Improve your PCR results

αAmp™

Specific
Exact
Fast

AlphaHelix

Improve your results - unmatched specificity

All polymerases are active in a temperature range, not only at set temperature. During the time it takes samples to reach set temperature in a block cycler (see next page) non-specific reactions will occur.

Our patented SuperConvection™ technology induces a strong mixing action into the PCR-tubes. The mixing action together with rapid direct IR-heating and forced air cooling allows for faster temperature change in the samples then conventional thermocyclers. SuperConvection™ occurs at elevated g-force during heating or cooling. Mixing generally improves reaction kinetics for enzymatic reactions.

αAmp™ maintains full ramping speed until set temperature is reached. Temperature is immediatly transferred to the sample. Non-specific amplifications are not seen under these conditions.

Accuracy & precision

In αAmp™ heating and cooling are done without any temperature differences between samples. The precision is ±0.25 °C of set temperature immediatly when the sample reached set temperature.

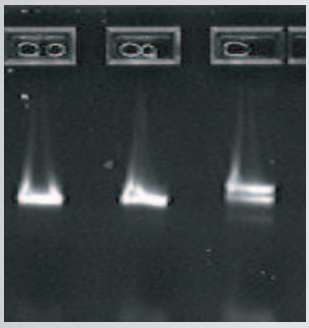
A high performance block cyclers today struggles with uneven heating. Typical uniformity after 10 s at target temperature are ±0.4°C. In addition to this comes the precision on block cyclers that can be as good as ±0.3°C of set temperature. The differences are generally a lot higher during heating and cooling. Data are for the block, not samples.

Speed

In thermocyclers ramping rates are used to compare speed. There are two principles of measuring ramping rates, either the ambient temperature (block, air) or the actual sample temperature.

The αAmp™ have an average sample ramping rate of around 6°C/s for a 20 ul reaction. This is obtained by direct IR heating, cooling by forced air and SuperConvection™.

Typical ramping rates for a block cycler today are a max. speed of 4 - 5°C/s and an average speed of 2 - 2.5°C/s. Adding 12 s for a 20 ul sample to reach set temperature (see next page) the sample ramping speed in todays block cyclers are just over 1°C/s.



4-plex run on αAmp™

Lane 1 and 2 are αAmp™, lane 3 is a block cycler with ramping rates of 4 to 5°C/s. A 20 ul reaction with KAPA 2G FAST HotStart polymerase, human DNA from blood and 193, 300, 400 and 480 b.p. forward/ reverse primers.

Protocol: 30 s at 95°C followed by 30 cycles of 3 s at 95°C, 10 s at 62°C and 6 s at 72°C with a final elongation at 72°C for 30s.

The gel image shows one distinct target band in lane 1 and 2 (αAmp™) while lane 3 (block cycler) shows two bands. (The tube was placed in the centre of the block to minimize corner/ edge factors.)

Separate application note avaliable.

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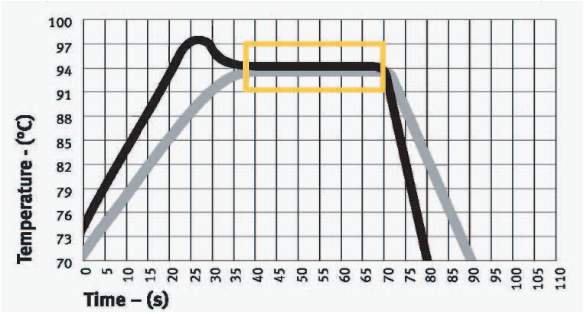
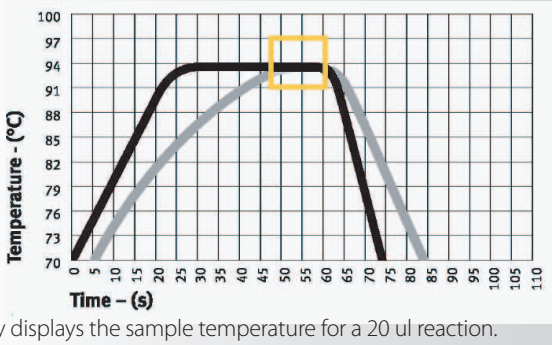
Temperature control and block thermo cyclers

Block cyclers controls the block temperature. In "tube mode" the sample volume is entered for estimation of sample temperature. An over shoot is used to speed up heat transfer. It takes about 12 sec for a 20 ul reaction to reach the set temperature in "tube-mode". "Block mode" makes heat transfer slower.

Tube mode



Block mode



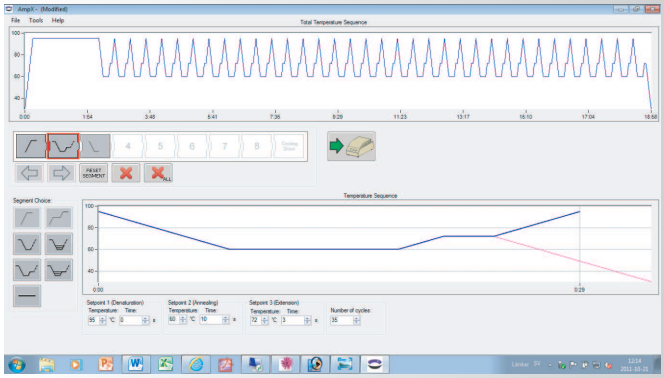
The black graph displays the block temperature while the grey displays the sample temperature for a 20 ul reaction.

The in-tube temperature probe in αAmp™ monitors and controls the rapid heat transfer. Data are continuously calculated by a processor to ensure that samples always reach set temperatures without any significant over or under shoot.

Software

αAmp™ comes with a easy-to-use software. Simply create your protocol on a computer and download it to the αAmp™.

Just click on the pre-configured process step buttons and type in required time, temperature and number of cycles for each part of the protocol.



The future

αAmp™ is new thermocycler technology. The unrivelled accuracy, precision and speed together with mixing action gives αAmp™ unique advantages. Multiplex data have shown improvement but other areas like improving Bias on Next Generation Sequencing amplification, running high GC content reactions, high fidelity accuracy, long range reaction times and more can also be improved by running on αAmp™.

αAmp™ allows researchers to have full control of their PCR reactions at a level that haven't been possible before. Step up to the next level of PCR with αAmp™.

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Technical data:

No of samples:	24 samples in standard 0.2 ml PCR-tubes
Sample volumes:	20, 50 and 100 ul are standard volumes
Heating/ cooling technology:	Direct IR heating, air cooling
Temperature range, sample:	40 - 98 °C
Average in-sample ramping speed:	6 °C/s between 50 - 90 °C
Temperature uniformity:	± 0.01°C
Temperature accuracy:	± 0.25 °C
Memory:	99 programs in unit, unlimited in net book
No of cycles:	99
No of segments:	7
Software:	AmpX 2.0, two or three step PCR, touch down
Interface:	USB
Power supply:	100-240 VAC, 50-60 Hz, 600 VA
Dimensions:	19 X 35 X 15.5 cm (WxDxH)
Weight:	7 kg

Ordering information:

Item:	Product code:
αAmp™, Gold, complete with AmpX 2.0 software, rotor, one probe of choice, USB cable, 24 adaptors	60-1001
αAmp™, Red, complete with AmpX 2.0 software, rotor, one probe of choice, USB cable, 24 adaptors	60-1004
Accessories:	
Rotor for 24 samples	60 -1005
20 ul temperature probe	60 -1006
50 ul temperature probe	60 -1007
100 ul temperature probe	60 -1008
PCR-tubes with attached cap, no adapter required, 0.2 ml, 1 000 pcs/bag	61 - 0001
PCR-tubes with attached cap, adapter required 0.2 ml, 1 000 pcs/bag	61- 0003
Adapters for using standard tubes	61- 0004

AlphaHelix

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