

The Ion Proton™ System

Rapid genome-scale benchtop sequencing

The Ion Proton™ System is a benchtop sequencing system that delivers exome and transcriptome sequencing in a few hours on the Ion PI™ Chip. With the release of the Ion PII™ Chip*, the Ion Proton™ System will deliver human-scale genome sequencing—with DNA to variants in a single day.



Specifications for the Ion Proton™ Sequencer

Working environment (for indoor use only)	Temperature: 68–77°F (20–25°C) Humidity: 40–60%, noncondensing Altitude: <6,500 ft (2,000 m) Clearances: 12 in (30.5 cm) in rear 4 in (10 cm) on left side 4 in (10 cm) on right side 4 in (10 cm) from front edge of bench to sequencer bezel 36 in (90 cm) aisle in front of bench for operator access Optional rack mounting with two Ion Proton™ Sequencers per rack†
Gas supply	Connection: 0.25 in push-to-connect fitting Pressure: 30 psi Composition: nitrogen (grade 4.8, 99.998% or better)
Other connections	Ethernet: 1 GigE USB: 2x USB 2.0
Power	Voltage: 100 V (min) to 240 V (max) Current: 14 A (max) Frequency: 50/60 Hz Power draw: 1,350 W
Dimensions	Width: 21.3 in/54.2 cm Depth: 30.5 in/77.5 cm Height: 18.7 in/47.4 cm
Weight	Crated for shipment: 200 lb/90.7 kg Free-standing: 130 lb/59 kg
Instrument compute hardware	Processor: Dual 8-core Intel® Xeon® Sandy Bridge Memory: 128 GB RAM FPGA: Dual Altera® Stratix® V GPU processor: 1x NVIDIA® Tesla® C2075 Storage: 11 TB (SSD and HDD) Operating system: Ubuntu® 11.10

Specifications for Proton™ Torrent Server

Product configuration	A single free standing tower computer appliance, included with the purchase of the Ion Proton™ System. Includes Torrent Suite Software with all necessary software components to deliver signal processing, base calling, read alignment, and variant calling.		
Processor	Dual 8-core 2.9 GHz CPUs		
Memory	128 GB RAM		
GPU processor	2x NVIDIA® Tesla® GPUs		
Storage (approx.)	27 TB (sufficient for storage of >50 Ion PI™ Chip runs)		
Operating system	Ubuntu® 10.04		
Dimensions (approx.)	Width: 8.5 in/21.8 cm	Depth: 28 in/71.4 cm	Height: 17 in/43 cm
Weight (approx.)	120 lb/55 kg		
Power	Voltage: 100 V (min) to 240 V (max) Current: 12 A (max)	Frequency: 50/60Hz Power Draw: 1,100 W	

Ion Proton™ System performance specifications with Ion PI™ Chip

Throughput	Up to 10 Gb (Note: Ion PII™ Chip* will be available about six months after the Ion PI™ Chip. Ion PII™ Chip* will enable sample-to-variant analysis of a human genome in a single day, at up to 20x coverage.)		
Read length	Up to 200-base fragment reads		
Number of reads passing filter	60–80 million reads passing filter		
Sequencing run time	2–4 hours		
Key applications	Human-scale genome sequencing Exome sequencing Small genome sequencing Gene sequencing	ChIP sequencing Methylation analysis <i>De novo</i> sequencing	Whole transcriptome sequencing Gene expression by sequencing Small RNA sequencing
Available library solutions	Ion AmpliSeq™ Library Kit Ion TargetSeq™ Exome Kit	Ion Xpress™ Plus Fragment Library Kit Ion Total RNA-Seq Kit	
Areas of interest	Agricultural research Cancer research Forensic science	Stem cell research Epigenomics Metagenomics	Ancient DNA genomics
Barcoding solutions	384 barcodes supported by Torrent Suite Software	96 off-the-shelf barcodes for DNA	16 off-the-shelf barcodes for RNA
Software solutions	Torrent Suite Software utilizing Torrent Browser including TMAP alignment and Torrent Variant Caller for germline or somatic mutation detection Torrent Browser (included) offers users remote Web access to instrument status monitoring, run quality reports, individual data files, and extensible plugins for application-specific analysis Plugins available for download from the Torrent Browser Plugin Store for analysis of genome sequencing, targeted sequencing, variant analysis and annotation, microbial sequencing, transfer to 3rd party bioinformatics packages, and more Data can optionally flow into Ion Reporter™ Software for controlled analysis, annotation, and reporting of variants. Ion Reporter™ Software provides application specific workflows to support single, trio and paired tumor normal analysis.		
Data formats	Industry-standard FASTQ, SFF, BAM, and VCF format outputs		

Ordering information

Description	Cat. No.
Ion Proton™ System (includes Ion Proton™ Sequencer and Proton™ Torrent Server)	4476610
Additional equipment	
Ion OneTouch™ 2 System	4474779

Find out more about the Ion Proton™ System at lifetechnologies.com/proton

*The content provided herein may relate to products that have not been officially released and is subject to change without notice.

† Space-saving rack can be purchased for the Ion Proton™ System. Contact your sales representative for details.

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