QUANTX-300 Quantum Efficiency Measurement Solution

- Integrated with newly re-designed CB130B monochromator; cuts measurement time in half!

Breadboard Sold Separately

- Wide wavelength range of 325 - 1800 nm for characterizing a large variety of PV cell technologies

- Patent pending detector technology for a seamless response through the entire wavelength range

- Complete, turn-key PV efficiency measurement solution

- Robust, compact design: small footprint to minimize lab space (0.85 m x 0.39 m)

- Simultaneous IQE, EQE, and spectral response measurements

- Integrated beam chopper with virtual digital lock-in amplifier capable of 4 Hz for high signal-to-noise

- Achromatic optics: maintains spot size throughout entire spectral range

- User-friendly, icon-based software interface for simple calibration and IQE measurement

- Compliant to ASTM E1021-12 standard and test method

EXCELLENCE IN TECHNOLOGY

The QUANTX-300 leverages Newport's expertise in optical design, spectroscopy, precision motion control, and electronics technologies. These proficiencies have been focused into a complete, sophisticated measurement system for Quantum Efficiency (EQE and IQE).

The QUANTX-300 empowers researchers to measure internal Quantum Efficiency (IQE) and quantify External Quantum Efficiency (EQE), also known as Incident Photon to Charge Carrier Efficiency (IPCE), for any photovoltaic device. Employing industry-leading, durable components for optical performance, the QUANTX-300 is preconfigured, assembled, and calibrated at the factory. The product is a turn-key solution which includes all necessary components with integrated light source, monochromator, detectors, electronics, software, and even the computer.

The QUANTX-300 incorporates a patented detector geometry using a beam splitter, allowing for simultaneous measurement of EQE and the reflective losses to quantify IQE. Unique to this model is an integrated, software-controlled sample voltage bias, adjustable from -10 to +10 V. This model also includes a 4-wire sense which broadens the capabilities to include a large range of sample sizes and efficiencies.

A variety of accessory modules are available to provide positive sample positioning, temperature control, and electrical probing capabilities.

Newport®

INTUITIVE SOFTWARE

The acquisition and controls software for the QUANTX-300 is pre-installed on a laptop computer which is included with the measurement system. The software uses an intuitive, icon-based graphical interface to provide instrument controls, configuration, and data acquisition.

The software seamlessly controls all of the system components. EQE and IQE curves are calculated and plotted as a function of wavelength in a single scan without the need to reposition the detectors or sample, optimizing measurement accuracy and repeatability.
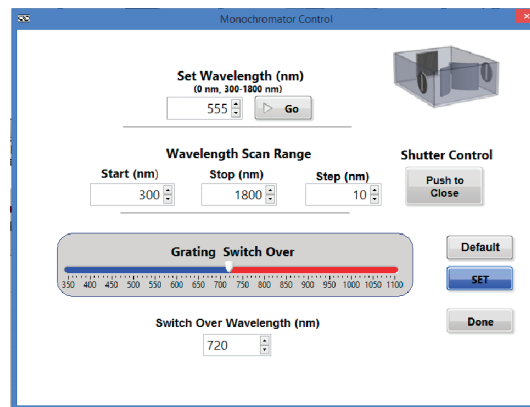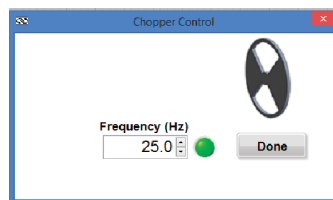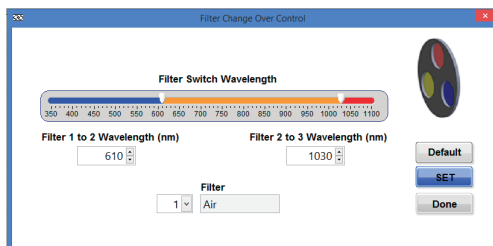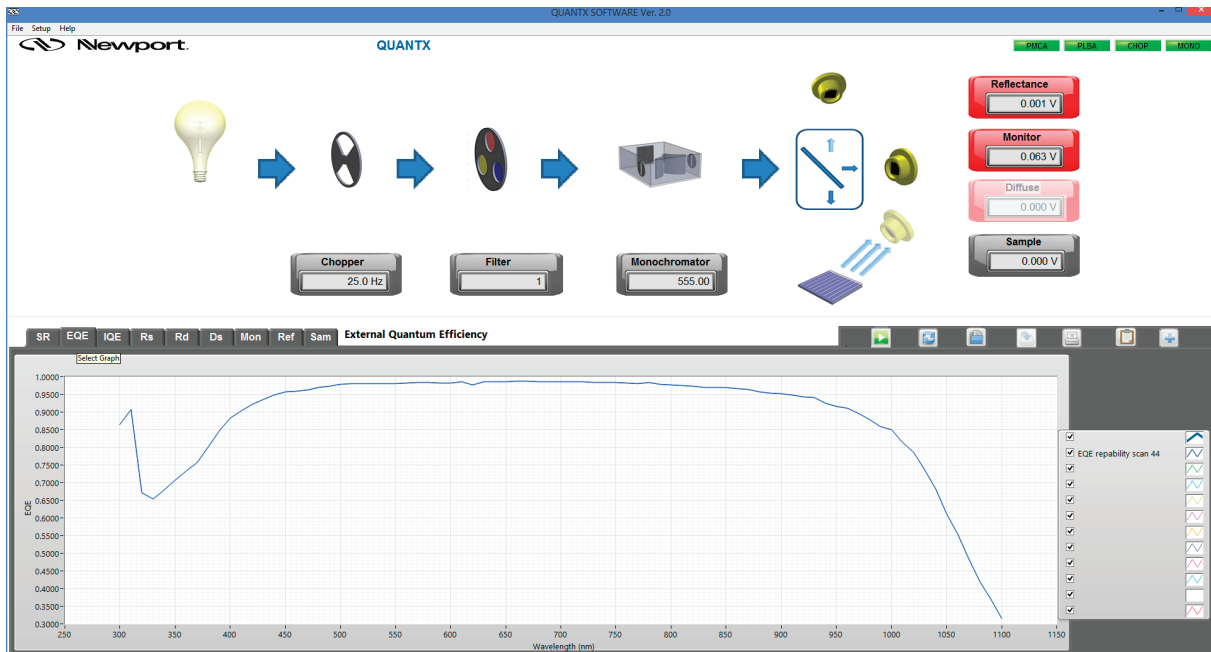
INSTRUMENT SPECIFICATIONS

|	
Spot Size	1.1 mm x 1.2 mm at focus
Working Distance	85 mm
Wavelength Range	325 - 1800 nm
Wavelength Accuracy	$\pm$ 0.5 nm
Spectral Response Repeatability	$\pm$ 0.5% of measured value
Programmable Voltage Bias	$\pm$ 10V
Signal Acquisition	Chopper with virtual lock-in amplifier
Chopper Frequency	4.0 Hz - 100.0 Hz
QE Test Cell	Included
Reflectance Calibration Standards	Included
Computer	Included

ELECTRICAL / MECHANICAL SPECIFICATIONS

Input Voltage	90 - 264 VAC
Power Consumption	400 W
Power Supply Operating Mode	Constant current or constant power
Ambient Operation Temperature	$23 \pm 5\ ^{\circ}$C lab environment
Weight	75 lbs. (34 kg)
Dimensions (m) (W x D x H)	0.85 x 0.37 x 0.49

AVAILABLE ACCESSORIES

Temperature Controlled Vacuum Chuck	IQE-200B-TC-VAC
Electrical Contact Probe Kit - Magnetic	PVIV-PROBE-KIT
Light Tight Enclosure	QUANTX-300-LTE
Light Biasing Kit *(delivers white or filtered smple biasing illumination)*	IQE-LIGHT-BIAS
Vacuum Pump	PVIV-VAC-PUMP; PVIV-VAC-PUMP-220
Temperature Controlled Circulating Water Bath	PVIV-CHILLER
Replacement Lamp	6252

[371.5]
14.63

[855.9]
33.70

[502.2]
19.77

[371.5]
14.63

[908.6]
35.77

[502.2]
19.77
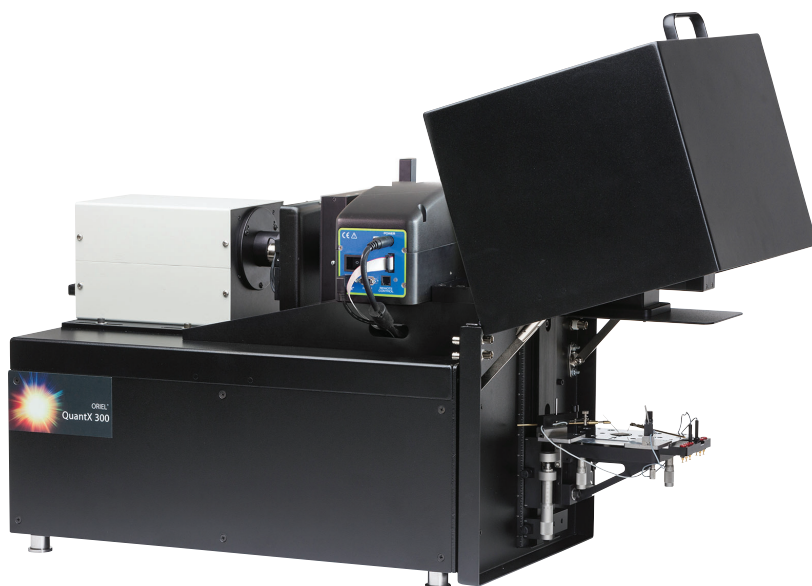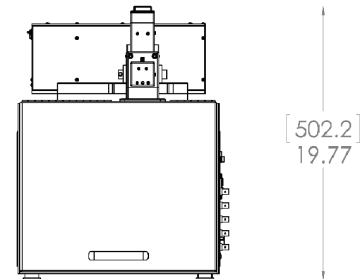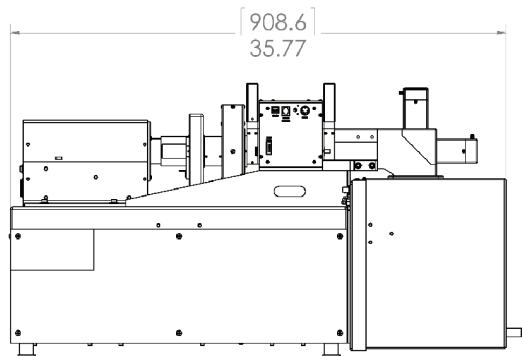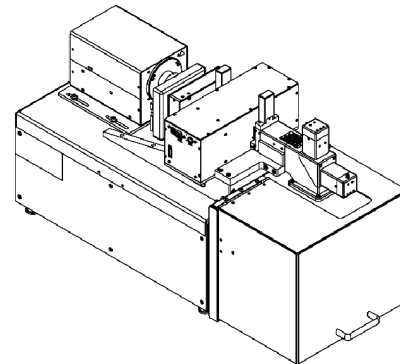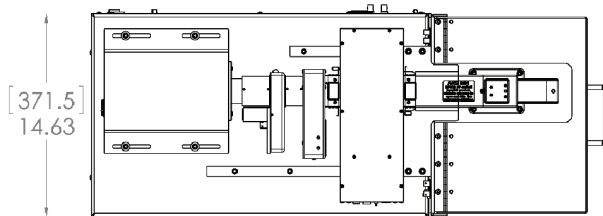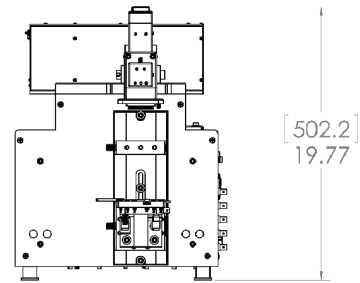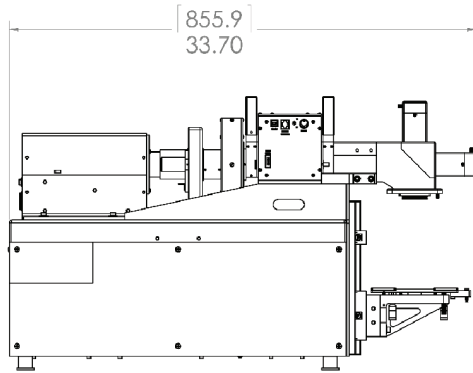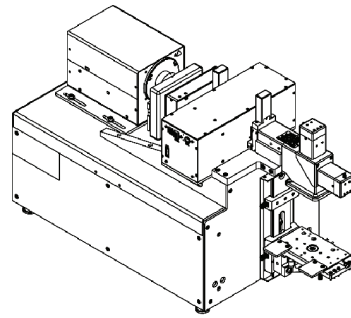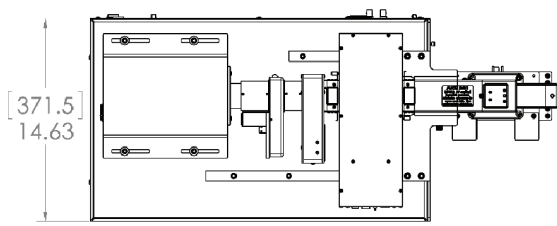
Note that the actual monochromator used in this product is not accurately reflected in the diagrams above, but the overall system dimensions remain unchanged.