



DEPARTMENT OF ENGINEERING DESIGN  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
CHENNAI - 600 036, INDIA

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Dr. T. ASOKAN  
Professor

23.04.2015

DUE DATE: 05.05.2015

Ref: DEPT/ED/2014-15/TASO/235

Item 1: (Qty: 3) Precious Metal Brushed DC servo motor with Encoder


Item 2: (Qty: 3) Motor controller for precious metal servo motor

Precious Metal Brushed DC servo motor with Encoder  
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Motor controller for precious metal servo motor

Dear Sir/ Madam,

1. Quotations are invited in duplicated for the various item shown below over leaf/enclosed list.
2. The quotations are to be **two parts – one Technical Offer and one Commercial offer**.  
The two parts of the offer are to be clearly marked on the envelopes. The two parts of the offer in separate envelopes must be enclosed in the one bigger envelope duly sealed and super scribed with reference number and date and due date must be addressed to the under signed so as to reach him on or before the due date stipulated above.
3. The quotations duly sealed and Super scribed on the envelope with reference no. and due date, should be addressed to the undersigned so as to reach him or before the **due date** stipulated above.
4. Quotations should be valid for 60 days from the date and period of delivery be indicated.
5. Local firms to quote for free delivery to this Institute. If quoted for Ex – Godown delivery charges be indicated separately.
6. Relevant Literature pertaining to the items quoted with full specifications.
7. Sales Tax/General Taxes /ED if applicable and such other taxes legally leviable and intended to be claimed should be distinctly shown along with price quoted. If this is not indicated no such claim will be admitted at any stage. The taxes leviable should take into consideration that we are entitled to have concessional sales tax applicable to Non – Government Educational institutions run with no profit motive for which a concession is given. Sales Tax certificate will be issued at the time of final settlement of the bill.
8. Goods should be supplied carriage paid and insured.
9. Goods shall not be supplied without an official supply order.
10. Every short effort will be made to make payment within 30 days from the date of bill/acceptance of goods whichever is later.
11. The Guarantee period of the item may be indicated clearly.
12. In case of LC. Payment 90% of the payment will be made after completion of the supply. The balance 10 % of the payment will be made after satisfactory installation of the equipment.
13. IIT Madras is exempt for payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. IIT Madras will make necessary arrangements for the clearance of imported goods at the Airport /Seaport. Hence the price should not include the above charges.
14. **Acceptance and Rejection:-** IITM has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
15. **The sealed Quotation to be sent to Dr.T.ASOKAN**

  
Yours faithfully,  
Prof. T. Asokan  
Engineering Design  
IIT Madras Chennai 600 036.

**Dr. T. ASOKAN, Ph.D.**  
Professor  
Department of Engineering Design  
Indian Institute of Technology Madras  
Chennai - 600 036, India



IIT Madras is interested to procure the following items on limited tender basis from the original manufacturers or authorized distributors of the items:

**Item 1: (Qty: 3)**

**Precious Metal Brushed DC servo motor with Encoder:**

Application: To be used in Haptic setup with current controlled torque feedback

1. Nominal motor speed : 100 – 500 rpm
2. Nominal motor torque : 0.1 – 0.15 Nm
3. Stall torque : 1 – 1.2 Nm
4. Commutation brushes: precious metal brushed
5. Weight  $\leq 500$  g
6. Diameter : 40mm (max)
7. Encoder CPR :  $> 1000$
8. Motor rotor inertia :  $120 \text{ gcm}^2$
9. Expected Torque constant :  $> 120 \text{ mNm/A}$
10. Nominal voltage : 24 – 48 V
11. Nominal Current : 0.7 A
12. Stall current :  $< 7$  A
13. Efficiency :  $> 90\%$
14. Power :  $< 50$  W

**Remarks:**

The motor is expected to be operated at low speeds and high current. Therefore, a motor with high stall current is preferred. The motor should not introduce any noise due to sparking of the commutator.

**Item 2: (Qty: 3)**

**Motor controller for precious metal servo motor**

1. Mode of operation : Current control
2. Weight :  $< 250$  g
3. Efficiency:  $> 90\%$
4. Power rating :  $> 100$  W
5. Encoder frequency :  $> 5$  Mhz
6. Current capability : upto 5 A
7. PWM clock frequency of power stage :  $> 50$  kHz
8. PID frequency :  $> 50$  kHz