



Department of Mechanical Engineering
Indian Institute of Technology Madras
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Professor and Head

Ref: No. IITM/MDS/PC/22-23/Dynamic Signal Analyser

DATE: 12.01.2023

Due Date: 23.1.2023

Time: 03.00P.M.

Sub: Quotation Invited for Purchase of Dynamic Signal Analyser – Reg.

Dear Sir/Madam,

1. Quotations are invited in duplicate for the various items shown below / overleaf / **Enclosed list.**
2. The **quotations are to be in two parts as Technical Bid and as Financial Bid:** 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 due date and must be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. **Fax and Email quotation are not acceptable.**
4. Quotations should be valid for 90 days from the due date and period of delivery required, warranty terms etc. should also be clearly indicated.
5. Imported supplies should be quoted **for CIF Madras.**
6. Local firms to quote for free delivery to this Institute. If quoted for Ex-Godown delivery charges be indicated separately.
7. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples / machine/ equipment if called for should be submitted / demonstrated at free of charges, and collected back at the supplier's expenses. Compliancy certificate is to be provided indicating conformity to the technical specifications
8. Custom Duty / ED if applicable and such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. If this is not indicated no such claim will be admitted at any stage.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
12. The Guarantee period of the item may be indicated clearly.
13. 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.
14. **Acceptance and Rejection:-** I.I.T. Madras 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.

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[Dr. P. CHANDRAMOULI]

Note: Also enclose OEM authorization certificate, Local Content Certificate and Land Border declaration

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Purchase of a Dynamic Signal Analyser

It is proposed to purchase a 4-channel dynamic signal analyzer (DSA) which is capable of vibration/ acoustic/ structural measurements including modal testing. The equipment should also have the ability to be used as a shaker controller if required. The hardware of the DSA should have 8-channels installed in a single rack, of which at least 4-channels should be active with the option to activate 2/4 channels based on the budget available.

Hardware Specifications

S.No	Parameter	Technical Specification
1	No of channels	8 input channels in the hardware with 4 input channels active with simultaneous acquisition on all channels; option to activate 2/4 channels at a time later. Should be able to connect Integrated Electronics Piezo-Electric (IEPE) / Transducer Electronic Data Sheet (TEDS) type Impact Hammer, Uni-axial, Tri-axial Accelerometers and microphones.
2	Input voltage range:	± 20V pk-pk
3	Input impedance	1 Mega Ohm
4	Input coupling	AC, DC and IEPE optional charge
5	Input sensitivity	Programmable 1 mV/g to 1000 mV/g
6	Frequency range	Upto 46.08 kHz
7	Signal to noise ratio	> 100 dB
8	Channel cross talk	≤ -100 dB
9	Harmonic distortion	< 95 dB
10	Sampling Frequency	Better than 50k samples per second for each channel in parallel
11	Input ADC	24-bit per channel minimum
12	Output DAC	24-bit preferably
13	Dynamic range	> 150dB
14	Input connectors	BNC
15	Output connectors	BNC
16	Number of analog outputs:	<ul style="list-style-type: none"> • <u>At least one</u> for drive output channel • Must have provision to connect and drive a modal shaker • Output waveform types to include sine, triangle, square, white noise, DC, chirp, swept sine as well as arbitrary waveforms
17	PC interface	Ethernet
18	Internal memory	At least 4 GB internal flash memory for emergency data back in case of power failure

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Software specifications:

The DSA should be supplied with real-time data acquisition and analysis software with the following features

1. FFT spectral analysis
2. FRF measurement
3. Auto/Cross spectrum
4. Math functions
5. Acoustic measurement (including 1/1 and 1/3 Octave band data)
6. Time data recording
7. Export to various data file formats

Optional features:

1. Vibration controller software for Swept sine, random and shock testing
2. Shock response measurement and analysis

Other hardware/software requirements for the DSA

1. Facility of throughput acquisition, with storing of continuous time data in parallel without affecting any other functions like online control, response measurement or analysis
2. Provision must be available to export the drive, control and response data (frequency and time domain) of sine/random/shock tests to text or Microsoft Excel format. The retrieval /export should make the entire data (of selected test) available in user selected format without any re-sampling or data loss or breaking up into different lines.
3. TEDS support to support to all channels; ICP cable check and analog overload detection
4. Front panel abort button for emergency shut down
5. Provision must be available for taking print out of signal plots, test data set up parameters, drive spectrum, last control, etc. Provision to be provided to export all the plots to Microsoft word.
6. Utilities: Utilities for converting individual stored time domain into ASCII format without any re-sampling or other loss of data should be retrievable as a single file
7. Accessories
 - i. Instruction manual
 - ii. Service manual
 - iii. Back-up copies of all purchased software to be provided in DVD/USB Drive
8. **Warranty: for 2 years** with software updates during warranty period to be provided
9. The software should install and run in another Desktop/Laptop Computer, in case of any failure of the Desktop/Laptop Computer in which the software was originally installed

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