



Department of Electrical Engineering
Indian Institute of Technology Madras
Chennai – 600 036, India

Prof. Krishna Vasudevan
Electrical Engineering Department

Ref: No. EE/KV /DSO /2017-18

DATE: 15.11.2017

Due date : 30.11.2017

Dear Sir,

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 Offer and as 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 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 60 days from the due date and period of delivery required , warranty terms etc. should also be clearly indicated. A minimum of one year warranty is required from the date of commissioning.
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. Sales Tax/General Taxes/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. 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.
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. IIT Madras is exempt from 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.
15. **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.

Yours faithfully,


Prof. Krishna Vasudevan

Items required: 200 MHz Digital Storage Oscilloscope as per specifications enclosed.
Qty Required -1 No.



Specifications for 200MHz Digital Storage Oscilloscope

Main Unit:

1. Input Power: 240V AC, 50Hz
2. Display Update Rate: > 900,000 Waveforms/s in all operating modes
3. Analog Channels: 4 Channels
4. Bandwidth: 200MHz
5. Sample Rate for Scope: > 4 GSa/s
6. Min Detectable Pulse Width: 5ns
7. Time base: 5 ns/div to 50 s/div
8. Sensitivity: 2mV/div to 5V/div
9. Acquisition memory for Scope: 4MB and also Segmented Memory should be available
10. Trigger: Auto Level, Normal, Single
11. Trigger Modes: Zone Trigger, Edge, Pattern, Pulse Width, set up / Hold, Rise Time / Fall Time, Video & USB
12. Combination Triggering: Should be able to set trigger condition Simultaneously & trigger on both Analog & Digital Channels
13. Display: 8.5" WVGA Capacitive Touch Colour LCD Display
14. Compatible with USB wireless mouse and keyboard support
15. Maximum Channel Input: 300Vrms
16. Storage Facilities: Internal Memory & Built-in-Front Panel USB Flash Memory Port
17. Interfaces Required: USB
18. Should be License based upgradeable from DSO (Digital storage oscilloscope) to MSO (Mixed signal oscilloscope).
19. Should be License based upgradeable in Bandwidth.
20. Warranty - >2years.

Inbuilt 20 MHz arbitrary/function generator:

Sl. No.	Parameters	Units
1	Output Type	BNC connector
2	Features	Dual Channel AWG-stimulus output of sine, square, ramp, pulse, DC, Sinc (x), exponential rise/fall, cardiac, Gaussian Pulse and noise waveforms
Sine Wave parameters		
- Frequency range: 0.1 Hz to 20 MHz		
- Total harmonic distortion: 1%		
- SNR (50 ohm load, 500 MHz BW) : 40 dB ($V_{pp} \geq 0.1$ V); 30 dB ($V_{pp} < 0.1$ V)		

Square Wave/Pulse Parameters	
<ul style="list-style-type: none"> - Frequency range: 0.1 Hz to 10 MHz - Duty cycle: 20 to 80% - Duty cycle resolution: Larger of 1% or 10 ns - Pulse width: 20 ns (minimum) - Rise/fall time: 18 ns (10 to 90%) - Pulse width resolution: 10 ns. - Overshoot: < 2% 	
Ramp/Triangle Wave	
<ul style="list-style-type: none"> - Frequency range: 0.1 Hz to 200 kHz - Linearity: 1% - Variable symmetry: 0 to 100% - Symmetry resolution: 1% 	
Other Waveforms	
<ul style="list-style-type: none"> - Noise Bandwidth: 20 MHz typical - Sine Cardinal (Sinc) Frequency range: 0.1 Hz to 1.0 MHz - Exponential Rise/Fall Frequency range: 0.1 Hz to 5.0 MHz - Cardiac Frequency range: 0.1 Hz to 200.0 kHz - Gaussian Pulse Frequency range: 0.1 Hz to 5.0 MHz 	
Arbitrary Waveform	
<ul style="list-style-type: none"> - Waveform length: 1 to 8k points - Amplitude Resolution: 10 bits (including sign bit) - Repetition Rate: 0.1Hz to 12 MHz - Sample Rate: 100 MSa/s - Filter Bandwidth: 20 MHz 	
Frequency	<ul style="list-style-type: none"> - Sine wave and ramp accuracy: 130 ppm (frequency < 10 kHz) 50 ppm (frequency > 10 kHz) - Square wave and pulse accuracy: [50+frequency/200] ppm (frequency < 25 kHz) 50 ppm (frequency ≥ 25 kHz) - Resolution: 0.1 Hz
Amplitude	20mVp-p to 5Vp-p into High Impedance

Frequency Response Analysis (FRA) Option:

- Dynamic range: > 70 dB
- Frequency range: 20 Hz to 10 MHz
- Sweep or single frequency test modes
- 10 to 50 points per decade
- Logarithmic plot of gain & phase and tabular view of test results
- export and/or save measurement results in .csv format for offline analysis

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The quotes should be addressed To:

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 Chennai – 600 036, India



Note: If any quires and clarification should be addressed to:
 Mr. Shrinath Kannan (ee16s068@ee.iitm.ac.in)