

شرح فنی دستگاه کوانتومتر مدل ARL iSpark 8860 :

الف) مشخصات فنی دستگاه:

No.	Designation
1	ARL 8860 Metals Analyzer + Computer (Standard)
2	Fe Matrix
3	OXSAS OES Analytical Software
4	CNO Option
5	Standard Inclusion Analysis with Inclusions Report in low alloy steel (OE-8860-IR-FE-A0)
6	Analytical channels
7	Nitrogen Channel
8	Oxygen Channel
9	Calibration of Low Alloy Steel (OE-8860-CAL-FE-A0)
10	Calibration of Carbon, Nitrogen and Oxygen in Low Alloy Steel (OE-8860-CAL-FE-A4)
11	Calibration of Al sol/insol in LAS with PIM Method (OE-8860-CAL-FE-AS1)
12	Calibration of B sol/insol in LAS with PIM Method (OE-8860-CAL-FE-AS2)
13	Calibration of Ca sol/insol in LAS with PIM Method (OE-8860-CAL-FE-AS3)
14	Calibration of Ti sol/insol in LAS with PIM Method (OE-8860-CAL-FE-AS4)
15	Calibration of Free Cutting Steel (OE-8860-CAL-FE-G0)
16	Calibration of Cr Steel (OE-8860-CAL-FE-H0)
17	Calibration of Cr-Ni Steel (OE-8860-CAL-FE-J0)
18	Calibration of Nitrogen VUV in Cr-Ni Steel (OE-8860-CAL-FE-J2)
19	Calibration of Mn Steel (OE-8860-CAL-FE-K0)
20	Calibration of Tool & High Speed Steel (OE-8860-CAL-FE-L0)
21	Calibration of Ni-hard, Cast iron, Nodular Iron (OE-8860-CAL-FE-M0)
22	Calibration of Nitrogen VUV in Ni Hard, Cast & Nodular Iron (OE-8860-CAL-FE-M2)
23	Calibration of High Alloy Cast Iron (OE-8860-CAL-FE-N0)
24	Calibration of Ni Resist (OE-8860-CAL-FE-P0)
25	Global Iron Calibration (OE-8860-CAL-FE-Z0)
26	Calibration of Nitrogen VUV in Global Iron (OE-8860-CAL-FE-Z2)
27	Calibration of Oxygen in Global Iron (OE-8860-CAL-FE-Z3)

28	High Pressure Regulator
29	Rare Gas Purifier SIRCAL (230 V)
30	Consumables for dry vacuum system-VUV (OE-KOC8832)
31	Consumables for Fe applications (OE-KOC8844-1)

Fe Calibrations

	OE-8860-CAL-FE-A0	OE-8860-CAL-FE-G0	OE-8860-CAL-FE-H0
Element	Low Alloy Steel	Free Cutting Steel	Cr Steel
Fe	90-99.99	93-99.3	62.5-89.5
Al	0.0005-1.9	0.001-0.12	0.002-0.35
As	0.0005-0.15	0.015-0.08	
B	0.00015-0.012		
Bi	0.002-0.1		
C	0.0015-1.5	0.002-1.3	0.035-2.3
Ca	0.00015-0.005		
Ce	0.0015-0.06		
Co	0.0005-0.65	0.005-0.25	0.018-0.3
Cr	0.0015-2.5	0.006-2.5	9-31
Cu	0.002-1.5	0.006-0.7	0.025-2.3
La	0.0005-0.02		
Mg	0.00005-0.0006		
Mn	0.0005-2.4	0.05-1.9	0.2-2.8
Mo	0.001-1.6	0.001-1	0.03-2.8
Nb	0.001-0.8	0.006-0.07	0.01-2.5
Ni	0.001-2.2	0.007-2.2	0.1-6.3
P	0.0005-0.12	0.009-0.08	0.01-0.05
Pb	0.0005-0.15	0.0015-0.35	
S	0.0005-0.1	0.009-0.35	0.001-0.07
Sb	0.001-0.25		
Se	0.003-0.025		
Si	0.001-3.3	0.002-1.8	0.2-2.8
Sn	0.0005-0.25	0.001-0.1	0.003-0.06
Ta	0.005-0.2		
Te	0.001-0.015		
Ti	0.0005-0.6	0.0015-0.12	0.002-0.2
V	0.002-1	0.002-0.6	0.02-0.85
W	0.003-1.5	0.05-0.35	0.02-0.75
Zn	0.001-0.04		
Zr	0.001-0.25	0.006-0.08	

Fe Calibrations

	OE-8860-CAL-FE-A4
Element	CNO in Low Alloy Steel
C	0.0004-0.15
N	0.0009-0.045
O	0.006-0.1

Fe Calibrations

	OE-8860-CAL-FE-J0	OE-8860-CAL-FE-K0	OE-8860-CAL-FE-L0
Element	Cr-Ni Steel	Mn Steel	Tool & High Speed Steel
Fe	40-89	77.5-87.5	59-90.5
Al	0.001-1	0.004-0.1	
As	0.002-0.025		
B	0.0002-0.025		
Bi	0.002-0.02		
C	0.007-2	0.6-1.7	0.3-1.45
Ca	0.0002-0.006		
Ce			
Co	0.02-0.6	0.01-0.8	0.06-11
Cr	4-35	0.15-4	2-5
Cu	0.01-6.3	0.003-0.6	0.02-0.1
La			
Mg			
Mn	0.025-13	8.5-20	0.08-0.5
Mo	0.008-6.8	0.03-2	0.1-10
Nb	0.005-3.5		
Ni	3-38	0.04-3.8	0.03-0.45
P	0.002-0.05	0.02-0.1	0.01-0.05
Pb	0.0005-0.004		
S	0.001-0.07	0.005-0.07	0.002-0.05
Sb	0.005-0.2		
Se			
Si	0.04-4.3	0.1-1.6	0.07-0.5
Sn	0.002-0.12	0.01-0.06	
Ta	0.008-0.12		
Te			
Ti	0.002-2.2		

V	0.01-1	0.01-0.35	0.4-4
W	0.01-4.5		1.8-24.5
Zn			
Zr			
	OE-8860-CAL-FE-J2		
Element	N ₂ VUV in Cr-Ni Steel		
N	0.002-1		

Fe Calibrations

	OE-8860-CAL-FE-M0	OE-8860-CAL-FE-N0
Element	Cast & Nodular Iron & Ni Hard	High Alloyed Cast Iron
Fe	79.5-95	53-80
Al	0.003-0.15	
As	0.002-0.15	
B	0.0002-0.1	
Bi	0.002-0.025	
C	1.4-4.5	1.3-4
Ca		
Ce	0.0015-0.06	
Co	0.004-0.45	
Cr	0.02-10	12-35
Cu	0.01-2.7	0.02-1.5
La	0.002-0.02	
Mg	0.001-0.1	
Mn	0.06-1.9	0.3-2.3
Mo	0.001-2	0.25-4
Nb	0.003-0.55	
Ni	0.02-7.5	0.15-18
P	0.003-1.2	0.02-0.45
Pb	0.001-0.06	
S	0.001-0.22	0.007-0.1
Sb	0.0015-0.29	
Se	0.001-0.06	
Si	0.25-4	0.3-2
Sn	0.002-0.4	
Ta		
Te	0.001-0.04	
Ti	0.0015-0.3	
V	0.002-0.7	

W	0.003-0.2	
Zn	0.001-0.03	
Zr	0.0005-0.05	
OE-8860-CAL-FE-M2		
Element	N ₂ VUV in Cast & Nodular Iron & Ni Hard	
N	0.004-0.013	

Fe Calibrations

	OE-8860-CAL-FE-P0	OE-8860-CAL-FE-Z0
Element	Ni Resist	Global Iron
Fe	53-79.5	30-99.8
Al		0.003-1.9
As		0.002-0.15
B		0.0005-0.1
Bi		0.003-0.1
C	0.4-3	0.01-4.5
Ca		0.0003-0.006
Ce	0.0015-0.04	0.002-0.06
Co	0.03-0.15	0.004-19
Cr	0.2-4	0.015-35
Cu	0.1-9	0.002-7
La		0.002-0.02
Mg	0.02-0.13	0.003-0.13
Mn	0.3-7.5	0.005-21
Mo	0.005-1	0.002-10
Nb	0.09-0.4	0.005-3.5
Ni	12-39	0.015-38
P	0.01-0.25	0.005-1.2
Pb		0.002-0.06
S	0.005-0.1	0.002-0.2
Sb		0.005-0.29
Se		
Si	0.5-6	0.015-6
Sn		0.002-0.4
Ta		0.01-0.6
Te		0.002-0.02
Ti		0.002-2.2
V	0.005-0.35	0.002-10
W		0.01-24.5
Zn		0.001-0.04

Zr	0.004-0.25
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Fe Calibrations

Element
N
Element
O

OE-8860-CAL-FE-Z2
N ₂ VUV in Global Iron
0.005-0.9
OE-8860-CAL-FE-Z3
O ₂ in Global Iron
0.01-0.1

ب) قطعات اسپیر دستگاه:

N°	P/N	Description	QTY
1	A042266	Radial fan, cabinet	1
2	S705403	Kit U – iSpark argon and dust filters	1
3	S704807	IMC board	1
4	S704195	PMT acquisition board, 16 channels	1
5	A042998	Optical fiber	1
6	S704817	Attenuator board, 16 channels	1
7	S705299	Flat cable for attenuator boards	1
8	AA26820	Bridge 1/10P	1
9	S704859	PMT socket with cable	1
10	A043819	Power cord 230 VAC	1
11	S501204	Source door filter	1
12	A042827	Power supply 230VAC/250VDC,600W	1
13	S704726	Intellisource Power board	1
14	S704231	Intellisource Igniter board	1
15	A042921	Contactor 24VDC,20A, 3NO+1NC	1
16	S705112	Source filter board	1
17	A035135	Fan, 24VDC, 5W, 170M3/H, source	1

18	S705401	Kit S – iSpark fuses and switch breakers	1
19	S705634	Kit Source, static, relay V2	1
20	A039236	Diaphragm pump	1
21	A039237	Kit, diaphragm	1
22	A037385	Molecular pump	1
23	A037399	Grease molecular pump (syringe)	1
24	S704835	Vacuum pump control board	1
25	S500290	Transformer 160/230 VAC - 600 VA	1
26	S705396	Vacuum ball valve	1
27	A027620	Thermostat 60°C	1
28	A036774	Power resistor, 22 Ohms	1
29	A035135	Fan, 24VDC, 5W, 170M3/H, oven	1
30	S704829	HVPS, regulation and vacuum board	1
31	S701655	Spectrometer temperature sensor board	1
32	A043178	Cooling fan	1
33	A042120	Safety switch sensor	1
34	A042121	Safety switch magnet actuator	1
35	S704859	PMT socket with cable	1
36	S705340	Kit F – iSpark shutter optical channel	1
37	S702822	Lens holder with lens, VUV	1
38	S705338	Kit D – iSpark instrument o-rings	1
39	A039356	Fan 80x80x25 24VDC	1
40	A027678	O-ring D19 x 2, viton, insulator o-ring	1
41	AA25389	O-ring D11 x 3, stand argon outlet	1
42	S501210	Analysis table D12 (for Fe)	1
43	S500207	Electrode D6/4 x 80 (for Fe)	1
44	A043191	O-ring D5x4 for electrode	1
45	913922	Brush, yellow (for Fe, Ni, Co, Ti)	1
46	A043365	Valve 2/2-way	1