

## **NOTICE INVITING QUOTATION (NIQ)**

**Date:** 20/11/2013

Sealed quotations on company letterhead are invited from reputed manufactures in India, abroad or their authorized suppliers/ dealers and service agents in India for the supply of the *Multi-channel Strain-gage data logger for static/dynamic strain measurements*. The quotation must provide detailed information of the configuration and specifications of the items as well as price and terms and conditions of the payment. The quotation should mention the total cost of equipment, delivery, installation, commissioning, and demonstration at IIT Delhi.

The quotation should be submitted on or before 5<sup>th</sup> December, 2013 by 5:00 PM in the office of the **Head, Department of Civil Engineering, Room No. 221, Block No. IV, Indian Institute of Technology Delhi, Hauz Khas, New Delhi - 110 016 (INDIA)**. The validity of the submitted quotation must extend up to at least three months. **Interested parties are required to submit their technical and financial bids in separately sealed envelopes and marked respectively as "Technical Bid" and "Financial Bid" on the outside.** The two envelopes should be enclosed inside a single large envelope and marked, **"ATTN: Dr. Dipti Ranjan Sahoo, Sealed Quotation for Multi-channel Strain-gage data logger for static/dynamic strain measurements to be opened by Purchase Committee"**.

**Equipment: Multi-channel Strain-gage data logger for static/dynamic strain measurements (1 No.)**

**General Specifications:**

- Stable, accurate, low-noise signal conditioning
- Measurement accuracy  $\pm 0.05\%$
- Measurement resolution 0.5 microstrain
- Individual 8-channel input cards for strain gage and strain-gage-based transducers
- Electronically selectable, built-in bridge completion for 120-, 350-, and 1000-ohm gages
- Future expansion - Virtually unlimited number of channels in increments of 8 channels
- Maximum scan rate of 2048 samples per second
- Self calibration traceable to NIST standard
- Simultaneous sampling with anti-aliasing filter and analog-to-digital conversion at a rate of 2048 samples per second for every channel
- Selectable digital filtering of measurement signals
- Data logger should operate with "StrainSmart Software" to make it compatible with the existing System 5000

**The various components of the multi-channel strain measurement data logger are as follows:**

**(a) Chassis/Scanner ..... (1 No)**

- Input power: 10 - 32Vdc, 30A (max.)
- Capacity: Up to 4 Input Cards, 8 channels per card. (expandable)
- LCD DISPLAY: 64 x 128 white LED-backlit display
- LED PANEL: Individual LEDs; one per channel to indicate channel status
- Key pad: Membrane. 20-key; 12 key numeric keypad, 5 key navigation keypad
- Ethernet Interface: IEEE 802.3, 802.3u 10Base-T, 100Base-TX, Auto-detect

- Storage: 512 MB (standard); 2GB maximum (Removable)
- Processor: 250MHz floating point digital signal processor
- Memory: 64MB SDRAM
- Cable Connection: TIA/EIA RJ-45, Category 5, 100m distance (max)
- System Accuracy:  $\pm 40$ ppm of setting
- Drift:  $1.9\text{ppm}/^\circ\text{C} \pm 0.6\mu\text{V}/^\circ\text{C}$  typical,  $9.4\text{ppm}/^\circ\text{C} \pm 2.1\mu\text{V}/^\circ\text{C}$  maximum
- Resolution:  $150\mu\text{V}$  nominal, Voltage Range:  $\pm 5\text{V}$

**(b) Strain gage input card .....(2 Nos.)**

- No of channels: Eight per card
- INPUTS: Software selectable for S+/S-, Vcal+/Vcal-, or excitation
- Strain Gage: 120/350/1000 Ohms quarter-bridges; 60-5000 Ohms half- and full-bridges
- Input Impedance: 220Mohms nominal each input
- Source Current:  $\pm 5\text{nA}$  per volt excitation
- Resolution:  $0.5\mu\text{e}$  (GF=2)
- Input Connector: Eight-pin/10-pin TIA/EIA RJ-45
- Amplifier: Zero Temperature Stability, DC Gain Accuracy and Stability, Analog Input
- Excitation: Software controlled,
- Resolution:  $1\text{mV}$ , Accuracy:  $\pm 4\text{mV}$ , Current:  $50\text{mA}$  (max.)
- Shunt Calibration capability

**(c) Analog input card (used in conjunction with straingage card)..... (1 No.)**

- No of channels: Eight per card
- A/D converter: Eight (one per channel)
- Architecture: Sigma-delta
- Resolution: 24 bits
- Conversion rate: 40 k samples/second/channel
- Data recording rate: 2048/1024/512/256/128/64 samples/second/channel
- Analog Anti-alias Filter: Low-pass, 3.5kHz @-3dB, 3 poles
- Topology: GIC, constant delay

**(d) Data Acquisition Software ..... (1 No.)**

- Correction for thermal output, temperature coefficient, and transverse sensitivity of strain gages, as well as nonlinearity errors inherent in the Wheatstone bridge.
- Data from measurements with delta, rectangular, and tee rosettes to be reduced to principal strains and stresses, as well as the equivalent stresses
- Fully reduced and corrected measurement data to be monitored online, and recorded at predetermined limits or at user-defined intervals.
- Test setups and measurement data to be permanently stored for offline display or for use in databases, word processors, and spreadsheets.
- Capability to reduce data in both the time and frequency domains.
- Sensor-specific assignment of inputs (strain gages, thermocouples, etc.), as well as user-defined assignments for mathematical manipulation of measurement data.
- Reduced data available offline Paradox data tables, ASCII text, Microsoft Office formats
- Self-calibration to NIST Standards.

**NOTES:*****Terms of Conditions:***

- A complete set of Manuals for operation, maintenance and safety should be provided. All Documents and Manuals should be in English language.
- Documentation related to guarantee/warranty of equipment to be provided in the name of IIT Delhi.
- Each of the essential specification needs to be responded. Bidder should also provide the timeframe of the delivery. Failure to respond to any essential specification can lead to disqualification.
- Vendor should provide a reference of supply of 10 (TEN) similar equipments to various organizations within India or outside of similar equipment. Any negative comments from any one referred would disqualify the bid. IIT Delhi reserves the right to interact/ visit with the referred customer as per its convenience.
- Pre-installation requirements, if any, should be mentioned along with their detailed technical specifications. All these items should be provided within 2 weeks of Supply Order placement so that IIT Delhi can prepare the installation requirements well in time.
- Vendor is required to supply, install and ensure proper commissioning of the equipment within 30 days of the Supply Order.
- The supplier should demonstrate the performance of the equipment to the specifications by conducting trial tests at the Structures Laboratory.
- The Institute reserves the right to accept/reject any/all the offers without assigning any reason whatsoever.