GE Healthcare

Selection guide

Biacore™ systems

Biacore systems are designed to provide valuable information and high-quality molecular interaction data in a range of fields including: basic biological research, drug discovery and development, immunogenicity studies, vaccine development, and quality control. Biacore systems help you to:

- Understand the relationship between molecular interaction and function
- Screen for hits and optimize leads based on selectivity, affinity, and kinetics
- Examine interactions of ions, small molecules, and multidomain proteins or viruses with targets
- Screen and characterize antibodies and proteins based on yes/no binding, affinity and kinetics from the fastest on-rates to the slowest off-rates
- Quantitate protein by measuring the concentration of active protein with retained biological function

Which system is right for you?

Applications	Biacore 8K	Biacore S200	Biacore T200
Kinetics/affinity characterization	Yes	Yes	Yes
Kinetics/affinity screening	Yes	Yes	Yes
Single cycle kinetics	Yes	Yes	Yes
LMW interaction analysis	Yes	Yes	Yes
Fragment screening	Yes	Yes	Yes
Epitope mapping	Yes*	Yes*	Yes*
Immunogenicity	-	-	Yes
Concentration analysis	-	-	Yes
Calibration-free concentration analysis	-	-	Yes
Thermodynamics	-	Yes	Yes
Comparability	-	-	Yes
Sample recovery MS	-	-	Yes
Built-In knowledge base	-	-	-

** The application can be performed, but with limitations in software and/or hardware functionality*

Specifications†

Association rate (k_a) (proteins)	up to 10^9 $M^{-1}s^{-1}$ LMW molecules: up to 10^7 $M^{-1}s^{-1}$	10^3 to 3×10^9 $M^{-1}s^{-1}$	10^3 to 3×10^9 $M^{-1}s^{-1}$
Dissociation rate (k_d)	10^{-6} to 0.5 s^{-1}	10^{-5} to 2 s^{-1}	10^{-5} to 1 s^{-1}
Affinity range	fM to mM	fM to mM	fM to mM
Concentration range	-	-	1 pM to 2 mM
Precision (concentration analysis)	-	-	< 5% CV
Molecular weight limit	No lower limit	No lower limit	No lower limit
Baseline noise	Typically < 0.02 RU (RMS)	< 0.015 RU (RMS)	< 0.03 RU (RMS)
Baseline drift	Typically < 0.3 RU/min	< 0.3 RU/min	< 0.3 RU/min
Sample volume (kinetics)	Injection volume plus 20 to 50 µL (application dependent)	50 to 400 µL	50 to 400 µL
Immobilized molecule consumption	Typically 0.03 to 3 µg/flow cell	0.03 to 3 µg/flow cell	0.03 to 3 µg/flow cell
Analysis temperature	4°C to 40°C	4°C to 45°C	4°C to 45°C
Sample storage temperature	4°C to 40°C	4°C to 45°C	4°C to 45°C
Data collection rate	1 or 10 Hz	1, 10 or 40Hz	1 or 10 Hz
Sample capacity	4 × 96- or 384-well microplates, normal and deep-well	1 × 96 or 384	1 × 96 or 384
Number of flow cells	16 in 8 channels	4	4
Unattended run time	60 h	48 h	48 h
Data evaluation time	96 curve sets < 5 min	32 curve sets < 5min	32 curve sets < 10 min
GxP support	-	-	Yes (SW package)
Additional packages	-	-	GxP extension

† *Specifications are representative values, and can vary dependent on experimental conditions and individual properties of ligand and analyte*

Biacore X100	Biacore 4000	Biacore C
Yes	Yes	-
Yes	Yes	-
Yes	-	-
Yes	Yes	-
-	Yes	-
Yes*	Yes	-
Yes*	Yes*	-
Yes	Yes	Yes
Yes	-	-
Yes*	-	-
-	-	-
-	-	-
Yes	-	-

10^3 to 10^9 $M^{-1}s^{-1}$	10^3 to 10^9 $M^{-1}s^{-1}$	N/A
10^{-5} to 0.1 s^{-1}	5×10^{-5} to 1 s^{-1}	N/A
fM to mM	fM to mM	N/A
10 pM to 2 mM	2 pM to 2 mM	10 pM to 1 mM
< 5% CV	< 5% CV	< 5% CV
M_r > 100	M_r > 50	M_r > 180
< 0.1 RU (RMS)	< 0.1 RU (RMS)	< 0.6 RU (RMS)
< 0.3 RU/min	< 0.3 RU/min	< 0.3 RU/min
32 to 120 µL	28 to 376 µL	5 to 325 µL (concentration analysis)
Typically 1 µg	3 to 10 µg/spot	Typically 1 µg
Ambient/4°C to 40°C (Plus)	4°C to 40°C	25°C (fixed)
Ambient	4°C to 40°C	Ambient (external thermostating possibility)
1 Hz	1 or 10 Hz	1 Hz
15 vials	Antibodies: 10 × 96 LMW: 6 × 384	2 × 96
2	4 × 5 spots	4
24 h	60 h	24 h
1 curve set < 0.5 min	120 curve sets < 6 min	Total analysis time < 5 min/sample
-	Yes (Included)	Yes (Included)
Plus	Antibody extension LMW extension	-

Label-free interaction analysis—from research, through drug discovery and development, to QC

Biacore 8K

Discover more, more efficiently

Delivering high-quality binding data to meet the toughest challenges in small molecule/biotherapeutic screening and characterization.

- A single solution for interaction analysis in both screening and characterization
- Screening of 2300 molecules in a day
- High-quality kinetic characterization of 64 interactions in 4 h
- 60 h unattended run time with queueing abilities and rapid multirun evaluations

Biacore S200

Empowers low-molecular weight drug discovery programs

Our most sensitive SPR-based sensor for cutting-edge applications.

- Determine affinity and kinetics with exceptional quality for confident lead optimization even for difficult targets where response levels are low
- Find site-selective binders directly using competition experiments
- Obtain fragment binding data from 384 single-concentration samples in less than 16 h

Biacore T200

Versatility all the way from research to discovery and quality control

Versatile system for high-quality characterization of molecular interactions—from ions to viruses.

- Increase understanding of molecular mechanisms and structure-function relationships
- Select and optimize lead compounds during drug discovery
- Select, characterize, and assess comparability of biotherapeutics
- Perform time- and cost-efficient concentration analysis

Biacore X100

Boost your protein interaction research

Reliable insights into biological processes in multiuser environments/small-scale interaction analysis.

- Characterize molecular mechanisms and interaction pathways based on kinetics and affinity
- Gain increased understanding of structure-function relationships
- Determine the active concentration without the need for standard curves

Biacore 4000

High throughput without compromise

Large-scale, label-free analysis in drug discovery providing high-throughput without compromise on data quality.

- Screen and select compounds, fragments, and biotherapeutics based on kinetics and affinity even for samples such as supernatants and serum
- Define specificity through epitope mapping and inhibition studies
- Benefit from innovative software tools specifically designed for large-scale interaction analysis

Biacore C

Confident concentration analysis in GxP environments—from preclinical development to QC

The world's first SPR instrument dedicated to rapid determination of concentration in GxP environments.

- Determine the active concentration of mAbs, protein therapeutics, and vaccines or quantitate process-specific impurities
- Monitor quality and stability in formulations development and protein manufacturing
- Perform biopharmaceutical release testing

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