

# The Ion Proton™ System

## The only benchtop genome center

The Ion Proton™ System is a benchtop sequencing system that will be capable of human-scale genome, exome, or transcriptome sequencing in a few hours—with DNA to variants in a single day.



### Specifications for the Ion Proton™ Sequencer\*

|  |  |
|--|--|
| <b>Working environment<br/>(for indoor use only)</b> | Temperature: 68-77°F (20-25°C)<br>Humidity: 40-60% noncondensing<br>Altitude: <6,500 ft (2,000 m)<br>Clearances:<br>12 in (30.5 cm) in rear<br>4 in (10 cm) on left side<br>4 in (10 cm) on right side<br>4 in (10 cm) from front edge of bench to sequencer bezel<br>36 in (90 cm) aisle in front of bench for operator access<br>Optional rack mounting with two Ion Proton™ Sequencers per rack |
| <b>Other connections</b>                             | Ethernet: 1 GigE<br>USB: 2x USB 2.0<br>Gas supply: 0.25 in push-to-connect fitting<br>Pressure: 30 psi<br>Composition: dry argon or nitrogen (industrial grade, 99.9% pure or better)  |
| <b>Power</b>   | Voltage: 100 V (min) to 240 V (max)<br>Current: 14 A (max)<br>Frequency: 50/60 Hz<br>Power Draw: 1,350 W   |
| <b>Dimensions</b>                                    | Width: 21.3 in/54.2 cm<br>Depth: 30.5 in/77.5 cm<br>Height: 18.7 in/47.4 cm  |
| <b>Weight</b>  | Crated for shipment: 200 lb/90.7 kg<br>Free-standing: 130 lb/59 kg   |
| <b>Instrument compute hardware</b>                   | Processor: Dual 8-core Intel® Xeon® Sandy Bridge<br>Memory: 128 GB RAM<br>FPGA: Dual Altera® Stratix® V<br>GPU processor: 1 x NVIDIA® Tesla® C2075<br>Storage: 11 TB (SSD and HDD)<br>Operating System: Ubuntu® 11.10  |

## Specifications for Proton™ Torrent Server\*

|                              |  |   |                     |
|------------------------------|--|---|---------------------|
| <b>Product configuration</b> | 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. |   |                     |
| <b>Processor</b>             | Dual 8-core 2.9 GHz CPUs   |   |                     |
| <b>Memory</b>                | 128 GB RAM   |   |                     |
| <b>GPU processor</b>         | 2x NVIDIA® Tesla® GPUs   |   |                     |
| <b>Storage (approx.)</b>     | 27 TB (Sufficient for storage of >50 Ion Proton™ I Chip runs)  |   |                     |
| <b>Operating system</b>      | Ubuntu® 10.04  |   |                     |
| <b>Dimensions (approx.)</b>  | Width: 8.5 in/21.8 cm  | Depth: 28 in/71.4 cm                      | Height: 17 in/43 cm |
| <b>Weight (approx.)</b>      | 120 lb/55 kg   |   |                     |
| <b>Power</b>                 | Voltage: 100 V (min) to 240 V (max)<br>Current: 12 A (max)   | Frequency: 50/60Hz<br>Power Draw: 1,100 W |                     |

## Ion Proton™ System performance specifications\* with Ion Proton™ I Chip at commercial launch

|                                       |   |  |  |
|---------------------------------------|---|--|--|
| <b>Throughput</b>                     | Up to 10 Gb<br>(Note: The Ion Proton™ II Chip will be available about six months after the Ion Proton™ I Chip. The Ion Proton™ II Chip will enable sample-to-variant analysis of a human genome in a single day, at up to 20x coverage.)  |  |  |
| <b>Read length</b>                    | Up to 200-base fragment reads   |  |  |
| <b>Number of reads passing filter</b> | 60-80 million†  |  |  |
| <b>Sequencing run time</b>            | 2-4 hours   |  |  |
| <b>Key applications</b>               | Human scale genome sequencing<br>Exome sequencing<br>Small genome sequencing<br>Gene sequencing   | ChIP sequencing<br>Methylation analysis<br><i>De novo</i> sequencing | Whole transcriptome<br>Gene expression by sequencing<br>Small RNA sequencing |
| <b>Available library solutions</b>    | Ion AmpliSeq™ Library Kit<br>Ion TargetSeq™ Exome Kit   | Ion Xpress™ Plus Fragment Library Kit<br>Ion Total RNA-Seq Kit       |  |
| <b>Areas of interest</b>              | Agricultural research<br>Cancer research<br>Forensic science  | Stem cell research<br>Epigenomics<br>Metagenomics                    | Ancient DNA genomics   |
| <b>Barcoding solutions</b>            | 384 barcodes supported by Torrent Suite Software  | 96 off-the-shelf barcodes for DNA                                    | 16 off-the-shelf barcodes for RNA  |
| <b>Software solutions</b>             | Torrent Suite Software utilizing Torrent Browser including TMAP alignment and Torrent Variant Caller for germline or somatic mutation detection.<br><br>Torrent Browser (included) offers users remote web access to instrument status monitoring, run quality reports, individual data files, and extensible plug-ins for application-specific analysis.<br><br>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.<br><br>[Data can optionally flow into Ion Reporter™ Software for controlled analysis, annotation, and reporting of variants. User permission, audit tracking, and version control in Ion Reporter™ Software provide a stable environment for running routine assays.] |  |  |
| <b>Data formats</b>                   | 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  |
| <b>Additional Equipment</b>  |          |
| Ion OneTouch™ 2 System   | 4474779  |
| Ion Proton™ Rack   | 4478858  |

Find out more about the Ion Proton™ System at [lifetechnologies.com/proton](http://lifetechnologies.com/proton)

\*The content provided herein may relate to products that have not been officially released and is subject to change without notice. †Passing filter at ≥50 bases.

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