

DW-TY-9000 Optical Emission Spectrometers (Arc/Spark-OES)

A Full Range of Solutions for the Entire Metals Industry

DW-TY-9000 is Full Range of Solutions for the Entire Metals Industry. It use full-digital technology to replace bulky photomultiplier tube (PMT) simulation technology and keep pace with international spectrometer technology. The adoption of vacuum optical chamber design, full-digital excitation light source, advanced CCD detectors, and high-speed data readout system equips the device with high properties, ultra-low limit of detection (LOD), long-term stability and repeatability. The analytical precision can meet the requirements of laboratory standard, the analytical date is stable and reliable. Widely used in Metallurgy, casting, machinery processing and other industries incoming and outgoing product quality control.



Scope of supply

1. Supply list

No.	Item	Specifications	QTY	Unit	Remarks
1	Optical Emission Spectrometer	DW-TY-9000	1	Set	Include in quotation.
2	Business computer		1	Set	
3	Printer		1	Set	
4	Tungsten electrode		1	Pc	
5	Electrode pressure spring		1	Pc	
6	The electrode fixed screw		2	Pcs	
7	Electrode brush	Φ6	2	Pcs	
8	Lens holder sealing ring	Φ16×2.65	2	Pcs	
9	Lens holder sealing ring	Φ72×2.65	1	Pc	
10	Exhaust gas filter core		1	Pc	
11	Degreasing cotton		15	G	
12	Power socket		1	Pc	
13	M2 Internal hexagonal wrench		1	Set	
14	M4 Internal hexagonal wrench		1	Set	
15	Long handle phillips screwdriver		1	Pc	
16	13 – 15 fixed wrench		1	Pc	
17	Spark machine screw	M6	4	Pcs	
18	Fuse	10A	2	Pcs	
19	Argon gas pressure reducing valve		1	Pc	
20	Argon gas pipeline		2	M	
21	Exhaust pipe		1	Pc	
22	Gas bottle		2	Pcs	
23	Print paper		1	Pc	
24	Spectrometer manual		1	Set	

Notes: The Buyer knows and agrees that the Seller may adjust the supply when the production of the above-mentioned instruments, spare parts and other suppliers change due to technological progress, product upgrading, market changes, etc.

2. Optional items:

Optional item	Qty	Note
High purity argon gas (pure \geq 99.999%)	1 bottle	Should prepare by customer. If can't get should use argon purifier to get 99.999% argon gas.
Small air conditioning	1 set	Essential, customer should prepare by themselves.
High precision magnetic saturation voltage stabilizer (1KVA)	1 set	Need for voltage instability, if the customer uses intermediate frequency furnace, then need 3KVA Voltage Stabilizer
Argon purifier	1 set	When argon gas is not as pure as 99.999%.
Samples grinder (ferrous metals) or Mini lathe (non-ferrous metals)	1 set	Essential
Type samples	pieces	Essential for foundry

Analytical Program

Note:

The instrument is calibrated with limited standard samples which Chongqing Drawell Instrument Co., Ltd have for general purpose. For special alloy and special elements, the instrument must be calibrated by customer themselves. Or if customer is willing to provide sample collaboration for program development, the customer must provide accurate sample element content tables and ensure sample uniformity, but such curves are not used as acceptance indicators of the instrument.

If the customer has type sample demand, the type sample number can be provided, and the customer can purchase the type sample by himself; if the salesman buys the type sample on behalf of the salesman, the type sample will be shipped separately by Chongqing Drawell.

Technical Data of DW-TY-9000

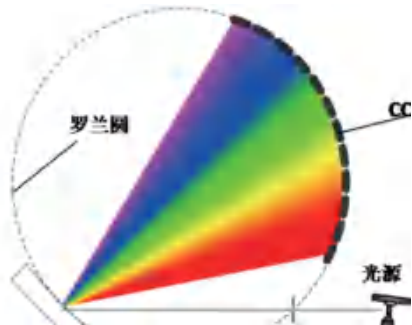
1. Parameter

Item		Index
Optical System	Focal Length	400mm
	Wavelength range	165~589nm (Extendable)
	Detector	High resolution CCD Multi detectors
	Degree of vacuum	Auto control within 6-20 pa
	Pixel resolution	30pm
	Grating line	2400m1/mm
	First order spectral line dispersion rare	1.2nm/mm
	Average resolution ratio	10pm/pixel
	Full spectrum	
	Light room temperature is controlled automatically	
Spark Source	Type	Digital arc and spark source
	Spark frequency	100-1000HZ
	Discharge current	1-400A
	Ignition voltage	>15000V
	Excitation light	Optimization of discharge parameters design
		High energy precombustion technology HEPS
Spark Stand	Processor	High-speed data synchronization acquisition and processing
	Electrode	Tungsten electrode technology
	Make up	Thermal deformation self-compensation design
	Argon flushed with minimal consumption of Argon	
	Spray discharge electrode technology	
Others	Adjustable electrode technology	
	Measurable elements	Fe、Al、Cu、Ni、Ti、Co、Zn、Sn、Mg、Pb etc
	Dimension	800mm(L)*700mm*470mm(H)
	weight	About 100kg
	Storage temperature	0℃-45℃
	Operating temperature	10℃-35℃, 23±2℃ is recommended
	Power	AC220V/50Hz(Customized)
	Power consumption	Excitation:700W/Stand by:100W
	Argon quality	99.999%, Argon pressure>4Mpa
	Argon consumption	5L/min during spark mode
	Interface	Ethernet data transmission based on DM9000A

2.Main Features

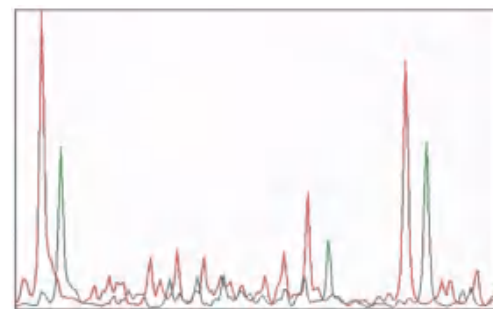
1.Optimized vacuum optics system

- (1) Integrated optics room and Paschen Runge construction design, making all the spectrum lines focused on the gratings.
- (2) Direct-jet type optics technology and MgF2 material lens to make sure ultraviolet wave's best energy of elements, such as C,S, P and N.



2. Automatic Light-Path Correction

- (1) With automatic light path correction, optical system automatically scans the spectral lines to ensure the correctness of received lines and avoid tedious scanning of wave peaks.
- (2) The instrument automatically identifies specific spectral lines and compares them with original stored lines to determine the location of the drift and find the present pixel position for analysis among the lines.



3. Single-Board Lens Design

- (1) The adopted specialized entrance window separating from vacuum in the vacuum optical system can be operated under the system working status. The adopted single-board lens structure in the optical lens is convenient for routine cleaning and maintenance.
- (2) It is not required to maintain the device in the daily operation, and there is no consumable and renewal part.



4. Optical Chamber Integration

- (1) Specialized optical chamber structural design makes the volume of the chamber smaller, with less than half air exhaust speed of ordinary spectrometers.
- (2) Integrated design and high-precision processing in the vacuum chamber improves the duration of vacuum.



5. Vacuum Anti-Oil-Returning Technology

- (1) Multi-level separating vacuum anti-oil-returning technology absorbs vacuum compaction and baffle valves to ensure the complete separation of vacuum optical chamber from vacuum pump during non-operation time.
- (2) The intermediate addition of vacuum oil filtering device ensures the oil inside the vacuum pump not to enter the vacuum chamber, and ensures CCD detectors and optical components to work under reliable situation.



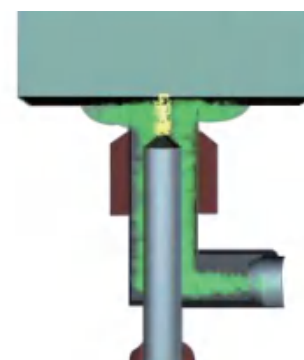
6. Open-Access Inspire Stand

- (1) Flexible sample clamp design of Open-Access Excitation Stand satisfies user on-site analysis of samples with different sizes and shapes
- (2) The small sample clamps in cooperative use can make the analytic precision of wire rods achieve 1.5 mm at the minimum.



7. Injection Electrode Technology

- (1) The instrument adopts the most internationally-advanced injection electrode technology with tungsten used. Under the status of excitation, the electrode forms argon gas injection flow surrounded. Thus, there is no opportunity for the surrounding excitation points to contact external air so as to improve precision of excitation.
- (2) The attached specialized argon gas channel design significantly reduces the usage amount of argon gas and use cost for customers.



8. Integrated Gas Channel Block

- (1) The excitation stand is made of alloys with good heat dissipation to achieve solidity, durability and cleaning convenience.
- (2) The gas supply system adopts integrated gas channel block and electrode self-flushing function to create good environment for excitation.



9. Full Digital Inspire Light Source

- (1) The system uses the most internationally-advanced plasma inspire light source, and generates ultra-stable energy release to excite samples in the environment filled with argon gas.
- (2) Full Digital Inspire Light Source ensures ultra-high resolution and high-stability output rate of plasma in the excitation samples.



10. High-Speed Data Acquisition

- (1) The instrument adopts high-performance CCD devices, UV coating technology and high-performance FPGA, DSP and ARM processors.
- (2) The system has ultra-high functions of data acquisition and analysis, and can realize automatic real-time monitoring and control of the block operation status of optical chamber temperature, vacuum degree, argon gas pressure, light source and excitation chamber.



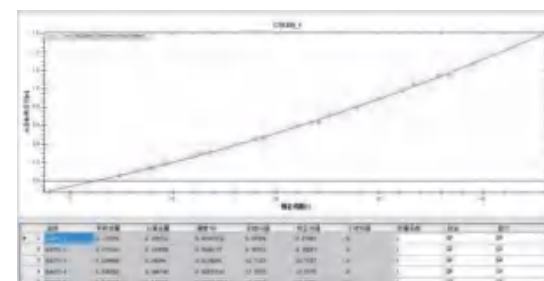
11. Ethernet Data Transfer

- (1) Ethernet cards and TCP / IP protocol are connected between computers and spectrometers to avoid electromagnetic interference, fiber aging defects. Meanwhile, the computers and printers are completely placed in external position for the benefit of promotion and substitution.
- (2) Complete network systems.
- (3) The system can remotely monitor the status of devices, operate the system through multiple channels, as well as control and monitor all the instrumental parameters.



12. Pre-Set Working Curves

- (1) The analysis programs in terms of elements and materials exist slight difference. The parameters of excitation and measurement have been adjusted before delivery. Customers can automatically choose optimal measurement conditions according to analysis programs.
- (2) Over a long period of time, the factory has been accumulating a large amount of experience and comprehensive international standard sample base. The factory pre-sets the working curves before delivery to benefit customers to put the device into use immediately after receiving.
- (3) The analysis range is attached to the technical specification (the system can plot or prolong working curves for free according to samples provided by customers).



13. Fast Analysis Speed

- (1) The fast analysis speed saves time for customers by finishing the element component analysis through all channels within 20 seconds.
- (2) According to the specific type of materials to be analyzed, it is available to make the instruments achieve the best analysis results within the minimum duration by setting pre-burning time and measurement time.

14. Multiple Matrices Analysis

- (1) The light-path design absorbs the structure of Rowland circle and vertically interleaved CCD arrays to ensure all the spectral lines to be received. No hardware is required to realize analysis of multiple matrices.
- (2) It is convenient to add up matrices, material types and analysis elements according to the requirements of production.



15. Software with Multiple National Languages

- (1) The instrumental operating software is completely compatible with Windows system, and can be equipped with specific language versions according to user requirements.
- (2) The software is easy to use. Even those staff without any knowledge and experience about spectrometers can easily use the software after a short simple training.



Guarantee & Service

1. Technical documents and software

1.1 Drive and application software installation CD

1.2 User manuals

1.3 Daily maintenance sheet

2. Installation

The Seller's professional technicians will install the instruments and training the users within 2 to 3 workdays for free.

Commissioning will be taken before acceptance. Both parties should sign the acceptance report after the instrument reaches all the technical data prescribed in this agreement.

3. Acceptance

The Buyer should acknowledge receipt of goods after checking them against the list shown in the agreement. After the instrument runs steadily at least 24 hours, the testing results should be reached the technical data by using the homogeneous national or international first grade CRM.

4. Training

Installation Engineer in the field installation and commissioning process, the Buyer shall organize the relevant users and maintenance responsible person to receive on-site training, training time generally not more than 3 days. Through training, so that the relevant personnel more in-depth understanding of spectral analysis related technologies, skilled in instrument operation and maintenance. The training includes instrument installation, commissioning, testing samples, testing user's samples, training lab operators about equipment theory, daily operation, software application, daily maintenance and repair, to make sure that users can operate the instrument properly.

5. After-sales service

5.1 The calculation of the warranty period

- The warranty period of the instrument shall be in accordance with the contract stipulations.
- If the contract does not specifically point out that the warranty shall be implemented in accordance with the following terms:

The warranty period shall be 12 months from the date of acceptance of the goods or 12 months from the date of receipt of the goods by the buyer, whichever comes first.

The general fragile parts (such as mouse, ordinary keyboard, etc.) are guaranteed for three months from the date of the factory.

The warranty period for external parts (PC, printer, stabilized power supply, etc.) is subject to the manufacturer's requirements.

The repair period is three months.

Consumables (filter cotton, electrode brush, etc.) are not guaranteed.

- If the quality problem of the instrument is affected, the warranty period will be postponed accordingly.

5.2 During the warranty period, the equipment will be repaired free of charge if it breaks down in normal use. However, due to the buyer's operation or maintenance personnel's mis-operation or improper use and force majeure factors (war, earthquake, lightning strike, flood and so on), the seller will charge cost and maintenance fees.

5.3 After the instrument has been repaired, the seller confirms the malfunction by telephone and solves the problem. If the problem needs to be solved on site, the seller can rush to the site within 48 hours.

5.4 Maintenance beyond warranty period:

Over the warranty period, the seller will continue to provide maintenance services and use of consultation, if need to go to the customer site service, the Seller will properly charge parts fees, service fees and other fees.

5.5 Spare parts and consumable supplies: the seller will supply spare parts and consumables to the buyer at a favorable price.

Installation & Training

After the seller received the buyer's instrument installation notice, sent to the user's site for installation and debugging. It's totally free. The buyer only bears our engineer round airfares and local accommodation (Including the VISA cost).

1. Installation Conditions see Attachment 1 and Attachment 2.
2. After the instruments have arrived at your esteem company, warehouse storage, warehouse temperature 0 ~ 30 °C, relative humidity is not more than 75%, after waiting for installation personnel arrived, mutual unpacking, counting number according to the packing list.
3. Use the standard sample which is bought by your esteem company for instrument acceptance at the scene and check the analysis precision. Or if the customers don't know the standard samples at all, we company can help customer buy from China and ship together with the machine.
4. After installation and debugging, it must be paid to return if the quality can't meet the technical requirements. If only individual elements analysis deviation is slightly larger, mutual analysis reason, through friendly consultation.
5. The training includes how to use the instrument, daily maintenance, software operation.
6. After installation completely, Engineers need to complete an installation acceptance report, and on behalf of the signature or stamp by both parties.
7. Warranty period in accordance with the contract to perform

Attachment 1 Installation conditions should be prepared by buyer.

- 1.Space: The optical room and sample prepare room should separately. In order to operate convenient, please leave 1 meter space around the instrument.
- 2.Prepare two bottles of high purity argon gas, the purity should be more than 99.996%.
- 3.Spectrometer access side should be equipped with power protection, air switch, over-current protection of the 20A
- 4.Independent special ground, ground resistance is less than 1 ohm, grounding body with 38 ~ 50 mm diameter copper bar, its length is 2.1 m, the method of making the ground see the attachment.
- 5.According to the space of the laboratory, it should be equipped with air conditioner.
- 6.Equip with a double disc grinding prototype or a floor grinder, mill Φ 350 mm diameter, used in steel specimen surface polishing, generally need 40-60 mesh. If the sample is non-ferrous metals, need a small lathe to sampling.
- 7.In order to ensure the argon gas purity, need to configure an argon gas purifier. If the purity is more than 99.999%, it will not be necessary.
- 8.The standard sample should be prepared by the user. It is used for the calibration function.
- 9.Equip with a high precision regulated power supply if it is before the furnace analysis or harmonic interference.

Note

Spectrometer power supply system should be separate with high power electric equipment (such as the power of the medium frequency furnace and its frequent start-stop devices).

Stay away from high-power electrical appliances at least 50 m or so.

Spectral laboratory dustproof effect should be good.

Spectral instrument avoid single heat or direct sunlight.

Attachment 2 The installation of ground wire method

Grounding resistance requirement

(1) Resistance $< 2\Omega$

The value of the grounding resistance can define the value of earth current. If grounding electric resistance is smaller, the grounding device of grounding voltage value will be smaller. That is to say, the value of the grounding resistance has marked the equipment grounding performance is good or bad.

Resistance measurement

Grounding resistance is generally measured by ammeter, voltmeter, bridge method, grounding resistance measuring instrument etc. At present it is measured by grounding resistance measuring instrument. This method is simple and convenient. Common grounding resistance measuring instrument is the type of ZC - 8 and ZC - 29. Before the grounding resistance test, it should unscrew the ground down lead first.

Installation

Generally speaking, a ground wire buried depth should not be less than 2 m. Installation of grounding in special places, if the depth of less than 2 m should be placed around the grounding salt 5 kg, wood carbon about 10 kg and add water, to reduce the grounding resistance. If you use a minimum of 2 and 2 root of grounding, the distance between each pole should not be less than 2.0 m, in order to reduce the diaspora of the earth resistance. In strong corrosive soil, it should use plating of copper or galvanized grounding electrodes. And grounding shall not be buried in the garbage and ash layer, laying on the ground and the ground is extremely should not be painted, in order to avoid the grounding resistance is too big.