

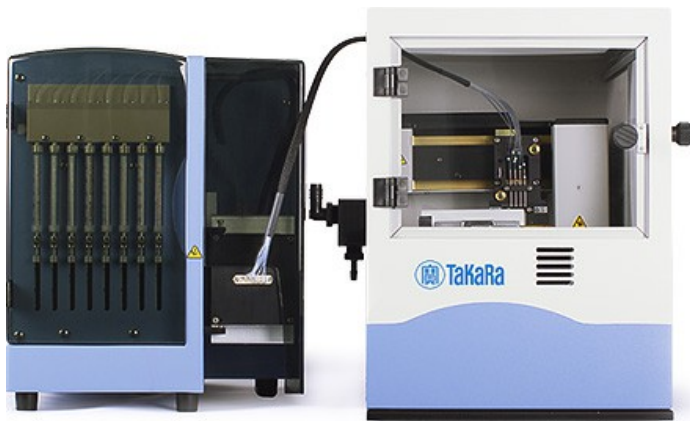
SmartChip Real-Time PCR System technical specifications

The SmartChip system is a complete system that enables high-throughput, high density, real-time PCR for gene expression or single nucleotide polymorphism (SNP) genotyping analysis. The SmartChip MultiSample NanoDispenser (MSND) is a high precision, nanoliter-volume liquid handling system customized with a chip-cooling station and an enclosed humidification environment for delivering multiple samples on custom target sets. In just over 2 hr, the SmartChip Real-Time PCR Cycler can process 5,184 reactions in parallel from a single chip. Gene expression analysis can be performed using dye- or probe-based methods, depending on your research needs. Common SNP genotyping protocols making use of FAM and VIC dyes are optimized to meet your high-throughput experimental needs in a cost-effective manner.

System components

SmartChip MSND

- Load up to 384 samples
- Active evaporation control
- Proven high-precision delivery platform



SmartChip cycler

- 5,184 parallel reactions
- Approximately 2-hour run time
- 100-nl reactions



SmartChip MSND specifications



Category	Specifications
Maximum # of samples	384
Dispense volume	100 nl per well
Laptop computer	<ul style="list-style-type: none"> • Enterprise class, 64-bit Windows 10 • 2-Gb memory • 250-Gb storage • 1-Gb network and wireless • USB port
Power requirements	Four outlets (SmartChip MSND, pump control box, CPU, and monitor) with 100–120 VAC/200–240 VAC, 8A/4A at 60/50Hz
Environmental conditions	<ul style="list-style-type: none"> • 15–30°C ambient • 10–70% relative humidity, noncondensing
Dimensions	<ul style="list-style-type: none"> • Fluidic module: (W) 28 cm, (H) 33 cm, (D) 45 cm • Stage module: (W) 27 cm, (H) 40 cm, (D) 60 cm • Laptop computer: (W) 35 cm, (H) 30 cm, (D) 27 cm • Pump control box: (W) 26 cm, (H) 38 cm, (D) 51 cm • Humidifier: (W) 20 cm, (H) 40 cm, (D) 30 cm • Scale: (W) 25 cm, (H) 50 cm, (D) 22 cm
Weight	<ul style="list-style-type: none"> • SmartChip MSND: 65 kg • CPU: 2.7 kg
Performance specification	Printed lambda, CTSD <0.2
Dispenser run time	<ul style="list-style-type: none"> • 48 samples <10 minutes • 384 samples <60 minutes
Certifications	<ul style="list-style-type: none"> • TUV (North America) • CE Mark (European Union)

SmartChip cycler specifications



Category	Specifications
Reactions	<ul style="list-style-type: none"> • Parallel reactions: 5,184 • Reaction volume: 100 nl per well
Precision	Standard deviation <0.2 Ct between 5,000 and 10,000 copies of a control template
Filters (center width, nm)	<ul style="list-style-type: none"> • Excitation: FAM (475/35), VIC (520/15), ROX (543/22), SYBR (475/42) • Emission: FAM (520/15), VIC (565/24), ROX (676/29), SYBR (550/50)
Camera	Cooled CCD camera, 9.3 megapixel
Illumination	250 W quartz tungsten halogen stabilized lamp, rated at 1,000 hr
Thermal cycler	<ul style="list-style-type: none"> • Ramp rate: 65–95°C <20 sec, 95–65°C <15 sec • Typical 40-cycle runs take approximately 2 hr • Melt temperature profile is user programmable (range: 0.5–2°C/sec; recommended ramp rate: 0.5°C/sec) • Thermal uniformity is ±0.5°C at 76°C
Software	SmartChip qPCR instrument control and analysis software. Five user licenses per cycler.
Computer	<ul style="list-style-type: none"> • Dell ultra-small form factor <ul style="list-style-type: none"> ◦ Enterprise class, 64-bit Windows 10 ◦ 4-Gb memory ◦ 250-Gb storage ◦ 1-Gb network adapter ◦ USB ports for memory sticks • LCD monitor
Power requirements	Two outlets (cycler, CPU and monitor) with 100–120 VAC/200–240 VAC ± 10%, 8.0/4.0 A at 50–60 Hz
Thermal cycler fuse	5 x 20 mm, T6.3AH
Air	<ul style="list-style-type: none"> • Clean dry air (recommend –40°C dewpoint) regulated to 6.9–8.3 BAR (100–120 PSI) • Regulator output: 4-mm OD urethane tubing or with M5 or 1/8 NPT female port (consult Takara Bio for other thread forms)
Environmental conditions	<ul style="list-style-type: none"> • 15–30°C ambient • 10–70% relative humidity, noncondensing • <2,000 m altitude • pollution degree ≤2
Dimensions	<ul style="list-style-type: none"> • Thermal cycler: (W) 66 cm, (H) 53 cm, (D) 60 cm • CPU, monitor, keyboard, mouse: (W) 60 cm, (H) 50 cm (D) 50 cm
Weight	<ul style="list-style-type: none"> • Thermal Cycler unit: 57 kg • CPU/monitor: 12 kg
Certifications	<ul style="list-style-type: none"> • TUV (North America) • CE Mark (European Union)

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