SARTORIUS

Product Datasheet

Octet® QK^{e} System

Enhanced Quantitation and Kinetics Performance with Biosensor Re-Racking

Key Features

- Increased sensitivity and dynamic range for protein quantitation
- Excellent signal resolution for measuring protein and peptide kinetics
- Greater operational cost savings with biosensor re-racking and regeneration

The Octet® QK^{e} system is the enhanced-performance version of the first-generation Octet® QK instrument from the Octet® family of label-free biomolecular interaction analysis instruments. Two acquisition rate settings and a higher-performance spectrometer combine to provide greater sensitivity and a wider dynamic range for protein quantitation and kinetic analysis. In addition, biosensor re-racking provides enhanced assay flexibility and operational cost savings.

Increased Sensitivity and Dynamic Range for Protein Quantitation and Kinetics

The Octet® QK^e instrument contains the same high-performance spectrometer used in the Octet® RED96 system. In addition, the Octet® QK^e system provides a High Sensitivity acquisition rate setting for both quantitation and kinetics assays, allowing measurement of lower ranges of protein concentrations and smaller molecular weight analytes than was possible with the Octet® QK system.

The Standard acquisition rate of 0.6 Hz with 5 averages per data point (1 data point per 1.6 seconds) is the default setting on the Octet® QK^e system and equivalent to that on the Octet® QK system. The High Sensitivity acquisition rate of 0.3 Hz (1 data point per 3.3 seconds) allows the software to perform 40 averages per data point to reduce noise and enhance signal to noise ratios, shown in Table 1, and gives the Octet® QK^e system enhanced sensitivity for quantitation of proteins and peptides.

Kinetic analysis of proteins and peptides benefits from these Octet® QK^e system enhancements over the Octet® QK system in two ways:

- Lower molecular weight proteins and peptides can be detected and analyzed on the Octet® QK^e system.
- The binding data for proteins or peptides at different concentrations can be better resolved on the Octet® QK^e system, providing reliable measurement of kinetic constants.

System	Octet® QK	Octet® QK^e		Octet® RED
Setting	0.6 Hz, 5 avg	0.3 Hz, 40 avg	0.6 Hz, 5 avg	5 Hz, 20 avg
k_{on} (1/Ms)	1.51E+05	1.37E+05	1.08E+05	1.03E+05
k_{off} (1/s)	7.48E-02	8.00E-02	7.25E-02	6.56E-02
K_D (M)	4.95E-07	5.82E-07	6.71E-07	6.39E-07
S/N @ [0.5 K_D]	4.7	30.8	14.3	29.1

Table 1: Comparison of performance of the Octet® QK, QK^e (at two different acquisition rates) and RED systems for the insulin (5.8 kDa)-anti insulin interaction.

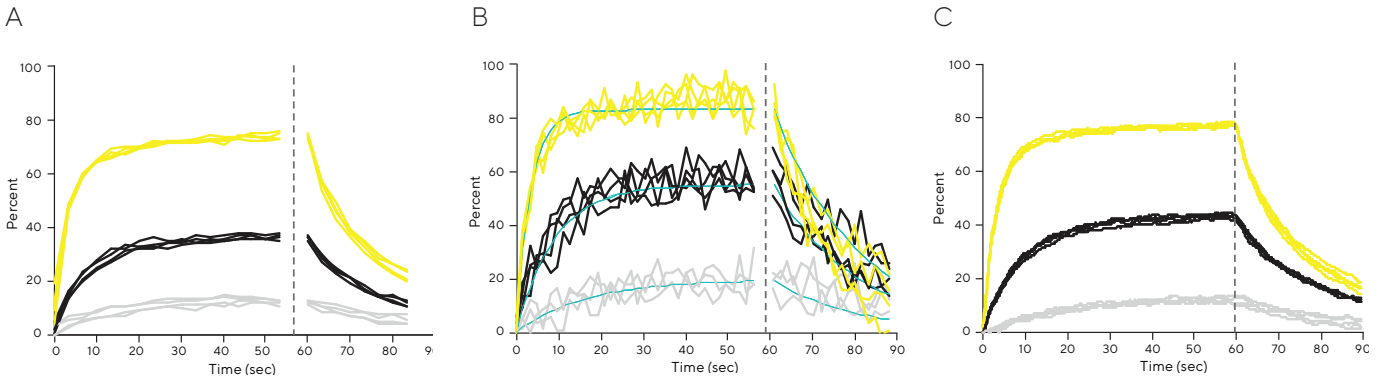

Figure 1: Comparison of the binding of insulin (5.8 kDa) to biotinylated anti-insulin antibody anchored on Super Streptavidin biosensors on the Octet® QK^e system (A), the Octet® QK system (B), and the Octet® RED system (C). The Octet® QK^e system data was obtained using the Low acquisition rate setting of 0.3 Hz and 40 averages. The Octet® RED system data was obtained using 5 Hz acquisition rate and 20 averages and the Octet® QK system data was obtained using a 0.6 Hz acquisition rate and 5 averages.

Octet® QK^{e} System Specifications*

Sample and analysis	
Detection Technology	Bio-Layer Interferometry (BLI)
Biosensor Type	Disposable, single-use fiber optic biosensors with optional reuse by regeneration and/or re-racking
Information Provided	▪ Kinetic and affinity analysis (k_{obs}, k_a, k_d, K_D) ▪ Concentration data analysis (no need for background subtraction) ▪ Epitope binning and cross-blocking matrices and trace overlays
Data Presentation	▪ Plots displaying kinetic binding, equation fits, and residuals of fits ▪ Tabulated kinetic and quantitation data
Sample Types	Proteins, antibodies, peptides, media containing serum, buffers containing DMSO, periplasmic fractions, untreated cell culture supernatants, and crude cell lysates
Sample Plate	Standard 96-well, black, flat bottom microplate
Sample Volume	▪ 180–220 µL/well (96-well microplate) ▪ Nondestructive testing, easily recovered
Orbital Flow Capacity	Static or 100–1500 rpm
Analysis Temperature Range	(Ambient + 4°C)–40°C, 1°C increments

*All specifications are subject to change without notice.

In comparison, the Octet® QK384 system provides equivalent performance at greater throughput. The Octet® HTX, RED96 and RED384 systems provide the best performance among the Octet® family of instruments for quantitation and kinetic analysis, with the broadest dynamic range, greatest sensitivity, and ability to measure small molecule : protein binding and fast binding interactions.

Making Quality Analysis Affordable

The Octet® QK^{e} system provides re-racking and reuse of biosensors at the end of an experiment. Biosensor re-racking provides enhanced flexibility for loading ligands on biosensors and reduces operational costs by regenerating and re-using biosensors. Combined with superior data quality, the Octet® QK^{e} system is a value-added alternative to other label-free instruments for your assays.

Quantitation and kinetics	
Throughput	Up to 8 assays in parallel; up to 96 assays per 96-well microplate
Analysis time per sample	▪ hIgG quantitation in 2 minutes for 8 samples, ≤ 32 minutes for 96 samples ▪ Real-time kinetic analysis experiments from 5 minutes to 4 hours
Baseline noise	▪ ≤ 3 pm (RMS) at High Sensitivity acquisition rate ▪ ≤ 8 pm (RMS) at Standard acquisition rate
Quantitation range for hIgG	▪ 1 µg/mL to 700 µg/mL at low rpm LOD of 0.05 µg/mL at 1000 rpm

Physical specs	
Dimensions	18.6 in (H) x 17 in (D) x 20.8 in (W) 47 cm (H) x 43 cm (D) x 53 cm (W)
Weight	54 lb (24.5 kg)
Electrical requirements	▪ Mains: AC 100–240 V, 5.0–2.0 A, 50/60 Hz, single phase ▪ Power consumption: 120 W (240 W peak)
Safety standards	▪ CE, Nemko

Ordering Information

Part No.	UOM	Description
OCTET QKE	System	Includes Octet® QK^{e} instrument, Octet® software, desktop computer, LCD monitor, accessory kit, and one-year warranty

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