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# QUANTUM EFFICIENCY SYSTEM

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## QE-9000



Quantum Efficiency system automatically measures EQE characteristics of solar cells  
System includes

EQE SYSTEM  
SAMPLE HOLDER  
CONNECTIONS

### **SOFTWAREs**

QE characterization Software

### **FYTRONIX IPCE CHARACTERIZATION SYSTEM includes**

This system analyze quantum efficiency (EQE) characteristics of solar cells,  
Quantum efficiency (QE) – also referred to as Incident Photon to Charge Carrier  
Efficiency (IPCE) - indicates the ratio of the number of photons incident on a solar cell to  
the number of generated charge carriers.

The system contains the following elements:

Quantum efficiency system

Wavelength range: 380-1100 nm

USA Spectral monochromator

Design: Double cascaded Czerny-Turner

Double grating turrets standard in each section

Focal Length: 110mm each section f/#

Beam Path: Straight through standard

Wavelength Drive: Dual worm and wheel with electronic synchronization and computer control.

Programmable in additive or subtractive dispersion with positive or negative gratings orders.

Wavelength Precision: 0.1nm (Additive) 0.2nm (Subtractive)

Wavelength Accuracy  $\pm 0.3\text{nm}$  (Additive)  $\pm 0.6\text{nm}$  (Subtractive)

Slewing Speed  $> 100\text{nm/s}$

Stray Light  $< 10^{-9}$

Slits Standard set includes: 0.125mm, 0.15mm, 0.3mm, 0.6mm, 1.2mm, and 2.4mm x 4.0mm.

Max Resolution  $< 0.5\text{nm}$  (Additive)  $< 1\text{nm}$  (Subtractive)

Band Pass:  $\sim 1\text{nm}$  (with 1200gv/mm grating and 0.15mm slit)

Gratings: 2 or 4 gratings

Lock in amplifier for V-I conversion

### **FYTRONIX FY-IPCE-9000 SYSTEM measures the followings**

Photocurrent-wavelength measurements

External quantum efficiency measurements, EQE

#### **SPECIFICATIONS OF QUANTUM EFFICIENCY and IV SYSTEM**

1. System should measure quantum efficiency of the solar cell
2. The wavelength of the system is in the range of 380-1100 nm according to IEC and ASTM standards
3. The system measure current-wavelength measurements of solar cells
4. The monochromator should have the following technical data

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Band Pass:  $\sim 1\text{nm}$  (with 1200gv/mm grating and 0.15mm slit)

I/V converter for voltage and current conversion

5. Photocurrent-wavelength measurements are performed at various voltages

6. System have a solar light bias (solar simulator light)

7. System have a computer