

# HiSeq™ Sequencing Systems

Redefining the trajectory of sequencing.

## HiSeq System Highlights

- **High Accuracy and Unprecedented Output:**  
Generate up to 600 Gb per run with the highest yield of data greater than Q30.
- **Breakthrough User Experience:**  
Easily set up runs with simplified library prep, automated clonal amplification, pre-configured, plug-and-play reagents, simple flow cell loading, touch screen-enabled user interface, and integrated paired-end fluidics.
- **Unmatched Cost-Effectiveness:**  
Unrivalled output and ease of use with the industry's simplest sequencing workflow provide the lowest overall operating cost.
- **Flexibility:**  
HiSeq 1000 offers broader access to HiSeq technology, providing an easy upgrade path to the HiSeq 2000 as sequencing needs change.

## Sequence at a Scale Never Before Possible

HiSeq Sequencing Systems combine Illumina's proven and widely-adopted, reversible terminator-based sequencing by synthesis (SBS) chemistry with innovative engineering. Comprised of the HiSeq 2000 (Figure 1) and HiSeq 1000 systems, this high-performance sequencing family combines human interaction design features and the easiest sequencing workflow, setting a new standard for simplicity and user experience.

The HiSeq 2000 sequencing system delivers the industry's highest sequencing output and fastest data generation rate. With the industry's simplest sequencing workflow and unmatched cost effectiveness, HiSeq 2000 has lowered the cost of whole-human genome sequencing to unrivaled levels.

Offering the same outstanding user experience and cost per data output (Gb), the HiSeq 1000 enables researchers to access HiSeq performance, with a built-in upgrade path should sequencing throughput needs change.

## Unprecedented Output

HiSeq Systems make it possible for individual labs to take on the largest and most complex sequencing studies at a lower cost. With cutting-edge scanning and imaging technology, clusters on both surfaces of the flow cell can be sequenced, dramatically increasing the number of reads, sequence output, and data generation rate. The ultra-high output and speed of the two flow cell HiSeq 2000 makes it possible to sequence > 5 human genomes at ~30× coverage simultaneously, up to 192 gene expression samples or 100 exome samples in

a single run. The HiSeq 1000 System is an exceptionally powerful tool for researchers who do not require the throughput of a HiSeq 2000. It enables researchers to sequence > 2 human genomes at ~30× coverage or 96 gene expression samples in one run.

## Breakthrough User Experience

Innovative design features make HiSeq Systems the easiest-to-use next-generation sequencing systems (Figure 2). Flow cells are loaded on the vacuum-controlled loading dock. Pre-configured, plug-and-play reagents sufficient for up to 200 cycles plus indexing, drop into racks in the machine's chiller compartment, requiring only two minutes of hands-on time. A simple touch screen user interface, including on-screen, step-by-step instructions with embedded multimedia help, simplifies run setup. Real-time progress indicators provide at-a-glance status, and remote monitoring allows a single user to check progress on multiple systems from any browser or internet-enabled phone.

HiSeq 2000 can be operated in single or dual flow cell mode, offering unmatched experimental flexibility and instrument scalability. Its independently-operable flow cells allow applications requiring different read lengths to run simultaneously. The single flow cell HiSeq 1000 delivers the same user experience and output per flow cell, and can be easily upgraded to the dual flow cell HiSeq 2000 to meet growing research needs.

**Figure 1: HiSeq 2000 System**



Illumina's HiSeq 2000 sequencing system enables individual labs to take on larger and more complex studies, including routine human genome sequencing.

GAATGATAACAGTAACACACTTCTGTAAACCTTAAAGATTACTTGTATCCACTGATTCAACGTACCGTAAACGACATCAATTTAGAGACTAAATATAACGTACCATTAAAGAGCTACCGTCTTCTGTAAACCTTAAAGATTACTTGTATCCACTGATTCAACGT  
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GATTACTTGTATCCACTGATTCAACGTAAAGATTACTTGTATCCACTGATTCAACGTACCGTAAACGACATCAATTTAGAGACTAAATATAACGTACCATTAAAGAGCTACCGTCTTCTGTAAACCTTAAAGATTACTTGTATCCACTGATTCAACGT  
CGTATCAATTTAGAGACTAAATATAACGTACCATTAAAGATTACTTGTATCCACTGATTCAACGTACCGTAAACGACATCAATTTAGAGACTAAATATAACGTACCATTAAAGAGCTACCGTCTTCTGTAAACCTTAAAGATTACTTGTATCCACTGATTCAACGT





## HiSeq System Information

### HiSeq System Performance Parameters

Parameters	Single Flow Cell (HiSeq 2000 or 1000)*		Dual Flow Cell (HiSeq 2000 only)	
Read Length	Run Time	Output	Run Time	Output
1 × 35 bp	~1.5 days	47–52 Gb	~2 days	95–105 Gb
2 × 50 bp	~4.5 days	135–150 Gb	~5.5 days	270–300 Gb
2 × 100 bp	~8.5 days	270–300 Gb	~11 days	540–600 Gb
Reads	Up to 1.5 billion clusters passing filter, and up to 3 billion paired-end reads		Up to 3 billion clusters passing filter, and up to 6 billion paired-end reads.	
Throughput	Up to 35 Gb per day for a 2 × 100 bp run		Up to 55 Gb per day for a 2 × 100 bp run	
Performance	Greater than 85% bases higher than Q30 at 2 × 50 bp <sup>†</sup> Greater than 80% bases higher than Q30 at 2 × 100 bp <sup>†</sup>			

\*HiSeq 2000 can be run as a single flow cell or dual flow cell system.

<sup>†</sup>Install specifications for HiSeq sequencers with an Illumina PhiX library and cluster densities between 610 – 678 K/mm<sup>2</sup> that pass filtering on a HiSeq system using TruSeq v3 Cluster and SBS kits for HiSeq. Performance may vary based on sample quality, cluster density, and other experimental factors. Paired 100 bp runs may vary in the range of 80 to 90% of bases above Q30 and paired 50 bp runs typically vary in the range of 85 to 95% bases above Q30 based on the above factors.

### HiSeq System Specifications with Monitor and PC

#### Instrument Configuration

Computer and touch screen display  
Installation setup and accessories  
Data collection and analysis software

#### Instrument Control Computer

Base Unit: 2x Intel Xeon X5560 2.8 GHz CPU  
Memory: 48 GB RAM  
Hard Drive: 4x 1.0 TB 7200 RPM SATA  
Operating System: Windows Vista

Note: Computer specifications will be regularly upgraded.  
Contact your local account manager for current configuration.

#### Operating Environment

Temperature: 22°C ± 3°C  
Humidity: Non-condensing 20%–80%  
Altitude: Less than 2,000 m (6,500 ft)  
Air Quality: Pollution degree rating of II  
Ventilation: Maximum of 4,000 BTU/h  
For Indoor Use Only

#### Laser

532 nm, 660 nm, 650 nm (barcode reader)

#### Dimensions

WxDxH: 118.6 cm × 76.0 cm × 94.0 cm (46.7 in × 30.0 in × 37.0 in)  
Weight: 221.4 kg (488 lbs)  
Crated Weight: 312 kg (688 lbs)

#### Power Requirements

100–240V AC 50/60Hz, 20A, 1500W  
Illumina provides a region-specific uninterruptible power supply for all HiSeq instruments.

#### Product Safety

CE marked and ETL listed instrument

### HiSeq Systems and Accessories

	Catalog No.
HiSeq 2000 Sequencing System	SY-401-1001
HiSeq 1000 Sequencing System	SY-405-1001
HiSeq 1000 to HiSeq 2000 Upgrade	SY-405-1002
cBot Clonal Amplification System	SY-301-2002

## Accelerate Your Research with HiSeq Systems

HiSeq Systems redefine the trajectory of sequencing by combining innovative engineering with proven SBS chemistry to set new standards for output, simplicity, and cost-effectiveness. With the HiSeq 2000 and HiSeq 1000, the ability to process larger numbers of samples and to decode larger and more complex genomes means that virtually any sequencing project is now within reach.

## Learn More

For more information about HiSeq 2000, HiSeq 1000, and Illumina sequencing, visit [www.illumina.com/systems](http://www.illumina.com/systems).

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