

# BS-380

## Chemistry Analyzer

### Technical Specifications

#### System Function:

Fully automated, Discrete, Random access for routine, STAT, Urine and homogeneous immuno assays;

STAT sample priority

Throughput: 300 tests / hour, up to 450 tests / hour with ISE

#### Measuring principles:

Absorbance photometry, Turbidimetry

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

Single / Dual reagent chemistries,

monochromatic / bichromatic

Linear / non-linear calibration

Programming: User defined profiles and calculation

#### Sample Handling:

Sample tray: 75 positions for primary or secondary tubes and sample cups

Sample volume: 2~45µl, step by 0.1µl

Sample probe: Liquid level detection, vertical and horizontal collision protection, Clot detection function

Probe cleaning: Interior and exterior automatic washing  
Carry-over < 0.1%

#### Automatic sample dilution:

Pre-dilution and post-dilution ratio up to 1:150

Dilution vessel: Cuvette

#### Internal Bar Code Reader (optional):

Used for sample and reagent programming; applicable to various bar code systems including Codabar, ITF, Code128, Code 39, UPC / EAN, Code 93. Bi-directional LIS interface

#### ISE Module (optional):

Direct ISE method K<sup>+</sup>, Na<sup>+</sup>, Cl<sup>-</sup>

Throughput: Up to 225 tests per hour

#### Reagent Handling:

Reagent tray: 60 positions in refrigerated compartment (2~8°C)

Reagent volume: R1: 150~350µl, step by 1µl;

R2: 20~200µl, step by 1µl;

Reagent probe: Liquid level detection, vertical and horizontal collision protection

Probe cleaning: Interior and exterior automatic washing  
Carry-over < 0.1%

#### Reaction System:

Reaction rotor: Rotating tray, 72 cuvettes with automatic washing

Cuvette: Optical length of 5mm

Reaction volume: 150~360µl

Operating temperature: 37°C by direct solid heating/dry bath

Temperature fluctuation: ±0.1°C

Mixing system: Integrated mixers system

#### 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

Resolution: 0.001Abs

#### Control and Calibration:

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

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

#### Operation Unit:

Operation system: Windows® 7, Windows® 8 and Windows® 10

Data storage: Unlimited, dependent on PC hard drive

Interface: RS-232

#### Working Conditions:

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

Temperature: 15~30°C

Humidity: 35~85%

Water consumption: 10L/hour

Dimension: 990mm x 693mm x 1135mm (WxDxH)

Weight: 200 Kg



## BS-380 Chemistry Analyzer

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P/N: ENG-BS380-21285x8-20170809

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# BS-380

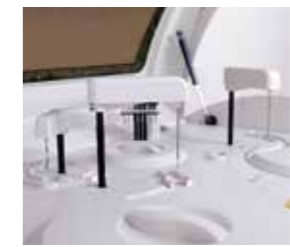
## Chemistry Analyzer

- Discrete, random access, fully automated
- Constant 300 tests per hour, up to 450 tests per hour with ISE
- Onboard capacity of 75 sample positions, up to 58 chemistries plus 3 ions
- Refrigerated reagent compartment
- Automatic probe cleaning, liquid level detection, vertical and horizontal collision protection
- 8-step auto washing system
- 12 wavelengths: 340~800nm
- Automatic dilution for abnormal sample
- Internal bar code reader (optional)
- Bi-directional LIS interface



### Multi-functional sample tray

- 75 sample positions
- Can be programmed into 5 virtual sample disks
- Primary tubes and various sample cups can be used
- Automatic dilution of high concentration sample
- Pre-dilution for samples
- Internal sample bar code reader (optional)



### Multi-functional sampling probes

- Interior and exterior probe washing
- Liquid level detection
- Collision protection
- Inventory monitoring
- Probe depth adjusted automatically
- Clot detection function



### Reaction tray

- Test sequence optimization
- 150  $\mu$ L minimum total reaction volume
- Contains 72 reaction cuvettes
- Maintenance-free direct solid heating system



### Washing station

- High-tech washing station to ensure accurate results and valid diagnostics
- Concentrated detergents to reduce carry-over
- 8-step auto washing station



### High performance mixer design

- Integrated mixers system
- Optimized homogenization
- High precision mixer station to ensure excellent reaction conditions
- Standardized mixing procedures
- Separate mixer for individual reaction steps



### Refrigerated reagent tray

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

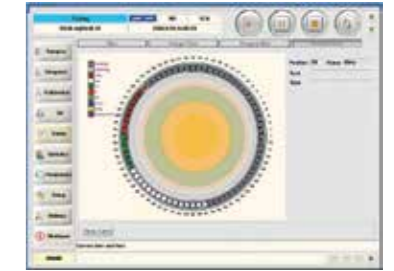
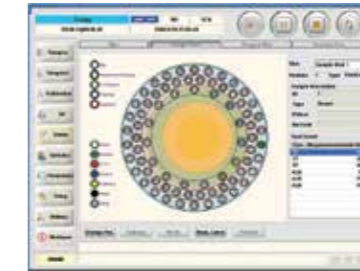
# BS-380

## Chemistry Analyzer



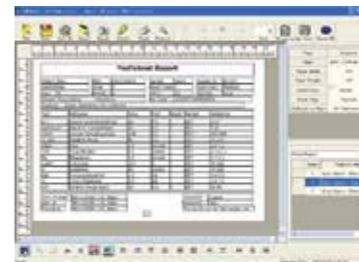
### Dynamic and real-time display of running status

- Running status of reagent tray, sample tray and reaction tray
- Real-time monitoring of reagent residual volume
- Real-time diagnosis of system working status



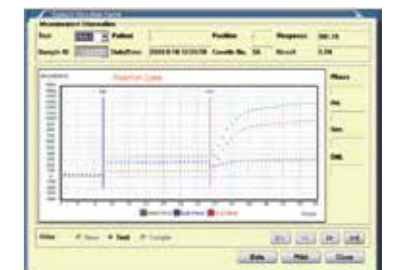
### Flexible and convenient software function

- Template Modifying Software  
Flexible to define various report templates for laboratory, and easy to import new template from Mindray or other users.
- Monitoring of various Samples  
It is method to perform continuous glucose monitoring in subjects with impaired glucose tolerance or other multiple samples monitoring.
- Fast Emergency Detection  
One-key STAT function makes it easy to perform an emergency test for operator.



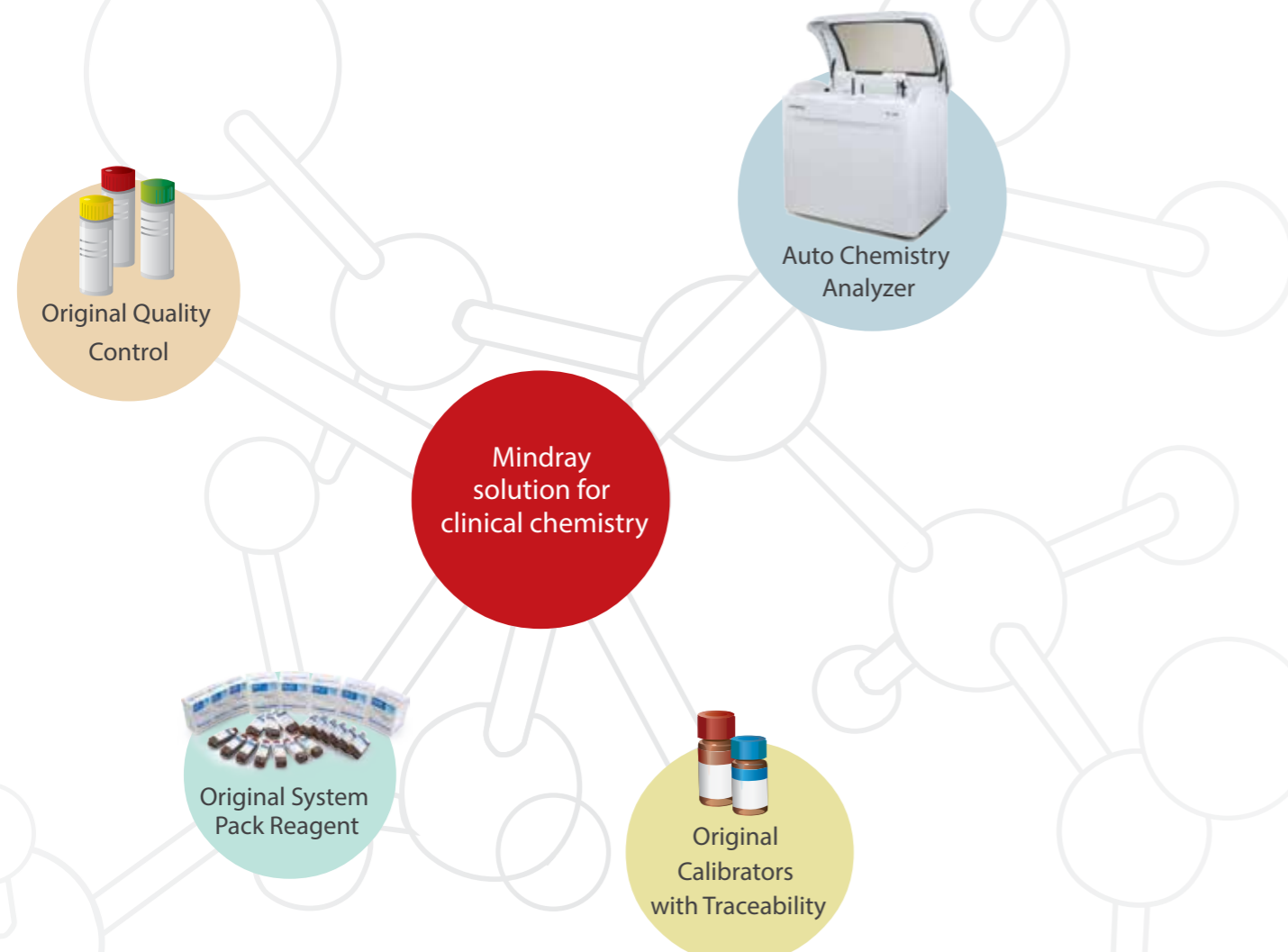
### Original reaction data record

- Real-time monitoring of reactions
- Simultaneously display reaction curves under primary and secondary wavelengths
- Detailed profile of alert messages



## 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-380 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 (CO<sub>2</sub>)  
 Microalbumin\*  
 β<sub>2</sub>-Microglobulin (β<sub>2</sub>-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