SaCycler - 96

Real Time PCR System

A new instrument for real-time amplification and melting analysis suitable both for research studies as well as for diagnostics applications. Two thermoelectric Peltier elements ensure high accuracy of temperature regulation and noiselessness.
The unique design and project of the thermal block allows loading and unloading of test samples in a completely automated software-controlled way.

Technical characteristics

Thermal block format	96 test tubes of 0.2 ml (12 x 8)
Test tube type	0.2-ml test tubes for PCR (individual, in strips, 8 pieces each or a holder 12 x 8)
Range of thermal block temperature control	0 C…100°C
Resolution of temperature setting	0.1°C
Absolute accuracy of temperature maintenance	±0.2°C
Uniformity of thermal block temperature	±0.15 °C
Average heating rate of the thermal block within temperature range of 4…99 °C	3.3 °C /s
Maximum heating rate of the thermal block within temperature range of 4…99 °C	3.5 °C/s
Average cooling rate of the thermal block within temperature range of 99….55 °C	2.1 °C /s
Maximum cooling rate of the thermal block within temperature range of 99….55 °C	2.5 °C /s
"Hot cover" temperature	105°C ±1°C
Actuating device of the thermal block	Peltier elements
Excitation source	Light-emitting diode (LED)
Detector	CCD (charge coupled device) -matrix
Number of the fluorescence measurement channels	4 or 5*
Excitation/detection wave length	470/525, 532/570, 585/633, 633/670, 690/750 **
Threshold sensitivity of each of the channels for solutions of standard fluorophores	0.05x10E-12M
Computer interface	USB 2.0 High-speed
Power consumption	Not over 550 W
Overall dimensions, WxDxH	210x540x540 mm
Preparation time after switching-on	Not over 5 minutes
Weight	27 kg

* The 5th channel is optional and available only after customer's specific request.
** The excitation/detection 690/750 wavelengths are for the 5th optional channel

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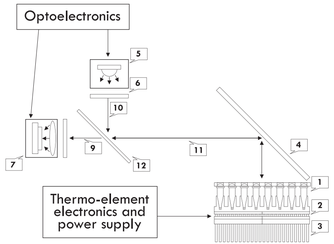
Sacace BIOTECHNOLOGIES

Features

- 4 or 5 channels multiplexing for discrimination of up to five targets in a single reaction well*
- Strong flexibility thanks to the 96-well format suited for standard PCR microplates, test tubes and strips
- State of the art optics for the highest sensitivity
- Optimal signal/noise ratio and absence of crosstalk ensured by the unique design of the optical track including a separate light source for each channel and a matrix CCD camera
- Light emitting diodes (LED) as a light source with a lifetime of about 100,000 hours that does not require maintenance or constant monitoring
- Wide dynamic range of detection using multiple exposure method, which leads the optimization of signal registration conditions to a whole new level, greatly simplifying or even eliminating the need for fluorescence settings
- Main applications are Real-Time quantitation, single nucleotide polymorphisms (SNPs) genotyping, melting curve and gene expression analysis

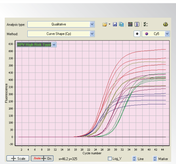
** the standard device has four channels. The fifth channel is optional and must be requested by the customer.*

Optical scheme

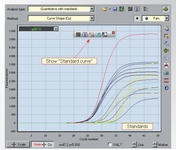


1. *tubes/plate*
2. *Peltier elements*
3. *cooling element*
4. *optical mirror*
5. *LED light source*
6. *excitation filter*
7. *fluorescence detector*
8. *emission filter*
9. *emitted light*
10. *excited light*
11. *total light*
12. *spectral separator.*

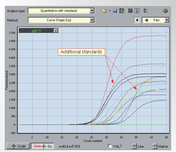
Quantitative and Qualitative Analysis



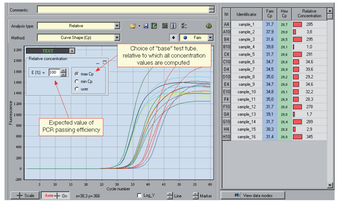
Qualitative analysis allows to determine presence or absence of target DNA in a sample.



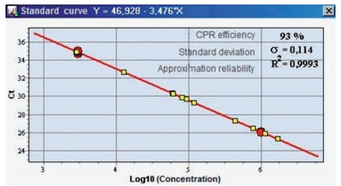
Quantitative analysis, with the use of calibration standards, allows to determinate the quantity of target DNA in the sample.



It is possible to use calibration standards from other run files.



Relative concentration analysis allows to evaluate the quantity of the target DNA fragment in the analyzed samples relative to the reference test tube.

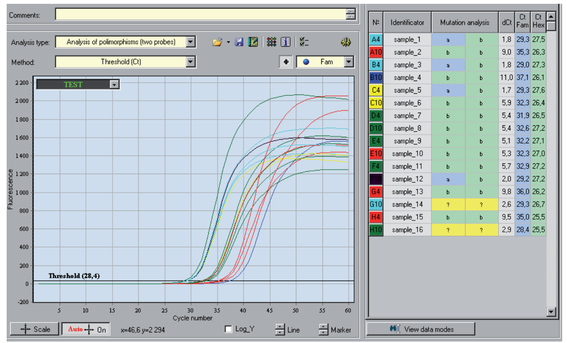


By interpolating the Ct value of the samples on the standard curve it is possible to measure the actual quantity of target DNA in the samples.

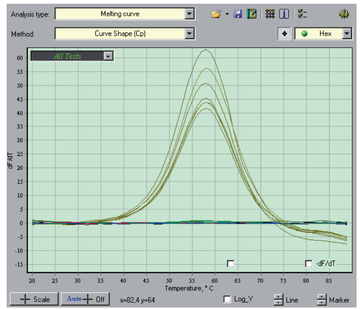
№	Identificator	Hex Cp	Fam Cp	Absolutely Concentration
A1	Sample_1	32,9	27,5	75,5
A2	Sample_2	29,6	27,2	999
A3	Standard_1	20,6		849.000
A4	Standard_2	27,7		5.390
A5	Standard_3	33,8		32,0
A6	Standard_4		22,3	
A7	Standard_5		25,5	
A8	Standard_6		30,2	

Example of quantitative results in a table form.

Melting and SNP Analysis



Real time PCR analysis of genetic polymorphisms like SNP with the use of two different fluorophores in one test tube.



Melting curves are applied to analysis for determination of polymorphisms of single nucleotides.

Software

- User friendly software can be used either in a simplified for beginning users or in a full-featured mode for expert users
- Possibility for the user to view data previously analysed while another amplification program is in process
- Resume program execution in case of a power failure or an unexpected computer shutdown
- Ease of integration with any laboratory information management system (LIMS) as the software can save all data in standard graphic or text formats ready to be loaded into databases.

Expanding your throughput

- Compact case design allows to use several devices together to increase throughput with minimal space requirements
- Multiple devices (up to 8) can be simultaneously controlled by the same computer