

## BS-400 Chemistry Analyzer

### Technical Specifications

#### System function:

Fully automated, Discrete, Random Access, for routine, STAT, urine and homogeneous Immuno Assays  
STAT sample priority

Throughput: 400 tests/hour, up to 640 tests/hour with ISE

#### Measuring principles:

Absorbance photometry, Turbidimetry

Methodology: End-point, Fixed-time, Kinetic, optional ISE  
Single/Dual/Triple/Quadruple reagent chemistries, monochromatic / bichromatic

Programming: User defined profiles and calculation chemistries

#### Sample Handling:

Sample tray: 90 positions for primary tubes or secondary cups

Sample volume: 2~45µl, step by 0.1µl

Sample probe: liquid level detection, clot detection and collision protection

Probe cleaning: automatic washing for both inside and outside, carry over ≤ 0.1%

#### Automatic sample dilution:

pre-dilution and post-dilution  
dilution ratio up to 150

dilution vessel: cuvette

#### Internal bar code reader:

Used for sample and reagent programming  
Applicable to various bar code systems of Codabar, ITF (Interleaved Two of Five), code128, code39, UPC/EAN, Code93  
Capable to link in LIS bi-directional mode

#### ISE Module:

Optional selection for K<sup>+</sup>, Na<sup>+</sup>, Cl<sup>-</sup>, or K<sup>+</sup>, Na<sup>+</sup>, Cl<sup>-</sup>, Li<sup>+</sup>

Throughput: Up to 320 tests per hour

#### Reagent Handling:

Reagent tray: 80 positions in refrigeration compartment (4~10℃)

Reagent volume: R1: 150~350µl, step by 1µl  
R2/R3/R4: 20~350µl, step by 1µl  
2 independent reagent probes

Reagent probe: liquid level detection and collision protection  
Inventory checking

Probe cleaning: automatic washing for both inside or outside  
carry over ≤ 0.1%

#### Reaction System:

Reaction rotor: rotating tray, 90 cuvettes with automatic washing

Cuvette: optical length 5mm

Reaction volume: 150~360µl

Operating temperature: 37℃

Temperature fluctuation: ±0.1℃  
2 independent mixing bars

#### Optical System:

Light Source: Halogen-tungsten lamp

Photometer: reversed optics, grating photometry

Wavelength: 340nm, 380nm, 412nm, 450nm, 505nm, 546nm, 570nm, 605nm, 660nm, 700nm, 740nm, 800nm

Absorbance range: 0~3Abs (10mm conversion)  
Resolution: 0.001Abs

#### Control and Calibration:

Calibration mode: linear (one-point, two-point and multi-point), Logit-Log 4P, Logit-Log 5P, spline, exponential, polynomial, parabola

Control rules: Westgard multi-rule, Cumulative sum check, twin plot

#### Operation Unit:

Operation system: Windows 2000 Professional or Windows XP

Interface: RS-232

#### Working Conditions:

Power Supply: 200-240V~, 50Hz, 1500VA  
or 220/230V~, 60Hz, 1500VA  
or 110/115V~, 60Hz, 1500VA

Temperature: 15-30℃

Humidity: 35-80%

Water consumption: 23L/hour Deionized water

Dimension: 1180mm x700mm x1145mm (WxDxH)

Weight: 300kg



DISTRIBUTOR:

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**BS-400** NEW  
Chemistry Analyzer

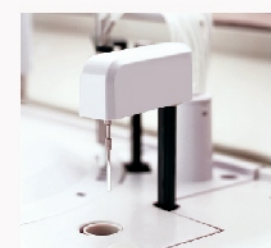


## **BS-400** Chemistry Analyzer

- Discrete, random access, fully automated
- 400 tests per hour, up to 640 tests per hour with ISE
- Up to 77 onboard chemistries and 4 ions
- Refrigerated reagent compartment
- Onboard capacity of 90 sample positions
- Automatic probe cleaning, liquid level detection, clot detection & collision protection from both vertical and horizontal directions
- 8-step auto washing system
- 12wavelengths: 340-800nm
- Automatic dilution for abnormal sample
- Internal bar code reader (optional)
- LIS interface bi-directional







**High performance mixer design**

- Optimal homogenization in minimum time
- High precision mixer station to ensure excellent reaction conditions
- Standardized mixing procedures across the whole range of analyzers
- The two mixers will function immediately after the sample and reagent pipetted in



**High quality ISE Module**

- Optional selection for  $K^+$ ,  $Na^+$ ,  $Cl^-$  or  $K^+$ ,  $Na^+$ ,  $Cl^-$ ,  $Li^+$
- Throughput: Up to 240 or 320 tests per hour
- 6 months shelf life



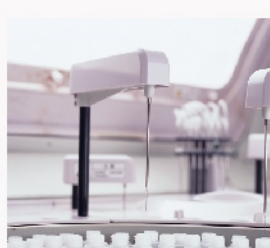
**Refrigerated reagent tray**

- 80 reagent positions for R1, R2, R3, R4
- 24 hour non stop cooling with Peltier element
- Ready to use liquid stable reagents
- Internal reagent bar code reader (optional)



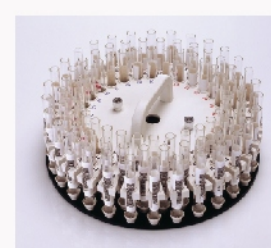
**Washing station**

- High tech wash station to warrant accurate results and ensure valid diagnostics
- Two different detergents to prevent any carry over
- 8 step water cleaning



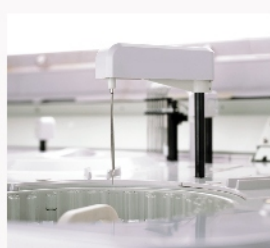
**Multi-function reagent probe**

- Internal and external probe washing
- Liquid level detection
- Collision protection
- Inventory monitoring
- Reagent volume as small as 20µl
- Probe depth adjustment automatically



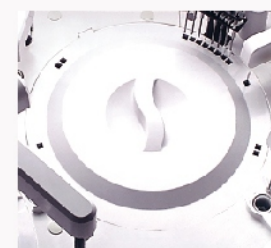
**Multi-function sample tray**

- 90 sample positions
- Can be programmed in the 5 virtual sample trays
- Primary tube and various sample cup can be used
- Automatic dilution of high concentration sample
- Pre-dilution for calibrator and sample
- Internal sample bar code reader (optional)



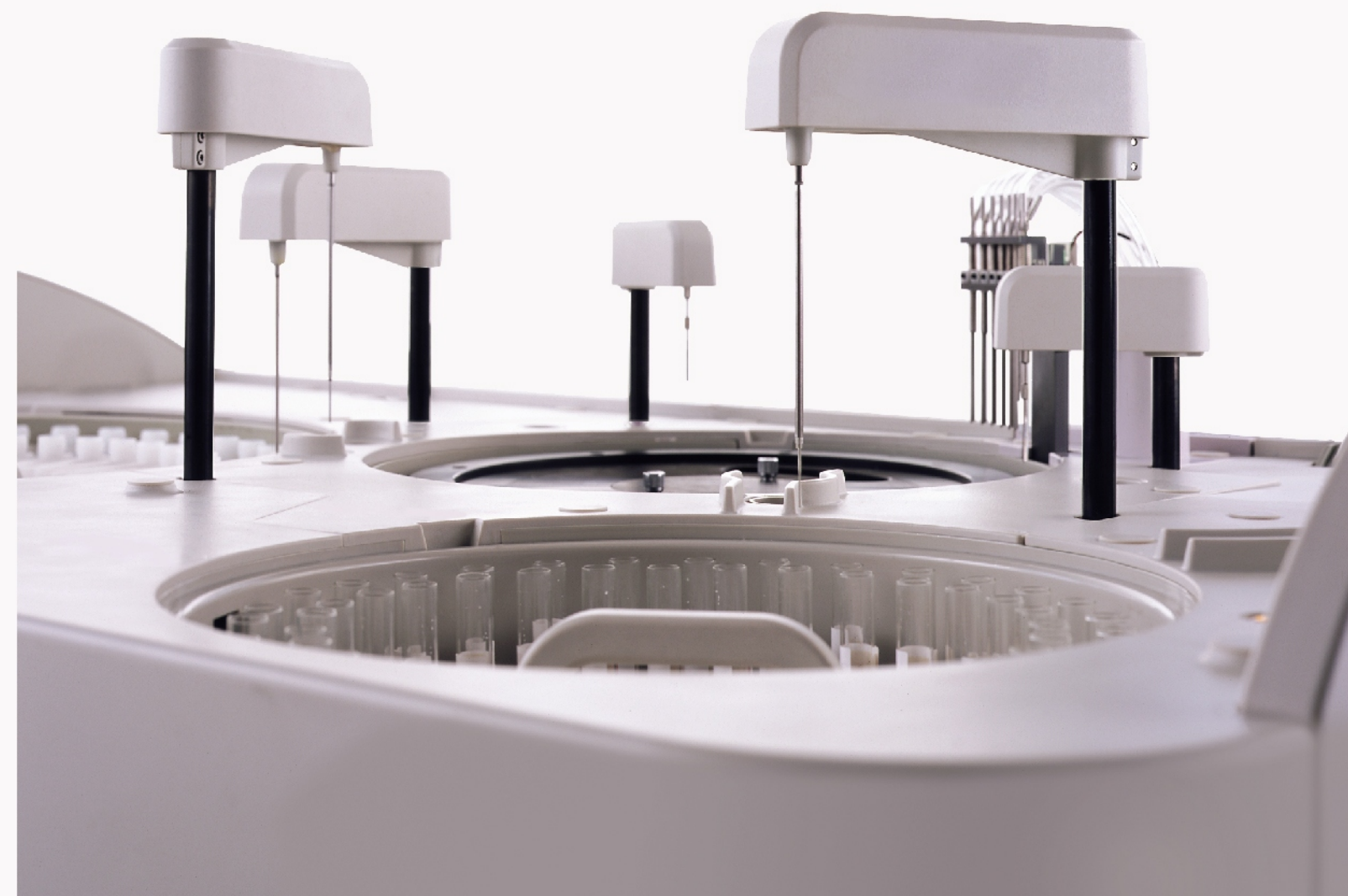
**Multi-function sample probe**

- Internal and external probe washing
- Liquid level detection
- Clot detection
- Collision protection
- Probe depth adjustment automatically
- Sample volume as small as 2.0µl



**Reaction tray**

- Test sequence optimization that reduces carry over
- Total reaction volume as small as 150µl
- Contain 90 reaction cuvettes
- Maintenance free heater elements





## Sample of Test Menu

### Proteins & Immunoglobulins

Total Protein	TP
Albumin	Alb
Myoglobin	Mb
Immunoglobulin A	Ig A
Immunoglobulin G	Ig G
Immunoglobulin M	Ig M
Immunoglobulin E	Ig E
Complement C3	C3
Complement C4	C4
C Reactive Protein	CRP
Rheumatoid Factor	RF
Anti Streptolysin O	ASO

### None-Protein Nitrogen

Urea	Ure
Uric Acid	UA
Creatinine	Cre
Blood Urea Nitrogen	BUN
Total Bilirubin	TB
Direct Bilirubin	DB

### Lipids

Total Glyceride	TG
Phospholipid	PL
Free Fatty Acid	FFA
Total Cholesterol	TC
Free Cholesterol	FC
High Density Cholesterol	HDL
Low Density Cholesterol	LDL
$\beta$ -Lipoprotein	$\beta$ -Lipo
Apolipoprotein A I	ApoA I
Apolipoprotein A II	Apo A II
Apolipoprotein B	Apo B
Apolipoprotein C II	Apo C II
Apolipoprotein C III	Apo C III
Apolipoprotein E	Apo E
Total Bile Acid	TBA
Lipoprotein (a)	Lp (a)

### Glucide

Glucose	Glu
Sialoid Acid	SiA
Fructose	FRA

### Enzymes

Alanine aminotransferase	ALT
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Aspartate aminotransferase	AST
Alkaline phosphatase	ALP
Acid phosphatase	ACP
Adenosine Deaminase	ADA
Amylase	Amy
Amylase-pancreatic	Amy-p
Gamma-Glutamyl Transferase	$\gamma$ -GT
Creatine Kinase	CK
Creatine Kinase-MB	CK-MB
Choline Esterase	ChE
Lactate Dehydrogenase	LDH
$\alpha$ -hydroxybutyric dehydrogenase	$\alpha$ -HBDH
Monoamine Oxidase	MAO
Lipase	Lip
Leucine aminopeptidase	Lap
N-Acetyl- $\beta$ -Glucosaminidase	NAG

### Electrolytes & Minerals

Sodium	Na
Potassium	K
Chloride	Cl
Calcium	Ca
Magnesium	Mg
Phosphate	P
Iron	Fe
Unsaturated Iron Binding Capacity	UIBC
Transferrin	Tf
Copper	Cu

### Drugs

Alcohol	ALC
Amphetamines	AMP
Barbiturates	BAR
Benzodiazepine	BZO
Cocaine Metabolite	COC
Methadone	MTD
Methaqualone	MTQ
Phencyclidine	PCP
Propoxyphene	PPX

### Others

Glycosylated hemoglobin A1c	HbA1c
nonglycosylated hemoglobin	HbA0
Urine-Albumin	U-Alb
Ratio of Branched-chain Tyrosine amino acids to	BTR



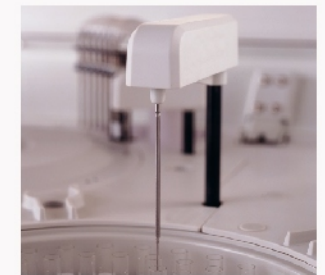
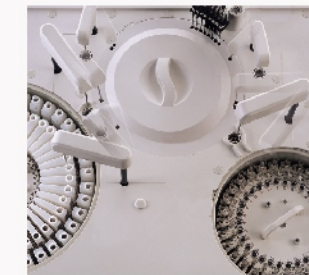




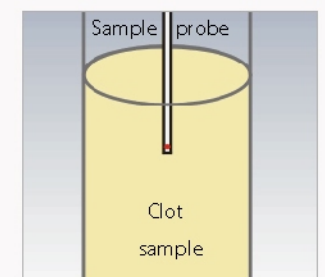
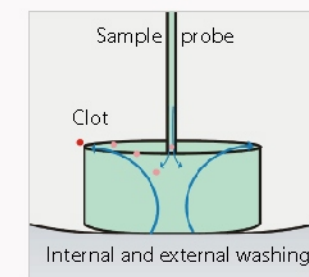
Convenient to use: real time monitoring of working status, emergency tests are enabled by the LED lightening.



Reusable cuvettes: high performance and accurate result.



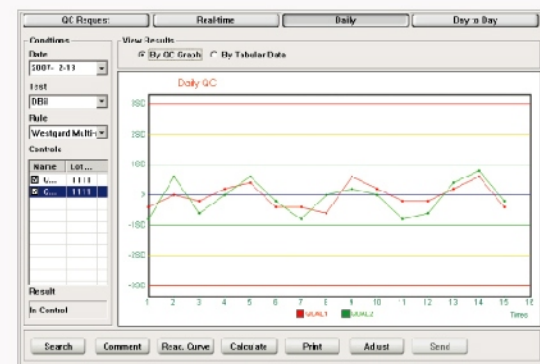
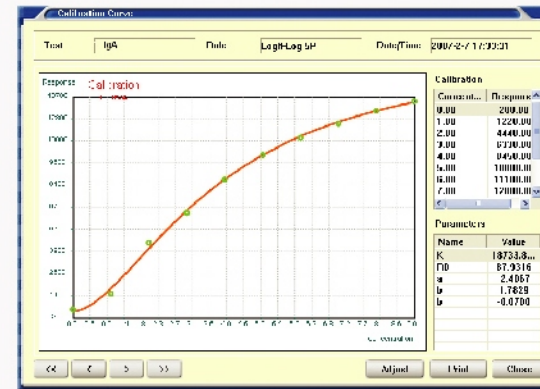
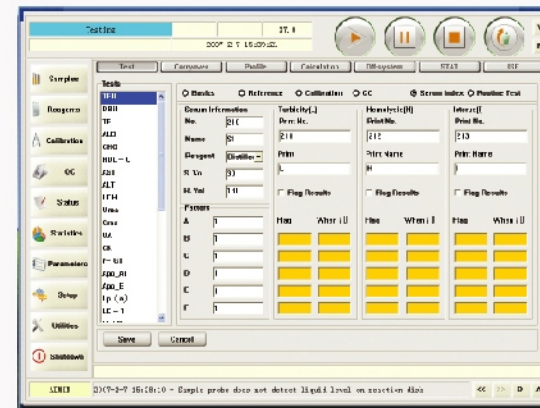
Clot detection: to avoid incorrect reaction at the very beginning of the process.





## Comprehensive and sophisticated software program

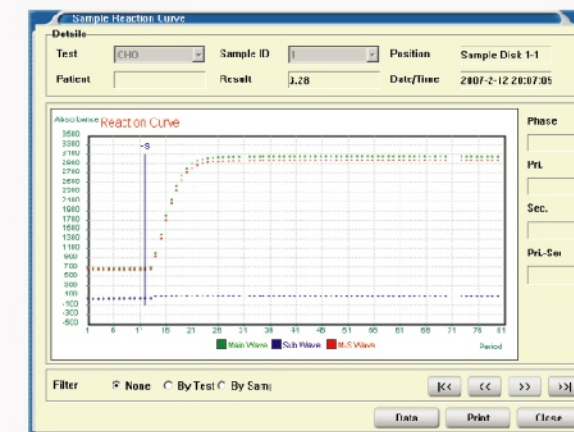
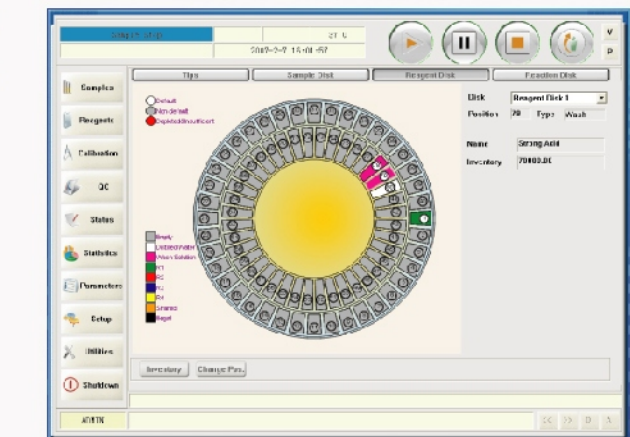
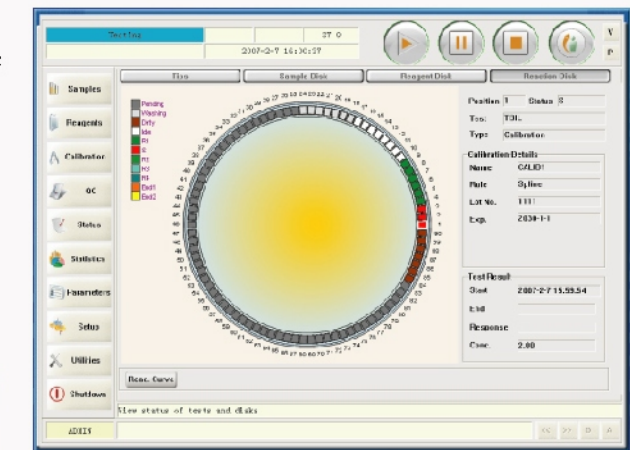
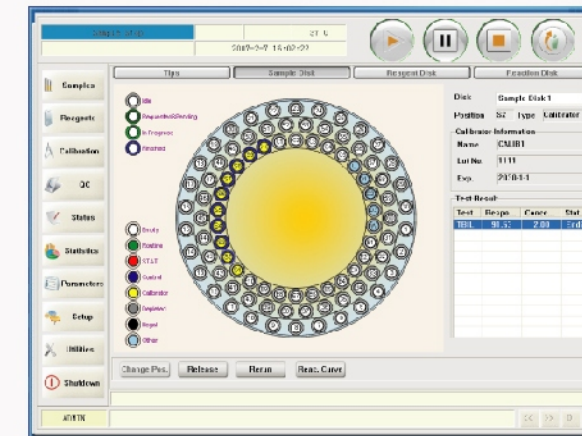
- Serum indices detection function;
- Intelligence to extend the linearity range for enzyme tests automatically;
- Multi-point calibration: up to 10 points;
- Auto rerun: in commensurate / increasing / decreasing mode;
- Power-off memory protection: in case of emergency shutdown, the system quickly stores all the current information. When powered on again, it will carry over unfinished tests without requesting again;
- Reaction trend graph for patient's history results;
- Comprehensive indications for out-of-control results, and detailed causation record;
- Automatic alarm during running process, with explanations when clicking it;
- Multi-media training materials (Chinese / English), easy for learning and operating;



Test Name	Error Code	Level	Result
2007-2-15 10:20:05	40324	Level 0	OK
2007-2-15 10:20:05	40324	Level 1	OK
2007-2-15 10:20:05	40324	Level 2	OK
2007-2-15 10:20:05	40324	Level 3	OK
2007-2-15 10:20:05	40324	Level 4	OK
2007-2-15 10:20:05	40324	Level 5	OK
2007-2-15 10:20:05	40324	Level 6	OK
2007-2-15 10:20:05	40324	Level 7	OK
2007-2-15 10:20:05	40324	Level 8	OK
2007-2-15 10:20:05	40324	Level 9	OK
2007-2-15 10:20:05	40324	Level 10	OK
2007-2-15 10:20:05	40324	Level 11	OK
2007-2-15 10:20:05	40324	Level 12	OK
2007-2-15 10:20:05	40324	Level 13	OK
2007-2-15 10:20:05	40324	Level 14	OK
2007-2-15 10:20:05	40324	Level 15	OK

## Dynamic and real time display of running status

- Running status of reagent tray, sample tray and reaction tray;
- Real time monitoring of reagent residual volume;
- Optimum test sequence setting program to avoid carry over.



## Original reaction data record

- Real time monitoring of reaction curve;
- Simultaneously display primary and secondary wavelengths to avoid interference;
- Detailed profile of alert messages;
- Real time diagnosis of system working status.