

**DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY,
SHIBPUR, HOWRAH-711 103.**

No. 91/2018/EE-3/21(KM)

Dated: 31/12/2018

From : The Head of the Department,
Electrical Engineering,
IEST, Shibpur, Howrah-711 103

To : Enlisted vendors of the institute and other interested parties/ For Website Tender.

Dear Sir(s),

Sealed quotations are invited for supply of the following item(s) within **21 days** from the date of publication of this advertisement in the website. The quotation should include the 5% GST only as per institute rule, delivery charges, entry tax if any, etc. to Department of Electrical Engineering, Indian Institute of Engineering Science and Technology, Shibpur and should mention a firm delivery period. Preferences will be given to the suppliers who can supply ex-stock.

The vendors, who are not enlisted in the Institute register, should submit the copies of their valid Trade License, GST registration, PAN, latest Income Tax / Sales Tax Statement /Return, SSI/MSME certificate, if any etc. and any other commercial credentials. The institute will provide concessional GST rate certificate with the purchase order and will pay 5% GST only.

Yours faithfully,



Signature of the indenting Officer/
Concerned Faculty Member



Prof. & Head of EE Dept.
IEST, Shibpur, Howrah – 711 103

Item No.: Specifications

PEL#6: 2-ch non-isolated digital storage oscilloscope–3 sets

Each of the above-said oscilloscopes should have the following features/specifications:

Bandwidth	: 70MHz
Channels	: 2
Sample Rate (Each Channel)	: Minimum 2GS/s Real Time on each channel
Display	: Minimum 7 inch, Active TFT Color Display
Zoom	: Oscilloscope should be able to horizontally and vertically expand or compress live or stopped waveforms
Frequency Counter	: should have built-in dual channel 10 Hz to 70 MHz Frequency Counter
FFT	: FFT function should be capable of showing both Time domain and Frequency domain signals simultaneously
Trendplot	: should be available to plot Measurement values over long period of time.
Limit Test	: should be available to provide quick Pass/Fail comparison between an input Signal and user defined Template
Data Logger	: Oscilloscope should have built-in Data Logging facility to save user specified triggered waveforms to a USB device
Storage memory	: must be available for waveform storage in USB Flash drive
Input / Output Ports	: USB host port on front panel for flash drives and USB device on back Panel for PC connectivity and Printers.

Standard Accessories : should be supplied with 2 Nos. 100MHz Oscilloscope Probes, Operating Manual, Software for PC connectivity, USB Cables, Power Cord and other standard Accessories

Vertical system – Analog channels

Vertical resolution - 8 bits

Input sensitivity range- 2 mV to 5 V/div on all models with calibrated fine adjustment

DC gain accuracy - $\pm 3\%$, from 10 mV/div to 5 V/div

Maximum input voltage: 300 VRMS CAT II; derated at 20 dB/decade above 100 kHz to 13 Vp-p AC at 3 MHz and above

Offset range: 2 mV to 200 mV/div: ± 1.8 V >200 mV to 5 V/div: ± 45 V

Input coupling: AC, DC, GND

Input impedance: 1 M Ω in parallel with 20 pF

Vertical zoom: Vertically expand or compress a live or stopped waveform

Horizontal system — Analog channels

Time base range: 5 ns to 50 s/div

Time base accuracy: 50 ppm

Horizontal zoom: Horizontally expand or compress a live or stopped waveform

Input/Output ports

USB interface

USB host port on front panel supports USB flash drives USB device port on back of instrument supports connection to PC

Data storage

Nonvolatile storage

Reference waveform display: 2.5K point reference waveforms

Waveform storage without USB flash drive: 2.5K point

Maximum USB flash drive size: 64 GB

Acquisition system

Peak Detect: High-frequency and random glitch capture, captures glitches as narrow as 12 ns (typical) at all time base settings from 5 μ s/div to 50 s/div

Sample: Sample data only

Average: Waveform averaged, selectable: 4, 16, 64, 128

Single Sequence

Roll: At acquisition time base settings of >100 ms/div

Trigger system

External trigger input

Trigger modes: Auto, Normal, Single Sequence

Trigger types: Edge (Rising/Falling), Conventional level-driven trigger. Positive or negative slope on any channel.

Coupling selections: AC, DC, Noise Reject, HFReject, LF Reject

Video: Trigger on all lines or individual lines, odd/even or all fields from composite video, or broadcast standards (NTSC, PAL, SECAM)

Pulse Width (or Glitch): Trigger on a pulse width less than, greater than, equal to, or not equal to, a selectable time limit ranging from 33 ns to 10 s

Trigger source: Two channel models: CH1, CH2, Ext, Ext/5, AC Line

Trigger view: Displays trigger signal while Trigger View button is depressed.

Trigger signal frequency readout: Provides a frequency readout of the trigger source.

Waveform measurements

Cursors Types: Amplitude, Time

Measurements: ΔT , $1/\Delta T$, ΔV

Automatic measurements: Period, Frequency, Pos Width, Neg Width, Rise Time, Fall Time, Maximum, Minimum, Peak-Peak, Mean, RMS, Cycle RMS, Cursor RMS, Phase, Pos Pulse Cnt, Neg Pulse Cnt, Rise Edge Cn, Fall Edge Cn, Pos Duty, Neg Duty, Amplitude, Cycle Mean,

Cursor Mean, Burst Width, Pos Overshoot, Neg Overshoot, Area, Cycle Area, High, Low, Delay RR, Delay RF, Delay FR, Delay FF

Waveform math

Arithmetic: Add, Subtract, Multiply

Math functions: FFT

FFT Windows: Hanning, Flat Top, Rectangular 2048 sample points Sources

Two channel models: CH1 - CH2, CH2 - CH1, CH1 + CH2, CH1 × CH2

Autoset

Autoset menu: Single-button, automatic setup of all channels for vertical, horizontal, and trigger systems, with undo Autoset

Square wave

Single Cycle, Multicycle, Rising or Falling Edge

Sine wave

Single Cycle, Multicycle, FFT Spectrum

Video (NTSC, PAL, SECAM)

Field: All, Odd, or Even Line: All or Selectable Line Number

Autorange

Automatically adjust vertical and/or horizontal oscilloscope settings when probe is moved from point to point, or when the signal exhibits large changes.

Frequency counter

Resolution: 6 digits

Accuracy (typical): + 51 parts per million including all frequency reference errors and +1 count errors

Frequency range: AC coupled, 10 Hz minimum to rated bandwidth

Frequency counter signal source: Pulse width or edge selected trigger source

Power source

Power source voltage: 240 V ±10%

Power source frequency: 50 Hz

Power consumption: 50 W maximum

Conforming to standards

Regulatory Electromagnetic compatibility: Should meet directive 2004/108/EC, EN 61326-2-1 Class A;

Australian EMC Framework

Safety: UL61010-1:2004, CSA22.2 No. 61010-1:2004, EN61010-1:2001, IEC61010-1:2001

Calibration certificates conforming to applicable international standards should be given along with supply of oscilloscopes, if order is placed on the vendor.

Warranty requirements: 3 years at least.