Subject: Inviting quotation for “Fabrication of TTL repeater, stepper motor driver, analog isolator, analog multiplexer module as per ANNEXURE A for ECRIS, IADD, BARC”

Dear Sir,

On behalf of the President of India, you are invited to quote for “Fabrication of TTL repeater, stepper motor driver, analog isolator, analog multiplexer module as per ANNEXURE A for ECRIS, IADD, BARC” Terms & conditions are given below.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Description of the Job</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“Fabrication of TTL repeater, stepper motor driver, analog isolator, analog multiplexer module as per ANNEXURE A for ECRIS, IADD, BARC”</td>
<td>As per Annexure A</td>
</tr>
</tbody>
</table>

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 in their (via speed post) letterhead, placed in sealed envelope super scribed with the above mentioned Reference No., due date and Title Inviting quotation for “Fabrication of TTL repeater, stepper motor driver, analog isolator, analog multiplexer module as per ANNEXURE A for ECRIS, IADD, BARC” addressed to Head, IADD, BARC, Trombay, Mumbai-400085, on or before 24/3/2020 (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, IADD, 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 IADD, 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.

Dr. S. Krishnagopal  
Head, IADD, BARC.
ANNEXURE A

Subject: "Fabrication of TTL repeater, stepper motor driver, analog isolator, analog multiplexer module as per ANNEXURE A for ECRIS, IADD, BARC"

<table>
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<tr>
<th>S.No.</th>
<th>Description of module</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Two 8-Channel TTL Repeater in 2U powder coated Rack</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Single Channel Stepper Motor Driving Unit with enclosure</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Dual Channel Analog Isolator with enclosure</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>8 channel Analog Multiplexer module in 2U powder coated Rack</td>
<td>2</td>
</tr>
</tbody>
</table>

Detailed Description of Each module is as follows

1. Two 8 channel TTL Repeater in 2U powder coated Rack
   - TTL Inputs: 2 Nos with LED indication
   - TTL Outputs: 8 Nos per input channel Total 16 output with LED indication
   - Rise time of TTL Input and Outputs: around 5-10 ns.
   - Time Period Measurement Resolution for Input Signal 15 ns [FPGA base timing measurement]
   - Standalone System with Industry Standard Display for Pulse width and Frequency of Input Signal
   - Frequent and Ton period should be displayed on the front panel for every output and input.
   - TTL Outputs are buffered and Isolation needs to be provided upto 5KV for each channel.
   - Impedance control routing technique should be used to minimize the overshoot and ringing.
   - PCB board should have Immersion Gold/ENIG finish.
   - All the above system including the required isolated power supply and EMI Line Filter should be housed in industrial grade metal enclosure.
   - Supply should make PCB and take the approval of Scientific Officer, IADD, BARC with OPA no. of file.

2. Single Channel Stepper Motor Driving Unit with enclosure
   - Supply Voltage (V) : 12 V to 42 V
   - Supply Current (A) : 5 A
   - Output Current (Amp) : 0 to 4.5
   - Control Signal : 3.3 to 24
   - Micro Step : 1, 2, 8, 16, 32
   - Should have provision for standalone control of Speed, Direction, enable/disable, ON/OFF from front panel of the enclosure & also with digital I/O.
   - All the digital signal should be isolated from the supply signal.
   - Circular 4 pin connectors M12 or M16 [10 Nos] with 4 meter cable [1Nos] should be provided for Stepper motor connection.
   - Should have provision for Limit switch interfacing and appropriate connector [M12 connectors] needs to be provided on the panel. Isolated interface with power supply should be used for Limit switch interfacing.
   - All the above system including the required isolated power supply and EMI Line Filter should be housed in industrial grade metal enclosure.
3. **Dual Channel Analog Isolator with enclosure**
   - High CMV Isolation: 1500 V rms
   - Three-Port Isolation: Input, Output, and Power
   - Input and output range: ±10V
   - Low Nonlinearity: 0.005%
   - Wide Bandwidth: 120 kHz Full-Power (~3 dB)
   - Slew rate: 6 V/microsecond
   - 50 ohm BNC connectors should be provided on the back panel for Inputs and Outputs.
   - Impedance Controlled Routing to match impedance of all Analog signals to 50
   - Power supply should be filtered to maintain low noise.
   - PCB board should have Immersion Gold/ENIG finish.
   - All the above system including the required isolated power supply and EMI Line Filter should be housed in industrial grade metal enclosure.

4. **8 channel Analog Multiplexer module in 2U powder coated Rack**
   - No of channels: 8 differential
   - Analog input range: ±15V
   - Digital Control signal: 3 Digital
   - Setting time: 1 micro second
   - Connection: Break before make
   - Power supply: 230V AC to ±15V DC
   - Multiplexing Single Ended or Differential ended signals
     Selection is made via MODBUS TCPIP and/or digital IO as per the system requirement
   - Supplier should provide low crosstalk between multiplexer output.
   - Indicators for all inputs and outputs
   - Impedance Controlled Routing to match impedance of all Analog signals to 50 ohm.
   - Power supply should be filtered to maintain low noise.
   - PCB board should have Immersion Gold/ENIG finish.
   - All the above system including the required isolated power supply and EMI Line Filter should be housed in industrial grade metal enclosure.

**NOTE**

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

[2] Quote for all the items individual item quote are not accepted.

[3] Replacement Warranty: 3 years

[4] Supplier should provide necessary accessories for installation of above mentioned modules.