CAS-1200™
automated PCR setup

a Compact Robotic Workstation for Precision Liquid Handling

www.PCRsetup.com

Addresses the precision demands of quantitative PCR setup

- Compact size
- Easy to use
- Extremely versatile
- Inexpensive to own and operate

40 cm (19"")
Why Automate PCR Set-Up?

- Better reproducibility
day-to-day, laboratory-to-laboratory
- Reduce artefacts from human error
- Reduce Costs
  Use smaller reaction volumes
  Fewer mistakes mean fewer repeat experiments
- Reduced risk of repetitive strain injuries for staff
- Set-up is the least fun, but most critical part!
The more experienced and careful you are the better the real-time PCR results—leaving it to a robot makes sense

**CAS-1200™** automated PCR setup

**EXAMPLE DATA**

Real-time PCR analysis of robot-pipetted replicates

- Lowest $C_T$ 20.48
- Highest $C_T$ 20.66
- $C_T$ Std Dev 0.05

8-actin samples from 12 wells set up in a 96-well plate (3 µL sample with 17 µL master mix)
**CAS-1200™**

**EXAMPLE DATA**

**Setup of a 2-fold Quantitative Amplification Series**

- Human genomic DNA template diluted into 2-fold standards by the CAS-1200
- Amplification reactions were set up in replicates of four by the CAS-1200 using human dilutions as template
- Target: human BCL-2 gene
- Rotor-Gene 6000 real-time rotary analyzer was used for amplification and analysis
- Plots show tight replicates with expected one-cycle difference between each 2-fold dilution
- Standard curve for this experiment is shown with statistical data (boxed)

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**CAS-1200™**

**EXAMPLE DATA**

**Comparison of manual vs. hand pipetting**

- 20 µL reaction volume, 18 replicates
  - **Hand pipetting**
    - C\text{\textsubscript{T}} std dev 0.07
  - **CAS-1200 robot**
    - C\text{\textsubscript{T}} std dev 0.05
Comparison of manual vs. hand pipetting

**EXAMPLE DATA**

**Comparison of 15 µL reaction volume, 18 replicates**

Hand pipetting
CT std dev 0.11

CAS-1200 robot
CT std dev 0.07

**Comparison of 10 µL reaction volume, 18 replicates**

Hand pipetting
CT std dev 0.12

CAS-1200 robot
CT std dev 0.10
Comparison of manual vs. hand pipetting

5 µL reaction volume, 18 replicates

Hand pipetting
$C_T$ std dev 0.64

CAS-1200 robot
$C_T$ std dev 0.12

Supports all amplification and real-time PCR formats

96-well and 384-well
(Incl. all ABI, Roche, Bio-Rad, Stratagene, Eppendorf etc. instruments)

SmartCycler™ Tubes

Rotor-Gene™ 0.2 mL, 0.1 mL and Gene-Disc™ formats

LightCycler™ Capillaries

Roche COBAS™
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96 and 384-well support

Compatible with plates, tubes, tube racks, cooling blocks etc

CAS-1200™ automated PCR setup

Unusual formats are also supported

Including: MALDI plates, ELISA plates, reservoir plates, etc, etc
Support for Rotor-Gene rotary tube formats

- 0.1 mL tubes
- Gene-Disc™ 72
- 0.2 mL tubes
- Gene-Disc™ 100

Direct setup of Rotor-Gene Gene-Disc™ tube format

- Vertical tube orientation means a robot can set up all reactions directly into a Gene-Disc plate (both 72-well and 100-well discs)
- Heat Sealer provides a permanent or removable seal (user selectable)
- Gene-Disc rotor ready for cycling
Automatic normalization of sample concentrations

1. Specify the input concs. of each starting sample in the sample sheet
2. Specify the final desired conc.
3. Specify the final volume required

(Required vols. are specified for each sample)

Features

- Integrated cover
- Single channel pipetting
- UV light sterilisation option
- HEPA filter option
- Variety of plate configurations
- Variety of mixing possibilities
- Software wizards to setup standard and real-time PCR
Pipetting

- Single pipetting head
- Pipette volumes as low as 1 µL
- < 1% C.V. at 5 µL vol.
- Uses filtered Tecan or Capp style 50 µL and 200 µL tips
- Conductive tips are supported with optional liquid level sensing

Liquid level sensing (LLS)

- Optional circuitry
- Uses conductive tips (black, carbon impregnated)
- Liquid sensing as low as 10 µL
- Curbs tip immersion artifacts
Reagents and Master Mixes

- Removable Master Mix and Reagent block
- Can be refrigerated to keep reagents cool
- Many configurations available
- Custom versions available for master mix and reagent positions

Typical deck layout for PCR set-up
CAS-1200™ automated PCR setup

Software
- Intuitive layout—simple to learn
- Standard PCR components included
- Prepare Master Mixes and controls
- Set-up of standards (dilution series)
- Normalize sample concentrations
- Tip re-use options
- Import/Export of sample names
- Pre- and Post run reports
- Virtual mode aids new protocol testing
- Most versatile software available

Robotic Workflow for Real-Time Analysis

X-tractor Gene™ automated nucleic acid extraction
CAS-1200™ automated sample setup
Rotor-Gene™ real-time rotary analyzer

“Extraction-to-Reaction”
Standard objections to robotics

셙 Luxury—only for big labs
  ● CAS-1200 costs less than a real-time instrument
  ● Introduces a new generation of personal robotic workstation

셙 Running costs are too high
  ● Robotic tips are now similar in cost to regular tips
  ● In fact, overall savings can be made on reagents & fewer repeat expts.

셙 Robots are too big—“we have no space”
  ● Only 49 cm (19.3”) wide—a fraction the size of similar equipment

셙 Difficult to use/can’t be bothered learning to use it
  ● Try the software and see! We are happy to arrange a demonstration.

Summary

四是 Low cost, small, simple to operate personal robot
四是 High precision for real-time PCR setup
四是 Low volume reaction setup saves reagent cost
四是 Useful for many laboratory projects
四是 Reduce human error and repetitive strain injury issues
四是 Versatile; set up in 96-well, 384-well or wide range of other tube types
四是 Single head for precision and cherry-picking of any sample
四是 Optional Liquid Level Sensing, UV light sterilization & HEPA filter options