

Table 1: Flexibility for Multiple Applications

Application	High-Output Reagent Kit		Mid-Output Reagent Kit	
	No. of Samples	Run Time	No. of Samples	Run Time
Targeted Amplicon Sequencing 750 amplicons 1000x coverage 2 x 150 bp	28	24 hours	9	17 hours
Targeted Expression Profiling 65 targets 1 x 50 bp	384	7 hours	123	6 hours
Enrichment Panel 1 Mb Region 100x coverage 2 x 75 bp	23	13 hours	7	12 hours
microRNA Sequencing 5 M reads/sample 1 x 36 bp	5	4 hours	2	4 hours
Small Whole Genome Sequencing 5 Mb Genome 30x coverage 2 x 150 bp	50	24 hours	16	17 hours

Industry-Leading SBS Chemistry Delivers High Accuracy

At the core of the MiniSeq System is industry-leading Illumina SBS chemistry, the most widely adopted NGS technology worldwide.* This proprietary reversible terminator-based method enables the massively parallel sequencing of millions of DNA fragments, detecting single bases as they are incorporated into growing DNA strands. The method significantly reduces errors and missed calls associated with strings of repeated nucleotides (homopolymers). The low cost per base allows deeper sequencing for more sensitivity and higher accuracy.

Versatile to Support a Wide Range of Applications

The MiniSeq System combines industry-leading Illumina NGS technology with a broad range of library preparation and data analysis solutions to deliver robust NGS tools in a simple, intuitive user experience. It offers cross-method flexibility, enabling easy transition between sequencing projects for both DNA and RNA applications. Demonstrated and optimized workflows are available for small RNA discovery, targeted resequencing, targeted RNA sequencing, and profiling of solid and hematological tumors.

The MiniSeq System delivers a < 1-day turnaround for numerous sequencing methods. The output of the system allows researchers to sequence a broad range of samples per run:

- 1-96 targeted panel samples
- 1-384 gene expression profiling samples
- 1-12 small RNA (miRNA) profiling samples

The MiniSeq System is supported by the full suite of Illumina library preparation solutions, enabling library compatibility across the Illumina sequencing portfolio. This allows researchers to scale up studies easily to the higher throughput NextSeq® Series Systems or perform follow-up studies on the MiSeq® Series Systems (Figure 3).

Push-Button Data Analysis and Streamlined Bioinformatics

The MiniSeq System features onboard data analysis in an intuitive user interface. The instrument computer processes base calls and quality scores generated during the sequencing run. Researchers have several options for data analysis.

Local Run Manager software is a multifunctional, integrated onboard solution. Local Run Manager not only allows users to create a sequencing run, monitor status, and view results, but also analyze data. It is easily accessed through a web browser and integrates with the instrument control software. Samples to be sequenced and analysis input files are recorded, and onboard data analysis is automatically performed upon completion of the sequencing run. This produces alignment information, structural variants, expression analysis, small RNA analysis, and more for each sample based on the user-specified analysis workflow.

Also, sequencing data can be run through a wide range of open-source or commercial pipelines developed for Illumina data, or instantly transferred, analyzed, archived, and shared securely with the



Figure 3: Illumina NGS Portfolio of Desktop Sequencers— Illumina NGS systems offer solutions for every application, sample type, and sequencing scale. Each delivers high data quality and accuracy with flexible throughput and simple, streamlined workflows. Data can be seamlessly compared, exchanged, and analyzed in BaseSpace.

*Data calculations on file. Illumina, Inc. 2015.

Table 2: MiniSeq System Performance Parameters

MiniSeq System Sequencing Performance ^a					
Flow Cell Configuration	Read Length (cycles)	Output (Gb)	Run Time ^b	Data Quality ^c	Required Input
High-Output Kit	300	~ 7.5	~ 24 hours	> 80% > Q30	1 ng-1 µg with Illumina Library Prep Kits
Up to 25 M single reads	150	~ 4	~ 13 hours	> 85% > Q30	
Up to 50 M paired-end reads	75	~ 2	~ 7 hours	> 85% > Q30	
Mid-output Kit	300	~ 2.5	~ 17 hours	> 80% > Q30	
Up to 8 M single reads					
Up to 16 M paired-end reads					

a. Actual performance parameters may vary based on sample type, sample quality, and clusters passing filter.
 b. Times include cluster generation, sequencing, and base calling with quality scores on a MiniSeq System.
 c. The percentage of bases > Q30 is averaged over the entire run.

BaseSpace Environment (Cloud or Onsite). Downstream data analysis using the BaseSpace platform includes alignment and variant detection, annotation, visualization, and interpretation. The BaseSpace Environment offers data analysis Apps developed or optimized by Illumina, or from a growing ecosystem of third-party App providers. These Apps cover common analysis methods used with Illumina NGS data, including DNA amplicon, targeted RNA, small RNA, somatic variant calling, and more. BaseSpace Software empowers researchers to do their own informatics.

Summary

The MiniSeq System is a small, robust benchtop sequencer that enables NGS to become an everyday tool in laboratories worldwide. Incorporating the latest advancements in SBS chemistry, the flexible MiniSeq System features push-button operation and streamlined library-to-results workflows that allow researchers to perform the most popular NGS applications. Its affordable price and cost-effective operation, even for low numbers of samples, makes the power of proven Illumina sequencing more accessible than ever.

Table 3: MiniSeq System Specifications

Instrument Configuration
RFID tracking for consumables
Instrument Control Computer (Internal)^a
Base Unit: Intel Core i7-4700EQ 2.4 GHz CPU
Memory: 16 Gb DDR3L RAM
Hard Drive: 1 Tb
Operating System: Windows 7 embedded standard
Operating Environment
Temperature: 19°C to 25°C (22°C ± 3°C)
Humidity: Noncondensing 20%-80% relative humidity
Altitude: Less than 2000 m (6500 ft)
Air Quality: Pollution degree rating of II, air particulate cleanliness levels per ISO 9 (ordinary room air) or better
Ventilation: Up to 2048 BTU/hr @ 600 W
For Indoor Use Only
Light Emitting Diode (LED)
515 nm, 650 nm
Dimensions
WxDxH: 45.6 cm x 48 cm x 51.8 cm (18 in x 18.9 in x 20.4 in)
Weight: 45 kg (99 lbs)
Crated Weight: 56.5 kg (125 lbs)
Power Requirements
100–120 Volts AC — A 15 Amp grounded
220–240 Volts AC — A 10 Amp grounded
Radio Frequency Identifier (RFID)
Frequency: 13.56 MHz
Power: Supply 3.3 Volts DC ± 5%, current 120 mA, RF output power 200 mW
Product Safety and Compliance
NRTL certified IEC 61010-1
CE marked to the Low Voltage Directive 2006/95/EC
FCC/IC approved
a. Computer specifications are subject to change.



