



Republic of the Philippines
NATIONAL POLICE COMMISSION
NATIONAL HEADQUARTERS PHILIPPINE NATIONAL POLICE
OFFICE OF THE CHIEF, PNP
Camp BGen Rafael T Crame, Quezon City

MEMORANDUM CIRCULAR
NO.: 2021-026

FEB 24 2021

**PRESCRIBING THE MINIMUM TECHNICAL SPECIFICATIONS
FOR BLOOD GAS ANALYZER**

1. REFERENCES:

- a. NAPOLCOM Resolution No. 2020-0065 entitled: "Minimum Standards for Blood Gas Analyzer" dated 30 January 2020;
- b. NAPOLCOM Memorandum Circular (MC) No. 2019-002 entitled, "Defining the Duty and Authority of the NAPOLCOM to Prescribe Minimum Standards for Uniforms, Arms, and Equipment to be Procured by the PNP" dated January 29, 2019;
- c. PNP MC No. 2019-016 entitled, "Implementing Guidelines of NAPOLCOM Resolution No. 2019-002 Defining the Commission's Function to Prescribe Minimum Standards for Uniforms, Arms and Equipment for the Philippine National Police and Delineation of Authority to the Chief, Philippine National Police and to Set Technical Specifications of PNP Uniforms, Arms and Equipment" dated April 4, 2019; and
- d. PNP UESB Resolution No. 2020-003 entitled, "Proposed Minimum Technical Specifications for Blood Gas Analyzer" dated January 22, 2021.

2. RATIONALE:

This MC sets forth the minimum technical specifications for Blood Gas Analyzer that will serve as reference in the procurement of the said equipment.

3. SITUATION:

Presently, the PNP Health Service clinicians need the equipment to measure blood gas pH (a scale used to specify how acidic or basic a water-based solution is), electrolytes, and some metabolites in whole blood specimens. It also measures partial pressure of carbon dioxide and oxygen, concentrations of many ions (sodium, potassium, chloride, bicarbonate), and metabolites (calcium, magnesium, glucose, lactate).

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4. PURPOSE:

To provide and establish the minimum technical specifications for Blood Gas Analyzer that will serve as reference in the procurement of the said equipment.

5. DEFINITION OF TERMS:

For purposes of this MC, the following terms shall mean:

- a. **Analyte** – refers to any chemical species involved in the reaction of the titration eg. Sodium ions. The target analyte is the unknown analyte which you are trying to identify the concentration of.
- b. **Blood Gas Analysis** – refers to a test which measures the amount of oxygen and carbon dioxide in the blood, as well as the acidity (pH) of the blood.
- c. **Calibration** – refers to the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy. Such a standard could be another measurement device of known accuracy.
- d. **Cycle time** – refers to the time taken from the start of production of a particular unit to the completion of production. So, it is an internal metric and may not be visible to the customer. It signifies the effort spent on making the product.
- e. **Electrochemistry** – refers to the branch of physical chemistry that studies the relationship between electricity, as a measurable and quantitative phenomenon, and identifiable chemical change, with either electricity considered an outcome of a particular chemical change or vice versa.
- f. **Electrolyte** – refers to a substance that produces an electrically conducting solution when dissolved in a polar solvent, such as water. The dissolved electrolyte separates into cations and anions, which disperse uniformly through the solvent.
- g. **Health Level Seven (HL7)** – refers to a set of international standards for transfer of clinical and administrative data between software applications used by various healthcare providers. These standards focus on the application layer, which is "layer 7" in the OSI model.
- h. **Identity Services Engine (ISE)** – reduces the complexity inherent in managing and securing the evolving enterprise network.
- i. **Metabolites** – refer to the intermediate end product of metabolism. The term metabolite is usually restricted to small molecules.

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- j. **Pacao2** – refers to an arterial-blood gas test that measures the amount of arterial gases, such as oxygen and carbon dioxide.
- k. **PaO2** – refers to the partial pressure of oxygen in arterial blood. It is usually measured in millimeters of mercury (mmHg or Torr) by the test called arterial blood gas (ABG) analysis.
- l. **pH** – refers to a scale used to specify how acidic or basic a water-based solution is. Acidic solutions have a lower pH, while basic solutions have a higher pH. At room temperature, pure water is neither acidic nor basic and has a pH of seven.

6. SPECIFICATIONS:

a. Description:

Blood gas analyzer is used to measure combinations of pH, blood gas (i.e. pCO₂ and pO₂), electrolytes, and metabolites parameters from whole blood samples. They can measure pH and partial pressure of carbon dioxide and oxygen. It is also used to determine patient's acid-base balance and levels of oxygen/carbon dioxide exchange.

b. Technical Specifications:

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|--------------------------|---|---|
| 1) Quality Control | : | Automatic |
| 2) Dimensions | : | 15 x 11.5 x 15, inches (H x w x d) |
| 3) Weight | : | 18 lbs |
| 4) Interface | : | ASTM /HL7 or Ethernet |
| 5) Calibration | : | Automatic |
| 6) Maintenance | : | Free or Automatic |
| 7) Measurement Principle | : | ISE or Electrochemical |
| 8) Analyte | : | pH, Pco ₂ , Po ₂ , Na ⁺ K ⁺ , Cl, Ca, Lac |
| 9) Sample Type | : | Whole blood |
| 10) Sample Volume | : | 45 µL to 125 µL |
| 11) Cycle Time | : | 90 seconds |
| 12) Display | : | Graphical or colored screen |
| 13) Printer | : | Must be printer ready |
| 14) Test Result | : | 70 seconds |

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15) Data Storage : At least 100 MB data storage



16) Ambient Temperature : 15°C to 30°C

7. REPEALING CLAUSE:

All other technical specifications contrary to or inconsistent with the provisions of this MC are hereby rescinded, modified or amended.

8. EFFECTIVITY:

This MC shall take effect immediately after 15 days from filing a copy thereof at the UP Law Center in consonance with Section 3, Chapter 2, Book VII of Executive Order 292 otherwise known as the "Revised Administrative Code of 1987," as amended.



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