

DIRUI CS-400

Auto-Chemistry Analyzer

www.dirui.com.cn



DIRUI

Chemistry Analyzer

CS-400

Auto-Chemistry Analyzer

www.dirui.com.cn



Overall performance

Equipment type	Fully automatic ,discrete, STAT priority
Throughput (Theoretical max)	400T/H for photometry tests only 400T/H for only ISE tests
Test principle	Colorimetry, turbidimetry, ISE
Analysis method	End-point, kinetics, fixed-time, etc. support single/double wavelength and 1-4 multiple reagent item, linear and non-linear calibration
Simultaneous analysis item	88 colorimetric items and 3 ISE items (K, Na, Cl optional)

Sample unit

Sample position	115 sample positions, including 50 routine sample positions, 20 STAT positions, 34 calibration positions, 8 QC positions, 3 detergent positions. Continuously cooling at calibration and QC positions to keep 5-15℃ within 24 hours
Sample cuvettes specification	Standard cup, original blood tube, multi-specification tube available (Φ12~16) mm × (25 ~ 100) mm
Sample barcode	12of5, code128, code39, UPC/EAN, code93
Sample volume	2μl ~ 35μl, 0.1μl stepping
Sampling technology	liquid level detection, clot detection and collision detection
Sample probe carrying rate	automatic warm water cleaning. Carrying rate ≤ 0.1%
Automatic sample dilution	3~170 times

Reagent unit

Reagent probe	2, with the function of liquid level detection and collision detection
Reagent volume	20μl~350μl, 1μl stepping
Reagent position	double reagent disk, 45X2, continuous 5-15℃ cooling within 24 hours, loading 70ml and 20ml standard reagent kit
Reagent barcode	code128
Reagent probe carrying rate	automatic warm water cleaning. Carrying rate ≤ 0.1%

Reaction unit

Reaction cuvette	120 positions optical plastic cup, optical diameter is 6 mm
Total volume of reaction liquid	150μl ~ 450μl
Reaction temperature	37℃, ±0.1℃
Reaction disk constant temperature	circulating water
Mixing needle	2, after joining reagent, blending immediately
Reaction cuvette cleaning	7 stops 11 steps by warm water rinsing
Wastewater treatment	two diluence for high and low concentration waste water. With the function of concentrated waste liquid level alarming

Optical system

Light source	20W/12V halogen lamps. Life is 2000 hours
Monochromator	Grating photometry
Photoelectron road	after spectrophotometry
Wavelength	340nm、380nm、405nm、450nm、480nm、505nm、546nm、570nm、600nm、660nm、700nm、750nm or 800nm
Detector	photodiode LED array
OD linear range	0 ~ 3.3Abs

Calibration and QC

Calibration method	1 point linear method, 2 point linear method, multiple point linear method, non-linear method
Calibration tracking	automatic description calibration K-value trends
QC method	real-time QC, days QC and day QC
Out of control processing	alarming for out of control sample, record lost control reason

Operating system

PC operating system	Windows XP
Analysis control software	English version graphical operating software
Main function of software	automatic calibration, automatic barcode scanning, item compounding test, reagent info management, serum index, whole reaction process monitoring, dirty cup memory evading, prevent cross-contamination procedure, patient information memory and association input, automatic report audit, data multiple parameter query, report format statistic and printing, reference range classification, alarming information classification, user operating right classification, automatic dormancy and wake, real-time online help
Report printing	report formats support the user-defined mode, QC and state information etc
PC configuration	CPU ≥ 2.2GHz (dual-core processor); Memory ≥ 1G; Harddisk ≥ 160G; 17 inch LCD display; Stylus, inkjet or laser printer (optional)
System connection	TCP/IP network connection, standard RS-232C

Others

Volume	1060mm×790mm×1150mm
Weight	300Kg
Power supply	voltage AC 220V±22V, 50Hz±1Hz, power 2KVA



Certified to
ISO 9001:2000 and ISO 13485:2003

DIRUI

DIRUI INDUSTRIAL CO., LTD.

95 Yunhe Street, New & High Tech. Development Zone
Changchun, Jilin 130012 P. R. China

Tel: +86 431 85100409 Fax: +86 431 85172581

E-mail: dirui@dirui.com.cn Http://www.dirui.com.cn

· Specifications subject to change without notice.

20110121

DIRUI INDUSTRIAL CO., LTD.

DIRUI CS-400 Auto-Chemistry Analyzer

- Rear spectrophotometry of holographic concave flat field grating, cluster - optical path, realizing supermicro volume detection of reaction solution
- 60 nm polished probe, liquid level detection, clot detection and collision protection
- Colorimetric cuvette automatic rinsing and blank cuvette detection
- Sample rerun and dilution function
- English graphic operation software, report printing supports various formats
- User defined combined batch input of patient information, applicable to fast setting for special hospital, blood station and physical examination



DIRUI CS-400

Auto-Chemistry Analyzer



Sample/reagent pipeting mechanism

- 3 stand-alone probes, one probe for sample, two probes for reagent. The probes are polished with nano processing technology which reduces cross-contamination effectively
- Automatic liquid level detection: the probe detects the liquid level automatically, ensures the probe enter into liquid at perfect depth and reduces carry over on probe surface
- 3 stand-alone syringes, one syringe for sample, two syringes for reagent. The syringe is made of long life high-precision ceramic piston; it ensures high precision of sampling, low maintenance cost
- 3 stand-alone probes contain collision protection function, self-resetting, automatic re-pipeting sample and reagent automatically
- Intelligentized clot detection: Pipeting tube has pressure sensor which can detect the status of clot. The tube contains high pressure rinsing function to clean clot, which ensures the pipeting volume accuracy

- Water degassing technology: The analyzer has special degassing device to remove the air dissolved in the tube system, which ensure quick, accurate and small volume pipeting
- Automatically detect sample volume, reagent remaining volume and available testing times. It alarms when there are inadequate volumes to ensure continuous analysis
- Probe washing: high-pressure rinsing for internal wall, stream washing for external wall
- Clot detection

Photometry system

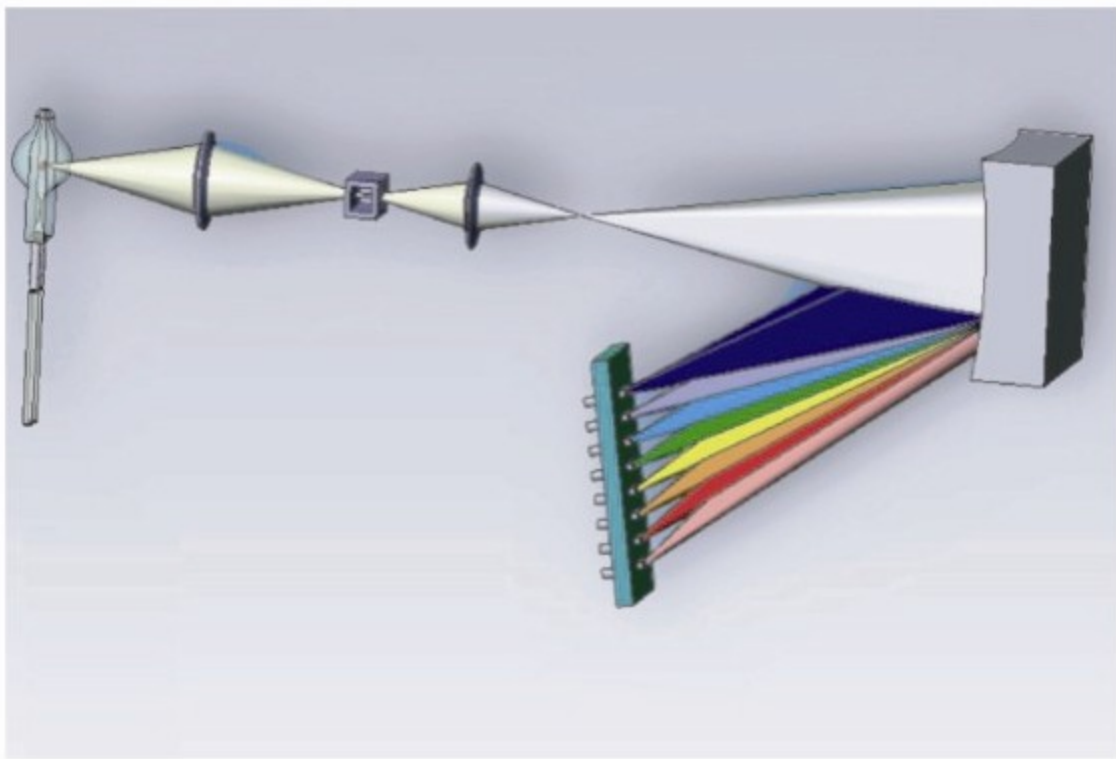
- Monochromator with holographic concave flat field grating, rear spectrophotometric 12 ways parallel measuring technology, reduces ambient light interference to get accurate result
- Cluster – condensing light (point light source) technology to reach super-microanalysis, total reaction volume is as less as 150 μ l, less reagent consume
- 20W/12V long life light source, adopt water cooling method, the best position design, no signal attenuation, strong anti-interference
- 12 ways photodiode array detector, 12 ways high dynamic range logarithmic amplifier, the range can be 6Abs without distortion. It ensures high concentration sample testing without data overflow
- Rigid plastic reaction cuvette, with good penetrating of Ultraviolet (UV), resistance against acid and alkali and long life span

Large volume semiconductor refrigerated double reagent disks

- Double disks 90 positions, including two detergent positions, 88 reagent position, each reagent position can load 70ml or 20ml universal reagent cuvette
- Reagent disk continuous cooling condition secures the quality of reagent
- One reagent, two reagent and up to four reagents testing (R1, R2, R3, R4) functions enable multiple testing items to satisfy the future development needs

Multi-function refrigerated sample disk

- Total 115 sample positions includes 50 routine sample positions, 20 STAT positions, 34 calibration positions, 8 QC positions, 3 detergent positions; 8 QC positions and 17 calibration positions maintain 5 $^{\circ}$ C-15 $^{\circ}$ C cooling condition; the whole disk can be easily replaced with handle
- Supports various tubes and trace samples cup specification (Φ 12~16) mm \times (25 ~ 100) mm
- The LED indicator for sample disk spinning can ensure the safety of inputting sample at any time



DIRUI CS-400

Auto-Chemistry Analyzer

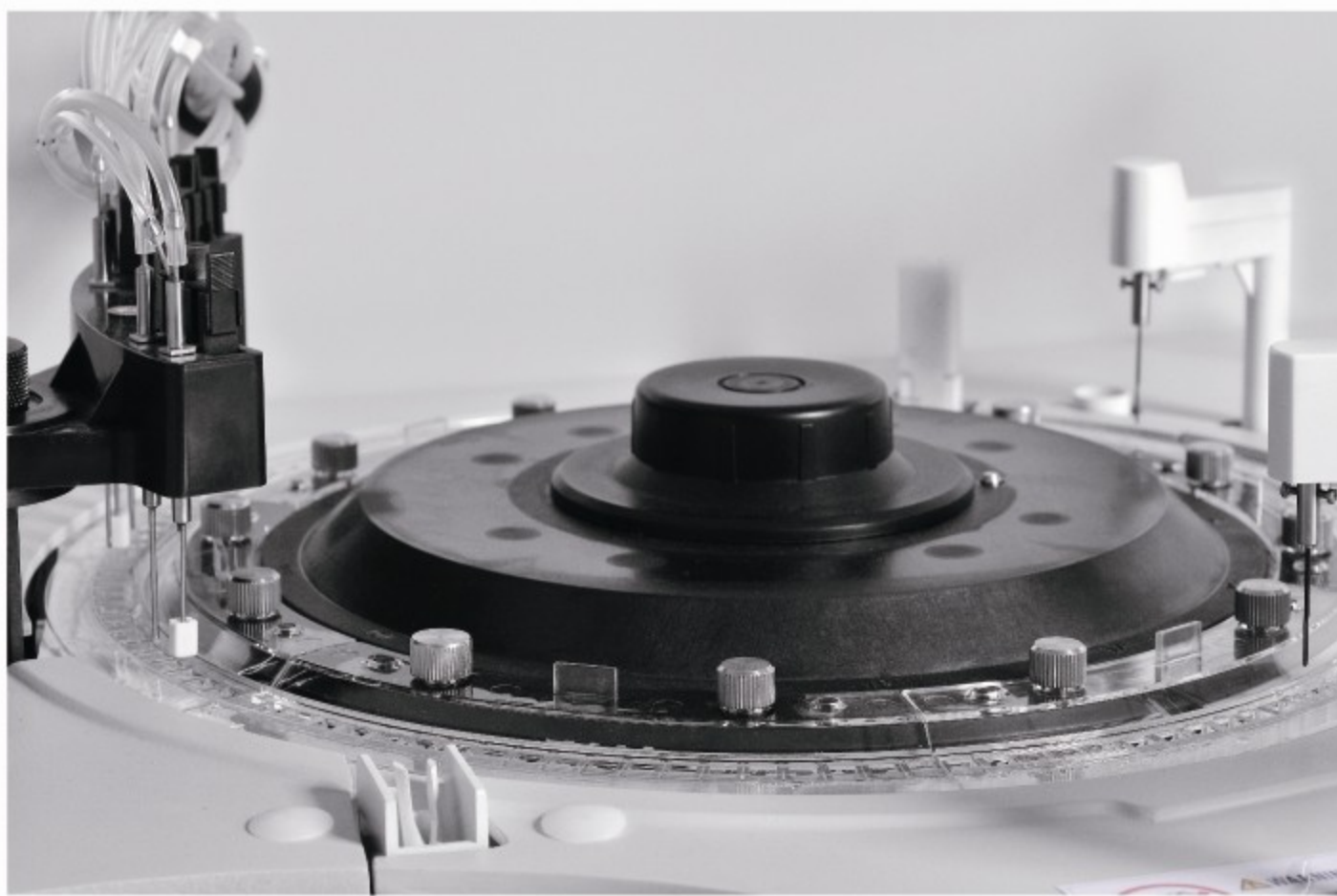
Double stirrer stirring mechanism

- 2 stand-alone stirrers start stirring immediately after add reagent to mix the reaction solution well
- The stirrer surface is telfon coated to avoid liquid suspension and reduce cross-contamination
- The stirrer is using “flat paddle” design and using swirl rinsing, which has the best cleaning effect



Reaction cuvette constant temperature device

- Using recycling water constant temperature device, automatically changing water
- Reaction cuvette is emerged into warm water which heats the cup evenly and reduces the ambient temperature influence
- PID thermostat technology ensures temperature is 37℃ ; the temperature control variation is $\pm 0.1^{\circ}\text{C}$

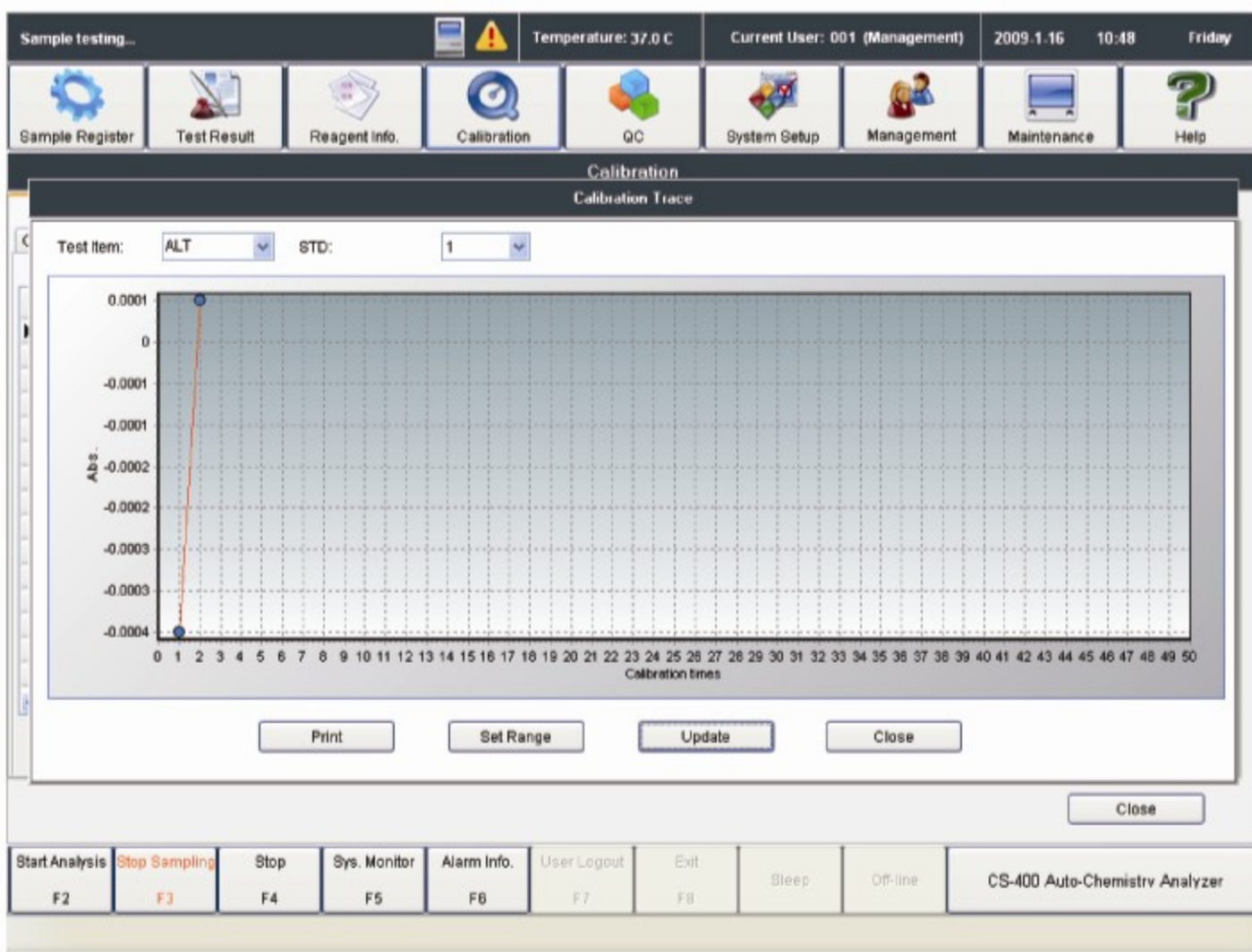
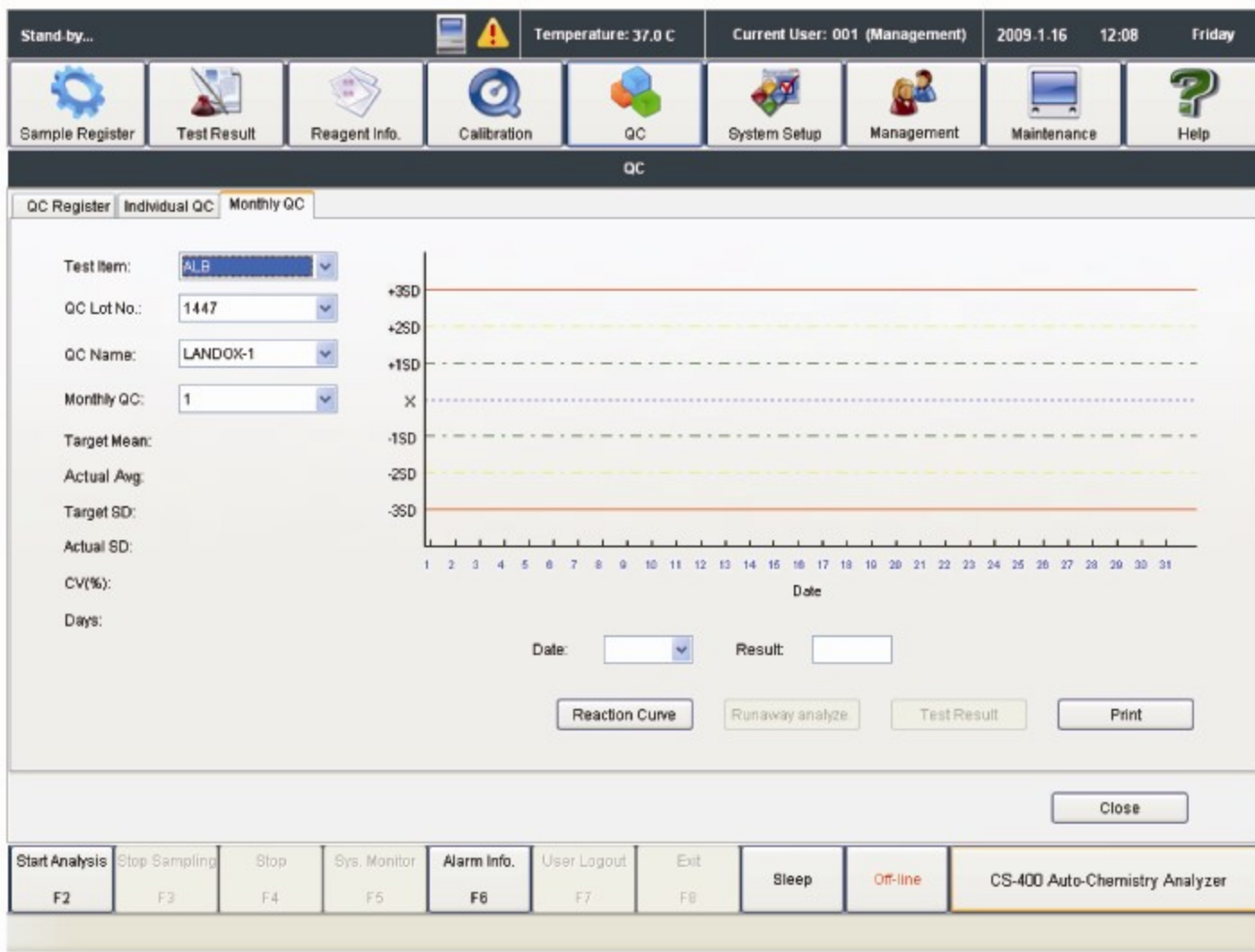


Reaction cuvette automatic rinsing

- 7 stops 11 steps washing by warm water rinsing ensures complete cleanness
- Vacuum draining liquid and warm water high pressure rinsing enhance the cleanness

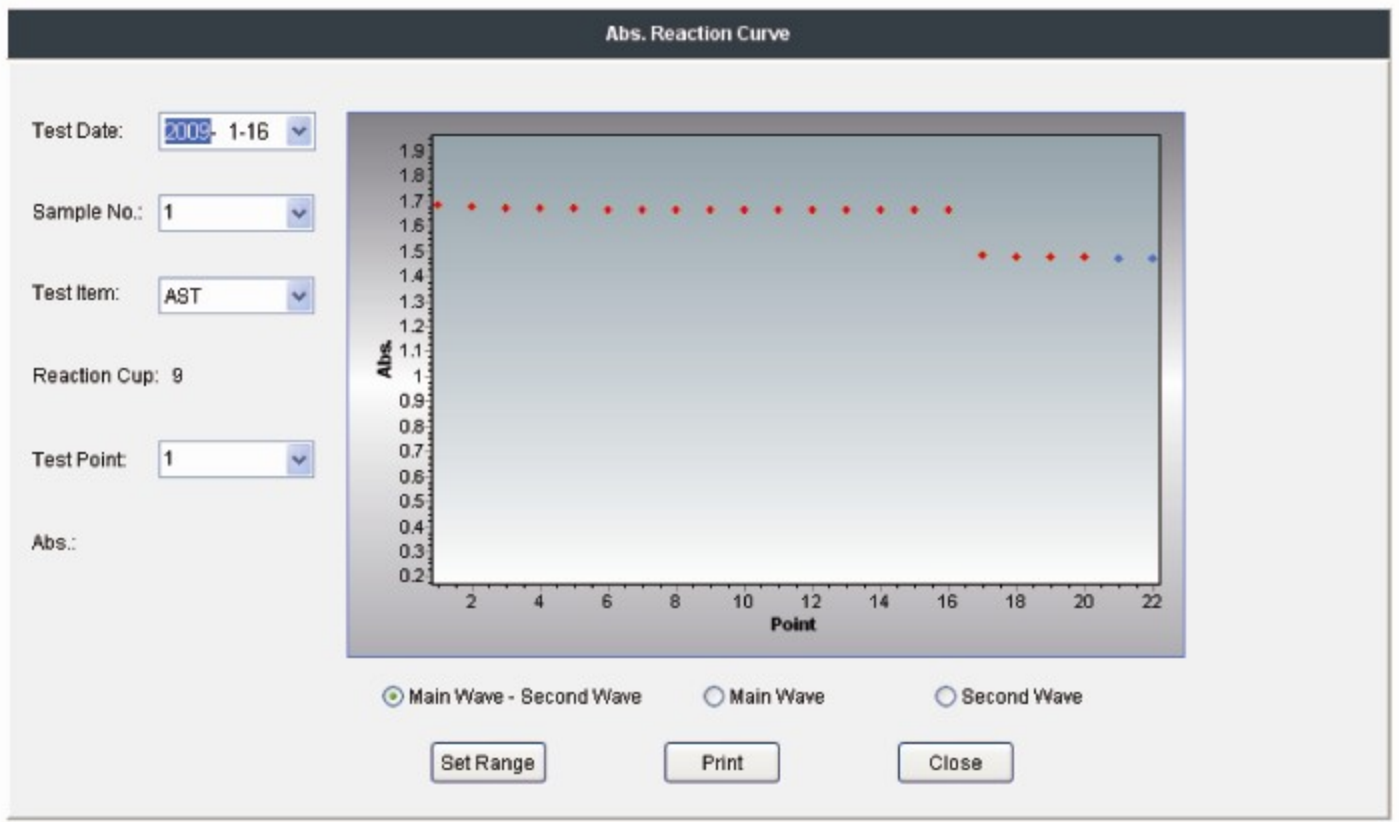
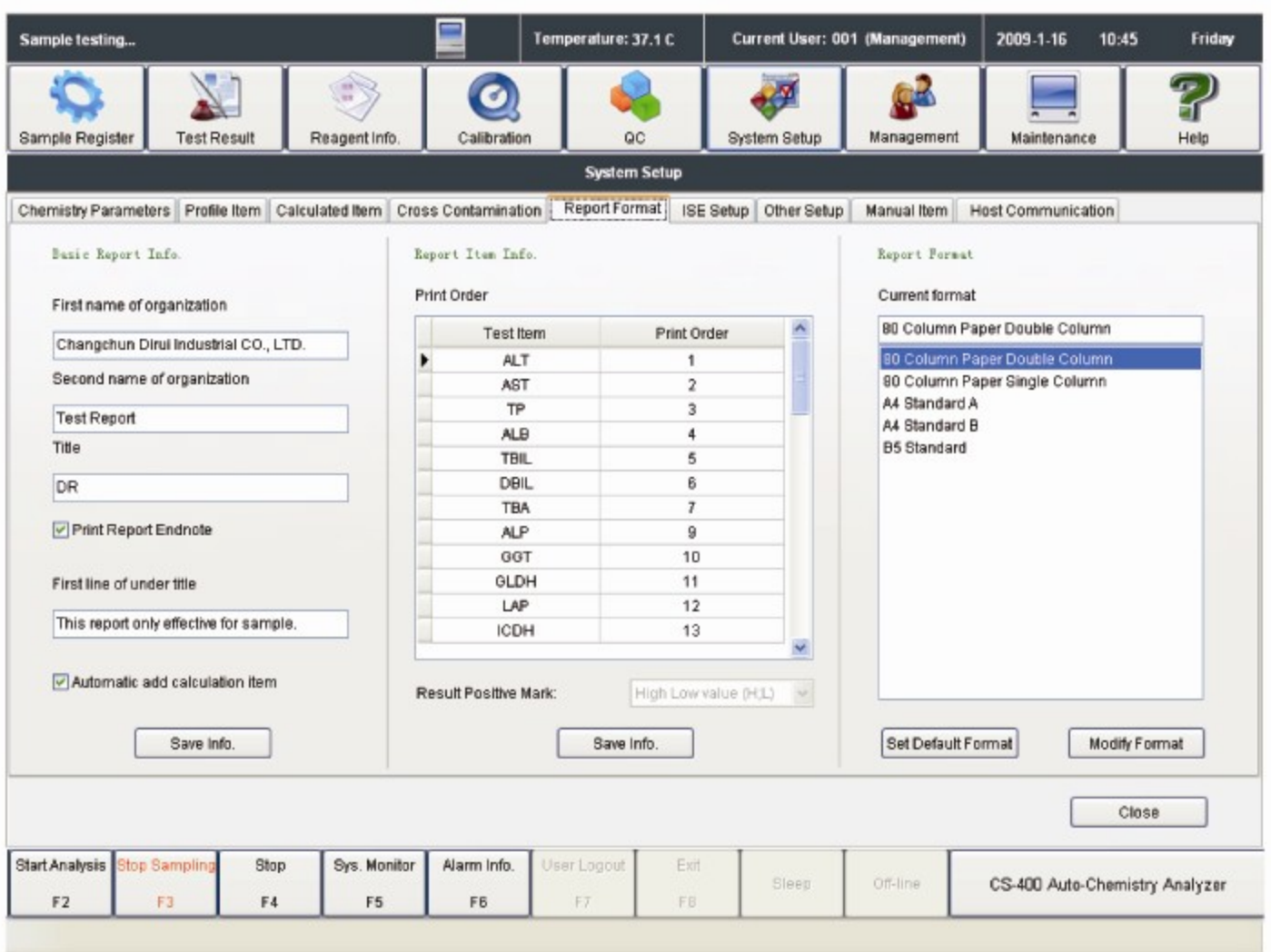
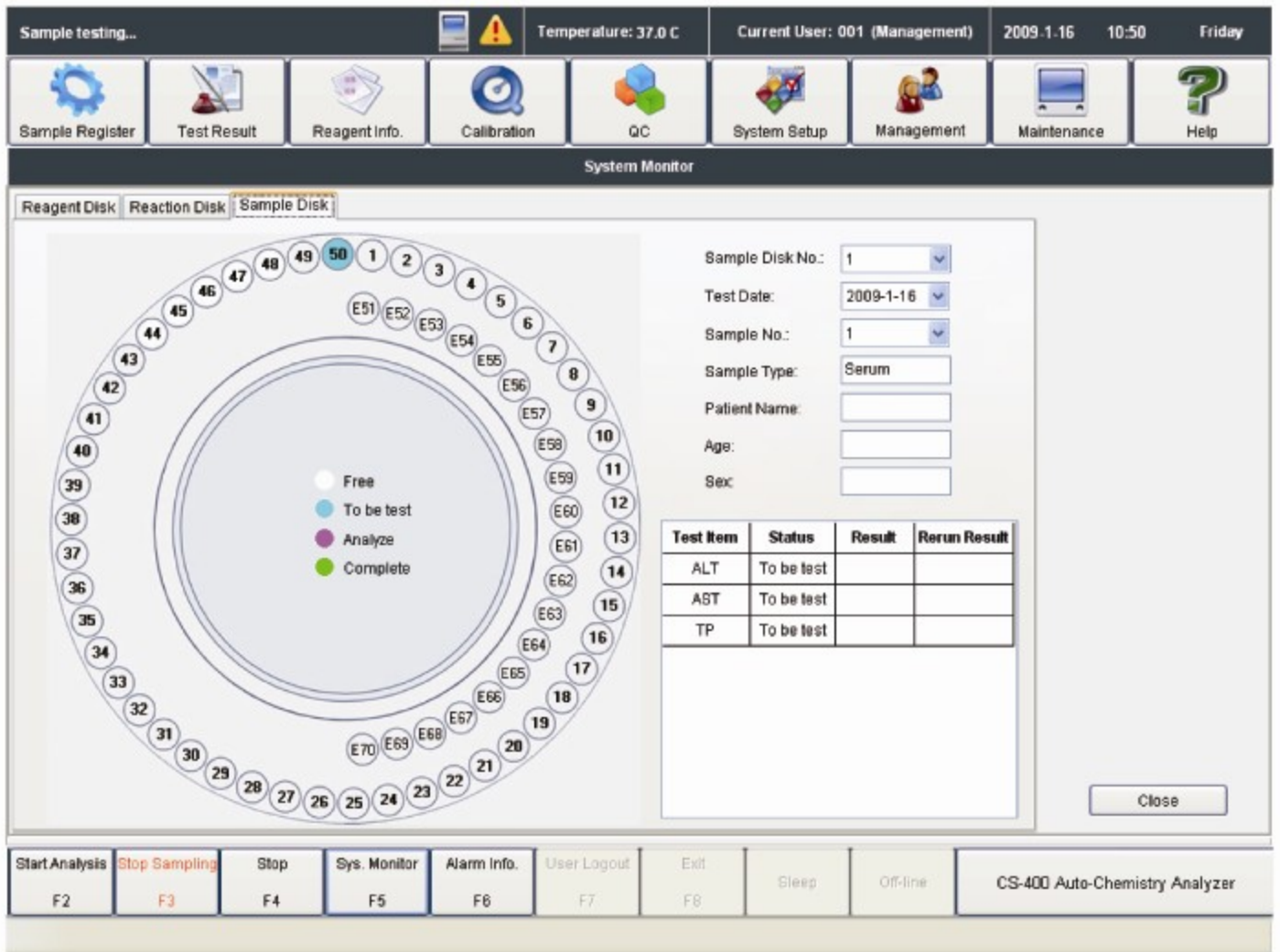
Calibration and QC function

- Linear and non linear calibration, which can be set with time, reagent lot number, etc, with flexible calibration methods
- 9 types of calibration curves fitting formula to satisfy different item analysis demands
- Each item can use 6 different levels' calibrators
- It has calibration tracing function, depicting calibration K value variation trends, helps to reduce system error
- QC interval and monthly QC ensure that the instrument is working at the best analysis condition
- QC rule: default as Westgard multi rules
- QC Plot: automatic depict and print relevant QC plot, L-J, Cumulative, Twin Plot
- Automatic storage of the reason for out of control & primary date, which complis to the lab QC management



Operating software

- English version graphical operating software, simple interface and user friendly
- Real-time online help system
- Simpl
- Probe washing: high-pressure rinsing for inner wall,stream washing for external walle and easy software operating, perfect function, consistent with the use of clinical testing requirement
- Multiple self-monitoring functions ensure the analyzing process intelligentization
- Multiple report formats, user-defined, automatic print function



Monitoring and calculating function

- Automatic monitoring super linear limit, super reference limit, substrate depletion, antigen surplus,no reaction equilibrium point checking program
- Serum checking function removes interference from hemolysis, blood lipid, jaundice
- Against cross-contamination program, avoid interference from different reagent
- Instrument analysis alarm hierarchical handling to arrange the job sequence by priorities
- User authority hierarchical management to enhance system security

ISE module(optional)

- K, Na, Cl measurement
- Throughput: 400 tests per hour
- Automatically rinsing, calibration
- 37℃ pre-heat function for ion reagent
- 3 syringes for ion reagent sampling, of which are made from long-life porcelain to keep high precision and low maintenance cost
- Less sample consumption (Only 15uL serum /urine is used for each test)

