



The Hamilton STAR Line

The **STAR Line** uses air displacement technology, which is analogous to a hand held pipette. Technological innovations implemented on the **STAR Line** include independent and asymmetric positioning of pipetting channels, precise tip attachment and unrivalled dual liquid level detection.

These innovations provide a wide volume range and quality pipetting. The **STAR Line** meets the strictest requirements regarding positional accuracy, precision and flexibility.

With unique features you can be assured that your application will be automated with the best process security, reliability and throughput available.



Air displacement pipetting:

- In combination with disposable tips, the risk of contamination of critical assays is reduced to an absolute minimum
- High accuracy and precision from sub-microliter volumes to 5 ml can be reached
- No system liquid, diluters, valves or maintenance rich tubing
- No dilution effects of samples with system fluid

Anti-Droplet Control: ADC

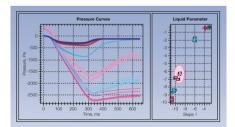
• ADC compensates pressure changes in the channels that are caused by the increase in vapour pressure of volatile solvents in real time

PerfectTouch Tip Technology: CO-RE

- Attaching of disposable tips or steel washable needles to the pipetting channels with a stable lock-and-key fit
- Precision tip attachment and positioning
- Highest precision on all axes
- No vertical force for tip attachment or tip ejection, thus eliminating mechanical stress and improving the overall system
- Minimized aerosol production

Dual Liquid Level Detection: pLLD and cLLD

- Three modes of Liquid Level Detection (LLD): None (pipetting from defined heights), capacitance pressure based
- Capacitive LLD system detects conductive liquids in most labware containers
- Pressure-based LLD system detects all liquids including non-conductive organic solvents



Dynamic Liquid Classification: DLC

- Classification of liquids according to their physical parameters determined from the pressure curve test during pipetting
- Flexible determination of liquid classes
- Improved pipetting precision of unknown liquids, mixtures of liquids, and liquids of variable quality

Total Aspiration and Dispense Monitoring: TADM

- TADM verifies with a traceable digital audit trail how a sample has been transferred
- Real-time error handling

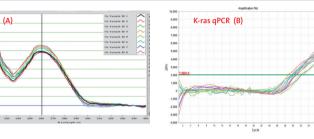
The STRATEC Molecular Universal Kit Panel

InviMag® Universal Kit / STARlet or Invisorb® Universal Kit / STARlet

One DNA/RNA isolation kit for various starting materials & nucleic acid types using magnetic beads or filter plates

With the innovative, flexible and cost efficient Universal Kit Panel, STRATEC Molecular has expanded its nucleic acid extraction product line for the diagnostics of infectious and genetic diseases. These unique products generate high quality nucleic acids from a wide range of different samples (e.g. blood, serum, feces, sputum) even when present in the same run. The Universal Kit Panel provides several key features: high recovery rates for low virus titers and nucleic acid amounts, high reproducibility, complete automation for different sample types without the need of additional manual preparations, direct processing of primary tubes and an optimal utilization of 96 well plate capacity. These features reduce the risk for operator errors while increasing process reproducibility and maintaining flexibility of sample types. With these unique features you can be assured that your sample preparation is automated with the best process security, nucleic acid quality, recovery rate and throughput available.

Fig. 1: Genomic DNA isolation from blood samples and amplification



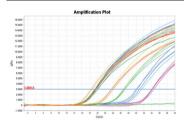
Genomic DNA was isolated from 24 samples of 200 µl transfusion blood using the InviMag[®] Universal Kit/ STARlet. 2.5 µl of isolated DNA were amplified using an in-house assay for K-ras (B). The UV/VIS of 8 replicates (A) shows the reproducible high quality of DNA.

 Ratio A260/A280 (24 samples): 1.72
 SD: 0.05

 Ratio A260/A230 (24 samples): 1.65
 SD: 0.35

 Yield: 3.99 μg (24 samples):
 SD: 0.46

Fig. 2: Bacterial DNA isolation (Gram positive bacteria, dilution series)



0.20

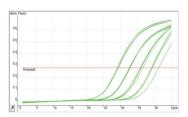
Bacterial DNA was isolated from Bacillus subtilis cell pellets using InviMag[®] Universal Kit/ STARlet. A dilution series with minimum 4 replicates each was prepared

A dilution series with minimum 4 replicates each was prepared (10⁷ to 10³) to check the recovery and 2.5 μl of the eluate was used in an in-house PCR on Rotorgene 3000.

The logarithmic linearity of respective CT's is excellent, the theoretical value of 3.3 between 1/10 dilution steps is reached with minimal deviations. The reproducibility was also checked using 24 samples with 10' cells (shown in figure 2). The deviation is: 5D 0.24.

<i>Bac. subtilis</i> Concentration	CT average
107	19.65
106	23.78
10 ⁵	27.02
104	30.69
10 ³	34.26

Fig. 3: Viral RNA isolation (Influenza A, dilution series)

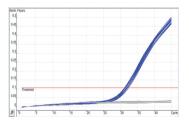


Viral RNA was isolated from 200 µl serum samples spiked with Influenza A stock using InviMag® Universal Kit/ STARIet.

A dilution series with 4 replicates each 1:10, 1:100 and 1:1000 was prepared to check the recovery and 2.5 μ l of the eluate was used in a commercial Influenza A PCR on Rotorgene 3000. There is a high correlation between the theoretical and the real difference between the CT values for each dilution.

Influenza A stock	CT average	SD
10°	22.87	0.06
10-1	26.24	0.22
10-2	29.64	0.34
10-3	33.34	0.93
PTC	28.71	0.19

Fig. 4: Viral DNA isolation (CMV, cross contamination pattern)



Viral DNA was isolated from 200 µl serum samples spiked with human CMV stock using InviMag[®] Universal Kit/ STARlet.

To check the cross contamination in combination with the reproducibility 24 CMV samples were added alternating with 24 serum samples on a 96 well plate. 2.5 μ l of each eluate was used in a commercial CMV PCR on Rotorgene 3000. Figure 4 shows the graph of this PCR. No cross contamination could be detected (grey line) and all CMV samples could be reproducibly detected (blue line).

Sample	CT average	SD
CMV	27.55	0.06
Serum	no signal	no signal
PTC	24.19	0.21

Theoretical difference in Ct between PTC and CMV: 3.5. Real difference is: 3.36



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