

**Government of India**  
**Bhabha Atomic Research Centre**  
**Electronics & Instrumentation Systems Division**

Ref: BARC/LPS/EISD/537/2017/ OPA: 191624

Date: November 2, 2017

**Sub: Invitation of Quotation for Control Hardware Components as per specifications in annexures-II**

Dear Sir,

1. Quotations are invited for the Supply of Control Hardware Components as per specifications in annexure-II
2. Bidder shall quote for supply of all the items, as per specifications in annexures. Partial quotations will not be accepted.
3. Taxes and Excise Duties must be quoted separately. Form AF / H whichever is applicable shall be provided, if required.
4. The quotation must reach Head, EISD by 20/11/2017 and must be sent in a sealed envelope super scribed with the reference number & the due date given above.

The address on the envelope should read as:-

**Head, EISD**

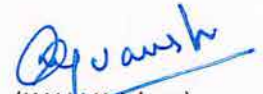
**BARC, Trombay,**

**Mumbai – 400085.**

**(Kind Attn: Shri K.Y.V.Krishna, SO/F)**

Quotations may also be submitted through e-mail to all the following e-mail ids: [amuthan@barc.gov.in](mailto:amuthan@barc.gov.in), [pshah@barc.gov.in](mailto:pshah@barc.gov.in), [anshuw@barc.gov.in](mailto:anshuw@barc.gov.in), [sspany@barc.gov.in](mailto:sspany@barc.gov.in).

5. The bidder shall deliver the items within 4 weeks from the date of issue of purchase order. The deliverables shall be supplied at **EISD, BARC, Trombay, Mumbai - 400 085**.
6. Head, EISD reserves the right to accept/reject any or all quotations without assigning any reason.
7. Delivery charges if any must be clearly mentioned in the offer.
8. Quotation must also indicate the duration of validity of offer.
9. Drawings / Sketches must not be given to other party.
10. The Bidder should also provide PAN/TAN/GIR/GSTIN No.



(K.Y.V.Krishna)  
SO/F, EISD, BARC

Tel. No: 022 25592582

वैज्ञानिक अधिकारी / Scientific Officer  
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Bhabha Atomic Research Centre  
भारत सरकार / Government of India  
ट्रॉम्बे, मुंबई / Trombay, Mumbai - 400 085.

Enclosure: Annexure-II

## Annexure - II

### Specifications of Control Hardware Components

#### 1) 24V to 48V Power Converter (01 no)

Input	19 ~72VDC Voltage range, 23A current
Output	48V DC, 21A, 1008W
Current Range	0 ~ 21A
Ripple & Noise (max)	150mVp-p
Voltage Tolerance	±1%
Line Regulation	±0.5%
Load Regulation	±0.5%
Efficiency	90%
Overload Protection	Up to 125% rated output power
Over temperature	Shut down output voltage
EMC standards	Compliance to EN55032, EN61000
Environment	-20 ~ 60°C, 20 ~ 90% RH non-condensing

#### 2) Stepper motor with driver (02 sets)

##### Stepper motor

1.8° Helical Worm Geared Stepper Motors High Torque Hybrid, NEMA 23(57 mm) Frame size, Bipolar (4 leads), Holding Torque 64 kgcm (6.4 Nm), Current per phase 2 Amp, Motor length 52 mm, 300mm Wire Length, Operating Voltage 24 - 48 VDC. Gear Box Ratio - 8:1, Backlash Precision ≤ 0.8 Degree.

##### Motor Driver

Compatible motor driver for stepper motor suitable for 2-phase & 4-phase motors, should support PUL/DIR and CW/CCW modes, 24V/48V DC Power Input, Output current: 1.3A - 4.5A, 1/2 to 1/250 microstepping, short-voltage, over-voltage, over-current and short-circuit protection, low temperature rise & smooth motion, pulse response frequency up to 200KHz, operating environment: -15 ~ 40°C, compact dimensions (<120mmx80mmx35mm)

#### 3) Resolver (01 no)

Type	Absolute Rotary
Elect Cyc / Mech Cyc	1 deg/deg
Excitation Frequency	7.5Khz (±5%)
Input	10V at ±10%Vrms, 50mA max current
Input Power	0.42 Watt
Impedance ZRO	242 Ohms
Impedance ZRS	220 Ohms
Impedance ZSO	705 Ohms
Impedance ZSS	645 Ohms
Transformation Ratio	0.5 (±10%)
Phase Shift, Open Circuit	-1°
Null Voltage	Max. 30mV rms
Temperature Range	-55 to 155°C
Rotor Moment of Inertia	0.0141 gm-cm-sec <sup>2</sup>
Weight	<250 gm

#### 4) Gigabit LAN Switch (01 no)

- 8-Port 10/100/1000Mbps data transfer rate
- Up to 1 Gbps of dedicated bandwidth per port and up to 2 Gbps bandwidth in full-duplex mode
- Supports MAC address learning, Windows & ubuntu OS
- Should support MAC address learning, Store and forward transmission method, Plug & Play installation, Wall mountable
- Standards supported: IEEE 802.3 10BASE-T Ethernet, IEEE 802.3u 100BASE-TX Fast Ethernet, IEEE 802.3ab 1000BASE-T Gigabit Ethernet, IEEE 802.3 NWay auto-negotiation, IEEE 802.3x Flow Control
- LED indicators for each port & device power
- Power supply: DC Input 5V DC/12V DC with standard power adapter
- Dimensions(W x D x H): Should be compact, permissible up to (150 x 90 x 40)mm