DISCOVER MOLECULAR INTERACTIONS

Kinetics – Affinity – Avidity
Conformational Changes
Thermodynamics

heliX®

dynamic BIOSENSORS

heliX

The **heliOS** network

Network of autonomous **heliX®** modules, simply plug-and-play.
Reliable and robust by built-in system redundancy for uninterrupted operation.

Combine as many **heliX®** modules as you require to **scale-up throughput** to your needs.

Observer

Operator

Highly-automated THROUGHPUT

High PERFORMANCE sensing

switchSENSE® static and dynamic measurement modes for the analysis of binding kinetics and molecular conformations.

4 signals, real-time

4 single-photon counters for highest fluorescence sensitivity.
Data collection at 10 ms to resolve even the fastest kinetics in real-time.

Robust microfluidics

Simplistic single-channel design, made from durable glass, withstanding highest flow rates and corrosive chemicals.
Disposable, maintenance-free.

heliX®
single unit

Automatic chip loader

5 chips, automatically exchangeable and NFC-tagged for seamless traceability.

Autosampler

384 and 96 well plates.
Sample temperature 10 – 70°C,
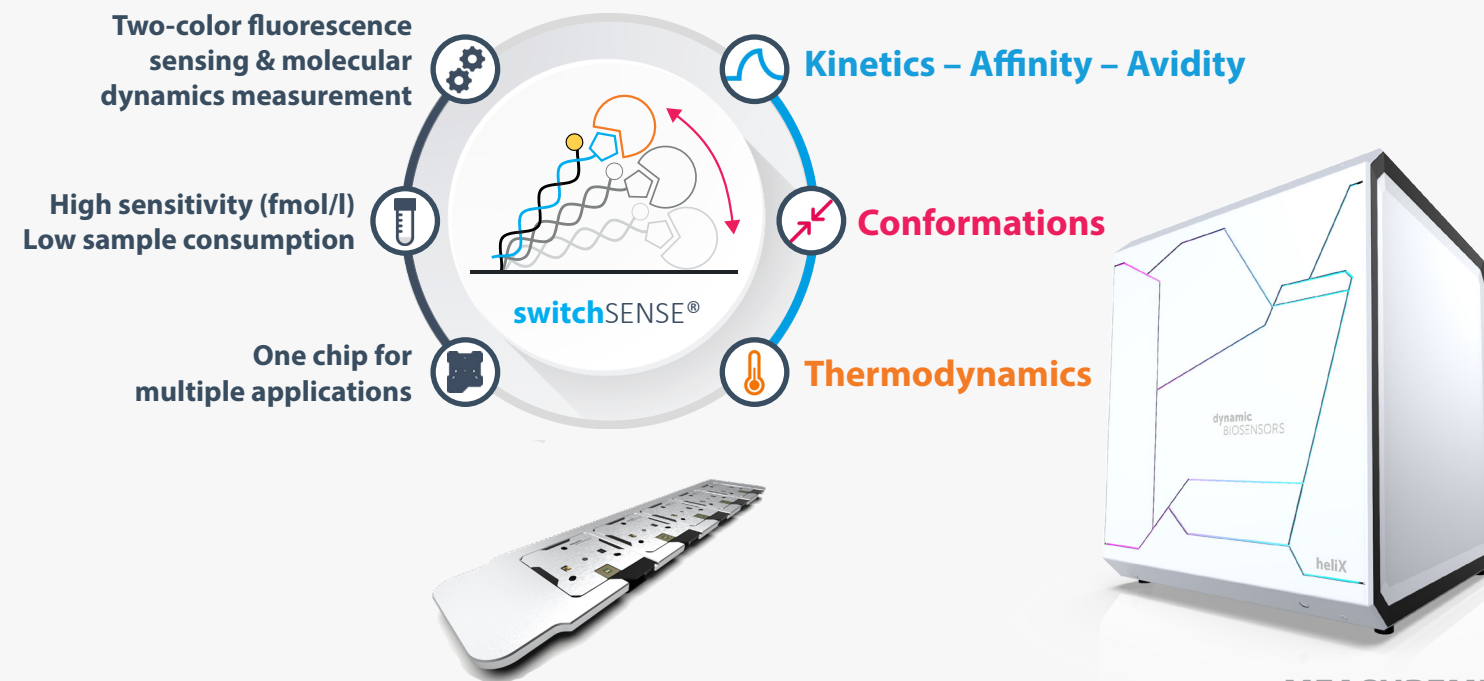sample compartment 4 – 40°C.

Ease-of-Use

Powerful software

For efficient planning and analysis of binding and conformation experiments.

Intuitive for the novice and configurable for the expert analysis of big data.
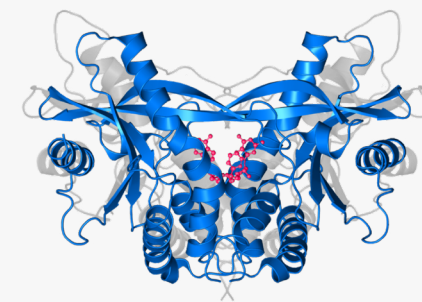
Control and monitor **heliX®** modules from **anywhere**.

dynamic
BIOSENSORS

switchSENSE® – Comprehensive biophysical information, in one measurement

- Two-color fluorescence sensing & molecular dynamics measurement
- High sensitivity (fmol/l) Low sample consumption
- One chip for multiple applications

switchSENSE®

- **Kinetics – Affinity – Avidity**
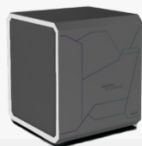- **Conformations**
- **Thermodynamics**

MEASUREMENTS   **APPLICATIONS**

DNA / RNA
association and dissociation rate constants
protein conformation
sample integrity
melting point
interlinking
affinity vs. avidity
concentration measurements
multispecific interactions (antibodies)

Proteins
hydrodynamic protein diameter
cooperativity
screening
folding / unfolding
agglomeration
activity of nucleic acid enzymes
small molecule induced conformational changes

Small Molecules
inhibitor dose response
sequence specificity
free energy, enthalpy, entropy
monomer-multimer transitions
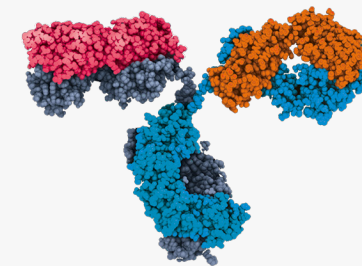
dynamic BIOSENSORS

heliX® system comparison

	heliX	heliX+	Double-heliX	4-heliX Bundle
No. of chips, auto-exchangeable	1	5	10	20
No. of real-time signals	2	4	8	16
Real-time referencing	[1] same channel	[1] same channel	[1] same channel [2] different channels	
No. of well-plates / wells	1 / 96	1 / 384	2 / 768	4 / 1536
Fluorescence channels	One color	Two Colors		
Sampling rate	1 datapoint/s	100 datapoints/s		
Temperature	[1] $T_{const.}$ = 25°C or 37°C	[1] any constant temperature from 10° to 70°C [2] variable temperature, ramp speed up to 10°C/min, for T_m measurement		
Measurement modes	[1] Molecular Dynamics [2] Fluor. Proximity Sens.	[1] Molecular Dynamics (molecular friction) [2] Fluorescence Proximity Sensing (FPS) [3] Fluorescence resonance energy transfer (FRET)		
Kinetics	$k_a = 10^3 \dots >10^7\ M^{-1}s^{-1}$ $k_d = 10^{-6} \dots 0.2\ s^{-1}$ $K_D = 0.1\ pM - 1\ mM$	$k_a = 10^3 \dots >10^8\ M^{-1}s^{-1}$ $k_d = 10^{-6} \dots 20\ s^{-1}$ $K_D = 50\ fM - 1\ mM$		