



Wondfo

BGA-102 Introduction

International Market Dept.

07-07

- Blood gas analysis is a key component of emergency diagnostic procedures.
- It allows physicians to quickly assess the patient's oxygen status and acid-base metabolism.





1. BGA-102



2. Reagent Pack



3. Test Card



4. QC Solution



5. Electronic QC Card



Instrument	Specification
Model	Blood Gas Analyzer (BGA-102)
Dimension & Weight	302*226*180mm(L*W*H), <6.5 kg (including battery)
Display	8 inches, resistive touchscreen
Power Supply	220V, 1.2~0.5A, 50Hz
Battery (Lithium)	14.8V/5000mAh, 8 hours stand by / 50 times testing
Storage	50,000 test results, 1 Gigabyte
Barcode scanner	Built-in barcode scanner
Results output	Built-in thermal printer (58*30mm), Wired connection, WIFI, LIS and Data management system
Temperature control	37°C±0.2°C
Working environment	Temperature: 10°C~30°C Humidity: 25%~80% Atmospheric Pressure: 70-106.6kPa Altitude: 500~3000m

Shelf-life

Unopen: 12 Months (2-8°C)
Once Open: 45 Days

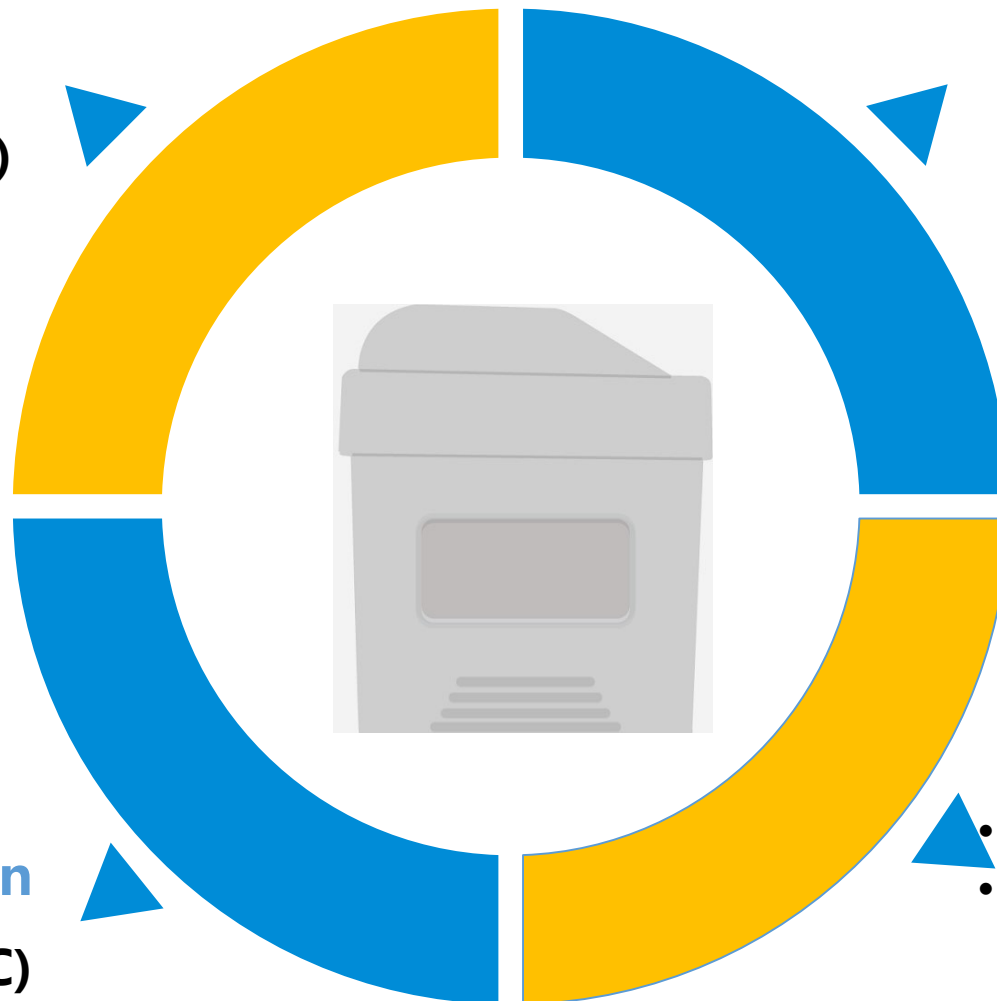
Test Capacity

50 Tests
100 Tests

Transportation
Cold chain (2-8 °C)

Notice

- The QR code is for single use
- Prior to installation, please put the reagent pack in room temperature for at least 8 hours



Specifications

Model

Test parameters

W459	PH/PCO ₂ /PO ₂
W460	K ⁺ /NA ⁺ /Cl ⁻
W461	K ⁺ /NA ⁺ / Cl ⁻ /CA ⁺⁺
W462	PH/PCO ₂ /PO ₂ /K ⁺ /NA ⁺ /Cl ⁻
W463	PH/PCO ₂ /PO ₂ /K ⁺ /NA ⁺ /Cl ⁻ /HCT
W464	PH/PCO ₂ /PO ₂ /K ⁺ /NA ⁺ /CA ⁺⁺ /HCT
W465	PH/PCO ₂ /PO ₂ /K ⁺ /NA ⁺ /Cl ⁻ /CA ⁺⁺ /HCT
W466	PH/PCO ₂ /PO ₂ /K ⁺ /NA ⁺ /Cl ⁻ /CA ⁺⁺ /HCT/ Glu/Lac

Shelf-life

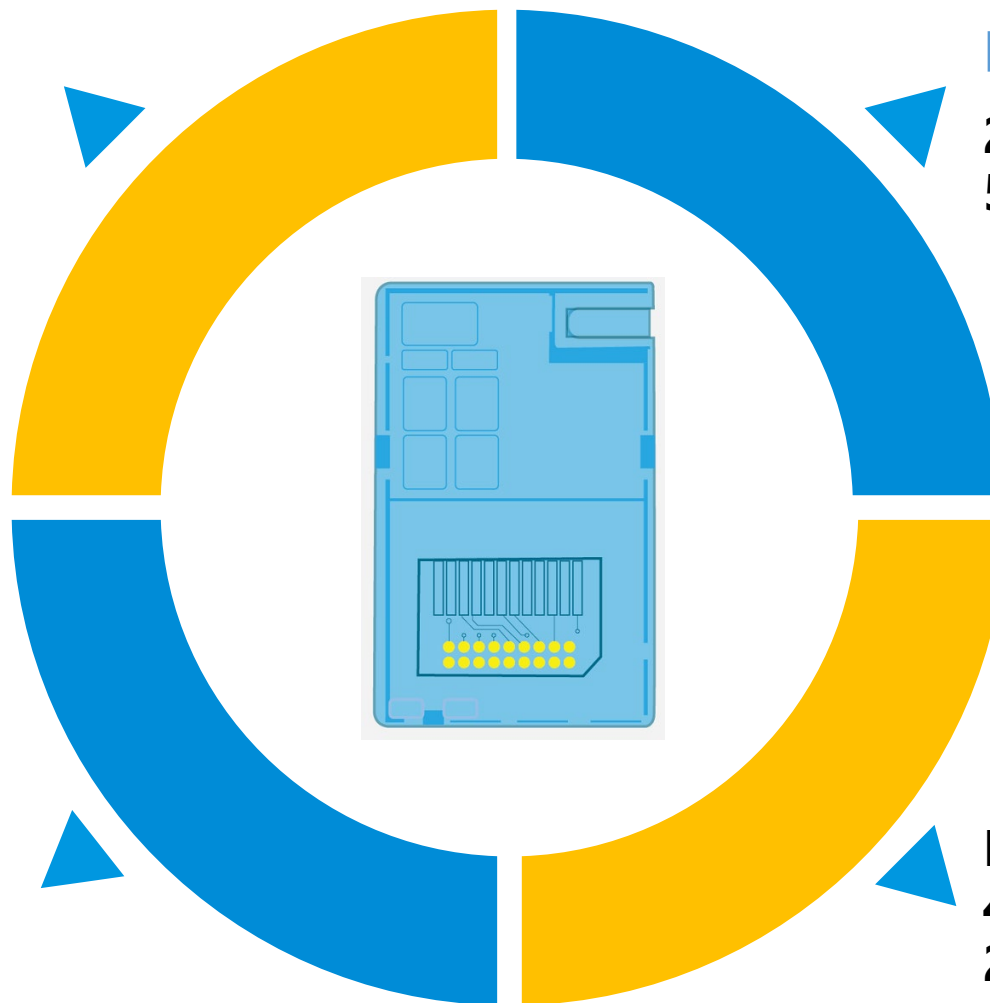
Catalog No.	Stored at 4~30°C	Refrigerated at 2~8°C	Number of Testing Parameters
W466-C7P4-M W466-C7P4-E	Valid for 9 months	Valid for 12 months	For testing 10 parameters including Glu/Lac
All others except for above two	Valid for 12 months	Valid for 15 months	For testing 3~8 parameters excluding Glu/Lac

Package

25 Tests/Box
50 Tests/Box

Transportation

Room temperature
4-30 °C or
2-8 °C (non-freezing)



Test Item	Measuring Range	Reference Range
pH	6.500-8.000	7.35-7.45
pCO2	10-150mmHg	35.0-45.0mmHg 4.67-6.00kPa
pO2	10-700mmHg	83-108 mmHg 11.039-14.364kPa
Na+	90-180mmol/L	136-146mmol/L
K+	1.6-11.5mmol/L	3.4-4.5 mmol/L
Ca++	0.25-3.00mmol/L	1.15-1.29mmol/L
Cl-	65-140mmol/L	98-106 mmol/L
Hct	10-75%PCV	Male 42-49%pcv Female 37-43%pcv
Glu	1.1-38.9mmol/L	3.9-5.8 mmol/L
Lac	0.30-20.00mmol/L	0.5-1.6 mmol/L

10 in 1

Sample type/volume: Arterial blood, 1mL syringe 400μL / 2mL syringe 800μL

Calculation parameter	Description	Calculation parameter	Description
cH⁺	Concentration of hydrogen ion	AnGap	Interval of anion
cH⁺(T)	Concentration of hydrogen ion after temperature revision	tHb(est)	Total hemoglobin (estimated value)
pH(T)	PH value after temperature revision	SO2(est)	Oxyhemoglobin saturation (estimated value)
pCO2(T)	Partial pressure of carbon dioxide after temperature revision	pO2(A-a)	Partial oxygen pressure difference between pulmonary alveoli and artery
pO2(T)	Partial pressure of oxygen after temperature revision	pO2(A-a)(T)	Partial oxygen pressure difference between pulmonary alveoli and artery after temperature revision
HCO₃⁻ act	Actual concentration of bicarbonate radical	pO2(a/A)	Oxygen tension ration between pulmonary alveoli and artery
HCO₃⁻ std	Standard concentration of bicarbonate radical	pO2(a/A) (T)	Oxygen tension ration between pulmonary alveoli and artery after temperature revision
BB(B)	Buffer base in blood	RI	Respiratory index
BE(B)	Residue base in blood	RI(T)	Respiratory index after temperature revision
BE(ecf)	Residue base in extracellular fluid	PO2/FIO2	The ratio between oxygen partial pressure and the part of inhaled oxygen
ctCO2	Total concentration of carbon dioxide	PO2(T)/FIO2	The ratio between oxygen partial pressure and the part of inhaled oxygen after temperature revision
Ca⁺⁺(7.4)	The concentration of calcium ion when the PH value is 7.4		

23 parameters



Training

Intuitive operation animation,
needs no extra training



Patient Info.

Support to input patient' s
information by manual or
barcode scanning.



SOP

Easy and standard operation,
ensure accurate test result

AARC Clinical Practice Guideline: Blood Gas Analysis and Hemoximetry: 2013

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Steve E Sittig RRT-NPS FAARC, and Ruben D Restrepo MD RRT FAARC

BGA 2.0 SETTING

Blood gas analysis should be performed by trained individuals,^{16,17} in a variety of settings, including, but not limited to:

- 2.1 hospital laboratory
- 2.2 hospital emergency department
- 2.3 patient-care area
- 2.4 clinic laboratory
- 2.5 laboratory in physician's office¹⁶
- 2.6 inter-facility critical care transport^{18,19}
- 2.7 pulmonary diagnostic laboratory
- 2.8 operating room suite
- 2.9 cardiac catheterization laboratory²⁰
- 2.10 postmortem examination²¹

Indications

- Indications for BGA and hemoximetry include:
 - The need to further evaluate the adequacy of a patient's ventilatory (P_{aCO_2}), acid-base (pH), and oxygenation (P_{aO_2} and oxyhemoglobin saturation) status, the oxygen-carrying capacity (P_{aO_2} , oxyhemoglobin saturation, total hemoglobin, and dyshemoglobin saturations) and intrapulmonary shunt
 - The need to quantify the response to therapeutic intervention (e.g., supplemental oxygen administration, mechanical ventilation) or diagnostic evaluations (e.g., exercise desaturation)
 - The need to assess early goal-directed therapy measuring central venous oxygen saturation in patients with sepsis, septic shock and after major surgery
 - The need to monitor severity and progression of documented disease processes
 - The need to assess inadequacy of circulatory response
 - A high central venous/arterial P_{CO_2} difference can indicate inadequate perfusion, as observed in severe hemorrhagic shock, poor cardiac output, during cardiopulmonary resuscitation, and after cardiopulmonary bypass.
 - The need to assess acid-base status when an arterial blood gas cannot be obtained. A central venous sample or capillary sample is preferable to a peripheral venous sample. A peripheral venous sample reflects only local tissue consumption versus delivery.
 - When analyzed by an accurate instrument and in very specific clinical conditions, an adjusted central VBG or CBG may show sufficient agreement with some parameters of the ABG.
 - VBG and CBG analysis has been found to reliably predict the ABG values of pH, P_{CO_2} , and HCO_3 in patients with exacerbation of chronic obstructive pulmonary disease (COPD).
 - A peripheral venous blood sample can be used to evaluate the acid-base status in patients with uremia and diabetic ketoacidosis.

Clinical management of COVID-19

Interim guidance
27 May 2020



Table 2. COVID-19 disease severity

Mild disease		Symptomatic patients (Table 1) meeting the case definition for COVID-19 without evidence of viral pneumonia or hypoxia. See the WHO website for most up-to-date case definitions (1).
Moderate disease	Pneumonia	<p>Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) but no signs of severe pneumonia, including $\text{SpO}_2 \geq 90\%$ on room air (54).</p> <p>Child with clinical signs of non-severe pneumonia (cough or difficulty breathing + fast breathing and/or chest indrawing) and no signs of severe pneumonia.</p> <p>Fast breathing (in breaths/min): < 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40 (55).</p>

Severe disease	Severe pneumonia	<p>While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.</p> <p>Adolescent or adult with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) plus one of the following: respiratory rate > 30 breaths/min; severe respiratory distress; or $\text{SpO}_2 < 90\%$ on room air (54).</p> <p>Child with clinical signs of pneumonia (cough or difficulty in breathing) + at least one of the following:</p> <ul style="list-style-type: none"> Central cyanosis or $\text{SpO}_2 < 90\%$; severe respiratory distress (e.g. fast breathing, grunting, very severe chest indrawing); general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions (55,56). Fast breathing (in breaths/min): < 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40 (55). <p>While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.</p>
Critical disease	Acute respiratory distress syndrome (ARDS) (57-59)	<p>Onset: within 1 week of a known clinical insult (i.e. pneumonia) or new or worsening respiratory symptoms.</p> <p>Chest imaging: (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by volume overload, lobar or lung collapse, or nodules.</p> <p>Origin of pulmonary infiltrates: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/oedema if no risk factor present.</p> <p>Oxygenation impairment in adults (57, 59):</p> <ul style="list-style-type: none"> Mild ARDS: $200 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2^a \leq 300 \text{ mmHg}$ (with PEEP or CPAP $\geq 5 \text{ cmH}_2\text{O}$).^b Moderate ARDS: $100 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 200 \text{ mmHg}$ (with PEEP $\geq 5 \text{ cmH}_2\text{O}$).^b Severe ARDS: $\text{PaO}_2/\text{FiO}_2 \leq 100 \text{ mmHg}$ (with PEEP $\geq 5 \text{ cmH}_2\text{O}$).^b <p>Oxygenation impairment in children: note OI and OSI.^c Use OI when available. If PaO_2 not available, wean FiO_2 to maintain $\text{SpO}_2 \geq 97\%$ to calculate OSI or $\text{SpO}_2/\text{FiO}_2$ ratio:</p> <ul style="list-style-type: none"> Bilevel (NIV or CPAP) $\geq 5 \text{ cmH}_2\text{O}$ via full face mask: $\text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}$ or $\text{SpO}_2/\text{FiO}_2 \leq 264$. Mild ARDS (invasively ventilated): $4 \leq \text{OI} < 8$ or $5 \leq \text{OSI} < 7.5$. Moderate ARDS (invasively ventilated): $8 \leq \text{OI} < 16$ or $7.5 \leq \text{OSI} < 12.3$. Severe ARDS (invasively ventilated): $\text{OI} \geq 16$ or $\text{OSI} \geq 12.3$.



THANK YOU!



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