

**Foundation for Innovation and Technology Transfer  
(FITT)**

REF: FT/2024/05/27  
Date: 20<sup>th</sup> November, 2024

**Notice Inviting Quotation**

for

**24 Channel Dynamic Data logger**

**TECHNICAL SPECIFICATIONS**

<b>Specifications for 16 Channel Digital Bridge Signal Conditioner Amplifier</b>		<b>Compliance (Yes/No)</b>
Number of Modules	One input module containing 16 electrically isolated & individually configurable channels	
Signal Conditioning	All 16 channels to measure Strain , force , voltage $\pm 10V$ ,PT100 Temperature  Strain gauges in full- , half- or quarter-bridge configuration(120 or 350 Ohm) ,Kreuzer Circuit , SG-quarter bridges : Three wire and four wire , SG-half bridges : Five Wire , SG-full bridges : Six Wire , Resistor, Resistance thermometer (PT100), connection in four-wire configuration , Potentiometric transducers , Voltage ( 10 V differential, 0 ... 30 V unipolar)	
Parallel Measurement	Synchronous parallel measurement	
Signal conditioning	carrier frequency Excitation : 1200 Hz and Selectable bridge excitation voltage : : 0.5 / 1 / 2.5 or 5 V DC and Carrier frequency	
A/D converter per channel :	24 Bit Delta Sigma converter	
Sampling rate per channel	Individual data rates up to 20 kS/s per channel, active low pass filter	
Filter	Active low-pass filter : Bessel, Butterworth, Linear phase, Filter OFF	
Internal completion resistors	120 and 350 Ohm	
TEDS Support	Yes	
Transducer connection :	Phoenix Contact push-in terminal Plug	
Potentiometer measuring range :	$\pm 500$ mV/V	

Calibration :	The hardware should be supplied with the calibration certificate stored inside the module / DAQ	
Accuracy class:	0.05 (strain gage) & 0.03 (voltage)	
DC voltage measuring range :	+ - 10 V	
Resistance measuring range :	1000 ohms	
<b>General Specifications</b>		
Transducer cable length :	Should support ≥80 meters	
Synchronization	Via Firewire, NTP, PTP ,Ethercat ,IRIG	
Operating temperature	-20 ... +65C	
Power Supply	10 ... 30V DC for field applications with 230 VAC adapters for Lab.	
Size & Weight	Must be compact and portable. Weight < 1Kg and size < 1 liter	
Optical Expansion possibility	Same product range and software should be further expandable to Universal Electrical Data logger and Optical data loggers	
Distributed & Scalable Modules	The modules must be upgradeable to > 100 channels.	

		Compliance (Yes/No)
<b>Specifications for 8 Channel Digital Universal Signal Conditioner</b>		
No of modules	One input module containing 8 electrically isolated & individually configurable channels.	
Signal conditioning	All 8 Channels should support strain gage half /full bridge, half/full inductive bridge, LVDT, ICP, thermocouples, PT100, potentiometer, voltage, current , frequency, counter, CAN bus) without any external adapter or signal conditioning	
Channel configuration	Automatically via TEDS (integrated editor). Manually via integrated sensor database which must be open & expandable.	
A/D Converter	Each channel should have separate 24-bit A/D Converter for synchronous & parallel measurements. No Multiplexing / sample & hold.	
Signal Conditioning	DC and Carrier Frequency	
Sampling rate per channel	≥ 40 KHz/channel. Individually adjustable / channel	
Excitation for Active Sensors	5 ... 24VDC adjustable for each channel	
Strain gauge-based sensors measuring range	± 10 mV (must support 6 wire Krezuer circuitry)	
LVDT's measuring range	±3000 mV/V	

Inductive sensors measuring range	± 1000 mV	
Piezoresistive transducer measuring range	±1000 mV/V	
Bridge Excitation Voltage	1 or 2.5Vrms with selectable AC & DC excitation	
ICP transducer excitation	4.0mA	
ICP Sensor Measuring Range	± 8 V	
Potentiometer measuring range	± 500 mV/V	
DC voltage & Currents measuring range	± 60 V, ± 10 V, ± 100 mV & 4...20mA	
Resistance measuring range	5000 ohms	
Bessel & Butterworth Filters	0.01 HZ to 6KHz individually adjustable per channel	
Common Mode Voltage	± 60V	
<b>General Specifications</b>		
Channel Isolation	All inputs to be electrically isolated	
Transducer cable length	Should support ≥80 meters	
Common Mode Rejection	>100dB	
TEDS support	TEDS (IEEE 1451.4) supported on every channel. Capability to read & Write TEDS. Support full bridge TEDS in ≤ 6 wire circuit.	
Transducer connector	D Connector / Screw Terminals/ Push Pull Connector	
Interface	Firewire, Ethernet	
Synchronization	Via Firewire, NTP, PTP ,Ethercat ,IRIG	
EMC requirements	EN 61326	
Vibration (30 min)	50m/s <sup>2</sup>	
Shock (6 ms)	350m/s <sup>2</sup>	
Operating temperature	-20 ... +65°C	

### List of Deliverables

Sl. No.	Description	Qty.

1	<p><b>24 Channel Bridge Amplifier</b></p> <p><b>Consisting of following :</b></p> <ul style="list-style-type: none"> <li>a) 16 Channel Bridge Amplifier with male connector</li> <li>b) 8 Channel Universal amplifier without Male Connector</li> <li>c) Power adapter for module , 2 No.</li> </ul> <p>Warranty : 1 Years from date of Invoice</p>	1Set
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### **Terms & Conditions Details**

**Preparation of Bids:** The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid

**Opening of the tender:** The bid will be opened by a committee duly constituted for this purpose. The technical bid will be opened first and it will be examined by a technical committee (as per specification and requirement). The financial offer/bid will be opened only for the offer/bid which technically meets all requirements as per the specification.

**Acceptance/ Rejection of bids:** The Committee reserves the right to reject any or all offers without assigning any reason.

**Two separate sealed envelopes to be submitted for technical and financial bid (clearly labelled as “technical bid” and “financial bid”) respectively.**

**Last date of submitting the bids will be 12<sup>th</sup> December, 2024 before 5:00 pm to :**

The quote should reach the following address on or before last date.

Prof. Shashank Bishnoi  
Room No. 101, MRL Lab, Block-V  
Department of Civil Engineering  
Indian Institute of Technology Delhi  
Hauz Khas, New Delhi 110016  
Email: bishnoi@iitd.ac.in

Please quote prices for FOB New Delhi, inclusive of all taxes and duties.

Quote should be in Indian Rupees for agents of Indian manufacturers, or in foreign currency, for agents of foreign manufacturers, and needs to be valid for at least three months.

Attach all the technical literature and a list of similar installations done in India.

If the quote is being submitted by a representative of the manufacturer, a valid agency-ship or dealership certificate authorizing the agent to quote to IIT Delhi on behalf of the manufacturers should be enclosed. The principal and the vendor, both, are not allowed to quote for the same product.

Complete set of manuals for the operation of the equipment should be given.

Please specify all of your terms and conditions clearly, including delivery period.

Mode of payment for purchases through wire transfer on delivery. Only bank charges within India are payable by FITT, IIT Delhi, all bank charges outside India are the responsibility of the seller. For purchases in INR, payment is on delivery.