The **heliOS** network

Network of autonomous heliX® modules, simply plug-and-play.

Reliable and robust by built-in system redundancy for uninterrupted operation.

**Highly-automated THROUGHPUT**

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

**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.

For further information visit [www.dynamic-biosensors.com/heliX](http://www.dynamic-biosensors.com/heliX)

Contact info@dynamic-biosensors.com to speak to our application team about methodologies or to arrange a demonstration.
The heliOS network

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

Highly-automated THROUGHPUT

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.

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

High PERFORMANCE sensing

switch2D® static and dynamic measurement modes for the analysis of binding kinetics and molecular conformations.

Advanced microfluidics

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

Ease-of-Use

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.

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.

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DISCOVER MOLECULAR INTERACTIONS

Kinetics – Affinity – Avidity
Conformational Changes
Thermodynamics

Fastest binding kinetics
## Multi-parameter analysis with switchSENSE®

<table>
<thead>
<tr>
<th>Parameter</th>
<th>heliX+</th>
<th>Double-heliX</th>
<th>4-heliX</th>
<th>Bundle</th>
</tr>
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<tbody>
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<td>No. of chips, auto-exchangeable</td>
<td>1</td>
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<td>10</td>
<td>20</td>
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<tr>
<td>No. of real-time signals</td>
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<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>No. of well-plates / wells</td>
<td>1 / 96</td>
<td>1 / 384</td>
<td>2 / 768</td>
<td>4 / 1536</td>
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<tr>
<td>Fluorescence channels</td>
<td>One color</td>
<td>Two Colors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sampling rate</td>
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<td>[2] variable temperature, ramp speed up to 10°C/min, for Tm measurement</td>
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</table>

### Kinetics

- **DYNAMIC mode**
  - Hydrodynamic friction
  - Fluorescence proximity sensing
- **STATIC mode**
  - Fluorescence proximity sensing
- **TWO-COLOR detection**
  - Fluorescence & friction sensing

### Thermodynamics

- **DNA / RNA**
- **Proteins**
- **Small Molecules**

### 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**

### Multiple measurement modes

- **DYNAMIC mode**
- **STATIC mode**
- **TWO-COLOR detection**

### Kinetic Parameters

- **k_a** = 10^3 … >10^8 M^{-1}s^{-1}
- **k_d** = 10^{-6} … 32 s^{-1}
- **K_D = 50 fM – 1 mM**

### HELIX system comparison

- **heliX**
- **heliX®**
- **Double-heliX**
- **4-heliX**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>heliX</th>
<th>heliX®</th>
<th>Double-heliX</th>
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<td>Measurement modes</td>
<td>Molecular Dynamics</td>
<td>Fluorescence Proximity Sens.</td>
<td>Molecular Dynamics (molecular friction)</td>
<td>Fluorescence Proximity Sensing (FPS)</td>
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### switchSENSE® – Comprehensive biophysical information, in one measurement

**Multi-parameter analysis with switchSENSE®**

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<th>switchSENSE®</th>
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<th>Double-heliX</th>
<th>4-heliX multiplex</th>
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### Kinetics

- **K$_{\text{a}}$** ($10^3$ – $10^8$ M$^{-1}$ s$^{-1}$)
- **K$_{\text{d}}$** ($10^{-6}$ – 0.2 s$^{-1}$)
- **K$_{\text{D}}$** (0.1 pM – 1 mM)
- **K$_{\text{a}}$** ($10^3$ – $10^8$ M$^{-1}$ s$^{-1}$)
- **K$_{\text{d}}$** ($10^{-6}$ – 32 s$^{-1}$)
- **K$_{\text{D}}$** (50 fM – 1 mM)

### Conformations

- DNA / RNA
- Proteins
- Small Molecules

### Thermodynamics

- DNA / RNA nanolever
- Protein diameter $D_H$, $\Delta D_H = 0.1$ nm
- Melting temperature $T_m$
- Thermodynamics $\Delta H, \Delta S, \Delta G$
- Nucleic and enzyme activity

### Kinetic Measurements

- **Catabolism**
- **Kinetics**

### SwitchSENSE® System Comparison

- **DYNAMIC mode**
- **STATIC mode**
- **TWO-COLOR detection**

- DNA / RNA nanolever
- Protein diameter $D_H$, $\Delta D_H = 0.1$ nm
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- Nucleic and enzyme activity

### Protein Diameter

- $D_H$
- $\Delta D_H$ = 0.1 nm

### Melting Temperature

- $T_m$

### Thermodynamics

- $\Delta H$
- $\Delta S$
- $\Delta G$

### Nucleic and Enzyme Activity

- Protein diameter $D_H$, $\Delta D_H = 0.1$ nm
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### DNA / RNA

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- Thermodynamics $\Delta H, \Delta S, \Delta G$
- Nucleic and enzyme activity

### Conclusions

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

### Multiple Measurement Modes

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