

**Indian Institute of Technology Kanpur**  
**Department of Physics**

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Last date: 18/03/2018

**Tender Notice**

Sealed quotation should reach the undersigned latest by 5.00pm on 18<sup>th</sup> March, 2018 for the following item:

S.NO	Description of item	Quantity
1	Sensors & Accessories	01

The above –mentioned item should conform to the following specification:

Sr. No.	Quantity	Parameter	Specification
01	03	Silicon diode temperature sensor with standard calibration DT-670 and packaging (similar to DT- 670B1-SD from LakeShore Cryotronics, USA)	<b>Temperature Range:</b> 1.4 to 500 K <b>Current excitation:</b> 10 $\mu$ A $\pm$ 0.1% <b>Max reverse voltage:</b> 40 V <b>Max current before damage:</b> 1 mA continuous or 100 mA pulsed <b>Dissipation at excitation current:</b> 16 $\mu$ W at 4.2 K; 10 $\mu$ W at 77 K; 5 $\mu$ W at 300 K <b>Thermal response time:</b> less than 10 ms at 4.2 K, less than 100 ms at 77 K, less than 200 ms at 305 K; <b>Reproducibility:</b> $\pm$ 10 mK at 4.2 K
02	03	Cernox (Zirconium oxy-nitride) film based temperature sensors (similar to CX-1030-SD-HT from LakeShore Cryotronics, USA)	<b>Temperature Range:</b> 1.4 to 400 K <b>Typical excitation:</b> 20 $\mu$ V (0.1 K to 0.5K); 63 $\mu$ V (0.5 K to 1 K); 10 mV or less for T > 1.2 K <b>Dissipation at typical excitation:</b> 10 <sup>-5</sup> W at 300 K, 10 <sup>-7</sup> W at 4.2 K, 10 <sup>-13</sup> W at 0.3 K <b>Response time (typical):</b> 15 ms at 4.2 K, 0.25 s at 77K, 08 s at 273 k <b>Use in magnetic field:</b> The magneto- resistance should be negligible above 30 K and not be significantly affected by orientation relative to the magnetic field. The temperature error due to magnetic fields up to 10 Tesla should be less than 5% down to 2 K. <b>Reproducibility:</b> $\pm$ 3 mK at 4.2 K
03	01	Axial hall sensor (similar to HGA-3010 from LakeShore)	<b>Configuration:</b> Axial <b>Active area:</b> 0.76 mm (0.030 in ) diameter circle <b>Input resistance:</b> $\sim$ 1 $\Omega$

		Cryotronics, USA)	<b>Output resistance:</b> $\sim 1 \Omega$ <b>Nominal control current (<math>I_{CN}</math>):</b> 100 mA <b>Max. continuous current (non heat sinked, 25 °C):</b> 300mA <b>Magnetic sensitivity (at nominal current):</b> 0.55mV/kG to 1.05 mV/kG <b>Maximum linearity error:</b> less than 1% for fields within $\pm 3$ Tesla and less than 1.5% for $\pm 10$ Tesla <b>Zero field offset Voltage ( at nominal control current):</b> $\pm 50 \mu V$ (max) <b>Operating temperature range:</b> $-40 \text{ }^\circ\text{C}$ to $+100 \text{ }^\circ\text{C}$ <b>Temp. Coeff. of mag. sensitivity:</b> less than 0.01%/ $^\circ\text{C}$ <b>Temp. coeff. of offset (at nominal control current ):</b> less than $\pm 0.5 \mu V/^\circ\text{C}$ (max) <b>Mean temp. coefficient of resistance:</b> less than 0.2 %/ $^\circ\text{C}$ <b>Leads:</b> 34 AWG tinned copper with poly-nylon insulation; <b>Data:</b> Room temperature, 3 Tesla data should be supplied
04	01	Transverse Hall magnetic field sensor (similar to HGA-3010 from LakeShore Cryotronics, USA)	<b>Configuration:</b> Transverse <b>Active area:</b> 1.02 mm (0.030 in ) diameter circle <b>Input resistance:</b> $\sim 1\Omega$ <b>Output resistance:</b> $\sim 1 \Omega$ <b>Nominal control current (<math>I_{CN}</math>):</b> 100 mA <b>Max. continuous current (non heat sinked, 25 °C):</b> 300mA <b>Magnetic sensitivity (at nominal current):</b> 0.55mV/kG to 1.05 mV/kG <b>Maximum linearity error:</b> less than 1% for fields within $\pm 3$ Tesla and less than 1.5% for $\pm 10$ Tesla <b>Zero field offset Voltage ( at nominal control current):</b> $\pm 50 \mu V$ (max) <b>Operating temperature range:</b> $-40 \text{ }^\circ\text{C}$ to $+100 \text{ }^\circ\text{C}$ <b>Temp. Coeff. of mag. sensitivity:</b> less than 0.01%/ $^\circ\text{C}$ <b>Temp. coeff. of offset (at nominal control current ):</b> less than $\pm 0.5 \mu V/^\circ\text{C}$ (max) <b>Mean temp. coefficient of resistance:</b> less than 0.2 %/ $^\circ\text{C}$ <b>Leads:</b> 34 AWG tinned copper with poly-nylon insulation; <b>Data:</b> Room temperature, 3 Tesla data should be supplied
05	01	100 ft long four lead twisted (in two pairs with different colors) phosphor wire (similar to WQL-36-100 from LakeShore Cryotronics, USA)	<b>Melting range:</b> 1,223 K to 1,323 K ( $950 \text{ }^\circ\text{C}$ to $1050 \text{ }^\circ\text{C}$ ) <b>Coefficient of thermal expansion:</b> $1.78 \times 10^{-5}$ <b>Thermal conductivity:</b> 48 W/(m .K) at 293 K <b>Electrical resistivity (annealed):</b> $1.15 \times 10^{-7} \Omega \cdot m$ at 293 K <b>Specific heat :</b> 376.4 J/(kg.K) <b>Stress relief temperature (1 h):</b> 423 K to 498 K ( $150 \text{ }^\circ\text{C}$ to $225 \text{ }^\circ\text{C}$ ) <b>Chemical composition:</b> nominal 94.8% copper, 5% tin, 0.2% phosphorus; insulated wires.

### Terms & Conditions:

- 1) Quotations must reach undersigned by **18.03.2018, 5.00 pm**
- 2) Quotations should have a validity of minimum of 90 days.
- 3) Technical specification sheets, authorization certificate or proprietary certificate (if applicable) and Any other relevant documentation should be included with the quotation.
- 4) Quotations are required in duplicate: (1) TECHNICAL BID (2) FINANCIAL BID, in separate

Sealed envelopes, both to be finally put in one single envelope with Tender Enquiry Number Mentioned clearly in all sealed envelopes.

- 5) Please specify the maximum permissible educational discount, if any.
- 6) The delivery period should be specifically stated.
- 7) The rate offered should show both F.O.B (specify city) in the country of origin and CIF (New Delhi)
- 8) Please clearly mention the tax rate (like VAT etc.) and transportation charges up to IIT Kanpur, India.
- 9) Institute is exempted for payment of Excise Duty under notification No.10/97 & partially @ 5.15% Customs Duty exemption certificate under notification 51/96 and road permit will be provided if applicable.
- 10) After sales Service in India and warranty period should be clearly mentioned.
- 11) The Institute reserves the right of accepting and rejecting any quotation without assigning any reason.
- 12) Quotations by E-mail will not be accepted.

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