Rajiv Gandhi Institute of Technology, Kottayam  
No. D3/2774/18/RIT  
Dated: 06.07.2018

TENDER SCHEDULE

Superscription: Extended Tender No.D3/2774/18/RIT, Purchase of various items for the Power electronics Lab of EEE Department

Last date and time receipt of tender: 14/08/2018 11 a.m
Date and time of opening of tender: 14/08/2018 2 p.m
Last date and time of sale of tender form: 13/08/2018 2 p.m
Date upto which the rates are to be firm: 31/03/2019
Cost of tender form: Original Rs.672/- includes GST  
Duplicate Rs.336/- " "  
By Post Rs.707/- includes GST & postal charges

Address of the Officer from whom Tender Forms are to be obtained to whom tenders are to be send: THE PRINCIPAL, RAJIV GANDHI INSTITUTE OF TECHNOLOGY, VELLOOR P.O, PAMPADY, KOTTAYAM, KERALA, PIN - 686 501

<table>
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<tr>
<th>Details of items</th>
<th>Quantity</th>
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<tr>
<td>1 List attached</td>
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</table>

List of Items Required

PRINCIPAL
## List of items required

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Item</th>
<th>Specification</th>
<th>Quantity</th>
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<tbody>
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<td>1</td>
<td>Clamp -on current tester</td>
<td>Detailed specification attached</td>
<td>2 nos</td>
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<tr>
<td>2</td>
<td>Flexible AC current probe</td>
<td>Detailed specification attached</td>
<td>2 nos</td>
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<td>3</td>
<td>Digital infrared thermometer</td>
<td>Detailed specification attached</td>
<td>1 no</td>
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<td>4</td>
<td>Contactless digital tachometer</td>
<td>Detailed specification attached</td>
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### Detailed Specification

#### 1. Clamp-on current tester

- **Description**: Leakage current Mini Clamp-on, 3/30mA/30/60 Amp
- **Method detection**: Mean Value detection and rms value calibration
- **Display**: (Bar-graph display:32 segments) LCD (Digital display:3200 counts)
- **Range Switching**: Auto-range
- **Operating temperature and humidity**: 0-50º, 80% RH or less (no condensation)
- **Influence of conductor position**: Within accuracy
- **Safety Standard**: Approved for conformity to EN 61010-1, EN 61010-2-032
- **Circuit voltage**: 300 Vms or less
- **Withstanding voltage**: 3.7 KV AC for one minute
- **Power Supply**: One CR2032 (Coin-shaped) 3 V Lithium battery
- **Power Consumption**: 6 mW maximum
- **Battery Life**: Approx. 90 hours (when continuously used)
- **Auto power-off**: Approx. 10 minutes
- **Diameter of measurable conductor**: 40 at maximum mm
Dimensions: Lesser than 75 (W) x 180 (H) x 30 (D) mm

Weight: Lesser than 250 g

Accessories: Instruction manual, battery, soft case

AC Current: 3/30 mA, 30/60A

Frequency Characteristics: 50/60 Hz
1.0 + 5 (0~30mA)

Accuracy (50/60Hz): 1.0 + 5 (0~50A)
5.0 + 5 (50~60A)

Measurement Cycle: 2 times/second (Digital display), 12 times/second (bar-graph display)

Temperature Coefficient: 0.05% of range/°C or less (within the ranges of 0-18° and 28-50° for measurement of 0-50A)

Filter function: Filter function can cut off harmonics-currents components from 2nd order
Filter function select on or off must be available
Amplitude ratio at 100 Hz: -38 dB (1.26%) or less (typical: -41 dB)

Filter specification: (3 mA and 30 mA ranges and 30 A: Amplitude ratio at 120 Hz: -53 dB (0.22%) or less and 30 A and 60 A ranges) typical -56 dB)

Zero correction: 3 mA range: Displays 0.000 mA (zero) when 0.010 mA<1
30 A range: Displays 0.00 A (zero) when 0.05 A <1

Warranty: 3 years

Note:-

► Can measure leakage currents of 1 mA, which is useful or checking. The insulation of low voltage circuits and electrical components

► Can measure a broad range of currents from leakage currents (at a resolution of 0.001 mA) to load currents up to 60 A

► Typical influence (on the current value of an adjacent cable) from an external magnetic field is 0.0005%

► Durability of clamp: more than 50,000 opening/closing events

► High tensional strength

► Lengthened clamp lever enabling smooth opening/closing of the clamp even for thick cables of 40 mm in diameter

► Approved for conformity to safety standards EN 61010-1 and EN 61010-2-032 (CAT III 300V, -pollution degree 2)

2. Flexible AC current probe

Ranges: 30/300/3000A
Output: 100/10/1 mV/A
Accuracy: 1% of range
Frequency Range: 10Hz - 50 Hz
Zero Offset: AC coupled
Noise: 4mV
Operating Temperature: -20 °C to +85 °C
Battery life: 400 hrs cont. ext. power supply option
Connections: BNC connector and 4 mm plug adapter
Phase error: ± 1° (45 to 65 Hz) ± 10° (at 50 Hz)
Optional external power supply: Yes
Working voltage: 600 V Cat III
input + output

Dimensions - Electronics
(H X W XD): less than 120 x 70 x 35 mm
Weight: less than 400 gm
Measuring head Capacity: 178 mm
Head to box cable length: 2m
Warranty: 3 years

3. Digital infrared thermometer

Temperature Range: -30 °C to 600 °C (-22 °F to 112 °F)
Accuracy (Calibration geometry with ambient): ± 1.0 °C or ± 1.0 % of reading
Temperature 23 °C +/-2 °C whichever is greater
Opticcal Resolution: 20:1 (calculated at 90% energy)
Response Time (95%): <500 ms (95 % of reading)
Spectral Response: 8 to 14 microns
Emissivity: 0.10 to 1.00
Display Resolution: 0.1 °C (0.2 °F)
Repeatability (% of reading): ± 0.5 % of reading or ± 0.5 °C (whichever is greater)
Auto Capture: Set time and interval to capture up to 99 measurements
Internal memory: 99 data point logging capability
Flashlight: yes
Power: 1 AA battery
Battery life: 30 hours with laser and backlight on
Weight: lesser than 280 g
Size: less than (180 x 90 x 80) mm
Operating temperature: 0 °C to 50 °C (32 °F to 122 °F)
Storage Temperature: -20 °C to 60 °C (-4 °F to 140 °F (without battery)
Operating humidity: Non condensing < 10 °C (50 %)
< 90%RH@ 10 °C(50 °F) to 30 °C(86 °F)
< 75%RH@ 30 °C(86 °F) to 40 °C(104 °F)
< 45% RH @ 40 °C 104 °F to 50 °C(122 °F)
Operating Altitude: 2000 meter above mean sea level
Optical Resolution: 12000 meters above mean sea level
Drop test: 3 meters
Implement Standard: Q/ASF01
Compliance: IEC 61010-1: Pollution Class 2
Laser Safety: IEC 60825-1 Class 2, 650 nm, < 1 mW
Ingress Protection Rating: IP 54 IEC 60529
Warranty: 3 years
### 4. Contactless digital tachometer

- **Measurement method:** Using red visible-spectrum light and reflective tape or reflective plate
- **Display:** Transmissive FSTN LCD
- **Range switching:** Automatic
- **Detection range:** 50mm to 500mm (1.97” to 19.7”)
- **Reflection detection indicator:** Flashing red LED built into [HOLD] key, buzzer
- **Sampling period:** 62.5 ms to 2 s (depending on usage conditions)
- **Display refresh rate:** Approx. 0.5 to 10 times/sec
- **Drop proof:** 1m onto concrete surface
- **Dustproof and water proof:** IP50 (EN60529)
- **Functions:** MAX/MIN display, Display hold, Average, Auto power save, Buzzer, backlight function
- **Operating temperature:** 0 to 50 ºC (32 ºF to 122 ºF)
- **Operating humidity:** 40 ºC 45 ºC (104 ºF to 113 ºF) 60%RH or less
- **Storage temperature and humidity:** -10ºC to 50ºC (114 ºF to 122 ºF), 80%RH or less (non-condensing)
- **Applicable standards EMC:** EN61326
- **Safety:** EN61010
- **Power supply:** LR6 alkaline batteryx2, AC adapter
- **Maximum rated power:** 0.5VA
- **Continuous operating time:** Approx. 25 hours; when using alkaline batteries with buzzer off
- **Dimensions:** less than 75 Wx190xHx40 D mm
- **Mass Approx:** less than 250g (with batteries)
- **Analog output:** Output level: 0-1Vf.s, Output resistance: 1kΩ, Accuracy: ±2% of s, Accuracy guarantee temperature and humidity range: 23ºC: ±5ºC, 80%RH or less, Temperature coefficient: Add [accuracy specifications x 0.1 x (IT-23I)], where T is the operating temperature [ºC]. No temperature coefficient for 18ºC to 28ºC range.
- **Pulse output:** Output level: 0-3.3V±0.3V, Output resistance: 1kΩ
- **Functions:** Power input terminal, AC adapter detection, output terminal setting
- **Bundled Accessories:** Includes metal contact tip, two Rubber contact tip and Peripheral ring
- **Warranty:** 3 years