

Selection guide

Biacore™ surface plasmon resonance systems



Biacore™ SPR systems

Biacore™ SPR systems are designed to provide valuable information and high-quality interaction data for a broad range of molecular entities and scaffold types, including (but not limited to) small molecules and fragments, proteolysis targeting chimeras (PROTACs), molecular glues, antibodies, multidomain proteins, and viruses. The systems are used in a wide range of applications across a range of scientific fields including basic biological research, drug discovery and development, immunogenicity studies, vaccine development, and quality control.

Biacore SPR systems allow you to:

- Understand the relationship between molecular interactions and function or to confirm and validate your results from other techniques.
- Screen and characterize for hits and optimize leads based on selectivity, affinity, and kinetics.
- Screen, identify, 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 X100 SPR system	Biacore 1 series SPR systems	Biacore 8 series SPR systems
Kinetics/affinity characterization	●	●	●
Kinetics/affinity screening	●	●	●
Biacore single cycle kinetics (SCK)	●	●	●
Parallel kinetics			●
2D kinetics			●
Rapid protein screening			●
Low molecular weight (LMW) interaction analysis	●	●	●
Fragment screening		●	●
Epitope binning	○	●	●
Immunogenicity	○	○	○
Comparability assessment		●	●
Concentration analysis	●	●	●
Rapid protein concentration estimation			●
Calibration-free concentration analysis	●		
Parallel line analysis (PLA)		●	●
Buffer scouting using ABA injection command		●	●
Multicomplex analysis using Poly injection command		●	
GxP support		●	●
Built-in knowledge library	●		

● Application may be performed using the indicated product.

○ Application may be performed, but with limitations in software and/or hardware functionality.

Specifications SPR systems¹

Applications	Biacore X100 SPR system	Biacore 1K system	Biacore 1K+ system	Biacore 1S+ system	Biacore 8S system	Biacore 8S+ system
Association rate (k_a)	Proteins: up to $10^8 \text{ M}^{-1}\text{s}^{-1}$ LMW molecules: up to $10^6 \text{ M}^{-1}\text{s}^{-1}$	Proteins: up to $3 \times 10^9 \text{ M}^{-1}\text{s}^{-1}$ LMW molecules: up to $5 \times 10^7 \text{ M}^{-1}\text{s}^{-1}$			Proteins: up to $3 \times 10^9 \text{ M}^{-1}\text{s}^{-1}$ LMW molecules: up to $5 \times 10^7 \text{ M}^{-1}\text{s}^{-1}$	
Dissociation rate (k_d)	10^{-5} to 0.1 s^{-1}	10^{-6} to 1 s^{-1}		10^{-6} to 6 s^{-1}	10^{-6} to 0.5 s^{-1}	
Affinity range	pM to mM	fM to mM			fM to mM	
Concentration limit of detection (LOD)	10 pM	$\geq 1 \text{ pM}$			$\geq 1 \text{ pM}$	
Precision (concentration analysis)	< 5% coefficient of variation (CV)	< 5% CV			< 5% CV	
Molecular weight limit	$M_r > 100$	No lower limit for organic molecules			No lower limit for organic molecules	
Short-term noise	< 0.1 RU (RMS)	Typically < 0.03 RU (RMS)		Typically < 0.01 RU (RMS)	Typically < 0.01 RU (RMS)	
Baseline drift	< 0.3 RU/min	Typically < 0.3 RU/min			Typically < 0.3 RU/min	
Blank subtracted drift	N/A ²	< $\pm 0.003 \text{ RU/min}$			< $\pm 0.03 \text{ RU/min}$	
Sample consumption	Injection volume 2 to 100 μL plus 25 to 30 μL (application dependent)	Injection volume 1 to 400 μL plus 20 to 40 μL (application dependent)			Injection volume 1 to 200 μL plus 20 to 50 μL (application dependent)	
Immobilized molecule consumption	Typically 1 μg	0.03 to 3 $\mu\text{g}/\text{flow cell}$			Typically 0.03 to 3 $\mu\text{g}/\text{flow cell}$	
Analysis temperature	Ambient 4°C to 40°C ³	25°C to 37°C		4°C to 40°C (at least 20°C below ambient temperature)	4°C to 40°C (at least 20°C below ambient temperature)	
Sample storage temperature	Ambient	4°C to 37°C (at least 18°C below ambient temperature)		4°C to 37°C (at least 18°C below ambient temperature)	4°C to 40°C (maximum 18°C below ambient temperature)	
Data collection rate	1 Hz	1 or 10 Hz		1, 10, or 40 Hz	1 or 10 Hz	
Sample capacity	15 vials	1 \times 96- or 384-well microplate, normal and deep-well 1 reagent rack with 21–43 positions compatible with 0.7–4.4 mL vials	2 \times 96- or 384-well microplates, normal and deep-well 2 reagent racks with 21–43 positions compatible with 0.7–4.4 mL vials		4 \times 96- or 384-well microplates normal and deep-well	12 \times 96- or 384-well microplates normal and deep-well
Number of flow cells	2, in 1 channel	6, in 1 channel			16, in 8 channels	
Flow cell addressing	Single, pairwise	Single, pairwise	Single, pairwise, serial up to six		Single, pairwise	
Unattended run time	24 h	60 h	72 h		60 h	72 h
Buffer selector	No	No	Yes		Yes	
Method queue	No	Yes	Yes		Yes	
Software	Biacore X100 control and evaluation software	Biacore Insight Software				
Software extensions	Biacore X100 Plus package	Extended screening Concentration and potency Epitope binning Data integration GxP Biacore Intelligent Analysis™				
Dimensions (W \times H \times D)	596 \times 563 \times 593 mm	755 \times 725 \times 666 mm			902 \times 875 \times 616 mm	

¹ Specifications are representative values, which can vary dependent on experimental conditions and individual properties of ligand and analyte.

² Not determined on Biacore systems released before 2016.

³ Biacore X100 Plus package.

Label-free interaction analysis: Apply to your research, drug discovery and development, and QC



Biacore X100 system	Biacore 1K system	Biacore 1K+ system	Biacore 1S+ system	Biacore 8S system	Biacore 8S+ system
<p>Your research—boosted.</p>	<p>Your research—streamlined.</p>	<p>Your development—advanced.</p>	<p>Your discoveries—elevated.</p>	<p>Your discovery—accelerated.</p>	<p>Your discovery—accelerated. With maximized capacity.</p>
<p>Robust two flow-cell SPR system for reliable insights into biological processes in multiuser environments.</p> <ul style="list-style-type: none"> • One needle SPR system for 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. • Guided workflows for novice users with easy access to a knowledge library. 	<p>Six flow-cell SPR system for robust, reproducible interaction analysis from day one with minimal effort. Affordable cost and reduced running expenses.</p> <ul style="list-style-type: none"> • No programming skills needed to design, set up, or start your assay. • Fast and flexible exploratory studies using Interactive run. Take full control of the instrument and make decisions based on your results. • One needle SPR system with novel injection tool, which enables multicomplex analysis in one run. • Upgradable to Biacore 1K+ for higher capacity and increased analytical flexibility. • One-needle SPR system for interaction analysis allowing ranking, kinetics, affinity, epitope binning, sensorgram comparison, concentration and relative potency. 	<p>Six flow-cell SPR system with full flexibility for assay design and increased capacity for interaction analysis, with straightforward transfer of methods between systems.</p> <ul style="list-style-type: none"> • Serial injection over all six flow cells reduces analyte consumption by up to 40% for a small antibody screen, compared to a four flow cell SPR system. • One needle SPR system that tackles complex questions and samples. Queue up multiple methods, use buffer selector, and the innovative sample injection tools to get quality data and results. • Simpler data interpretation: compile, visualize, and export data with results in minutes. • Optimized for use in GxP regulated environment. • One-needle SPR system for interaction analysis allowing ranking, kinetics, affinity, epitope binning, sensorgram comparison, concentration and relative potency. 	<p>Six flow-cell SPR system with exceptional sensitivity, full flexibility, and high capacity for interaction analysis of most challenging targets or unstable binders with low response level.</p> <ul style="list-style-type: none"> • One needle SPR system with the highest sensitivity and data collection frequency, which allows you to better distinguish tight binders. • Broad analysis temperature range for expanded characterization and stability studies. • Increase operational efficiency, line up methods, utilize the sample capacity for unattended run time of 72 h. • Optimized injection design reduces sample consumption by 13% compared to a typical kinetic experiment. • One-needle SPR system for interaction analysis allowing ranking, kinetics, affinity, epitope binning, sensorgram comparison, concentration and relative potency. 	<p>16 flow-cell SPR system that efficiently delivers binding data with speed, scalability, and sensitivity meeting your toughest challenges in screening and characterization.</p> <ul style="list-style-type: none"> • High sample capacity of up to 4 × 384-well microplates. • 60 h unattended run time with queueing abilities and rapid multi-run evaluations; option for analysis in a GxP-regulated environment. • Eight-needle SPR system for interaction analysis allowing ranking, kinetics, affinity, epitope binning, sensorgram comparison, concentration and relative potency. • High data quality while increasing your throughput eight times vs one-needle SPR systems. • Parallel analysis enables rapid optimization of assay conditions and troubleshooting. 	<p>16 flow-cell SPR system that efficiently delivers binding data with speed, scalability, sensitivity, and maximized capacity, meeting your toughest challenges in screening and characterization.</p> <ul style="list-style-type: none"> • Exceptional sample capacity of up to 12 × 384-well microplates. • 72 h unattended run time with queueing abilities and rapid multi-run evaluation; option for analysis in a GxP-regulated environment. • Eight-needle SPR system for interaction analysis allowing ranking, kinetics, affinity, epitope binning, sensorgram comparison, concentration and relative potency. • High data quality while increasing your throughput eight times vs one-needle SPR systems. • Parallel analysis enables rapid optimization of assay conditions and troubleshooting.



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