

### Illustration of repetitive DNA sequences on DS3000 Compact CE Sequencer

### **Summary**

HITACHI DS3000 Compact CE Sequencer implements a newly developed base-caller that enables the accurate sequencing analysis in a compact size sequencer.

Here, we introduce the performance of the instrument by analyzing the repetitive DNA sequences which deemed to be difficult to separate.

The quality of the peaks are sufficient for the accurate base calling in the broad range of the electrophoresis including the beginning of the read, where the DNA migration tend to be disordered.

This result demonstrates the reliability of the instrument.



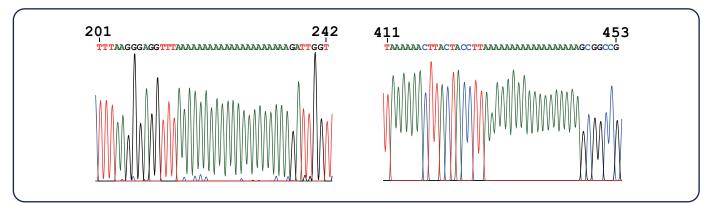


Figure 1: Migration pattern of adenine homopolymer sequence.

We analyzed continuous sequences of adenine located in the different position of the read in standard sequence mode on DS3000Compact CE Sequencer. The accurate base callings were observed, regardless of the position on the read.

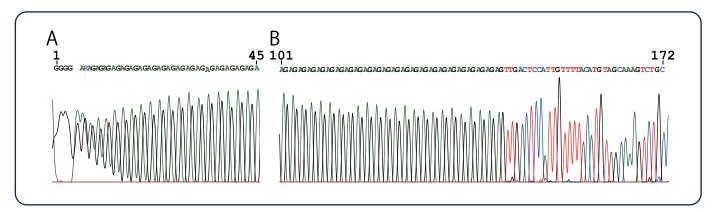


Figure 2: Chromatogram of the dinucleotide repeat sequence and its flanking region.

A: The peak shape distortion was observed only at the start of the read.

B: The di-nucleotide repeat spans around 140 bases. DS3000 Compact CE Sequencer exhibits sharp peaks till the end of the repeat, and beyond.

Sequencing was performed using BigDye® Terminator v3.1. Cycle Sequencing kit (Thermo Fisher Scientific, sold separately) All data were visualized using SangerseqR package (1).

(1) Hill JT, Demarest BL, Bisgrove BW, Su Y, Smith M, Yost HJ (2014). "Poly peak parser: Method and software for identification of unknown indels using sanger sequencing of polymerase chain reaction products". Developmental Dynamics.

#### **DS3000 Primary Specifications**

#### ■ Main unit specifications

Item	Details			
Number of capillaries	4			
Capillary length	36 cm			
Sample format	8-tube strip × 4			
Device control	Touch panel PC			
Number of Dyes	6			
Application	Sequencing analysis / Fragment analysis			
Size	400 (W) × 600 (D) × 600 (H) mm			
Weight	45 kg			
Performance guarantee temperature	15-30°C			
Performance guarantee humidity	20 - 80% RH (no condensation)			
Power input	100 – 240 ±10% VAC,50/60 Hz			
Rated power	260 VA			
Supported secondary analysis software	Mutation Surveyor (SoftGenetics, LLC, sold separately)     GeneMarker (SoftGenetics, LLC, sold separately)     GeneMarker HID (SoftGenetics, LLC, sold separately)			

#### ■ Run module specifications

Run Module	Application	Polymer type	Contiguous Read Length*1(bp,QV20 CRL)	Average run time (minutes)
Fast_Sequence36_Polymer7	Sequencing analysis	Polymer7	≥600	≤32
Standard_Sequence36_Polymer7	Sequencing analysis	Polymer7	≥700	≤60
BDx_Fast_Sequence36_Polymer7	BDx sequencing analysis	Polymer7	≥600	≤32
BDx_Standard_Sequence36_Polymer7	BDx sequencing analysis	Polymer7	≥700	≤60
Run Module	Application	Polymer type	Average run time (minutes)	Sizing precision*2 (bp, 50-400 bp)
Fragment_Analysis36_Polymer7	Fragment analysis	Polymer7	≤35	NA

Fragment analysis

- \*1 Contiguous Read Length (bp, QV20 CRL) is measured with BigDye<sup>®</sup> Terminator v3.1. Sequencing Standard Kit (Thermo Fisher Scientific, sold separately)
- \*2 Sizing precision (bp, 50-400 bp) is measured with PowerPlex™ ESI17 Fast Allelic Ladder and WEN ILS 500 ESS. (Promega, sold separately)
- $\cdot$  BigDye is a registered trademark of Thermo Fisher Scientific Inc.
- · Promega, PowerPlex is a registered trademark of Promega Corporation.

# Fragment\_Analysis36\_Polymer4 Consumables specifications

Product name	Part number	Details	Remarks
Capillary Cartridge 36 cm	613-0330	1 pcs	Storage temperature: 15-30°C
Buffer	613-0252	Anode Buffer × 2 cartridges Cathode Buffer × 2 cartridges	Storage temperature: 2-10°C
Polymer7	613-0251	4 cartridges	Storage temperature: 2-10°C
Polymer4	613-0250	4 cartridges	Storage temperature: 2-10°C
Septa for Cathode Buffer Cartridge	613-7231	10 pcs	
Retainer for Cathode Buffer Cartridge	613-7233	4 pcs	
Septa for 8 well tubes	613-7230	24 pcs	
Base and Retainer for 8 well tubes	613-7232	4 pcs	
Anode Electrode Assembly	613-7263	1 pcs	

Specifications in this catalog are subject to change with or without notice,

as Hitachi High-Tech Corporation continues to develop the latest technologies and product for its customers.

CAUTION: For correct operation, follow the instruction manual when using the instrument.

NOTICE: The system is For Research Use Only, and is not intended for any animal or human therapeutic or diagnostic use. Hitachi High-Tech does not guarantee the performance on the document with every possible sample under every possible condition. Copyright (C) Hitachi High-Tech Corporation 2020 All rights reserved.

Polymer4 ≤44

< 0.16

## **@**Hitachi High-Tech Corporation

## Tokyo, Japan www.hitachi-hightech.com/global/science/

Toranomon Hills Business Tower, 1-17-1 Toranomon, Minato-ku, Tokyo 105-6409, Japan customercenter.ev@hitachi-hightech.com



