

# Automatic Modular Clinical Chemistry Analyzer

## Polaris c2000



## Polaris c2000 Automatic Modular Clinical Chemistry Analyzer

KHB Polaris series are the latest product of KHB. As an automatic clinical chemistry immunoassay system specially designed for large and medium-sized clinical laboratories and third-party commercial laboratories, Polaris c2000 features high-speed detection, modular combination and intelligent management, providing high-quality test results and satisfying user experience.

### Mixing System

- Two groups of mixing devices each with 4 mixers
- Available for automatic frequency conversion

### Reaction System

- Dual-ring reaction tray with 432 reaction positions
- Permanent hard glass cuvette
- Electric Heating System

### Reagent System (Reagent Tray)

- Dual-reagent tray design with 216 reagent positions
- Refrigeration at 2 ~ 8°C
- Bar code scanning (optional)

### Reagent System (Reagent Probe)

- 4 reagent probes with 2 for each reagent tray
- Level sensing, volume tracking and anti-collision protection
- Automatic maintenance and cleaning

### ISE Module

- Equipped with K<sup>+</sup>, Na<sup>+</sup> and Cl<sup>-</sup> ion electrodes
- 600 tests/hour

### Washing System

- Automatic cleaning with 8 steps and independent cleaning of inner and outer rings
- Multi-stage heating of cleaning agent and deionized water

### Sample System (Track Unit)

- Loading capacity of 38\*10 samples
- Including 30 emergency sample positions, with test priorities
- Available for feedings with sample tubes of different sizes
- Available for bar code scanning

### Sample System (Sample Probe)

- Single-arm double-needle sample probe
- Liquid level sensing, volume tracking, collision protection, sample clot detection
- Automatic maintenance and cleaning

### Calibration and Quality Control Tray

- 25 refrigerated calibration/quality control/emergency positions
- Available for bar code scanning (optional)



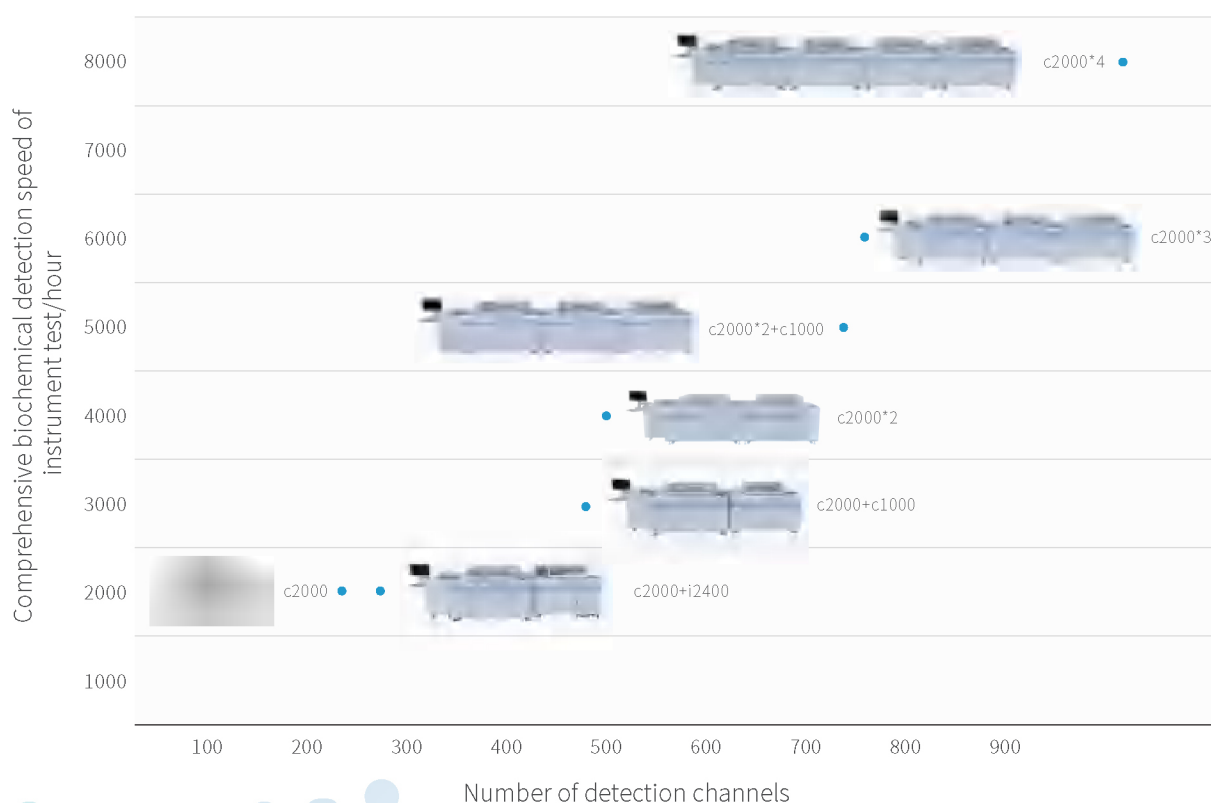
## Improve detection efficiency

### KHB Polaris Modular Combination Analysis System Customized Solution

KHB Polaris series are composed of biochemical modules including c2000 (biochemical analysis with constant speed of 2000 tests/hour) and c1000 (biochemical analysis with constant speed of 1000 tests/hour), as well as i2400 immunization-module (240 tests/hour).

#### Extensible customized solution with over 30 configurations

- 1-4 analyzer modules selectable, optional ISE (600 tests/hour)
- Interconnection with Polaris c1000 for speed expansion
- Interconnection with KHB Polaris i2400 for a biochemical immunoassay system



### Ultra-large dual-disc reagent system



- 216 reagent positions
- Dual-disc design with 108 reagent positions on each disc

### Patented[1] dual-channel batch sample input



- One-time batch sample input of 380 sample available for continuous input and bar code scanning
- Single-channel LED indicator to clarify sample operation status
- 30 tracks with independent emergency sample positions for emergency detection
- 25 refrigerated disc sample positions for accelerating emergency detection
- Compatible with the entire laboratory automation system

### Special dual-ring reaction tray design



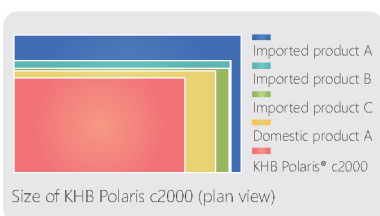
- Dual-ring reaction disc with 432 reaction positions available for high-speed operation
- Independent operation of inner and outer rings to reduce cross-contamination
- Permanent hard glass cuvette to reduce maintenance frequency

### Ultra-micro system design



- It takes 3.6s to add 2 samples to ensure constant biochemical detection speed of 2000 tests/hour
- Automatic level detection of sample probe available for volume tracking and accurate feeding
- Ultra-micro sampling technology with minimum reaction volume of 80μL

### Smaller stand-alone module

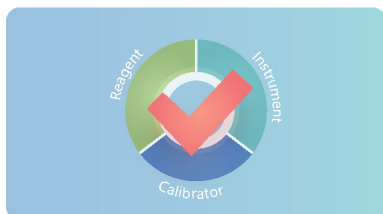


- Smaller stand-alone module size than similar mainstream products
- Compact design for better utilization rate of room space
- Integrated ISE module to lower maintenance cost



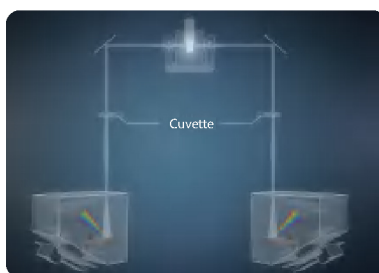
## Realize accurate detection

### Complete traceable system



- KHB reference measurement laboratory is a ISO17025/ISO15195 accredited lab
- Engagement in the value assignment of national reference materials and formulation of industrial standards
- Traceability system integrating instruments, reagents and calibrators
- Matching calibrators, some of which come with quality controls, easy-to-use

### New optical system



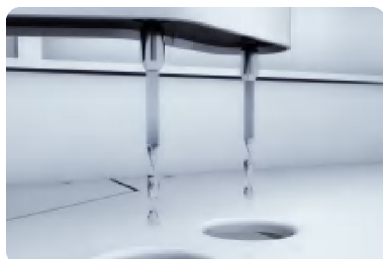
- Flat-filied concave grating with post spectro detection technology
- New generation of bi-directional light source to realize ultra-micro analysis
- Halogen lamp featuring ultra-long service life, stable signal and energy saving
- Special position design with strong anti-stray light interference
- 16 detection wavelengths to expand detection range
- Absorbance range as wide as -0.5 ~ 3.5Abs

### High quality reaction control system



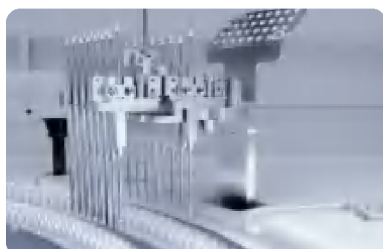
#### • Temperature control system

- Rapid and stable electric heating system, long service life, free of maintenance
- Real-time display of reaction tray temperature to ensure constant temperature 24 hours



#### • Mixing system

- Independent spiral mixing arm available for automatic frequency conversion
- Customized mixing parameter setting to realize accurate detection



#### • Washing system

- Thorough cleaning of reaction cuvette within 8 steps with warm water
- Preheating of deionized water and washing arm to reduce pollutant
- Independent control of cleaning water preheating for sample probe and washing arm

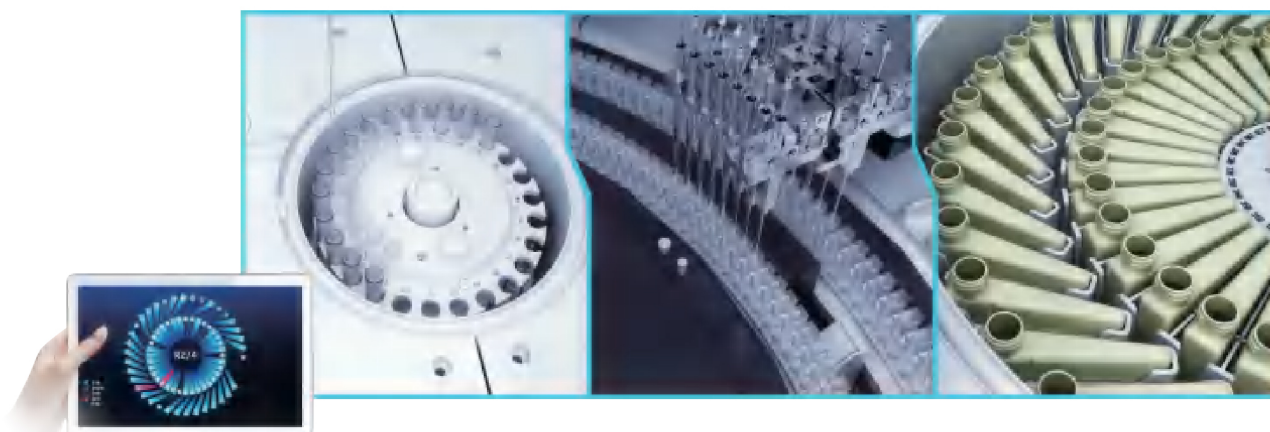
## Support intelligent laboratory

### Remote automatic quality control\* and maintenance

- Special calibration and quality control tray refrigerated at 2 ~ 8°C 24 hours
- Available for remote quality control, providing operators with more freedom
- Automatic maintenance and cleaning during start-up and power-off, reducing manual intervention
- Available for remote wakeup, startup, shutdown, improving working efficiency

### Remote automatic reminder of reagent change

- Automatic detection of remaining volume of reagent, with PAD (optional) to display such remaining quantity
- Automatic remote reminder of reagent change\*, reflecting convenient intelligent services
- On-line loading of reagents to ensure continuous analysis



### Intelligent cloud service

- Cloud upgrade: Real-time information on more optimized system and latest product
- Cloud diagnosis: Remote support and warning of failure for normal instrument operation
- Cloud quality control: Real-time analysis of room space comparison to improve quality management\*
- Big data platform to ensure accurate and reliable detection results\*



## KHB Polaris Series Clinical Chemistry Testing Items

### Diverse items menu

Over 100 kinds of clinical chemistry reagents that meet clinical requirement

### Multiple items available for attached calibrators

Traceable matching calibrators provided to ensure detection results and lower user costs



### Reagent bar code management

Bar code scanning for accurate reagent information and reliable period of validity management

### Excellent anti-interference capability

Outstanding abnormal sample detection, effectively reducing retest and avoiding delayed reports

## Clinical Chemistry Reagents Test Menu



### Liver Function

- ALT
- AST
- ALP
- TP
- ALB
- PA
- TBA
- γ-GT
- TB
- DB
- CHE
- AFU
- GPDA
- ADA
- 5'-NT
- CG
- m-AST
- CIV\*
- LAP\*
- MAO\*
- AMM\*
- GR\*



### Renal Function

- CRE
- UREA
- UA
- UMA
- Cys-C
- RBP
- NAG
- NGAL
- β2-MG
- α1-MG
- CSF\*
- LCλ\*
- LCK\*



### Blood Lipid

- TC
- TG
- HDL-C
- LDL-C
- ApoA1
- ApoB
- Lp (a)
- ApoE
- sd-LDL-C
- Lp-PLA<sub>2</sub>
- MPO\*
- PLIP\*



### Specific Protein

- IgA
- IgM
- IgG
- C3
- C4
- CRP
- hs-CRP
- WCRP
- RF
- ASO
- anti-CCP
- SAA
- PCT\*
- MMP-3\*
- Clq\*
- SOD\*



### Myocardium

- LDH
- CK
- CK-MB
- α-HBDH
- HCY
- IMA
- ACE
- MYO
- H-FABP
- CTnl\*
- LDH1\*



### Pancreas

- α-AMY
- LPS
- PAMY



### Electrolyte

- Ca
- Mg
- IP
- CO<sub>2</sub>
- K
- Na
- Cl
- Fe\*
- Zn\*



### Glycometabolism

- GLU
- HbA1c
- D3H
- NEFA
- GA
- INS\*
- GSP\*
- LAC\*



### Tumor Marker

- SA
- PGI
- PGII
- Fer\*
- SGF\*



### Others

- D-Dimer
- TRF
- FDP\*
- Fbg\*

\*Coming soon

## Polaris c2000 Automatic Modular Clinical Chemistry Analyzer Parameter Specification

### Performance

Throughput	Photometric test: 2000 tests/hour; ISE: 600 tests/hour (optional)
System functions	Continuous standby for 7*24 hours, emergency test, automatic dilution, automatic retest, automatic sleep and wakeup 1 ~ 4 reagents, dual-wavelength test, customized reaction time setting (1-60 minutes)
Scope of test	Clinical Chemistry and electrolytes (optional)
Type of sample	Serum, plasma, urine, whole blood, cerebrospinal fluid
Analytical method	One-point endpoint method, two-point endpoint method, kinetic method (reaction speed method), fixed time method (two-point speed method) and ISE indirect measurement method
Calibration method	Linear calibration: K factor method and linear method (including dual-point linear method and multi-point linear method) Non-linear calibration: transect method, broken line method, exponential method, logarithmic method, 3P parameter method, 4 P parameter method and 5P parameter method
Maximum number of items for analysis simultaneously	104 dual-reagent biochemistry items + 3 electrolyte items

### Sample System

Sample position	405 sample positions: including 380 track sample positions (including 30 emergency positions), available for bar code scanning; 25 disc emergency positions, available for bar code scanning (optional), 2 ~ 8°C refrigeration function
Sample volume	1.0 ~ 25.0μL, progressively increased by 0.1μL
Sample probe	Level sensing, volume tracking, anti-collision protection, sample clot detection, automatic maintenance and cleaning, with a cross-contamination rate of lower than 0.08%
Sample tube	Available for mixed placement of centrifugal cup, micro sample cup, glass blood sampling test tube, plastic blood sampling test tube and other types of samples

### Reagent System

Reagent tray	216 reagent positions, available for bar code scanning (optional) and reagent bottles with volumes of 75ml, 45ml and 25ml
Reagent volume	R1: 80 ~ 300μL; R2: 10 ~ 300μL; progressively increased by 0.5μL
Reagent probe	Level sensing, volume tracking, anti-collision protection and automatic maintenance and cleaning
Temperature for refrigeration of reagent	2 ~ 8°C

### Reaction System

Reaction tray	Disc type, with 432 reaction positions
Cuvette	Permanent hard glass cuvette (glass), with optical path of 5mm
Reaction solution volume	80 ~ 450μL
Constant temperature system	Maintenance-free electric heating system
Temperature of reaction tray	37°C, real-time display of temperature
Temperature fluctuation of reaction tray	±0.1°C

### Optical System

Light source	Halogen lamp
Spectral method	Flat-filied concave grating and diode array, with post spectro detection technology
Wavelength	16 wavelengths: 340nm, 380nm, 410nm, 450nm, 478nm, 505nm, 546nm, 578nm, 600nm, 630nm, 660nm, 700nm, 750nm, 780nm, 800nm, 850nm
Measurement range of absorbance	-0.5 ~ 3.5Abs

### Mixing System

Mixing arm	Independent mixing arm
Mixing technology	Available for automatic frequency conversion

### Washing System

Washing steps	Automatic cleaning within 8 steps
Washing solution	Acid and alkaline washing solution

### Working Conditions

Weight	642Kg
Size	1960mm (length) ×1090mm (width) ×1238mm (height)
Power supply	~ 230 V ±10%, 50 Hz/60 Hz ± 1 Hz
Power	4000VA
Water consumption	Less than 85 liter/hour



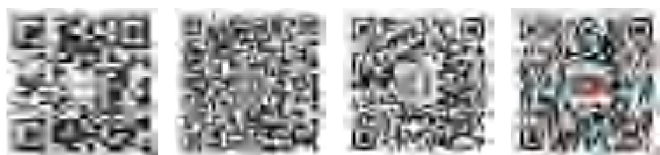
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