

FULL-SPECTRUM SPARK DIRECT READING SPECTROMETER (PROFESSIONAL TYPE) CODE OES-R420

STANDARD CURVES: CARBON STEEL / LOW AND MEDIUM ALLOY STEEL (A1), PLAIN STAINLESS STEEL (A2), AL-SI-CU ALLOY (B1)

CURVES CAN BE CUSTOMIZED OR ADDED ACCORDING TO REQUIREMENTS

CURVES CAN BE CUSTOMIZED FOR SPECIAL BASE MATERIALS MG, TI, PB, SN, MN, ETC. (SAMPLES ARE NEEDED)



- Can be widely used in industries such as metallurgy, casting, machinery, steel, and non-ferrous metals. It is widely used in the research and development of raw materials, parts, and product processes in fields such as automotive manufacturing, aerospace, shipyard, electromechanical equipment, engineering machinery, electronics and electrical engineering, education, and scientific research.
- Can be used for sample analysis of metals and their alloys such as Fe, Al, Cu, Ni, Co, Mg, Ti, Zn, Pb, Sn, Mn, etc.
- Optimal optical system in a 10,000-class ultra-clean environment, with an all-solid-state digital spark light source. Energy and frequency parameters are continuously adjustable, MTBF (mean time between failure) > 5000 hours, adaptable to a variety of different materials. A massive number of spectral lines make the analysis no longer limited, including elemental content of high and low curve segments. Automatic matching analysis of a wide range of unknown samples to automatically match the best analytical procedures. Automatic deduction of inter-element summing and multiplication of interferences, resulting in more accurate analysis results. Automatic calibration of pixel drift to ensure the stability of the optical system.
- Multilingual versions are available (Chinese, English, Russian, German).

STANDARD DELIVERY

Main unit	1 pc
Computer	1 set
Printer	1 pc
Voltage regulator	1 pc
Standardised sample	1 set
Analysis and calibration software	1 set
Consumable and spare parts	1 set*

OPTIONAL ACCESSORY

Lathe	OES-R420-LATHE	220×300mm, 220V
Electrode brush	OES-R420-BRUSH	/
Small sample fixture	OES-R420-RODLIKE	∅3.1~7mm regular bar sample
	OES-R420-FILIFORM	∅0.5~3mm filament sample
Gasket	OES-R420-GASKET1	Copper, ID6mm
	OES-R420-GASKET2	Copper, ID8mm
	OES-R420-GASKET3	Boron nitride, ID4mm
	OES-R420-GASKET4	Boron nitride, ID6mm

*CONSUMABLE AND SPARE PARTS

Classify	Name	Quantities
Spare parts	Polarimeter	1pc
	Allen key	1set
	Pressure reducing valve	1set
	Power ground	1pc
Consumable	Mirror paper	5pcs
	Tungsten electrode	1pc
	Lens (quartz)	1pc
	Electrode brush pen	1pc
	O-Ring	1set
	Fuse, 16A	3pcs
	Fuse, 8A	2pcs
Cleaning brush	1pc	

SPECIFICATION

Optical system	Detector	multiple CCD detectors, unlimited maximum number of detection channels
	Optical system construction	paschen-runge construction, grating focal length 500 mm, roland circle diameter: 500 mm
	Raster scribing	2700 lines/mm
	Spectral range	160~500nm
	Resolution	better than 0.01nm (line resolution 0.7407nm/mm, pixel resolution 0.005926nm)
	Pixel dimension	8μm
	Dispersion	class I: 0.74nm/mm, class II: 0.37nm/mm
Excitation source	Excitation frequency	20~1000Hz
	Excitation current	90A
	Excitation voltage	190V
Spark stand	Discharge parameter	Inductance: 120μH, Resistance: 3.5Ω, Capacitance: 5μF, Voltage: 380V
	Dimension	125x95mm, max. load 50kg
	Lens	One-piece lens isolation valve
	Excitation electrode	tungsten electrode
Gas supply	Argon quality	purity: 99.999%, pressure: ≥0.6MPa
	Flow rate	tidal flushing mode, excitation: 8L/min, standby: 60ml/min
General analysis time		<40s
Data processing		single excitation, slice exposure, simultaneous acquisition, simultaneous counting back, independent control of the integration of different CCD exposure time, to enhance the identification of trace elements, to reduce the detection limit of the instrument, adjust the integration time with the wavelength band, to enhance the stability of the instrument.
Work environment		20~25°C, <70%RH
Power		AC220V, 50Hz, 1Ø, 16A, 2.5KW, ground resistance <4Ω
Dimension (LxWxH)		545×380×435mm
Weight		70kg

IRON BASE CURVES

Curve number	A1	A2	A3	A4	A5
Elemental content (%)	Medium and low alloy steel*	Plain stainless steel	High speed tool steel	Cr-Mn stainless steel	Nodular iron**
C	0.0015-1.5	0.005-2.0	0.08-2.5	0.006-2.0	0.9-4.5
Si	0.005-2.0	0.005-2.0	0.005-2.0	0.003-2.0	0.1-5.5
Mn	0.005-2.5	0.002-2.5	0.005-2.0	2.0-25	0.005-2.5
P	0.001-0.1	0.002-0.1	0.003-0.1	0.003-0.2	0.003-1.0
S	0.001-0.1	0.001-0.1	0.001-0.1	0.003-0.1	0.003-0.2
Cr	0.001-5.0	5-35	0.01-7.9	0.005-30	0.005-5.0
Ni	0.002-5.0	0.004-30***	0.005-2.5	0.005-7	0.002-5.0
Mo	0.003-2.0	0.005-4.0	0.01-10.0	0.006-2.5	0.003-2.0
Cu	0.002-1.5	0.005-4.0	0.005-1.5	0.006-2.0	0.005-2.0
W	0.001-2.0	0.002-1.0	1.0-20.0	0.006-0.5	0.006-1.0
V	0.002-1.5	0.002-0.5	0.01-6.0	0.006-1.5	0.001-1.0
Ti	0.001-1.0	0.003-1.0	0.004-0.5	0.003-1.0	0.001-0.5
Nb	0.001-0.5	0.005-3.0	0.002-1.0	0.006-3.0	0.002-1.0
Al	0.001-1.5	0.004-1.5	0.005-0.2	0.004-0.5	0.001-0.4
Mg	-	-	-	-	0.001-0.1
Ce	-	-	-	-	0.001-0.1
Zr	0.004-0.5	-	-	-	0.003-0.1
Co	0.001-0.5	0.003-0.5	0.006-10	0.003-0.5	0.001-0.2
B	0.0008-0.02	0.002-0.02	-	0.002-0.02	0.003-0.2
Fe	REF	REF	REF	REF	REF
Description	La, As, Pb, Sn, Sb, Bi, Ca, Zn, Se, etc.in iron base can be customized				

*Medium and low alloy steel curve include carbon steel curve

**Ductile iron samples are required to be whitening treated samples

***Stainless steel in the nickel content of the standard configuration for the 0.004-30%, can be extended up to 40% according to requirements

COPPER BASE CURVES

Curve number	C1	C2	C3	C4	C5	C6	C7
Elemental content (%)	Zn-Brass	Pb-Brass	Sn-Bronze	P-Bronze	Al-Bronze	Cu-Ni alloy	Cu-Ni-Zn alloy
Al	0.001-0.5	0.05-1.0	0.001-0.2	0.001-0.1	0.5-12.0	0.001-0.5	0.001-0.1
As	0.003-0.2	0.003-0.3	0.003-0.2	0.003-0.2	0.003-0.1	0.003-0.05	0.003-0.1
Bi	0.002-0.01	0.002-0.01	0.002-0.1	-	-	0.001-0.02	0.001-0.01
Cd	0.001-0.15	-	0.001-0.01	-	-	-	-
Co	-	-	0.003-0.15	-	-	0.006-0.2	0.006-0.25
Fe	0.003-0.5	0.003-1.0	0.003-0.35	0.003-0.35	0.005-6.5	0.03-1.0	0.03-1.0
Mg	-	-	-	0.005-0.01	0.005-0.1	0.003-0.15	0.003-0.15
Mn	-	0.001-0.2	0.003-0.2	0.005-0.5	0.005-3.0	0.005-1.5	0.005-1.0
Ni	0.005-0.5	0.01-1.0	0.005-2.0	0.005-1.5	0.01-7.0	0.5-35.0	5.0-20.0
P	0.003-0.05	0.003-0.1	0.003-0.6	0.01-1.0	0.003-0.05	0.003-0.05	0.01-0.1
Pb	0.005-0.5	0.2-5.0	0.005-10.0	0.005-1.5	0.002-0.2	0.002-0.05	0.002-2.0
S	0.001-0.01	0.001-0.01	-	0.002-0.1	-	0.002-0.1	0.002-0.1
Sb	0.001-0.1	0.001-0.1	0.001-0.6	0.001-0.5	-	0.001-0.02	0.001-0.02
Si	0.001-0.2	0.001-0.2	0.004-0.15	0.004-0.15	0.004-0.5	0.002-0.2	0.002-1.0
Sn	0.005-0.1	0.005-1.0	0.01-12.0	0.1-12.0	0.005-0.3	0.005-0.1	0.005-0.2
Zn	0.5-42.0	0.5-42.0	0.005-12.0	0.002-1.5	0.003-2.0	0.005-1.0	10.0-35.0
Cr	-	-	-	-	0.001-0.1	-	-
Cu	REF	REF	REF	REF	REF	REF	REF
Description	Be, Ti, Te, Se, C, B, Au, Ag, etc. in copper base can be customized						

ALUMINUM BASE CURVES

Curve number	B1	B2	B3	B4
Elemental content (%)	Al-Si-Cu	Low-Al	Al-Mg-Si	Al-Zn
Cd	0.002-0.25	0.001-0.2	0.002-0.2	0.002-0.2
Cr	0.002-0.5	0.002-0.4	0.002-0.5	0.005-0.5
Cu	0.5-8.0	0.002-1.0	0.002-2.0	0.01-3.0
Fe	0.005-2.0	0.002-1.5	0.005-1.5	0.03-1.5
Mg	0.005-2.0	0.002-1.5	0.005-15.0	0.01-4.5
Mn	0.005-1.0	0.001-0.5	0.005-1.0	0.01-1.0
Ni	0.005-1.5	0.003-0.5	0.005-1.0	0.01-1.0
P	0.005-0.02	0.005-0.02	0.005-0.02	0.005-0.02
Pb	0.005-0.4	0.002-0.2	0.005-0.5	0.005-0.2
Si	1.0-16.0	0.005-1.5	0.01-25.0	0.01-1.0
Sn	0.0005-1.0	0.003-0.2	0.005-0.5	0.005-0.2
Ti	0.003-0.5	0.003-0.3	0.003-0.5	0.003-0.5
Zn	0.005-3.0	0.005-1.5	0.01-3.0	0.01-10.0
Al	REF	REF	REF	REF
Description	Sb, Sr, V, Zr, Ag, As, B, Be, Ca, Ce, Ga, Co, etc. in aluminum base can be customized			

NICKEL BASE CURVES

Curve number	D1	D2	D3	D4
Elemental content (%)	Nimonic alloy	Inconel alloy	Monel alloy	Hartz alloy
Al	0.005-6.0	0.005-6.0	0.005-4.5	0.005-1.0
C	0.005-0.3	0.005-0.2	0.005-0.5	0.005-0.25
Co	0.01-20.0	0.005-1.0	0.005-0.5	0.005-3.0
Cr	8.0-25.0	10.0-25.0	0.005-0.5	15.0-25.0
Cu	0.005-0.5	0.005-0.5	20.0-32.0	0.005-1.5
Fe	0.015-3.5	0.01-20.0	0.005-4.0	0.5-20.0
Mg	0.005-0.05	0.005-0.05	0.005-0.1	-
Mn	0.005-1.2	0.005-1.2	0.005-3.0	0.005-1.5
Mo	0.01-10.0	0.01-10.0	0.005-0.1	5.0-23.0
Nb	0.005-0.5	0.005-7.0	0.005-0.5	-
Si	0.005-1.0	0.005-0.5	0.005-4.5	0.005-1.3
Ti	0.005-6.0	0.005-3.0	0.005-1.5	0.005-0.5
V	0.005-0.6	0.005-0.5	-	0.005-0.5
W	0.002-4.5	0.005-0.5	-	0.5-6.0
Zr	0.005-0.15	0.005-0.05	0.005-0.1	-
Ni	REF	REF	REF	REF
Description	P, S, Pb, Ce, B, etc. in nickel base can be customized			

COBALT BASE CURVES

Curve number	E1	E2	E3	E4
Elemental content (%)	Co-Cr-W alloy	Co-Cr-Ni-W alloy	Co-Ni-Cr-Mo alloy	Co-Cr-Mo alloy
Al	0.005-0.48	0.005-0.48	0.005-0.48	0.005-0.48
C	0.005-1.0	0.005-1.0	0.005-0.5	0.005-0.5
Cr	18.0-31.0	18.0-31.0	18.0-31.0	18.0-31.0
Cu	0.005-0.3	0.005-0.3	0.005-0.05	0.005-0.05
Fe	0.005-9.0	0.005-3.0	0.03-1.0	0.005-3.0
Mn	0.005-2.0	0.005-2.0	0.005-0.3	0.005-1.0
Mo	0.005-1.5	0.005-1.0	1.0-10.0	1.0-8.5
Nb	0.005-4.2	0.005-0.5	0.005-0.5	0.005-0.5
Ni	0.005-3.0	8.0-25.0	10.0-36.0	0.005-5.0
Si	0.005-1.0	0.005-1.0	0.005-1.0	0.005-1.0
Ti	0.005-3.0	0.005-0.05	-	0.005-0.05
W	3.0-16.0	3.0-16.0	0.005-0.1	0.005-0.1
Co	REF	REF	REF	REF
Description	V, P, S, Ta, Sn, B, etc. in cobalt base can be customized			

ZINC BASE CURVES

Curve number	F1	F2
Elemental content (%)	Die-casting zinc alloy	Zinc-Aluminum alloy
Al	0.05-6.0	6.0-30.0
Cd	0.005-0.04	0.005-0.04
Cu	0.005-3.0	0.005-3.0
Fe	0.005-0.1	0.005-0.1
Mg	0.005-0.1	0.005-0.1
Ni	0.005-0.05	0.005-0.05
Pb	0.005-0.03	0.005-0.03
Si	0.005-0.05	0.005-0.05
Sn	0.005-0.01	0.005-0.02
Ti	0.005-0.3	0.005-0.3
Zn	REF	REF
Description	Sb, etc. in zinc base can be customized	