instructions herein before mentioned and as to the quality of workmanship or materials used onto work or as to any other question, claim right matter or thing whatsoever in any way arising out of or relating to the designs, specifications, instructions, orders and conditions or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the Chairman-cum-Managing Director of the National Small Industries Corporation Ltd. or any other person appointed by the Chairman cum Managing Director, National Small Industries Corporation Ltd. willing to act as such arbitrator. There will be no objection if the arbitrator so appointed is an employee of the National Small Industries Corporation Ltd. and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matters in dispute or difference. The arbitrator to whom the matter is originally referred to being transferred or vacating his office or being unable to act for any reason as aforesaid at the time of such transfer, vacation of office or inability to act., Chairman and Managing Director, National Small Industries Corporation Ltd. shall appoint another person to act as arbitrator, in accordance with the terms of the Contract. It is also a term of this supply that no person other than a person appointed by C.M.D., National Small Industries Corporation Ltd., as aforesaid, should act as arbitrator and if for any reason, that is not possible, the matter is not to be referred to arbitration at all.

As aforesaid, the provisions of the Indian Arbitration and Reconciliation Act, 1996, or any statutory modification or re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.

The party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each of such dispute.

The Arbitrator shall be deemed to have entered on the reference on the date, he issued notice to both parties fixing the date of the first hearing. The Arbitrator shall give a separate award in respect of each dispute of difference referred to him.

The venue of arbitration shall be at Chennai.

The award of the arbitrator shall be final, conclusive and binding on all parties.

The cost of arbitration shall be borne by the parties to the dispute, as may be decided by the arbitrator(s).

This contract shall be governed by the Indian Laws for the time being in force. The courts at New Delhi / Delhi only shall have the jurisdiction.

GENERAL MANAGER- NTSC

SIGNATURE OF THE TENDERER

DEFINITION

1. Where the context so requires, words importing the singular only also include the plural and vice versa.
2. Corporation shall mean 'The National Small Industries Corporation Ltd'.
(A Government of India Enterprise) NSIC Bhawan, Okhla Industrial Estate, New Delhi -110 020 and shall include their legal representatives, successors and permitted assigns.
3. The 'Site' shall mean the factory premises of NTSC Chennai.
4. The 'Competent Authority' means the Chairman cum Managing Director of the Corporation and his successors or any other officer of the Corporation duly authorised by him or his successor.
5. The General Manager-NTSC means the officer who holds the charge of that post in the Corporation at B-24, Guindy Indl. Estate, Ekkaduthangal, Chennai- 32 during the currency of this agreement, to act on behalf of the Chairman of the NSIC Ltd.

TECHNICAL SPECIFICATIONS

Specifications of Calibration Lab Instruments / Equipment

SI No	Discription	QTY
01	Temperature Calibrator	01 No
02	High Temperature Calibrator	01 No
03	a) Digital Pressure Calibrator	01 No
	b) Comparison Test Pump	01 No
04	Multi – Function Calibrator	01 No

1. Temperature Calibrator

Temperature Range	-40 from ambient to 123 °C
Resolution	0.1 °C
Stability	± 0.05 °C
Stabilization Time	To Specify
Accuracy	± 0.3 °C (or) Better
Well (Immersion) depth / dia	100 mm / 19 mm
Interchangeable Thermo wells (Provided)	1/4" & 1/2"
Heating Time	To Specify
Cooling Time	To Specify
°C / °F	Switchable
Current Input	0 to 24 mA
Power	220VAc / 50 Hz

2. High Temperature Calibrator

POWER SUPPLY	
Line Voltage / Frequency	220 VAc \pm 10% / 50 Hz (or) 440 VAc \pm 10% / 50 Hz
READOUT SPECIFICATIONS	
Temperature Units	$^{\circ}$ C / $^{\circ}$ F
Resolution (Manual Selection)	0.1 $^{\circ}$ C / 0.1 $^{\circ}$ F
THERMAL SPECIFICATIONS	
Maximum Temperature	1500 $^{\circ}$ C
Minimum Temperature	500 $^{\circ}$ C
Basic Accuracy	Within 0.5% of indicated temperature
Immersion Depth	To Specify
Stability	\pm 2 $^{\circ}$ C
Stability time	To Specify
Heating Element	To Specify
Heating Time to Max	To Specify
Emissivity	0.97 to 0.98
Thermowells and Interchangeable Thermowells	To Specify

3. a) Digital Pressure Calibrator

Ranges	0 to 700 bar
Accuracy	\pm 0.025 % F.S. + 1 digit
Resolution	Minimum 5 Digits
Display	Graphical Display
Engineering Units	Bar, mbar, kPa, MPa, cmH ₂ O, ftH ₂ O, inH ₂ O, mmHg, inHg, ftHg, Kg/cm ² , PSI, Atm.
Temperature Compensation	0 to 50 $^{\circ}$ C (Automatic)
mA Input	0 – 50 mA DC
Volts Input	0 – 30 V DC
Overload	25 % F.S.
Overload Activated Alarm	At 120 % F.S.
Pressure Switch Test	Maximum 9 V DC

3. b) Comparison Test Pump:

Ranges	0 to 700 bar
Type	Screw Pump
Pressure Generation	Priming Pump for initial pressure & Screw RAM Pump for high pressure
	Priming Pump With Fine Adjustment Vernier for Incremental Pressure generation
Test Port Connection	½ “ BSP (F) Swivel
Medium	Oil
Adapters	To specify the Size.

4. Multi – Function Calibrator (MFC)

Specifications

IN/OUT parameters:

<u>Signal</u>	mV, V, mA, Ω, KΩ, frequency, pulses
<u>thermocouples</u>	J, K, T, R, S, B, N, C, E, U, L, F, G, D
<u>resistance</u>	Pt100 IEC, OIML, USLAB, US, SAMA, JIS Pt200, 500, 1000, 1000
<u>thermometers</u>	OIML, Ni100, Ni120, Cu10, Cu100

Reference junction compensation:

internal automatic from -10 °C to +55 °C
external adjustable from -50 °C to +100 °C
remote with external Pt100 from -10°C to +100 °C

Rj compensation drift:

± 0.015°C/°C (from -10 °C to +55 °C)

Rj compensation error:

internal : ±0.15°C
remote : ±0.3°C

Common mode rejection:

>140 dB at ac operation

Normal mode rejection:

>70 dB at 50 or 60 Hz

Temperature stability:

for temperature exceeding the band +18°C to +28°C (from +64 °C to +84 °F) *full scale*: ± 8 ppm/°C
zero: ± 0.2 μV /°C

Output impedance (emf output):
< 0.5 Ω with 0.5 mA maximum current

Input impedance (mV, V and Tc ranges): >10 M Ω

Input impedance (mA ranges):
<140 Ω @ 1 mA

Source resistance effects:
 ± 1 μ V error for 1000 ohms source resistance

Rtd and Ω simulation excitation current:
from 0.01 to 5 mA

Rtd and Ω measurement excitation current:
~ 0.4 mA @ 400 Ω
~ 0.04 mA @ 4000 Ω

Rtd connection:
2, 3, and 4 wires

Rtd cable compensation:
up to 100 Ω (each wire)

Rtd cable compensation error (Pt100):
 $\pm 0.005^{\circ}\text{C}/\Omega$ of total wire

Maximum load resistance:
1000 Ω @ 20 mA

Display:
graphic LCD 240 x 64 dots display with LED backlight device

Measurement sampling time:
250 ms

Output noise (at 300 Hz):
<2 μ Vpp for ranges up to 200 mV f.s.,
<10 μ Vpp for ranges up to 2 V f.s.
<80 μ Vpp for ranges up to 20 V f.s.

Digital interface:
full bidirectional TTL (a RS232 adapter normal or insulated, is available as an option)

Channel 1-Channel 2 insulation:
50 Vdc

Calculation functions:
hold, max, min, offset, average

Selection $^{\circ}\text{C}/^{\circ}\text{F}/\text{K}$:
through the configuration procedure

In/Out data memory:

20 data with manual or automatic recall

Logging mode:

>1500 input data items (optional memory card for memory extension)

Convert function:

displays the electrical equivalent of the engineering unit

Scale factor:

5 different setting with zero and span programmable within -399999 and +999999

Square root:

in combination with scale factor

Calibration:

self learning technique with automatic procedure

Power supply:

external supply or rechargeable Ni-Cd battery

Battery life:

6h on Tc and mV input/output (backlight Off)

3.5h with 20 mA simulation (backlight Off)

Recharging time:

5h at 90% and 6h at 99% with instrument switched off. The battery charging is active only with the instrument switched off.

Battery charge indication:

bar graph on the LCD display

Line operation:

100 - 120 – 230 Vac with the external battery charger

Line transformer insulation:

2500 Vac

Firmware release identification:

release code on the display

Operating environment temperature

range: from -10 °C to +55 °C (from 14 °C to 131 °F)

Storage temperature range:

from -30 °C to +60 °C (from -22 °C to 140 °F)

Case: Injection moulded ABS with internal metal coating.

Ranges and Accuracies

IN-OUT RANGES

Sensor or parameter	Total range	High accuracy range	Resolution	Accuracy (% of reading)	Accuracy (% of reading)
Tc type J	-210 to 1200°C	-190 to 1200°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	-350 to 2200°F	-310 to 2192°F	0.1°F	±(0.01% +0.18F)	± (0.02% +0.18 °F)
Tc type K	-270 to 1370°C	-160 to 1260°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	454 to 2500°F	-256 to 2300°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Tc type T	-270 to 400°C	-130 to 400°C	0.01°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	-454 to 760°F	-238 to 752°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Tc type R	-50 to 1760°C	150 to 1760°C	0.1°C	±(0.01% +0.2°C)	± (0.02% +0.2 °C)
	-60 to 3200°F	302 to 3200°F	0.1°F	±(0.01% +0.36°F)	± (0.02% +0.36 °F)
Tc type S	-50 to 1760°C	170 to 1760°C	0.1°C	±(0.01% +0.2°C)	± (0.02% +0.2 °C)
	-60 to 3200°F	338 to 3200°F	0.1°F	±(0.01% +0.36°F)	± (0.02% +0.36 °F)
Tc type B	50 to 1820°C	920 to 1820°C	0.1°C	±(0.01% +0.3°C)	± (0.02% +0.3 °C)
	140 to 3310°F	1688 to 3308°F	0.1°F	±(0.01% +0.54°F)	± (0.02% +0.54 °F)
Tc type C	0 to 2300°C	0 to 2000°C	0.1°C	±(0.01% +0.2°C)	± (0.02% +0.2 °C)
	32 to 4180°F	32 to 3632°F	0.1°F	±(0.01% +0.36°F)	± (0.02% +0.36 °F)
Tc type G	0 to 2300°C	190 to 2300°C	0.1°C	±(0.01% +0.3°C)	± (0.02% +0.3 °C)
	32 to 4180°F	374 to 4172°F	0.1°F	±(0.01% +0.54°F)	± (0.02% +0.54 °F)
Tc type D	0 to 2300°C	0 to 2130°C	0.1°C	±(0.01% +0.3°C)	± (0.02% +0.3 °C)
	32 to 4180°F	32 to 3866°F	0.1°F	±(0.01% +0.54°F)	± (0.02% +0.54 °F)
Tc type U	-200 to 400°C	-160 to 400°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	-330 to 760°F	-256 to 752°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Tc type L	-200 to 760°C	-200 to 760°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	-330 to 1400°F	-328 to 1400°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Tc type N	-270 to 1300°C	0 to 1300°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	-450 to 2380°F	32 to 2372°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Tc type E	-270 to 1000°C	-200 to 1000°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	-454 to 1840°F	-328 to 1832°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Tc type F	0 to 1400°C	0 to 1400°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	32 to 2560°F	32 to 2552°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Pt100 IEC	-200 to 850°C	-200 to 850°C	0.01°C	±(0.01% +0.05°C)	± (0.02% +0.05 °C)
OIML, a 3926	-330 to 1570°F	-328 to 1562 °F	0.1°F	±(0.01% +0.09°F)	± (0.02% +0.09 °F)
Pt100	-200 to 650°C	-200 to 650°C	0.01°C	±(0.01% +0.05°C)	± (0.02% +0.05 °C)
a 3902	-330 to 1210°F	-328 to 1210°F	0.1°F	±(0.01% +0.09°F)	± (0.02% +0.09 °F)
Pt100 JIS	-200 to 600°C	-200 to 600°C	0.01°C	±(0.01% +0.05°C)	± (0.02% +0.05 °C)
SAMA	-330 to 1120°F	-328 to 1112°F	0.1°F	±(0.01% +0.09°F)	± (0.02% +0.09 °F)
Pt 200	-200 to 850°C	-200 to 850°C	0.1°C	±(0.01% +0.15°C)	± (0.02% +0.15 °C)
	-330 to 1570°F	-328 to 1562°F	0.1°F	±(0.01% +0.27°F)	± (0.02% +0.27 °F)
Pt 500	-200 to 850°C	-200 to 530°C	0.1°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
	-330 to 1570°F	-328 to 986°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
Pt1000 IEC	-200 to 850°C	-200 to 850°C	0.01°C	±(0.01% +0.1°C)	± (0.02% +0.1 °C)
OIML	-330 to 1570°F	-328 to 1562°F	0.1°F	±(0.01% +0.18°F)	± (0.02% +0.18 °F)
CU10	-70 to 150°C	-70 to 150°C	0.1°C	±(0.01% +0.4°C)	± (0.02% +0.4 °C)
	-100 to 310°F	-94 to 302°F	0.1°F	±(0.01% +0.72°F)	± (0.02% +0.72 °F)
CU100	-180 to 150°C	-180 to 150°C	0.1°C	±(0.01% +0.05°C)	± (0.02% +0.05 °C)
	-300 to 310°F	-292 to 302°F	0.1°F	±(0.01% +0.09°F)	± (0.02% +0.09 °F)
Ni100	-60 to 180°C	-60 to 180°C	0.1°C	±(0.01% +0.05°C)	± (0.02% +0.05 °C)
	-80 to 360°F	-76 to 356°F	0.1°F	±(0.01% +0.09°F)	± (0.02% +0.09 °F)
Ni120	0 to 150°C	0 to 150°C	0.1°C	±(0.01% +0.05°C)	± (0.02% +0.05 °C)
	32 to 310°F	32 to 302°F	0.1°F	±(0.01% +0.09°F)	± (0.02% +0.09 °F)
mV		-20 to +200mV	1µV	±(0.01% +2µV)	± (0.02% +2 µV)
mV		-0.2 to +2 V	10 µV	±(0.01% +10 µV)	± (0.02% +10 µV)
V		-2 to +20 V	0.1mV	±(0.01% +0.08mV)	± (0.02% +0.08 mV)
mA (In)		-5 to +50mA	0.1µA	±(0.01% +0.4µA)	± (0.02% +0.4 µA)
mA (Out)		0 to +50mA	0.1µA	±(0.01% +0.4µA)	± (0.02% +0.4 µA)
Ω IN		0 to 500Ω	1mΩ	±(0.01% +12mΩ)	± 0.02% +12 mΩ)
		0 to 5000 Ω	0.01Ω	±(0.01% +120mΩ)	± (0.02% +120 mΩ)
Ω OUT		0 to 500 Ω	1 mΩ	±(0.01% +20mΩ)	± (0.02% +20 mΩ)
		0 to 5000 Ω	0.01Ω	±(0.01% +200mΩ)	± (0.02% +200 mΩ)
Frequency		1 to 200 Hz	0.001 Hz	±(0.005% +0.001 Hz)	
		1 to 2000 Hz	0.01	±(0.005% +0.001 Hz)	
		1 to 20000 Hz	0.1 Hz	±(0.005% +0.001 Hz)	
Pulse counter		0 to 10 ⁶ counts	1 count	infinite	
Pulse (Out)		0 to 6000 pulse/min	1 pulse/min	1 pulse / min	
		0 to 36000 pulse/h	1 pulse/h	1 pulse / min	

Note:

- The relative accuracies shown above are stated for 360 days and the operative conditions are from +18°C to +28°C
- Typical 90 days relative accuracy can be estimated by dividing the "% of reading" specifications by 1.6.
- Typical 2 years relative accuracy can be estimated by multiplying the "% of reading" specifications by 1.4.
- All input ranges: additional error ±1 digit.

Calibration Lab Instruments / Equipment with Spares and Standard Accessories

Manufacture, Supply and Installation of Calibration Lab Instruments / Equipment (Thermal, Pressure and ET Parameter).

1. **STANDARD ACCESSORIES**

In case spares/accessories are applicable, their list and price should be clearly indicated separately with specifications and quantity for 2 years normal running and the cost of the same shall be included in the basic price of the instruments/ machines and the cost of such accessories shall be indicated separately also.

2. **Tooling**

The supplier should quote standard tools package offered with the Instruments / Equipment. Also quote **SEPARATELY** for all the optional tools

3. **Packing**

All equipment / Instruments shall be suitably Packed and Protected against Corrosion and Damage.

4. **List of Manuals**

The standard manuals with diagrams (Electrical& Electronics,) and documents must be supplied along with the Instruments / Equipment.

5. **INSTALLATION OF INSTRUMENTS / EQUIPMENT:**

The Instruments / Equipment would be installed at our Calibration lab (NTSC, Chennai).

6. **ACCEPTANCE / REJECTION**

Items supplied are subject to inspection and acceptance by the NTSC, Chennai or his nominee. Consequent on rejection, the supplier should collect/ replace the rejected items at his cost and risk.

7. **WARRANTY**

One year from the date of Commissioning and Installation.

8. **CALIBRATION**

All Instruments / Equipment produce with valid Calibration Certificate by NABL Accredited Lab.

SCHEDULE OF RATES

Sl. No.	Name of the items	Unit	Qty.	Amount	
				In figures (Rs)	In words (Rs)
01	Temperature Calibrator	No	1		
02	High Temperature Calibrator	No	1		
03	a) Digital Pressure Calibrator	No	1		
	b) Comparison Test Pump	No	1		
04	Multi – Function Calibrator	No	1		
	Applicable Taxes	Total			
	Total Amount (Inclusive of Taxes)	Total			

Total amount in words:**Note:**

The tenderer has to submit the rates for the standard items/accessories/optional items/ training, proposed to be supplied/provided along with Instruments / Equipment, in their price bid, separately.

SIGNATURE OF THE TENDERER WITH SEAL