



# QE *Pro* High-Sensitivity Spectrometer



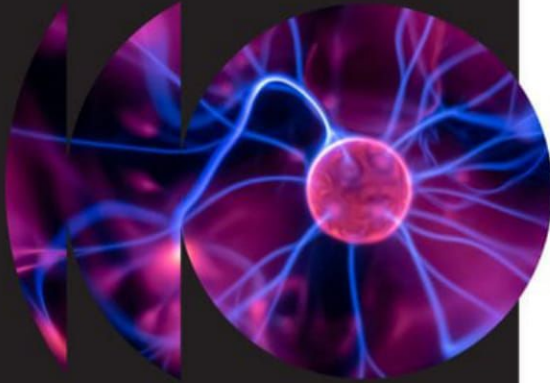
## Robust Optical Design for Great Spectral Performance

The QE *Pro* is a versatile, high-sensitivity spectrometer ideal for general-purpose and low light level applications such as absorbance, fluorescence and Raman analysis. The spectrometer has a back-thinned CCD detector with high quantum efficiency and onboard spectral buffering feature to ensure data integrity at high collection rates. An optional internal shutter is available for effective management of dark measurements, and the interchangeable slit design allows users to switch between absorbance and fluorescence measurements easily.



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## At a Glance

**Wavelength range:** Configurations support the range of 185-1100 nm

**Optical resolution:** 0.14-7.7 nm FWHM (depends on grating and size of entrance aperture)

**Integration time:** 8 ms-60 minutes

**System SNR:** 1000:1 (single acquisition)

**Dynamic range:** 85,000 (typical)

**Stray light:** <0.08% at 600 nm;  
0.4% at 435 nm

**Buffering:** 15,000 spectra

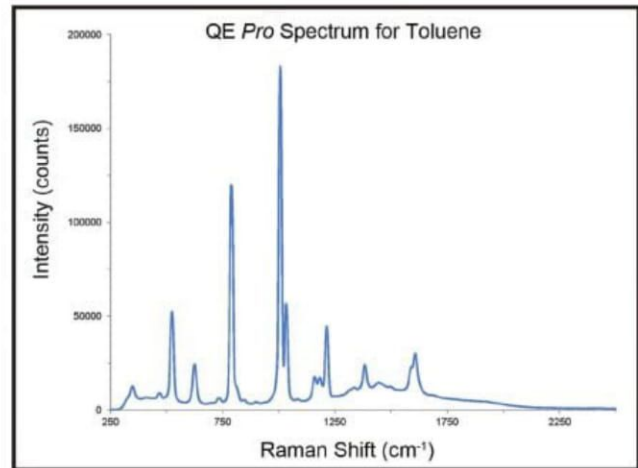
**TEC:** Cooling from -40 °C to +50 °C

**Interchangeable slits:** Multiple widths from 5  $\mu\text{m}$ -200  $\mu\text{m}$ ; SMA/FC bulkhead with no slit also an option

**Internal shutter (optional):** Actuation time: 11 ms; signal attenuation 0 dB (100% attenuated)

## Wide Dynamic Range

Low-noise electronics and an 18 bit A/D converter double the QE Pro's dynamic range and increase its sensitivity by a factor of two compared with typical back-thinned CCD array miniature spectrometers. This improves (lowers) the limit of detection for both absorption and fluorescence measurements, and enables measurements over a wider concentration range.



*The high-sensitivity QE Pro is a good option for measuring the Raman shift of aromatic hydrocarbons such as toluene.*

## Reliable Performance

To support fast, full-spectrum data acquisition, the onboard buffer stores up to 15,000 spectra. This maintains data integrity by buffering time stamped spectra for USB communications. Buffering enables full-spectrum kinetics measurements to be performed every 8 milliseconds or 125 measurements per second.

Thermoelectric cooling (TEC) precisely controls the temperature of the detector. Cooling the detector dramatically reduces the effect of thermal noise and improves the overall stability of the detector for lengthy measurements. The TEC in the QE Pro holds data stability to 4 dark counts over a 50 °C ambient temperature range, giving you the highest quality data. This stability performance makes the QE Pro ideal for demanding online and at-line quality control measurements susceptible to temperature changes.

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