

**Portable X-ray Flaw Detector**

Type	Model	Output voltage (kV)	Focus size (mm)	Beam angle	Max.penetration A3 Steel	Weight of generator (kg)	Size of generator (mm)
Frequency Conversation	XXG-1605	50~160	0.8×0.8	40+5°	19	14.5	225×225×550
	XXG-2005	50~200	2.0×2.0	40+5°	30	18	285×285×615
	XXG-2505	50~250	2.0×2.0	40+5°	40	30.5	320×320×640
	XXG-3005	100~300	2.5×2.5	40+5°	50	36.5	345×345×670
	XXQ-1605	50~160	0.8×0.8	40°	19	15.2	225×225×585
	XXQ-2005	50~200	1.5×1.5	40+5°	30	23	285×285×665
	XXQ-2505	50~250	2.0×2.0	40+5°	40	35	320×320×730
	XXQ-3005	100~300	2.3×2.3	40+5°	50	45.5	345×345×830
High Frequency	EVO 160D	20~160	1.0	40×60°	30	22	φ295×640
	EVO 200D	30~200	1.0	40×60°	43	23	φ295×630
	EVO 300D	50~300	3.0	40×60°	65	29	φ295×774
Pulse	Golden150	150	3.0	40°	12	4.5	230×103×77
	Golden270	270	3.0	40°	25	5.9	360×108×189
	Golden370	370	3.0	40°	50	10.5	495×115 216

**Digital Flat Panel Detector**

Model	Detector type	Scintillating medium	Image size	Pixel pitch	Spatial resolution	X-ray working range	Working temperature
Maple 3543	A-Si	GdSO	350×430mm	139μm	3.6LP/mm	40~225kV	5~35℃
Maple 2135	A-Si	GdSO	350×210mm	139μm	3.6LP/mm	40~450kV	5~35℃
Paxscan 2530HE	A-Si	Cesium iodide	250×300mm	139μm	3.6LP/mm	20kV~16mV	-10~40℃

# Energy Dispersion X-ray Fluorescence Spectrometer

Using energy dispersive X-ray fluorescence analysis technology, AL-NP-5010A is capable of measuring various elements in the substance simultaneously. It can be configured to measure any multiple elements from Na to U according to the user's application requirements. The instrument can be widely used in the environmental protection, archaeology, building materials, RoHS directive and other industries. It is the ideal choice of quality control for the enterprise.

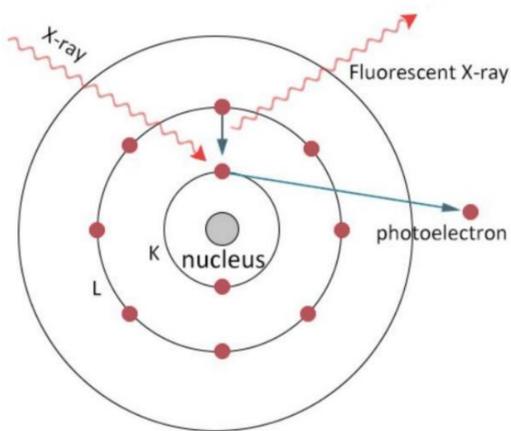
X-ray fluorescence spectrometry (XRF) is a state-of-art universal analysis method for elemental determination of various materials. Accurate qualitative, quantitative and non-standard analysis can be carried out on almost all elements in the periodic table, ranging from beryllium (Be4) to uranium (U92) whether it's the sample of block, powder or liquid. According to the different application requirements, the analysis concentration ranges from 0.1 PPM to 100%, and even the concentration of elements up to 100% can be measured directly without dilution. XRF analysis is characterized by simple sample preparation, wide range of measurement



AL-NP-5010A

XRF is widely used in the fields of environmental protection, geology, mineral, metallurgy, cement, electronics, petrochemical, polymer, food, medicine and high-tech materials. It plays an important role in product research and development, production process monitoring and quality management. See the specific applications as follows:

- Electronics, plastics, metal materials: various electronic components, hardware, plastic materials and products, circuit board etc.
- Paper and paper materials: raw materials, various paper, toner, ink, etc.
- Petroleum, coal: petroleum, lubricating oil, heavy oil, polymer, coal, coke, etc.
- Ceramics, cement: ceramics, refractory materials, rocks, glass, cement, cement raw materials and raw materials, clinker, limestone, clay, etc.
- Agriculture, food: soil, pesticide residues, fertilizer, plants, various food and so on.
- Non-ferrous metals: copper alloys, aluminum alloys, lead alloys, zinc alloys, magnesium alloys, titanium alloys, precious metals, etc.
- Iron and steel: pig iron, cast iron, stainless steel, low alloy steel, high alloy steel, special steel, ferroalloy, iron ore, slag, electroplating solution, casting sand, etc
- Chemical industry: inorganic organics and products, cosmetics, detergents, rubber, toners, catalysts, coatings, pigments, drugs, chemical fibers, etc.
- Environment: all kinds of waste, industrial waste, atmospheric dust, industrial wastewater, sea water, river water, etc. Biological science: organisms, auxiliaries, etc.



### Basic principle of XRF analysis

The electron orbital potential energy of the various elements is different from each other. Therefore, the X-ray photon energy emitted after excitation is different from each other, i.e., each element emits x-rays with the specific energy of the atom of that element, which represents the characteristics of the element and is therefore called the characteristic X-ray of the element. The characteristic X-ray of each element has its specific energy, and the X-ray detected with certain energy can determine the existence of this element in the material sample.

### Main component

- **The detection limit of harmful elements Cd, Pb, Cr, Hg and Br is restricted according to ROHS instruction**

Detection limit (Cd, Pb, Cr, Hg, Br): 2ppm

- **Multi-channel analyzer**

Number of channels: 2048 channels

- **Power controller**

System power control: +5 VDC at 250 mA (1.2 W)

Constant cooling control: 400 VDC

- **X ray tube**

The X-ray tube, specially treated with embedded lead inside is shielded in full range, leaving only the side window for the x ray outlet. The canned insulating oil is used for high voltage insulation and cooling, 0.005 inch Beryllium window, rated consumption power 50W, rated power 50kV. Designed service life >15000h.

- **Si(PIN) or SDD detector**

The resolution of detector is one of the main indexes to evaluate the performance of energy dispersive XRF spectrometer.

Resolution < 145eV (The lower the resolution, the higher the sensitivity.)

Counting rate > 1000/S

Crystal area > 15mm<sup>2</sup>

Beryllium window thickness = 0.025mm

Detector power < 1.2W

- **High voltage generator**

Input: 85 ~ 265VAC, 47 ~ 63Hz, Power factor correction.

1kV ~ 5k V comply to UL85~250VAC input standard

Current variation: 0 ~ rated power, 0.01% of output current

Ripple: Peak - peak of output voltage 0.25%

Temperature variation: voltage or current setting, 0.01%/oC

Stability: 0.05%/8h after warming-up for half an hour

Voltage variation: 0.01% of output voltage from no load to full load

- **Automatic filter conversion system**

6 filters are automatically selected and converted (filter function: The energy spectrum component of the excitation line can be improved to suppress the strong X-ray fluorescence of high content components and improve the measurement accuracy of the elements to be measured.)

- **Radiation shielded system**

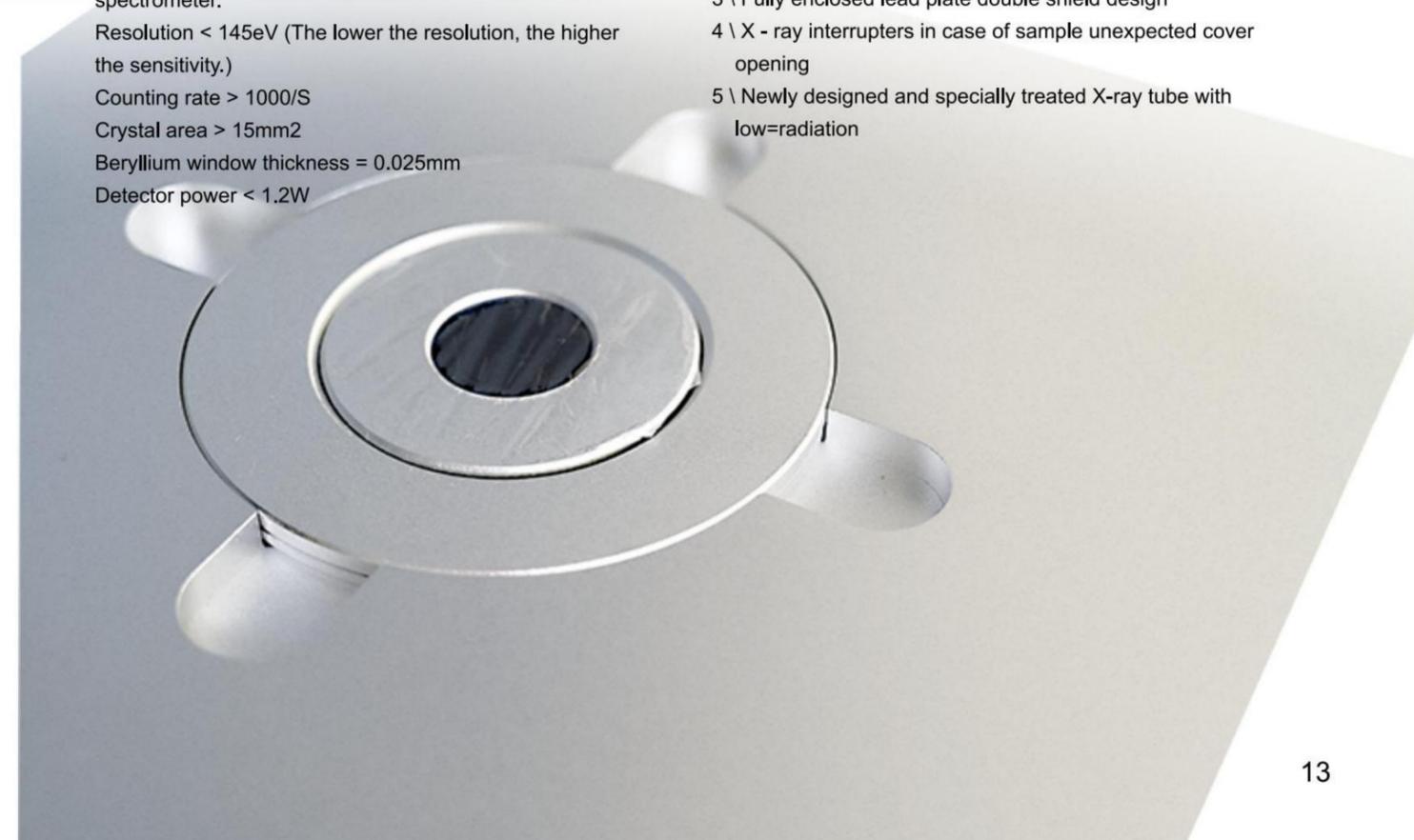
1 \ Automatic filtering device for lead plate

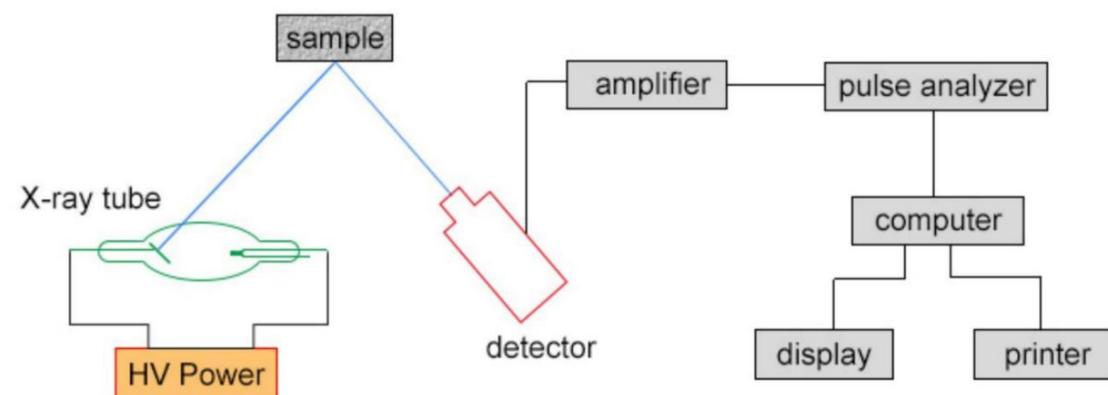
2 \ Delay testing and X-ray warning system

3 \ Fully enclosed lead plate double shield design

4 \ X - ray interrupters in case of sample unexpected cover opening

5 \ Newly designed and specially treated X-ray tube with low= radiation





XRF Spectrometer Structure Diagram

### EDXRF work principle

The original X-ray produced by X-ray tube and high voltage is irradiated on the sample after being properly filtered by the optical filter. The characteristic X-ray (called X-ray fluorescence) of the elements contained in the sample is stimulated. X-ray fluorescence spectra were obtained by using X-ray detectors with high energy resolution. Different elements formed different spectral peaks on the spectra. The strength of the spectral peak is directly proportional to the content of elements in the sample. The energy spectrum detected by the detector is analyzed by the computer. The types of elements contained

### • Powerful analysis software workstation

1. One-click operation software, simple and easy to use requiring no professional knowledge
2. Ergonomic human-machine interface
3. Operators do not need to set various test parameters, powerful customized report function
4. Test data is automatically stored with historical query function
5. The most advanced qualitative and quantitative analysis method
6. Dozens of elements can be analyzed simultaneously
7. Quick element analysis and the analysis time is adjustable from 30 seconds to 900 seconds
8. Long standby, automatically reduce tube voltage and tube flow to extend tube life
9. Temperature control of X ray tube to extend its service life
10. Monitor instrument operation status in real time and maintain it easily
11. To prevent the wrong operation of opening the cover of the sample when testing the sample, the software has warning operation prompts, and at the same time shut down the

### Technical parameters

Model	AL-NP-5010A	
Analysis principle	Energy dispersive X-ray fluorescence analysis	
Element measuring range	Any element from Na(11)-U(92)	
Min.measuring limit	Cd / Hg / Br / Cr / Pb ≤2ppm	
Sample shape	Arbitrary size,any irregular shape	
Sample type	Plastic / metal / film / powder / liquid etc	
X-ray tube	Mo	
Sample exposure diameter	5~50kV	
Detector	Target material	1~1000μA
	Tube voltage	2,5,8mm
	Tube current	Si-PIN or SDD detector,high speed pulse height analysis system
High voltage genetator	Special HV generatorfor X fluorecence	
ADC	2048 channels	
Filter	6 filters are automatically selected and converted	
Sample observation	200×color CCD camera	
Analysis software	Patented software products,free upgrade for life	
Analysis method	Thepretical α coefficient method,basic parameter method,empirical coefficient method	
Analysis time	30~900 seconds,adjustable	
Operating system software	WINDOWS XP	
Data processing system	Host	PC business model
	CPU	≥2.8G
	Memory	≥2g
	CD-ROM	8×DVD
	Hard disk	≥500G
	Display	22"or 24" LCD display
Working environment	Temperature 10~35℃ , humidity 30~70% RH	