BS-480 Chemistry Analyzer
BS-480 Chemistry Analyzer

Enhanced Liquid System
- Reagent and sample aspiration with extreme accuracy and precision
- Air bubble will be eliminated prior to washing
- High pressure interior probe wash
- Carry-over <0.05%

Economy Usage
- Light-Spot Flatting Technology – an enhanced optical system facilitates lower reaction volume
- 24 hours non-stop refrigeration at 2-10°C
- Minimum sample volume: 1.5 μl
- Reagent volume: 10 ~ 350 μl

Easy to perform maintenance
- All containers & maintenance kits are located in the front of the analyzer
- Easily accessible for part replacement, routine maintenance or troubleshooting
- Step-by-step maintenance guide built in the software design

Intelligent functions and smart protection
- Support 4 reagents (R1, R2, R3 & R4)
- Vertical and horizontal collision protection
- Automatic System Recovery upon collision
- Liquid level detection, clot detection

Robust hardware
**Advanced software**

**User-friendly Interface**
- Uniform platform of BS-2000 series, BS-800 series, BS-480 and future instrument
- Real-time status monitoring between analytical unit and carousels
- Bi-directional LIS interface transmission

**Real-time QC Status Monitoring**
- Westgard Rules and Two-Control Evaluation
- Levy-Jennings chart and Twin-Plot chart
- Real-time alarm when QC result(s) is out of range
- Auto QC setup capability

**Traceable Test Results**
- Reagent, calibrator and control data can be recalled from archive history
- User-friendly, intuitive software design, easy to recall from historical results

**Reflex Function**
- Pre-defined reflexive assays will be performed automatically when preset criteria is met
- Each assay may involve multiple reflexive criteria
- Each criteria may initiate up to a maximum of 20 relevant assays

**Test Summary**
- Test summary report calibration, QC, sample, validation test and rerun tests can be generated
- Facilitate computation of total test costs
- Error Log Export function - facilitate error report to engineers
- Results Archive can be transferred to engineers for evaluation
Accurate, Reliable Results

To ensure accuracy, reliability and correlation of diagnostic data, Mindray utilizes the International Standard in result reporting. To assure ease of report retrieving, Mindray establishes the Mindray Clinical Chemistry Measurement System for result traceability.

Standard reference system

- Adopt JCTLM reference system
- IFCC primary method for enzyme, ID/MS method for substrate
- NIST, IRMM reference materials

JCTLM, Joint Committee On Traceability In Laboratory Medicine
NIST, National Institute of Standards and Technology, USA
IRMM, Institute for Reference Materials and Measurements, EU
IFCC, International Federation of Clinical Chemistry and Laboratory Medicine

Complete traceability process

- Complete calibration hierarchy and traceability chain based on ISO standard (EN/ISO17511) from reference system to routine measurement system

Proficiency testing for reference measurement

- Participate RELA (External quality control for reference laboratory) to verify the accuracy of the value assignment procedure.

Traceability chain of Mindray measurement system (Glu)

<table>
<thead>
<tr>
<th>Traceability</th>
<th>Material</th>
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<td>Implementation</td>
<td></td>
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</table>

SI unit, mmol/L

Reference material SRM 917C
Mindray Master Calibrator
Mindray Product Calibrator
Routine Sample

Result

Mindray
International standardization certification

- International Standardization certificates of Cholesterol and HbA1c from CRMLN and NGSP.

More information refers to website (http://www.cdc.gov).

CRMLN (Cholesterol Reference Method of Laboratory Network)
NGSP (National glycosylated hemoglobin standardization program)

Matched calibrators and controls

- Dedicated calibrators with traceability and specific target value
- Convenient design of multi items of calibrators and controls combined into one vial
- Long shelf life of lyophilized powder

Dedicated, high-quality reagents

- Diagnostic function test panels
  Test panels such as: Hepatic panel, renal panel, pancreatic panel, lipid panel, cardiac panel, diabetic panel, rheumatic factor panel

- Reliable analysis performance
  EP series standard (CLSI)-evaluate and optimize reagent system for reliable performance in precision, linearity, stability, specificity and anti-interference capability

- ISO standard manufacturing
  Mindray follows straightly the ISO certified manufacturing process to ensure every lot of reagent in production is of supreme quality
# Reagent Menu

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<th>Substrates</th>
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<td>Alanine Aminotransferase (ALT)</td>
<td>Total Cholesterol (TC)</td>
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<tr>
<td>Aspartate Aminotransferase (AST)</td>
<td>Triglycerides (TG)</td>
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<tr>
<td>Alkaline Phosphatase (ALP)</td>
<td>HDL-Cholesterol (HDL-C)</td>
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<td>γ-Glutamyl Transferase (γ-GT)</td>
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<tr>
<td>α-Amylase (α-AMY)</td>
<td>Apolipoprotein A1 (ApoA1)</td>
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<td>Lactate Dehydrogenase (LDH)</td>
<td>Apolipoprotein B (ApoB)</td>
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<tr>
<td>Lipase (LIP)</td>
<td>Direct Bilirubin (D-Bil) DSA</td>
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<tr>
<td>Cholinesterase (CHE)</td>
<td>Direct Bilirubin (D-Bil) VOX</td>
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<tr>
<td>Adenosine deaminase (ADA)</td>
<td>Total Bilirubin (T-Bil) DSA</td>
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<tr>
<td>α-L-fucosidase (AFU)</td>
<td>Total Bilirubin (T-Bil) VOX</td>
</tr>
<tr>
<td>5’-nucleotidase (5’-NT)</td>
<td>Total Protein (TP)</td>
</tr>
<tr>
<td>Creatine Kinase (CK)</td>
<td>Albumin (ALB)</td>
</tr>
<tr>
<td>Creatine Kinase-MB (CK-MB)</td>
<td>Total Bile Acids (TBA)</td>
</tr>
<tr>
<td>α-Hydroxybutyrate Dehydrogenase (α-HBDH)</td>
<td>Glucose (Glu) GOD-POD</td>
</tr>
<tr>
<td>Glucose-6-phosphate dehydrogenase (G6PD)</td>
<td>Glucose (Glu) HK</td>
</tr>
<tr>
<td>Angiotensin converting enzyme (ACE)</td>
<td>Urea (UREA)</td>
</tr>
<tr>
<td>D3-hydroxybutyric acid (D3-HB)</td>
<td>Creatinine (CREA) Modified Jaffé</td>
</tr>
</tbody>
</table>

**Specific Proteins**

- Immunoglobulin A (IgA)
- Immunoglobulin G (IgG)
- Immunoglobulin M (IgM)
- Immunoglobulin E (IgE) *
- Complement C3 (C3)
- Complement C4 (C4)
- C-Reactive Protein (CRP)
- Lipoportein(a) (LP(a))
- Prealbumin (PA)
- High sensitivity C-reactive protein (hs-CRP)
- Rheumatoid Factor (RF)
- Antibodies Against Streptolysin O (ASO)
- Homocysteine (HCY)
- Ferritin (FER)
- Transferrin (TRF)
- Total iron binding capacity /
unsaturated iron Binding capacity (TIBC/UIBC)
- Myoglobin *
- D-dimer *
- Retinol binding protein (RBP) *

**Inorganic ions**

- Calcium (Ca)
- Magnesium (Mg)
- Phosphate Inorganic (P)
- Iron (Fe)

**Electrolytes/ISE**

- Chloride(Cl)
- Potassium(K)
- Sodium(Na)

* Coming soon
Mindray can now provide 60 parameters of dedicated reagents (more than 8 others are coming), covering hepatic, renal, cardiac, lipids, diabetes, pancreatitis, inorganic ions and immunalassays, etc., together with original calibrators with metrological traceability as well as controls for BS-480 chemistry analyzer.
BS-480 Chemistry Analyzer

Technical Specifications

System function
- Fully automated, discrete, random access, STAT, urine and homogeneous immunoassays; STAT sample priority
- Throughput: 400 photometric tests/hour, up to 240 tests/hour for 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

Sample Handling
- Sample tray: 90 positions for primary or secondary tubes and sample cups
- Sample volume: 1.5~45 µl, step by 0.1µl
- Sample probe: Liquid level detection, clot detection and collision protection
- Probe cleaning: Interior and exterior automatic probe washing
- Dilution vessel: Cuvette

Internal bar code reader (optional)
- Sample/Reagent barcode reading – applicable to various bar code systems including Codabar, ITF (Interleaved Two of Five), code128, code39, UPC/EAN, Code93; Bi-directional LIS Interface transmission

ISE Module (optional)
- Optional selection of K⁺, Na⁺, Cl⁻
- Throughput: Up to 240 tests per hour

Reagent Handling
- Reagent tray: 80 positions in refrigerated compartment (2~10°C)
- Reagent volume: 10~350µl
- Reagent probe: Liquid level detection, collision protection and inventory check
- Probe cleaning: Interior and exterior automatic probe washing

Reaction System
- Reaction rotor: Rotating tray, 90 cuvettes with automatic washing
- Cuvette: Optical length 5mm
- Reaction volume: 120~360µl
- Operating temperature: 37°C
- Temperature fluctuation: ±0.1°C
- Mixing system: 2 independent mixers

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: 0~3.3Abs (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 rules: Westgard multi-rule, Levy-Jennings, Cumulative sum check, twin plot

Operation Unit
- Operation system: Window XP Professional or Windows 7 Professional (32bit)
- Interface: RS-232, Network Port, USB/ parallel port

Working Conditions
- Power Supply: 200~240V, 50/60Hz, 1500VA
- Temperature: 15~30°C
- Humidity: 35~85%
- Water consumption: ≤20L/hour, De-ionized water
- Dimension: 1180mm x 710mm x 1150mm (W x D x H)
- Weight: 300 Kg