

AE-FP8201-A/B

Flame photometer

Instruction manual

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1、Field of use

- 1) Testing of Cement, Glass, Ceramics and Refractories; 2) Detection of Fertilizer and Soil;
- 3) Testing in Pharmaceutical and Beverage Industry;
- 4) Detection of Petroleum, Metallurgical, Mine and Chemical Products;
- 5) Detection of alkaline metals in hospitals, teaching and other fields.

2、Principle introduction

Flame photometer is an analytical instrument based on emission spectrum. Including: gas and flame combustion part, optical part, photoelectric converter and detection and recording part. The process is that the sample is sprayed into the flame by atomizer to excite luminescence, and the emission intensity is measured by detector after spectrophotometry, which is proportional to the content of the elements to be measured in the sample. Using the heat energy of flame to excite the atoms of an element to emit light, and using the instrument to detect the intensity of its spectral energy, and then to judge the content of an element in the substance, this kind of instrument is called flame photometer. For flame photometer, due to the limitation of flame excitation energy, it is generally only suitable for quantitative analysis of alkaline metals in a certain concentration range.

3、Technical parameter

Model		AE-FP8201-A/B
Measuring range	K	0-100ug/ml
	Na	0-100ug/ml
Detection limit	K	$\leq 0.004\text{mmol/L}$
	Na	$\leq 0.008\text{mmol/L}$
Linear error	K	$\leq 0.005\text{mmol/L}$
	Na	$\leq 0.03\text{mmol/L}$
Stability		Within 15s : $\leq 3\%$; Within 5min: $\leq 15\%$
Repeatability		$\leq 3\%$
Calibration method		Two point
Sampling rate		4-6ml/min

4、Main features of instrument

- 1) Simultaneous display of K and Na;
- 2) Easy to operate by touching keys;
- 3) Pre-selected function with flame size;
- 4) With Flameout Protection Device;
- 5) With RS232 interface, it can connect printer and PC software;
- 6) With pressure reducing valve.

5、 Normal operating conditions of instruments

- 1) The ambient temperature is + 10 ~35 C, and the relative humidity is less than 85%;
- 2) The product should be placed horizontally on a non-vibration worktable to avoid direct exposure to strong light, no strong interference of electric and magnetic fields, no strong air flow, no vibration affecting the use;
- 3) There should be no inflammable, explosive, corrosive gases and fire extinguishing equipment on site;
- 4) The power supply voltage is (220 + 22) V, the frequency is (50 + 1) Hz, and the grounding is good;
- 5) Power rating is 250W;
- 6) Use liquefied petroleum gas or propane with stable combustion without impurities.

6、 Preparations for Instrument Use

- 1) Prepare liquefied petroleum gas;
- 2) Configure the required solution. In order to overcome this difference, distilled water in the same container is expected to be used in the preparation and dilution of standard solution and sample.

7、 Operation and Use of Instruments

7.1 Boot up

The air output of air compressor and the outlet of liquefied petroleum gas tank are respectively connected to the corresponding interface of the main engine. The glass cover is placed in the combustion chamber, then the chimney cover is covered, the instrument power supply is connected, the power switch is opened, and the main engine is started. Connect the air compressor power supply, open the power switch, start the air compressor, adjust the air filter pressure reducing valve to make the pressure gauge display at 0.15MPa, insert the capillary into distilled water, remove the chimney cover should be able to see the water mist floating up, at the same time, please observe whether the waste liquid cup is discharged uniformly, if the waste liquid discharged unevenly, please Check whether there is air in the silica gel tube under the atomizer. If there is air, squeeze the silica gel tube by hand to expel the air bubbles. Open the LPG cylinder switch, after about 8 seconds, press the ignition switch, and automatically ignite. If not, turn the gas valve counterclockwise until it ignites. After several minutes of combustion, the flame size is adjusted to make the flame appear pure blue cone shape when distilled water is absorbed.

7.2 Preheat

After the instrument is ignited, because the temperature in the combustion chamber is unstable, the data will be unstable, so it needs to be preheated for 20 minutes under the condition of absorbing distilled water before the test can be carried out.

7.3 Test

Flame Photometer Host Start-up, Instrument Display Screen Display:

K	10.0	H
Na	10.0	H

Here we take KCl and NaCl as examples:

Firstly, a mixed solution of standard solution 0 and 100 ug/ml was prepared, Press the "K Range" and "Na Range" keys to select the range of solution to be tested. This machine has three gears of low-range L, medium-range M and high-range H. Here we choose high-range H. Then press the "low" key of K and the "low" key of Na respectively. The liquid crystal display is as follows:

K	000.0	H
Na	000.0	H

By pressing "▲" and "▼" of the adjustment keys of K and Na, the numerical adjustment is carried out, adjust to low value, then press the "low" key of K and the "low" key of Na again to correct the data. Then automatically enter the test interface.

K	0.0	H
Na	0.0	H

then press the "high" key of K and the "high" key of Na, The liquid crystal display is as follows:

K	088.0	H
Na	090.0	H

By pressing "▲" and "▼" of the adjustment keys of K and Na, the numerical adjustment is carried out, adjust to high value, The liquid crystal display is as follows:

K	100.0	H
Na	100.0	H

then press the "high" key of K and the "high" key of Na again to correct the data. Then

automatically enter the test interface.

K	100.0	H
Na	100.0	H

The "switch" key of K and the "switch" key of Na can turn on or off the display values of K and Na elements.

The current test values can be printed directly by pressing the "print" key on the surface.

Note: If the flame state changes after a long period of testing, resulting in a change in the value, the standard solution should be re-determined.

7.4 Shutdown

When shutting down, liquefied petroleum gas cylinders should be closed first, and the remaining petroleum gas in the pipeline will be burned out, and the flame will be extinguished accordingly. Before shutting down, please burn it in distilled water for about 5 minutes. After the flame is extinguished, the air compressor is shut down and the main engine is shut down. After shutdown, the gas valve can not be rotated. Next time it is used, it only needs to be re-ignited, and the flame state does not need to be adjusted. If the fire is not ignited, the amount of gas can be increased and adjusted after ignition.

Note:

When the flame is lit, the staff should not leave the work site. If gas leakage is found, no ignition is allowed. Close the LPG valve immediately, open the window for ventilation, and find the source of leakage.

8、 Maintenance and Maintenance of Instruments

- 1) After each test, the nebulizer is cleaned by continuous injection of distilled water for about 5 minutes.
- 2) When the instrument air compressor works, the water in the air is compressed and condensed in the filter pressure reducing valve or in the storage tank of the air compressor. Long-term accumulation of water will affect the stability of data and the normal use of the instrument.

After using for a period of time, the user should regularly discharge the accumulated water in the filter relief valve under the impetus of compressed air. At the same time, the accumulated water in the storage tank of the air compressor is discharged.

9、 Volume, Weight and Complete Set of Instruments

1) Volume:400×275×460mm

2) Weight :10.0Kg

Complete set: including main engine, air compressor, accessories and spare parts, etc.

Serial number	Name	Numbers	Remarks
1	Main machine	1	
2	An instruction manual	1	
3	Air compressor	1	
4	PU hose (air)	2.5 meters	
5	Silicone tube (spare)	0.6 meters	
6	Chimney components	1	
7	Glass tube	1	
8	Capillary	2	
9	Fuse	2	
10	Power line	1	
11	Steel wire	1	
12	Inner hexagon spanner	1	
13	Product qualification certificate	1	
14	Product warranty	1	
15	Printer	1	optional
16	PC software	1	optional

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