

BS-200

Chemistry Analyzer

Technical Specifications

System Function:

Automatic, Discrete, Random Access
STAT sample priority

Throughput: Up to 200 tests/hour (without ISE), up to 330 tests/hour with ISE

Measuring principles:

Absorbance photometry, Turbidimetry,
Ion Selective Electrode technology

Methodology: End-point, Fixed-time, Kinetic, optional ISE

Single/Dual reagent chemistries,
monochromatic/bichromatic
Linear/non-linear multi-point calibration

Programming: Open system with user defined profiles
and calculation chemistries

Reagent/Sample Handling:

Reagent/Sample tray:

40 positions for reagents and 40
positions for samples in refrigerated
compartment (2~12°C)

Reagent volume:

R1: 10~450µl, step by 1 µl

R2: 10~450µl, step by 1 µl

Sample volume: 2~45µl, step by 0.1 µl

Reagent/Sample probe:

Liquid level detection, collision protection and
inventory checking

Probe cleaning: Automatic washing for both interior and exterior
Carry-over < 0.1%

Automatic sample dilution:

Pre-dilution and post-dilution

Dilution ratio up to 1: 200

Dilution vessel: Disposable cuvette

Internal Bar Code Reader (optional):

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 communicate with LIS in

bi-directional mode

ISE Module (optional):

Measure K⁺, Na⁺, Cl⁻

Throughput: Up to 225 tests per hour

Reaction System:

Reaction rotor: Rotating tray, containing 80 cuvettes

Cuvette: Optical length 5mm

Reaction volume: 150~500µl

Reaction temperature: 37°C

Temperature fluctuation: ±0.1°C

Mixing System:

Independent mixing bar

Optical System:

Light Source: Halogen-tungsten lamp

Photometer: Reversed optics, static fiber spot photometry

Wavelength: 340nm、405nm、450nm、510nm、546nm、

578nm、630nm、670nm

Absorption range: 0~4.0Abs (10mm conversion)

Resolution: 0.0001Abs

Control and Calibration:

Calibration mode: Linear (one-point, two-point and multi-point),
Logit-Log 4P, Logit-Log 5P, Spline,
Exponential, Polynomial, Parabola

Control software: Westgard multi-rule, Cumulative sum
check, Twin plot

Operation Unit:

Operation system: Windows® XP Professional/Home SP2 or above
Windows® VISTA, Windows® 7

Interface: RS-232

Working Conditions:

Power Supply: AC 200~240V, 50/60Hz, 1000VA or
AC 100~130V, 50/60Hz, 1000VA

Temperature: 15-30°C

Humidity: 35-85%

Water consumption: 3.5L/hour

Dimension: Bench top: 860mm (W) x700mm (D) x625mm (H)

Floor standing: 860mm (W) x700mm (D) x1160mm (H)

Weight: Bench top: 110 Kg

Cabinet (optional): 51 Kg



BS-200

Chemistry Analyzer

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Mindray is listed on the NYSE under the symbol "MR"

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BS-200

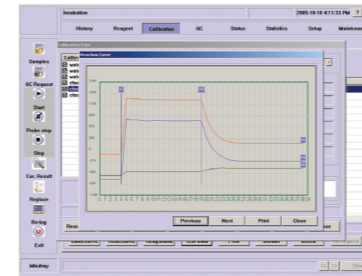
Chemistry Analyzer

- Discrete, random access, fully automated
- 200 tests per hour, up to 330 tests per hour with ISE
- Optional for ISE module and internal bar code reader
- 40 positions for samples and reagents respectively
- Automatic probe cleaning, liquid level detection, collision protection
- Reversed optic system with 8 wavelengths: 340~670nm
- Refrigerated reagent and sample compartment
- Bi-directional LIS interface



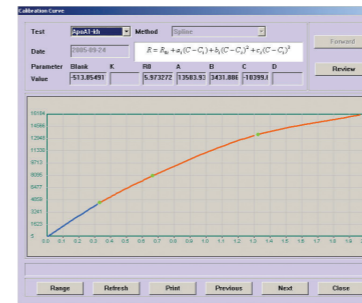
Dynamic and Real-time display of running status

- Running status of reagent tray, sample tray and reaction tray
- Real-time monitoring of reagent residual volume
- Probe depth adjusted automatically



Original reaction data record

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



Optimum calibration curve

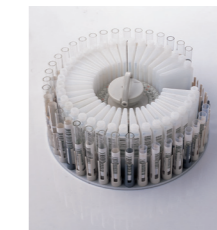
Calibration classification:

- Linear curve type: One-point linear, Two-point linear and Multi-point linear.
- Nonlinear curve type: Logistic-Log 4P, Logistic-Log 5P, Exponential 5P, Polynomial 5P and Spline.



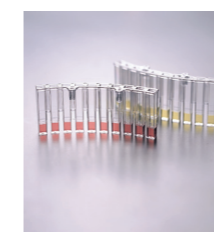
High quality ISE Module (optional)

- Measuring K+, Na+, Cl-
- Throughput: up to 225
- 6 months shelf life



Multi-functional sample/reagent tray

- Optional internal reagent/sample bar code reader
- 40 positions for samples and reagents respectively
- Primary tubes and various sample cups can be used, non-fixed positions for samples, control, calibrators and STAT
- 24 hour non-stop cooling with Peltier elements



Disposable reaction cuvettes

- Disposable cuvettes to avoid carry-over and to save operating costs
- Automatic cuvettes blank checking to assure precise results

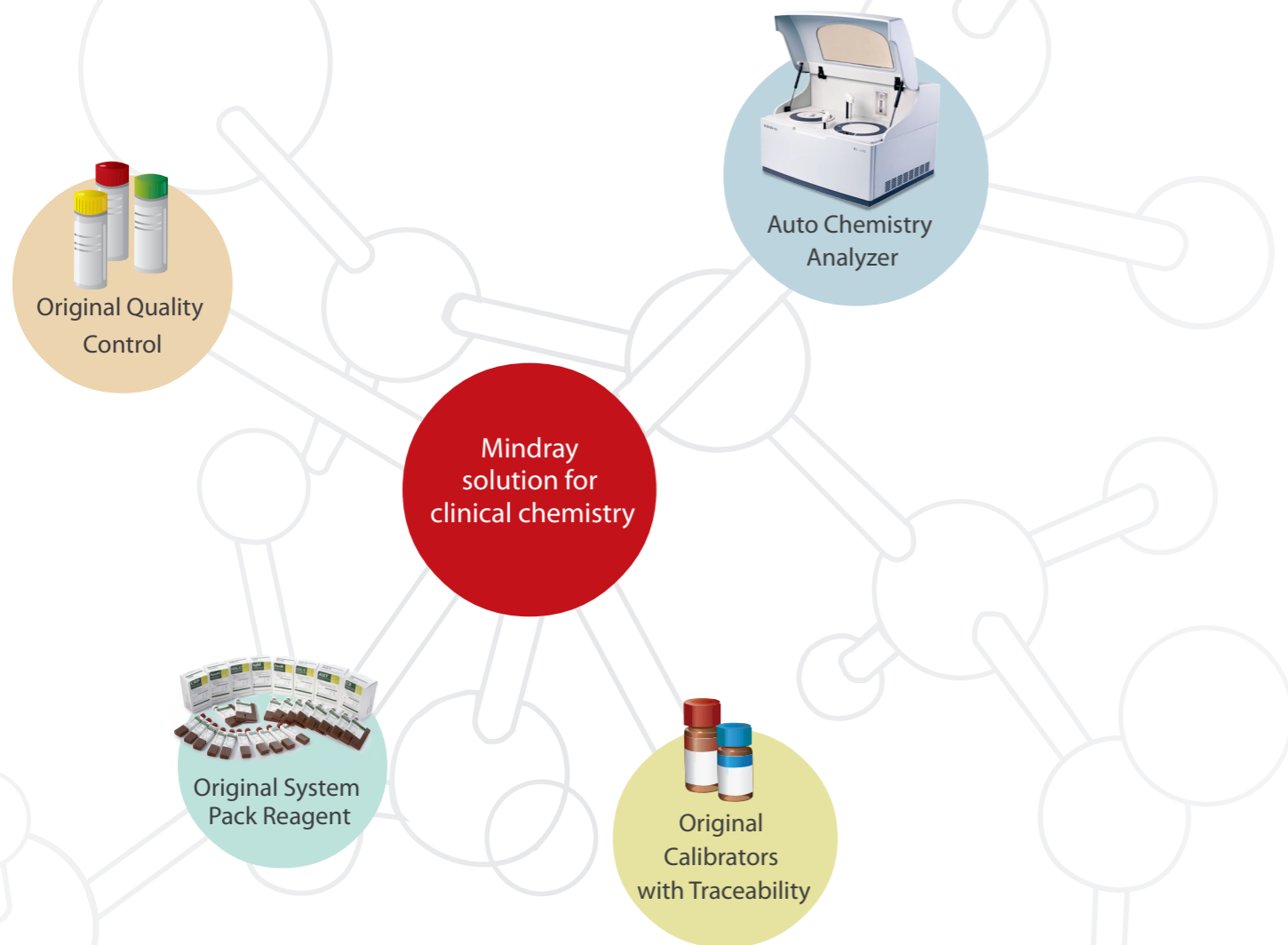


High performance mixer design

- Avoid cross contamination
- Optimal homogenization in minimum time
- Function immediately (within the same period)

Mindray solution for clinical chemistry

After more than 10 years of research and development on reagents, Mindray can now provide 48 parameters of dedicated reagents (more than 17 others are coming), covering hepatic, renal, cardiac, lipids, diabetes, pancreatitis, inorganic ions and immunoassays, etc., together with original calibrators with metrological traceability as well as controls for BS-200 chemistry analyzer.



Original Calibrators with traceability :

Reference Method (Certified by 'Joint Committee for Traceability in Laboratory Medicine' (JCTLM))

- International Federation of Clinical Chemistry and Laboratory Medicine (IFCC)
- National Institute of Standards and Technology (NIST)
- Centers for Disease Control and Prevention (CDC, USA)
- American Association for Clinical Chemistry (AACC)

Reference Material

- Institute for Reference Materials and Measurements (IRMM) standards
- National Institute of Standards and Technology (NIST) standards
- World Health Organization (WHO) standards
- Japan Committee for Clinical Laboratory (JCCLS) standards

Chemistry Reagents

Hepatic

Alanine Aminotransferase (ALT)
 Aspartate Aminotransferase (AST)
 Alkaline Phosphatase (ALP)
 γ-Glutamyl Transferase (γ-GT)
 Direct Bilirubin (D-Bil) DSA Method
 Direct Bilirubin (D-Bil) VOX Method
 Total Bilirubin (T-Bil) DSA Method
 Total Bilirubin (T-Bil) VOX Method
 Total Protein (TP)
 Albumin (ALB)
 Total Bile Acids (TBA)
 Prealbumin (PA)
 Cholinesterase (CHE)
 Adenosine deaminase (ADA) *
 α-L-fucosidase (AFU) *
 5'-nucleotidase (5'-NT) *

Renal

Urea (UREA)
 Creatinine (CREA) Modified Jaffé Method
 Creatinine (CREA) Sarcosine Oxidase Method
 Uric Acid (UA)
 Carbon dioxide (CO₂)
 Microalbumin*
 β₂-Microglobulin (β₂-MG) *
 Cystatin C (CysC) *

Cardiac

Creatine Kinase (CK)
 Creatine Kinase-MB (CK-MB)
 Lactate Dehydrogenase (LDH)
 α-Hydroxybutyrate Dehydrogenase (α-HBDH)
 Homocysteine (HCY)
 Myoglobin*

Ferrum

Iron (Fe)
 Ferritin (FER) *
 Transferrin (TRF) *
 Total iron binding capacity / unsaturated iron binding capacity (TIBC/UIBC) *

Lipids

Total Cholesterol (TC)
 Triglycerides (TG)
 HDL-Cholesterol (HDL-C)
 LDL-Cholesterol (LDL-C)
 Apolipoprotein A1 (ApoA1)
 Apolipoprotein B (ApoB)
 Lipoprotein(a) [LP(a)]

Pancreatitis

α-Amylase (α-AMY)
 Lipase (LIP)

Diabetes

Glucose (Glu) GOD-POD Method
 Glucose (Glu) HK Meth
 Hemoglobin A1c (HbA1c)
 Fructosamine (FUN)

Inorganic ions

Calcium (Ca)
 Magnesium (Mg)
 Phosphate Inorganic (P)

Rheumatism

High sensitivity C-reactive protein (hs-CRP) *
 Rheumatoid Factor (RF)
 Antibodies Against Streptolysin O (ASO)

Immune

Immunoglobulin A (IgA)
 Immunoglobulin G (IgG)
 Immunoglobulin M (IgM)
 Immunoglobulin E (IgE) *
 Complement C3 (C3)
 Complement C4 (C4)
 C-Reactive Protein (CRP)

Others

Glucose-6-phosphate dehydrogenase (G6PD) *
 D-dimer*
 Angiotensin converting enzyme (ACE) *
 Retinol binding protein (RBP) *
 D3-hydroxybutyric acid (D3-HB) *

* Coming soon