Government of India
Bhabha Atomic Research Centre
Accelerator and Pulse Power Division
Mumbai – 400 085, INDIA

ENGG. HALL NO. 4

REF. NO.: BARC/APPD/HK/2017/248

DATE: 31.8.2017

Subject: Inviting quotation for "Fabrication of USB based Data Acquisition Controller for pulsed plasma & ion beam diagnostics as per ANNEXURE A for ECRIS at Van De Graff Extension building."

Dear Sir,

On behalf of the President of India, you are invited to quote for "Fabrication of USB based Data Acquisition Controller for pulsed plasma & ion beam diagnostics as per ANNEXURE A for ECRIS at Van De Graff Extension building."

Terms & conditions are given below.

S. No.	Description of the Job	Quantity
1.	"Fabrication of USB based Data Acquisition Controller for pulsed plasma & ion beam diagnostics as per ANNEXURE A for ECRIS at Van De Graff Extension building."	1 Set

Terms and Conditions:

1. The supplier should quote for fabrication of the items, including the cost of the materials.
2. The material will be inspected before the start of the fabrication.
3. The quotations should have the minimum validity period of two month.
4. BARC being a Government organization is exempted from payment of excise duty and Octroi duty. However, excise duty exemption / Octroi duty exemption certificates will be issued if required. Sales Tax @ 12.5% VAT will be applicable. Income tax **@ 3%** & surcharge as applicable on IT will be deducted from your bill.
5. Supplier should submit their offers **via SpeedPost** in their letterhead, placed in sealed envelope super scribed with the above mentioned Reference No., due date and "Fabrication of USB based Data Acquisition Controller for pulsed plasma & ion beam diagnostics as per ANNEXURE A for ECRIS at Van De Graff Extension building." At Van De Graff Extension

building, addressed to Head, APPD, BARC, Trombay, Mumbai-400085, **on or before 15/09/2017** (Before 14:00 hours). The quotation should contain the following details like (i) Period of validity, (ii) terms and conditions of offer, (iii) Approximate period of completion of job, (iv) Copies of registration and income tax clearance certificates.

6. The item shall be subjected to inspection by our Scientists / Engineers at the supplier's works. Necessary inspection facilities should be provided to them during fabrication at the supplier's premises. Additional charges will not be admissible for such minor modifications, if any. The item should be delivered to us at **Van De Graff Extension building, APPD, BARC** after approval by our Scientists / Engineers.
7. Please note that shorter delivery period will be preferred. For any clarifications you may contact, Kewlani Hitesh/ S. H. Gharat APPD, BARC on Tel. 25592070/25593742 .
8. Payment will be made only after delivery and installation of the item to the above-mentioned address and approval by our Scientists / Engineers as per BARC rules.

R. K. Rajawat
Head, APPD, BARC

श्री. आर. के. राजावत / Shri R. K. Rajawat
अध्यक्ष, त्वरक एवं स्पंद शक्ति प्रभाग
Head, Accelerator & Pulse Power Division
भारत सरकार / Government of India
भाभा परमाणु अनुसंधान केन्द्र, मुंबई - 400 085.
Bhabha Atomic Research Centre, Mumbai - 400 085.

Copy to: Accounts Officer,
GSS Section,
Central Complex, BARC.

Annexure – I

"Fabrication of USB based Data Acquisition Controller for pulsed plasma & ion beam diagnostics as per ANNEXURE A for ECRIS at Van De Graff Extension building."

SR.NO.	TITLE	QUANTITY
1	**I. Fabrication of USB based DAQ** **Features:** **Analog Input**: Number of channels :16 differential or 32 single ended ADC resolution :16 bits Sample rate Single channel maximum 2.00 MS/s Multichannel maximum (aggregate) 1.00 MS/s Timing resolution 10 ns Timing accuracy 50 ppm of sample rate Input coupling DC Input range ±0.1 V, ±0.2 V, ±0.5 V, ±1 V, ±2 V, ±5 V, ±10 V Maximum working voltage for analog inputs (signal + common mode) ±11 V of AI GND CMRR (DC to 60 Hz) 100 dB Input impedance Device on AI+ to AI GND >10 GΩ in parallel with 100 pF AI- to AI GND >10 GΩ in parallel with 100 pF **Analog Triggers** Number of triggers 1 Source AI <0..31>, APFI <0, 1> Functions Start Trigger, Reference Trigger, PauseTrigger, Sample Clock, Convert Clock, Sample Clock Timebase Source level AI <0..31> ±Full scale APFI <0, 1> ±10 V Resolution 16 bits Modes Analog edge triggering, analog edge triggering with hysteresis, and analog window triggering Bandwidth (-3 dB) AI <0..31> 3.4 MHz APFI <0, 1> 3.9 MHz Accuracy ±1% of range APFI <0, 1> characteristics [Analog Programmable Function Interface] Input impedance 10 kΩ Coupling DC **Analog Output** Number of channels 4 DAC resolution 16 bits DNL ±1 LSB Monotonicty 16 bit Maximum update rate (simultaneous) 1 channel 2.86 MS/s 2 channels 2.00 MS/s 3 channels 1.54 MS/s 4 channels 1.25 MS/s Timing accuracy 50 ppm of sample rate Timing resolution 10 ns Output range ±10 V, ±5 V, ±external reference on Output coupling DC Output impedance 0.2 Ω Output current drive ±5 mA Overdrive protection ±25 V Power-on/off glitch Output FIFO size 8,191 samples shared among channels used Data transfers USB Signal Stream, programmed I/O AO waveform modes Non-periodic waveform, periodic waveform regeneration mode from onboard FIFO, periodic waveform regeneration from host buffer including dynamic update Settling time, full-scale step (1 LSB) 2 µs Slew rate 20 V/µs **Digital I/O/PFI [Programmable Function Interface]** Number of channels 48 total [32 (P0.<0..31>), 16 (PFI <0..7>/P1, PFI <8..15>/P2)\ Ground reference D GND Direction control Each terminal individually programmable a input or output Pull-down resistor 50 kΩ typical, 20 kΩ minimum Input voltage protection ±20 V on up to two pins ***Digital IO Features***	02

	Number of counter/timers 4 [Resolution 32 bits] Counter measurements Edge counting, pulse, pulse width,semi-period, period, two-edge separation Position measurements X1, X2, X4 quadrature encoding with Channel Z reloading; two-pulse encoding Output applications Pulse, pulse train with dynamic updates,frequency division, equivalent time sampling Internal base clocks 100 MHz, 20 MHz, 100 kHz **External Digital Triggers** Polarity Software-selectable for most signals Analog input function Start Trigger, Reference Trigger, PauseTrigger, Sample Clock, Convert Clock, Sample Clock Timebase Analog output function Start Trigger, Pause Trigger, Sample Clock,Sample Clock Timebase Counter/timer functions Gate, Source, HW_Arm, Aux, A, B, Z, Up_Down, Sample Clock Digital waveform generation (DO)function Start Trigger, Pause Trigger, Sample Clock,Sample Clock Timebase Digital waveform acquisition (DI)function Start Trigger, Reference Trigger, PauseTrigger, Sample Clock, Sample ClockTimebase Software Supported Labview, QT, Matlab, EPICS **Dimension:** Module with BNC connector 20.3 × 18.5 × 6.8 cm (8.0 × 7.3 × 2.7 in.) Storage temperature -40 to 70 °C	
2	AD210 Isolation Amplifier IC with scoket	02
3	Accessories Bosch Drill machine kit , general purpose circuit board [10 Nos] ,Jumpers cables , as per lab requirement while installation.	1 set

NOTE:

[1] Quote for the entire item, Individual quote will not be considered.

[2] Training and support for DAQ will be provided by supplier at site in BARC.

[3] Minor change in the order will be as per system requirement while installation.

[4] Warranty: Material Repair, replacement of 3 year.