MiSeq® System

Fully integrated, next-generation sequencing ecosystem for rapid genetic analysis.

MiSeq System Highlights

- **Sequencing at the touch of a button**
  Integrated and automated system requires no intervention, eliminating potential error
- **Most rapid variant detection for time-critical studies**
  Go from DNA to data in less than 8 hours
- **Proven data quality**
  Leverages the industry's most accurate TruSeq® chemistry for the highest confidence in your data
- **Optimized for key applications**
  Adjustable read lengths and imageable area provide ultimate experimental flexibility across a broad range of applications

Introduction

The MiSeq personal sequencing system enables researchers to go from sample to analyzed data in as little as eight hours with a revolutionary workflow and unmatched accuracy. Capable of generating up to 7.0 Gb per run, MiSeq is the only next-generation sequencer that integrates amplification, sequencing, and data analysis in a single instrument with a footprint of approximately 2 feet square (Figure 1). In contrast to sequencing systems that require emulsion PCR, the MiSeq system leverages Illumina's proven TruSeq chemistry, making it the ideal platform for any lab performing rapid and cost-effective genetic analysis for the widest range of applications.

Push Button Sequencing

The MiSeq system offers the easiest next-generation sequencing workflow. Perform simple instrument operation with an intuitive touch screen interface and plug-and-play reagents with RFID tracking and automated convenience. The compact, all-in-one MiSeq platform incorporates cluster generation, paired-end fluidics, and complete data analysis, eliminating the need for auxiliary hardware and saving valuable lab bench space. Seamless data upload to the BaseSpace™ cloud environment enables unparalleled analysis, collaboration, and security.

Fastest Turnaround Time

For results in hours rather than days, the MiSeq system delivers the simplest and fastest turnaround time of any next-generation personal sequencing system (Figure 2). Prepare your sequencing library in just 90 minutes with Nextera® sample prep reagents, then move to automated clonal amplification and sequencing in as little as three and a half hours directly on the MiSeq system. On the integrated instrument computer, data analysis from quality-scored base calls to variant calling and alignment is complete in less than two hours with no user intervention.

Proven Data Quality

Based on Illumina's proven sequencing by synthesis technology, massively parallel sequencing of millions of fragments occurs by a proprietary reversible terminator–based method that detects single bases as they are incorporated into growing DNA strands. A fluorescently labeled terminator is imaged as each dNTP is added and then cleaved to allow incorporation of the next base. Since all four reversible terminator–bound dNTPs are present during each sequencing cycle, natural competition minimizes incorporation bias. Base calls are made directly from signal intensity measurements during each cycle, greatly reducing raw error rates compared to other technologies. The end result is highly accurate base-by-base sequencing that eliminates sequence context–specific errors, enabling robust base calling, even within repetitive sequence regions and homopolymers. Illumina sequencing is powered by TruSeq technology, and delivers the highest data integrity, with the highest yield of error-free reads and the most base calls above Q30.

Optimized for Key Applications

Explore the broadest range of sequencing applications. Adjustable read lengths and imageable area and the choice of single or paired-end reads allow you to match experimental needs to your time requirements. Perform rapid and cost-effective capillary electrophoresis (CE) sequencing applications, as well as highly multiplexed amplicon sequencing with TruSeq Custom Amplicon, TruSeq Custom Enrichment, small genome resequencing and *de novo* sequencing, small RNA sequencing, library QC, and 16S metagenomics studies. For current next-generation sequencing users, complete sequencing projects in a fraction of time and cost using the MiSeq system.

Figure 1: MiSeq System

Illumina's compact MiSeq system is the ideal platform for rapid, cost-effective next-generation sequencing.

Figure 2: MiSeq Workflow

The MiSeq system's revolutionary workflow enables the fastest turnaround time of any next-generation personal sequencing system.

MiSeq System Performance Parameters

Read Length	Total Time from Prepped Library through Sequencing*	Output
1 × 35 bp	3.2–3.5 hours	440–550 Mb
2 × 25 bp	4.6–5.0 hours	640–800 Mb
2 × 100 bp	14.0–16.0 hours	2.5–3.1 Gb
2 × 150 bp	20.7–24.0 hours	3.7–4.6 Gb
2 × 250 bp**	>35 hours	6.0–7.0 Gb
Reads	12.0–15.0 million clusters passing filter, and 24.0–30.0 million paired-end reads	
Performance†	>90% bases higher than Q30 at 1 × 35 bp >90% bases higher than Q30 at 2 × 25 bp >85% bases higher than Q30 at 2 × 100 bp >75% bases higher than Q30 at 2 × 150 bp	

* Includes paired-end read, if applicable.

**Performance, output, amplification, and sequencing time for 2 x 250 bp read length depends on instrument upgrade, commercially available in the third quarter of 2012. Customers will be notified of upgrade availability. Upgrade dates are subject to change.

†The percentage of bases >Q30 is averaged across the entire run, not on a per-read or per-cycle basis.

Ordering Information

	Catalog No.
MiSeq system	SY-410-1001

Learn More

Go to www.illumina.com/miseq to learn more about the next revolution in personal sequencing.

MiSeq System Specifications

Instrument Configuration
RFID tracking for consumables
MiSeq Control Software
MiSeq Reporter Software

Instrument Control Computer (Internal)*
Base Unit: Intel Core i7-2710GE 2.10 GHz CPU
Memory: 16 GB RAM
Hard Drive: 750 GB
Operating System: Windows 7 embedded standard
*Computer specifications are subject to change.

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 1,364 BTU/h
For Indoor Use Only

Light Emitting Diode (LED)
530 nm, 660 nm

Dimensions
W×D×H: 68.6 cm × 56.5 cm × 52.3 cm (27.0 in × 22.2 in × 20.6 in)
Weight: 54.5 kg (120 lbs)
Crated Weight: 90.9 kg (200 lbs)

Power Requirements
100–240V AC @ 50/60Hz, 10A, 400W

Radio Frequency Identifier (RFID)
Frequency: 13.56 MHz
Power: 100 mW

Product Safety and Compliance
NRTL certified IEC 61010-1
CE marked
FCC/IC approved

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