# Specification for Solar Simulator with I-V system and Accessories

## I. Solar Simulator

- **Solar Simulator: -** Class AAA Solar Simulator AM1.5. This solar simulator should meet Optical ASTM E927 AAA Classification
- **Type of lamp: -** LED Source
- **Lamp Irradiance:** 1000 Watts/$m^2$ or above
- **Illumination Area: 5 $cm^2$ or above**
- **Max. Irradiance: 1.0 Sun equivalent**
- **Range: 0.1 to 1.0 Sun variable – Quote the step size**
- **(AM1.5G from 400 nm to 1100 nm)**
- **Temporal Stability < 0.2%**
- **Uniformity: <2%**
- **Emission Angle 120°**
- **Electrical Input Voltage 90 – 240 V AC, 50/60 Hz with sufficient cable length**

## II. I-V SYSTEM

- **Keithley system (Model: 2401)**

**Reference Cell and Contact probes**

- A NREL certified reference cell by any internationally acceptable accredited laboratories, should provide the valid certificate.

- **Micropositioner :** 2Nos Joystick Micropositioner with probe tips and four (4) contact probes.

**Software Features with DAQ**

- Easy to use MS Windows environment and user friendly software.
- Light Intensity & Temperature monitoring and control,
- Calculation of cell series resistance according to IEC 60891 standard.
- Software should handle measurement of both P type and N type cells without any cell connection changes.
- Computes solar cell parameters including
  Isc, Voc, FF, $I_{MAX}$, $V_{MAX}$, $P_{MAX}$, Eff, $R_s$ and $R_{sh}$ and saves them automatically on hard disk drive. In addition cell's temperature and irradiance level is measured and stored for future analysis.
- Advanced noise filtering feature to enable measurement of good quality I-V curves even under fluctuating intensity conditions

**DAQ**: HP Computer with latest configuration for the operation of the system & analysis.

**Warranty: -** Three years Manufacturer Warranty with assurance of spares availability for 10 years.

**UPS**: 1 hour backup

**Installation**: Installation should be provided at customer place at free of cost.

**Operating Voltage :** Indian Standard – 250 V; 50 Hz