LUWATECH

Oil Particle Counters

Application of laser photoresist measurement technique for particle detection

Product Brochure

Shanghai LUWATECH Industrial Co., Ltd

Company Profile

LUWATECH is specialised in the research and development, production, sales and technical service of oil particle counters, including particle counters, sensor series, purification sampling bottles, etc. The particle counters are desktop, portable, on-line, and custom-integrated. Sensors are available in oil moisture, viscosity, density, iron filings, oil multi-parameter detection sensors and other series.

Purification bottles have glass, borosilicate, PP, PE, PET plastic, various materials and specifications. Cleanliness in the 0 level 1 level 2. Can meet the needs of various industries purification sampling bottle.

The company has been focusing on the research and development and production of oil testing instruments for many years, and its product technology and application technology are in the leading position in China. LUWATECH products have been widely used by oil testing companies, lubricant manufacturers and lubricant users all over the country. The company's product technology research and development team has accumulated rich oil testing technology and experience over the years, which can provide users with strong application technical support and product development customisation.

LUWATECH will always adhere to the "scientific and technological innovation, user first" business philosophy, and constantly improve the product and innovation and upgrade, to provide users with first-class products and services. LUWATECH has been praised by all parties!

Cooperative customers include PetroChina, Sinopec, COMAC, CSIC, CSR, Caterpillar, Shell, COSCO Shipyard Heavy Industry, Taiyuan Heavy Industry, Fuji Heavy Industry, Kawasaki Heavy Industry, Beijing Sinoma Construction Group, Jiangsu Kehong Materials, Jiangsu Lei Xingxingxing Machinery, Luoyang Dagong Inspection Technology, Bosch Rexroth Changzhou Plant, Shandong Dongyu Machinery, Shandong Huiqiang Heavy Industry, Qingdao Suoer Automobile, China Gezhouba Group Construction Company, China Communications Second Public Company Limited. Group Construction Company, CCCC Second Public Bureau of the Third Engineering Company, Hebei Xinjin Iron and Steel, Dong'an Engine, Xinchuan Aviation Instruments, Chuanhang Aviation Engine, Shandong Xiangyu Aviation, China Guangdong Nuclear Power Inspection, Zhongce Rubber, Zhongrui Heavy Industry, Shengda Machinery, Aochuan Hydraulics, Huayi Precision Machinery, Weifu Precision Machinery, Shishang Precision Machinery, China Railway Construction Bridge Engineering Group, Air Force.

COOPERATION WITH CUSTOMERS IN VARIOUS FIELDS

Petrochemical

Shell HELIX 壳牌 喜力

中国石油

Sinopec

Heavy machinery

中国中车 CRRC

CSIC

河北新金

COSCO SHIPPING

运想重工 RUNSHARE

FUJIHIC

MAXIMATOR Maximum Pressure.

Aerospace

COMAC 中国商飞

AVIC

Infrastructure work

中国铁建

中国能建

中国建材集团有限公司 China National Building Material Group Co., Ltd.


FORTEST

TESTING INSPECTION CERTIFICATION

上海罗湾实业有限公司

组织注册地址：中国（上海）自由贸易试验区康桥东路333号9幢305室

组织经营地址：上海浦东新区康桥东路333号5栋南门2楼

统一社会信用代码：913101140878833277

确证上述单位的管理体系已经经过审核

并确认满足下列管理体系标准全部适用条款的要求

认证所依据的体系标准

ISO9001:2015&GB/T19001-2016

体系覆盖下列范围

仪器仪表、电子产品、机械设备、机电设备的销售

在国家规定的各行政许可，资质许可有效期内使用有效，

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授权代表

16/11/2023

批准日期

上海法检技术服务有限公司

网址：www.shfortest.com


营业执照

（副本）

名称 上海罗湾实业有限公司

类型 有限责任公司（自然人独资）

法定代表人

注册资本 人民币 200.0000 万元整

成立日期 2014年2月21日

营业期限 至 2044年2月20日

经营范围

登记机关


第 22059515 号

商标注册证

LUWATECH

核定使用商品/服务项目（国际分类：9）

注册人 上海罗湾实业有限公司

注册人地址 上海市嘉定区嘉定工业区[illegible]

注册日期 2018年[illegible]月07日 有效期至 2028年03月06日

局长

发证机关

商标局

Typical applications

Aerospace

- Equipped with hydraulic oil filtration and filling system
- Supporting Cleaning System Continuous monitoring of various oil systems in the aerospace ground support sector ensures the cleanliness of oil and the safe operation of aerospace equipment.

Construction machinery

- Earth moving machinery
- Agricultural machinery
- Forestry machinery
- Harvesting machinery Testing the cleanliness of the hydraulic system of construction machinery before delivery or during daily use can effectively ensure that the various components of the system (such as piston pumps, servo valves, controllers, gear pumps, etc.) are not damaged under load. (such as piston pumps, servo valves, controllers, gear pumps, etc.) work best under load conditions. (e.g. piston pumps, servo valves, controllers, gear pumps, etc.) work best under load conditions.

Power industry

- Wind turbine
- Gearboxes
- Lubrication system Regular testing of the fluid system ensures that optimum performance is achieved in the least amount of time.

Industrial equipment

- Production plant
- Oil production and transport
- Oil refineries
- The Precision Product Line tests the cleanliness of the hydraulic systems (cleaning systems) of all the equipment on the line, from the hydraulic control systems of machine tools, to the cleaning systems of precision components, to the monitoring of contamination during the oil transfer process, thus enabling the integrity of the oil to be effectively maintained at a high level during the oil refining process.

Test bench

- Hydraulic valve test bench
- Rinse test bench
- Various oil test stands The efficiency of the equipment can be greatly improved by continuously testing the cleanliness of the hydraulic system (lubrication system) oil.

Various liquid cartridge quality test rigs, cartridge passability test rigs.

Detection Principle

The Oil Cleanliness Tester uses the principle of the Light Extinction Method as defined in ISO11171I/SO4402 for oil cleanliness testing. The Light Extinction method, also known as the extinction method or the light barrier method, detects particles down to a minimum size of 1 μm or 4 μm (C). Light Extinction has the advantages of fast detection speed, strong anti-interference, high accuracy and good repeatability.

The principle of the shading method is shown in the figure below, the laser light source through the lens to produce a set of parallel beams, parallel beams perpendicular to the cross-sectional area of the sample through the chamber, irradiated to the photoelectric receiver, when there is no particles in the liquid stream, the circuit output for the E voltage, when there is a liquid stream of a projected area of the particles of the sample through the flow of the chamber, blocking the parallel beams, so that the transmittance of the attenuation of the light, and then the output of the circuit in the circuit of the amplitude of E0 of a negative pulse:

E0= -(a/A)×E (V)

If the particle is spherical, or if the particle is described in terms of an equivalent diameter d and E is equal to 10 V, then the particle is a sphere.

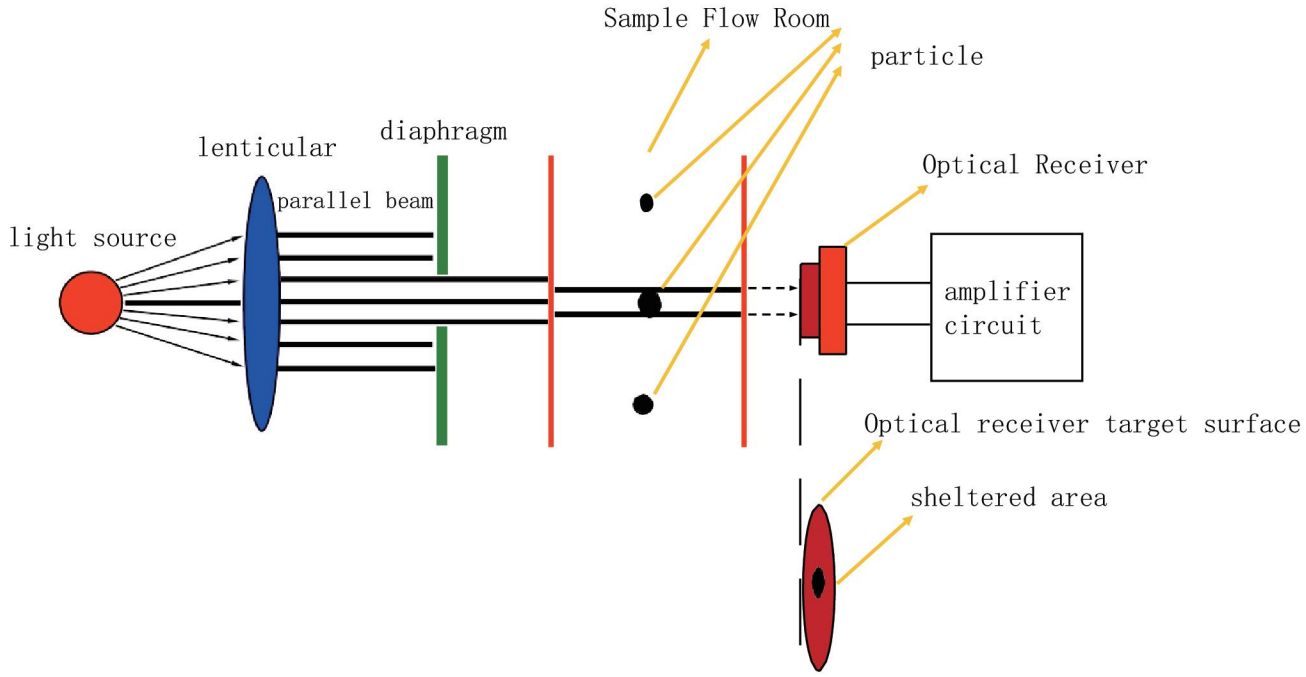
then E0= -(a/A)×E (V)

= -[π ×(d/2)2]/A×10 (V)

= -(π d2/4A)×10 (V)

= -7.854×d2/A (V)

That is, the projected area of the particle and the pulse voltage amplitude are linearly related.



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LWT-2A Benchtop Automatic Oil Particle Counter

Key application

- Laboratory Fluid Analysis
- Hydraulic equipment acceptance and routine maintenance
- Cleaning verification of systems
- Wear testing of hydraulic components
- Particle contamination testing of all common mineral oils, hydraulic oils, lubricating oils, anti-fuel oils, insulating oils, turbine oils and water-based hydraulic oils, as well as insoluble particles in organic liquid polymer solutions.

Optional

- Viscosity, temperature and water saturation in oil can be added.
- Trace moisture content PPM value detection function

Key features

- Adoption of the counting principle of the photoresist (shading) method developed by the International Hydraulic Standards Committee (IHSC)
- High-precision laser sensor, wide test range, stable performance, low noise, high resolution
- High-pressure syringe pump sampling method, can set the sampling volume, stable sampling speed and high sampling accuracy
- Combination of positive and negative pressure injection system for sample degassing, suitable for testing samples of different viscosities
- Built-in pressure sensor, you can directly set the pressure value, and automatically determine the air pressure in the cabin to ensure safety
- Host built-in air purification system to ensure that the test is not contaminated, a high degree of integration, to avoid secondary pollution caused by the air pump and the test system connected to the air tightness
- Built-in multiple calibration curves, compatible with all commonly used standards at home and abroad for calibration
- Built-in GJB-420A, GJB-420B, NAS1638, GB/T14039, ISO4406, SAE4059cpc, SAE4059F, SAE749D, ГОСТ17216, QC/T29104, JB/T9737, DLT432, HH005-2018, and other more than 10 common standards
- Support customised standard testing, customised standards can be named and graded
- Up to 64 testing channels can be set up at the same time according to customer requirements
- Built-in data analysis system, one test can give all standard test data and pollution level
- Cleaning detection, pre-set target cleaning requirements particle concentration, real-time display of cleaning status during the cleaning process, and automatically stop when the requirements are met
- Built-in viscosity, moisture and temperature sensor modules provide viscosity, moisture content saturation and ppm values and temperature reference values while accurately testing particle distribution (optional)
- Any particle size can be set and nearly 10,000 particle sizes are built-in for easy particle size analysis
- Standard sampling bottles or sampling cups and other sampling containers can be used to meet the testing requirements of different industries
- Full-featured 7-inch colour touch screen operation, folding key design, support for Chinese and English dual interface, easy to operate
- Manual, automatic, half-count calibration is available
- With RS232 interface, support 485 communication, can be connected to the computer or laboratory platform for data processing
- With massive data storage, printing function, and support for U disk storage, the machine has been stored data can be exported to the U disk
- With more than 5 account settings, and operator rights are set individually

Technical specifications

- Light source: Semiconductor laser
- Particle size range: 0.8 μm to 600 μm (calibrated to ACFTD calibration 1 to 100 μm or ISO MTD calibration 4 to 70 μm(c))
- Detection channels: 8~64 channels optional (factory default 64), arbitrary setting of particle size
- Resolution: better than 8 per cent
- Sensitivity: 0.8μm (ISO4402) or 3μm(c) (GB/T18854, ISO11171)
- Resolution: <10% (GB/T18854, ISO11171)
- Repeatability: RSD<2%
- Sample detection viscosity: ⩽650cSt (viscosity is too large can be combined with heating or dilution method detection)
- Sampling volume: 0.2~6000mL, interval 0.1mL
- Sampling accuracy: better than ±0.5 per cent
- Sampling speed: 5 ~80mL/min
- Pneumatic chamber: Positive and negative chamber devices for sample degassing and high viscosity samples.
- Maximum vacuum in air chamber: -0.08Mpa
- Maximum positive pressure of air chamber: 0.8 Mpa
- Maximum particle concentration: 12000~40000 particles/mL
- Temperature (paid optional): acquisition range: 1 ~ 100 ℃; acquisition accuracy: 1 ℃
- Water activity (paid option): collection range: 1~100%RH; collection accuracy: 1%RH
- Water content (paid optional): collection range: 1 ~ 360ppm; collection accuracy: 1ppm
- Testing sample temperature: 0℃~80℃
- Working temperature: -20℃~60℃
- Storage temperature: -30℃~80℃
- Power supply: 110~245V AC, 50/60Hz, 70W
- Main body size: 340mm x 410mm x 650mm
- Air pump size: 180mm x 160mm x 220mm
- Net weight of main unit: ⩾23kg
- Net weight of air pump: ⩾5.5kg

LWT-3 Benchtop Automatic Oil Particle Counter

Key application

- Laboratory Fluid Analysis
- Hydraulic equipment acceptance and routine maintenance
- Cleaning verification of systems
- Wear testing of hydraulic components
- Particle contamination testing of all common mineral oils, hydraulic oils, lubricating oils, anti-fuel oils, insulating oils, turbine oils and water-based hydraulic oils, as well as insoluble particles in organic liquid polymer solutions.

Optional

- Viscosity, temperature and water saturation in oil can be added.
- Trace moisture content PPM value detection function

Key features

- Adoption of the counting principle of the photoresist (shading) method developed by the International Hydraulic Standards Committee (IHSC)
- High-precision laser sensor, wide test range, stable performance, low noise, high resolution
- High-pressure syringe pump sampling method, can set the sampling volume, stable sampling speed and high sampling accuracy
- Combination of positive and negative pressure injection system for sample degassing, suitable for testing samples of different viscosities
- Built-in pressure sensor, you can directly set the pressure value, and automatically determine the air pressure in the cabin to ensure safety
- Built-in air purification system to ensure that the test is not contaminated
- Built-in SAE4059E, SAE4059F, SAE4059F-CPC, NAS1638, ISO4406, GB/T14039, GJB-420A, GJB-420B, ГОСТ17216-71, DL/T1096, SAE749D, JBT9737.1, QC/T29104-201, DL/T432-2018, HH005-2018 and other commonly used standards, support for the addition of any custom standard test and custom standards to add an unlimited number of standards, and can be set according to customer demand for the required standards
- Built-in data analysis system, one test can give all standard test data and pollution level
- Built-in multiple calibration curves, compatible with all commonly used standards at home and abroad, for single-channel or multi-channel fully automatic calibration
- Arbitrarily set particle size, built-in nearly 10,000 particle sizes for easy particle size analysis
- A variety of sampling containers such as standard sampling bottles or sampling cups can be used to meet the testing requirements of different industries
- Optional viscosity, dielectric constant, moisture and temperature sensor modules for multi-parameter testing
- Windows operating interface, built-in database, unlimited data storage, can use the test standard, sample name, sample batch number, tester, test time and so on a variety of ways to search query
- Multi-level account rights management, can be set separately account rights, support for digital signatures
- One control system supports multiple sensor setups, with optional tablet, laptop or desktop installation of system control software
- Test results can be printed using a micro or desktop printer, can be exported to pdf, excel tables and other formats, can be transmitted via USB, wifi and other means

Technical specifications

- Optical system: photoresist method (masking type)
- Light source: Semiconductor laser
- Measuring range: 0.8 μm to 600 μm (calibrated to ACFTD calibration 1 to 100 μm or ISO MTD calibration 4 to 70 μm(c))
- Measuring channels: 64 channels (the actual number of channels can be edited at the same time), the particle size by the user to set arbitrary
- Sensitivity: 0.8μm (ISO4402) or 3μm (c) (GB/T18854, ISO11171)
- Resolution: <10% (GB/T18854, ISO11171)
- Repeatability: RSD<2%
- Viscosity of test sample: ⩽650cSt (if the viscosity is too large, it can be detected with heating or dilution method)
- Sampling volume: 0.2~6000ml, interval 0.1ml
- Sampling speed: 5 ~80mL/min
- Sampling volume accuracy: better than ±0.5%
- Pneumatic chamber: Positive and negative pressure chambers for sample degassing and high viscosity samples
- Maximum vacuum in the pneumatic chamber: -0.08MPa
- Maximum positive pressure in the pneumatic chamber: 0.8 MPa
- Recombination error limit: 12000~40000 grains/mL
- Temperature acquisition (optional): -40~100°C Accuracy: ±0.5°C
- Moisture (optional): water activity collection: 1 ~ 100% RH; accuracy: ± 1% RH
- Absolute water content: 1 ~ 300ppm; Accuracy: ± 10ppm
- Dielectric constant (optional): 1～6
- Viscosity (optional): 0～500cSt Accuracy: ±2%
- Power supply: 110~245V AC, 50Hz, 70W
- Overall dimensions: 340mm x 310mm x 730mm
- Instrument net weight: ⩾22kg

LWT-5 Benchtop Automatic Oil Particle Counter

Key application

- Laboratory Fluid Analysis
- Hydraulic equipment acceptance and routine maintenance
- Cleaning verification of systems
- Wear testing of hydraulic components
- Particle contamination testing of all common mineral oils, hydraulic oils, lubricating oils, anti-fuel oils, insulating oils, turbine oils and water-based hydraulic oils, as well as insoluble particles in organic liquid polymer solutions.

Key features

- Adoption of the counting principle of the photoresist (shading) method developed by the International Hydraulic Standards Committee (IHSC)
- High-precision laser sensor, wide test range, stable performance, low noise, high resolution
- High-pressure syringe pump sampling method, can set the sampling volume, stable sampling speed and high sampling accuracy
- Combination of positive and negative pressure injection system for sample degassing, suitable for testing samples of different viscosities
- Built-in pressure sensor, you can directly set the pressure value, and automatically determine the air pressure in the cabin to ensure safety
- Host built-in air purification system to ensure that the test is not contaminated, a high degree of integration, to avoid secondary pollution caused by the air pump and the test system connected to the air tightness
- Built-in multiple calibration curves, compatible with all commonly used standards at home and abroad for calibration
- Built-in GJB-420A, GJB-420B, NAS1638, GB/T14039, ISO4406, SAE4059cpc, SAE4059F, SAE749D, ГОСТ17216, QC/T29104, JB/T9737, DLT432, HH005-2018, and other more than 10 common standards
- Support for custom criteria testing, with standardised naming of custom criteria and grade determination
- According to customer requirements, up to 64 detection channels can be set up at the same time, supporting tens of thousands of particle size settings
- Built-in data analysis system, one test can give all the built-in standard test data and pollution level
- Cleaning detection, pre-set target cleaning requirements particle concentration, real-time display of cleaning status during the cleaning process and automatically stop when the requirements are met
- Any particle size can be set and nearly 10,000 particle sizes are built-in for easy particle size analysis
- A variety of sampling containers such as standard sampling bottles or sampling cups can be used to meet the testing requirements of different industries
- Full-featured 7-inch colour touch screen, Android system operation,
- Chinese and English dual interface, support up and down left and right slide operation
- Dynamic graphical display of particle count changes during testing
- Built-in general calibration curves, other curves can be added as needed, manual, automatic, half-count calibration can be performed
- Built-in a variety of input methods, can be downloaded from the network, support for handwriting input
- The instrument has data integrity function, with password login, multi-level authority management, operation log and data backup function
- Unlimited operator accounts and individual assignment of operator rights
- With visitor login mode
- With LAN interface, multiple USB ports, support for Bluetooth and 4G wireless communication function (optional)
- With massive data storage, printing function, the machine can be stored wirelessly and support U disk storage data, data can be exported from the machine to the U disk.

Technical specifications

- Light source: Semiconductor laser
- Particle size range: 0.8 μm to 600 μm (calibrated to ACFTD calibration 1 to 100 μm or ISO MTD calibration 4 to 70 μm(c))
- Detection channels: 8~64 channels optional (factory default 64), arbitrary setting of particle size
- Sensitivity: 0.8μm (ISO4402) or 3μm(c) (GB/T18854, ISO11171)
- Resolution: <10% (GB/T18854, ISO11171)
- Repeatability: RSD<2%
- Sample detection viscosity: ⩽650cSt (viscosity is too large can be combined with heating or dilution method detection)
- Sampling volume: 0.2~6000mL, interval 0.1mL
- Sampling accuracy: better than ±0.5 per cent
- Sampling speed: 5 ~80mL/min
- Pneumatic chamber: Positive and negative chamber devices for sample degassing and high viscosity samples
- Maximum vacuum in air chamber: -0.08Mpa
- Maximum positive pressure of air chamber: 0.8 Mpa
- Maximum particle concentration: 12000~40000 particles/mL
- Testing sample temperature: 0°C～80°C
- Working temperature: -20°C～60°C
- Storage temperature: -30°C～80°C
- Power supply: 110~245V AC, 50/60Hz, 70W
- Main machine size: 340mm×410mm×650mm
- Air pump size: 180mm×160mm×220mm
- Net weight of mainframe: ≯23kg
- Net weight of air pump: ≯5.5kg
- Instrument memory: 8G

LWB-2 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Trace moisture detection function
- Pressure reducing valve (420 bar down to 5 bar)

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- Suitable for laboratory or on-site testing, off-line and on-line testing of oil samples
- Built-in precision metering pump
- Built-in data analysis system, can display the real data of the particle size of each channel and automatically determine the sample grade
- Pipes are made of 316L and PTFE to meet the detection of various organic solvents and oils
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, Г OCT17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to ISO11171, GB/T18854 and other standards
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Chinese and English bilingual, one-key switching, with preset, modify parameters, storage function, easy and fast operation
- Extra-large storage, optionally in the instrument's internal or external storage device, with the ability to print and export historical data
- 10.1" colour touch screen with glass panel protection
- Third-party calibration and verification certificates are available through and as an option
- Built-in polymer battery for outdoor use
- Stainless steel panel, engineering plastic high-strength housing, easy to carry

Technical specifications

- Light source: Semiconductor laser
- Flow rate range: 10-50mL/min
- Viscosity of test sample: ⩽350cSt
- Particle size range: 1-500μm (with different types of sensors)
- Detecting pressure: 0-0.5Mpa (optional pressure-reducing device up to 42Mpa)
- Interface: USB port, power port
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 1μm or 4μm (c)
- Limiting recombination error: 10000~40000 grains/ml
- Counting volume: 1-100 ml (5 or 10 ml recommended)
- Counting accuracy: ±0.4 contamination levels
- Protection class: IP56
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0-80°C
- Temperature acquisition T (optional): 1. Acquisition range: 1-100 degrees Celsius; 2. Measurement accuracy: 1 degree Celsius; 3. Response time: 30s
- Water activity collection aw (optional): 1. collection range: 1-100% RH; 2. measurement accuracy: 1% RH; 3. response time: 30s
- Absolute water content AH (optional): 1. Acquisition range: 1-350ppm; 2. Measurement accuracy: 1ppm; 3. Response time: 30s
- Working temperature: -20-60°C
- Power supply: AC 220V±10%, 50/60Hz or DC12-40V
- Weight: 6kg
- Volume: 400×305×168mm

LWB-3 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Key features

- Test principle of the photoresist (shading) method specified by the International Hydraulic Standards Committee (IHSC)
- High precision laser sensor, wide test range, stable performance, low noise, high resolution
- High-precision bi-directional piston pump sampling mode, adjustable feed rate, high precision sampling volume
- The pipeline is made of 316L and PTFE materials, corrosion-resistant, to meet the detection of all kinds of organic solvents and oils
- For laboratory or on-site measurements, with optional pressure reduction for on-line high pressure measurements
- Positive/negative pressure can be formed by external pressure chamber for high viscosity sample detection and sample degassing
- Standard sampling bottles, sampling cups and other sampling containers can be used, or directly connected to the hydraulic system for online testing, to meet the testing requirements of different industries
- Built-in multiple calibration curves, calibrated to ACFTD dust (ISO4402), ISOMTD dust (ISO11171), compatible with all commonly used domestic and international standards for calibration
- Built-in GJB-420A, GJB-420B, NAS1638, GB/T14039, ISO4406, SAE4059cpc, SAE4059F, SAE749D, ГОСТ17216, QC/T29104, JB/T9737, DLT432, HH005-2018, and other commonly used standards, a test can be given to all the built-in standards under the data results, to support the test of the customised standards, and according to the customer's needs to set up the required standards
- 1000 particle size channels for easy particle size analysis
- Built-in data analysis system, can automatically determine the sample level according to the standard, with automatic data processing, printing function
- Colour touch screen operation, Chinese and English input, with preset, input, modification, storage and query functions, easy and quick operation, can print and export historical data
- Multiple user login accounts can be arbitrarily set up, new users can be added, permission settings and old user deletion operations
- Four test modes can be selected: automatic, manual, continuous and online
- With RS232 interface, another optional RS485 interface, can be connected to a computer or laboratory platform for data processing, you can also use the USB data storage
- Built-in lithium battery, suitable for field work, without external power supply can be used
- With flushing function, flushing volume can be set arbitrarily
- Embedded design, high-strength shell, easy to carry, suitable for all kinds of construction machinery

Technical specifications

- Light source: Semiconductor laser
- Particle size range: 0.8-600μm (calibrated to ACFTD calibration 1~100μm or ISO MTD calibration 4~70μm(c))
- Sensitivity: 1μm
- Customised detection channels: 64 channels, arbitrary setting of particle sizes
- Sampling volume: 0.2-1000ml, interval 0.1mL
- Sampling accuracy: better than ± 1%
- Sampling speed: 5-80mL/min
- Cleaning speed: 5-80mL/min
- Cleaning volume: can be set between 0ml-90ml
- Counting error: ＜±5%
- Resolution: ⩽ 10%
- Repeatability: RSD＜2%
- Limit coincidence error: 12000-40000 particles/mL
- Particle counting relative error: ⩽ ± 10 %
- Offline detection viscosity: ⩽ 100cSt (viscosity is too large optional air pressure chamber)
- Pressure range: low pressure 0-0.6Mpa, high pressure up to 40Mpa (optional pressure reducing valve)
- Online detection interval: arbitrary settings
- Internal storage: 2 0 0 0 measurement results
- Testing sample temperature: 0 ℃ ~ 80 ℃
- Working temperature: -20℃~60
- Storage temperature: -30℃~80
- Power supply: AC100-240V, 50/60Hz
- Battery capacity: 5200mAh
- Battery running time: 6-8 hours
- Dimensions: 420 × 326 × 182mm
- Weight: 8.9kg

LWB-5 Portable oil particle counter (with moisture detection function)

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- Suitable for laboratory or on-site testing, with optional decompression device for on-line high pressure measurement, real-time monitoring of particle contamination in the oil system
- Positive/negative pressure can be formed by external pressure chamber for high viscosity sample detection and sample degassing
- Built-in data analysis system, can display the real data of the particle size of each channel and automatically determine the sample grade
- Pipes are made of 316L and PTFE to meet the detection of various organic solvents and oils
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, ГOCT17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to GB/T21540, ISO4402, GB/T18854 and other standards
- Built-in micro water sensor and temperature sensor
- Chinese and English bilingual, one-key switching, with preset, modify parameters, storage function, easy and fast operation
- Extra large storage, optionally in the instrument's internal or external storage device
- Embedded design, high strength shell, small size, light weight, easy to carry, suitable for all kinds of construction machinery

Technical specifications

- Light source: Semiconductor laser
- Offline detection speed: 5-60mL/min (factory default 25ml/min)
- Offline test sample viscosity: ⩽100cSt (optional pressure chamber for high viscosity)
- Particle size range: 1-500μm
- Online detection pressure: 0.1-0.5Mpa (optional pressure-reducing device up to 40Mpa)
- Interface: USB port, power port
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 0.8μm or 4μm (c)
- Limiting recombination error: 40,000 grains/ml
- Counting volume: 1-999ml (10 or 20ml recommended)
- Counting accuracy: ±0.4 contamination levels
- Protection class: IP67 (protective box)
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0-80°C
- Water activity reference value: 0-1aw (±0.05aw)
- Water content: 0-360ppm (±10%)
- Temperature acquisition T: 1. Acquisition range: 1-100 degrees Celsius; 2. Measurement accuracy: 1 degree Celsius; 3. Response time: 30s
- Water activity collection aw: 1. collection range: 1-100% RH; 2. measurement accuracy: 1% RH; 3. response time: 30s
- Absolute water content AH: 1. Acquisition range: 1-350ppm; 2. Measurement accuracy: 1ppm; 3. Response time: 30s
- Working temperature: -20-60°C
- Power supply: AC 220V±10%, 50/60Hz or DC12-40V
- Weight: 2.5kg
- Volume: 275×220×107mm

LWB-6 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Trace moisture detection function
- Pressure reducing valve (420 bar to 5 bar)

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- Suitable for laboratory or on-site testing, off-line and on-line testing of oil samples
- Built-in precision metering pump
- Built-in data analysis system, can display the real data of the particle size of each channel and automatically determine the sample grade
- Built-in data analysis system, can display the real data of the particle size of each
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, Г OCT17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to ISO11171, GB/T18854 and other standards
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Chinese and English bilingual, one-key switching, with preset, modify parameters, storage function, easy and fast operation
- Extra-large storage, optionally in the instrument's internal or external storage device, with the ability to print and export historical data
- 7" colour touch screen with glass panel protection
- Third-party calibration and verification certificates are available through and as an option
- Built-in polymer battery for outdoor use
- Stainless steel panel, engineering plastic high-strength housing, easy to carry

Technical specifications

- Light source: Semiconductor laser
- Flow rate range: 10-50mL/min
- Viscosity of test sample: ⩽350cSt
- Particle size range: 1-500μm (with different types of sensors)
- Detection pressure: 0-0.5Mpa (optional pressure-reducing device up to 42Mpa)
- Interface: USB port, power port
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 1μm or 4μm (c)
- Limiting recombination error: 10000-40000 grains/ml
- Counting volume: 1-100ml (5 or 10ml recommended)
- Counting accuracy: ±0.5 contamination levels
- Protection class: IP56
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0-80°C
- Temperature acquisition T (optional): 1. Acquisition range: 1-100 degrees Celsius; 2. Measurement accuracy: 1 degree Celsius; 3. Response time: 30s
- Water activity collection aw (optional): 1. collection range: 1-100% RH; 2. measurement accuracy: 1% RH; 3. response time: 30s
- Absolute water content AH (optional): 1. Acquisition range: 1-350ppm; 2. Measurement accuracy: 1ppm; 3. Response time: 30s
- Working temperature: -20-60°C
- Power supply: AC 220V±10%, 50/60Hz or DC12-40V
- Weight: 6kg
- Volume: 400×305×168mm

LWB-7 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- Suitable for laboratory or on-site testing, can also be equipped with a pressure reducing device for on-line high pressure measurement, real-time monitoring of particulate contamination in the oil system
- Positive/negative pressure can be formed by external pressure chamber for high viscosity sample detection and sample degassing
- Built-in data analysis system, can display the real data of the particle size of each channel and automatically determine the grade of the sample, a test can be given to all the built-in test standards of particle distribution and pollution level
- Pipes are made of 316L and PTFE to meet the detection of various organic solvents and oils
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, Г OCT17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to GB/T21540, ISO4402, GB/T18854 and other standards
- Built-in data analysis system, can automatically determine the sample level according to the standard, with automatic data processing, printing function
- Built-in micro water sensor and temperature sensor to display moisture saturation, PPM value and temperature data
- Chinese and English bilingual, one-key switching, with printing, storage function, 10.2-inch large screen, easy and quick operation
- Built-in polymer mobile power supply for about 8 hours of outdoor use
- Extra-large storage, optionally in the instrument's internal or external storage device
- Embedded design, high-strength shell, easy to carry, suitable for all kinds of construction machinery

Technical specifications

- Light source: Semiconductor laser
- Offline detection speed: 5-60mL/min
- Offline test sample viscosity: ⩽100cSt (optional pressure chamber for high viscosity)
- Online detection pressure: 0.1-0.5Mpa (optional pressure-reducing device up to 42Mpa)
- Particle size range: 1-500μm
- Interface: USB port, power port
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 0.8μm or 4μm (c)
- Limiting recombination error: 40,000 grains/ml
- Counting volume: 1-999ml
- Counting accuracy: less than ± 10 per cent error
- Protection class: IP67
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0-80℃
- Water activity reference value: 0-1aw (±0.05aw)
- Water content: 0-360ppm (±10%)
- Temperature acquisition T: 1. Acquisition range: 1-100 degrees Celsius; 2. Measurement accuracy: 1 degree Celsius; 3. Response time: 30s
- Water activity collection aw: 1. collection range: 1-100% RH; 2. measurement accuracy: 1% RH; 3. response time: 30s
- Absolute water content AH: 1. Acquisition range: 1-350ppm; 2.
- Measurement accuracy: 1ppm; 3. Response time: 30s
- Working temperature: -20-60°C
- Power supply: DC12.6V AC100~240V
- Weight: 5.5kg
- Screen size: 10.2 inch
- Battery capacity: 8000mAh
- Volume: 365×295×170mm

LWB-8 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Key features

- Test principle of the photoresist (shading) method specified by the International Hydraulic Standards Committee (IHSC)
- High precision laser sensor, wide test range, stable performance, low noise, high resolution
- High-precision bi-directional piston pump sampling mode, adjustable feed rate, high precision sampling volume
- The pipeline is made of 316L and PTFE materials, corrosion-resistant, to meet the detection of all kinds of organic solvents and oils
- For laboratory or on-site measurements, with optional pressure reduction for on-line high pressure measurements
- External pressure chamber can be connected to form positive/negative pressure to achieve the detection of high viscosity samples and sample degassing under negative pressure
- Standard sampling bottles, sampling cups and other sampling containers can be used, or directly connected to the hydraulic system for online testing, to meet the testing requirements of different industries
- Built-in multiple calibration curves, compatible with all commonly used standards at home and abroad for calibration, automatic calibration, manual calibration and half-count calibration
- Built-in GJB-420A, GJB-420B, NAS1638, GB/T14039, ISO4406, SAE4059cpc, SAE4059F, SAE749D, ГОСТ17216, QC/T29104, JB/T9737, DLT432, HH005-2018 and other more than ten commonly used standards, a test can be given to give all the built-in standards under the data results
- Supports customised standard tests, and can set up 64 testing channels simultaneously according to customer requirements
- 1000 particle size channels for easy particle size analysis
- Built-in data analysis system, can automatically determine the sample level according to the standard, with automatic data processing, printing function
- 7-inch colour touch screen operation, Chinese and English input, free to switch the language interface, with preset, input, modification, storage, upload function, easy and fast operation
- Multiple user login accounts can be arbitrarily set up, new users can be added, permission settings and old user deletion operations
- Optional tablet control, tablet size: 10 inch, tablet system: win10 professional system, Flash: 64GB, RAM: not less than 4GB DDR3L
- With RS232 interface, can be connected to a computer or laboratory platform for data processing, can also use USB for data storage
- Built-in lithium battery, suitable for field work, without external power supply can be used
- Embedded design, high-strength shell, easy to carry, suitable for all kinds of construction machinery

Technical specifications

- Light source: Semiconductor laser
- Particle size range: 0.8-600 μm (calibrated to ACFTD calibration 1-100 μm or ISO MTD calibration 4-70 μm(c))
- Detection channels: 64, set any particle size
- Sampling volume: 0.2-1000ml
- Sampling accuracy: better than ±1 per cent
- Sampling speed: 5-80mL/min
- Cleaning speed: 5-80mL/min
- Cleaning volume: can be set from 0ml to 90ml
- Counting accuracy: less than ±5 per cent error
- Resolution: ⩽10 per cent
- Repeatability: RSD＜2%
- Limiting recombination error: 12000-40,000 grains/mL
- Temperature acquisition (optional): -40~100°C Accuracy: ±0.5°C
- Moisture (optional): water activity collection: 1 ~ 100% RH; accuracy: ± 1% RH
- Absolute water content: 1～360ppm; Accuracy: ±10ppm
- Viscosity (optional): 0.5～500 cSt Accuracy: ±2%
- Off-line testing viscosity: ⩽100cSt (optional air pressure bottle sampler up to 400cSt)
- Pressure range: low pressure 0-0.6MPa, high pressure up to 42MPa (optional pressure reducing valve)
- Online detection interval: arbitrary setting
- Instrument screen size: 7 inch
- Testing sample temperature: 0°C～80°C
- Working temperature: -20°C～60°C
- Storage temperature: -30°C～80°C
- Power supply: AC100-240V, 50/60Hz
- Battery capacity: 5200mAh
- Battery run time: 6-8 hours
- Overall Dimension: 420×326×182mm
- Weight: 9kg

LWB-9 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- 4G remote monitoring function
- Built-in pressure reducing valve (42Mpa can be detected online)

Key features

- Oil particle laser sensor and six-parameter oil characterisation sensor for particle contamination, trace water ppm, viscosity, density, dielectric constant, water activity and temperature data
- The laser sensor adopts the testing principle of photoresist (shading) method, using the third generation of high-precision laser sensors, small size, high precision and stable performance
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, ГОСТ17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to GB/T21540, ISO4402, GB/T18854 and other standards, you can calibrate your own instrument
- Six-parameter oil property sensor adopts imported probe, get accurate measurement, wide tolerance fluid temperature, fast response, data refresh every second measurement is not affected by external vibration, all stainless steel, suitable for on-line monitoring robustness requirements, excellent chemical corrosion resistance and pressure resistance characteristics
- Built-in precision metering pumps for on- and off-line testing in the field
- Built-in oil heating device, can be set to display 40 °C temperature detection of oil moisture PPM value, moisture saturation, viscosity, density and dielectric constant of the detection of values
- Pre-calibrated 1~8 kinds of oil detection curves, can accurately detect a variety of oils
- Built-in micro-printer, real-time printing test reports, data can be saved, query, export and print historical data
- Alarm function can be set, input the alarm value, can be compared with the detection value to give the alarm scheme, judgement: qualified or unqualified
- With volume flushing and flushing mode, convenient for users to use the equipment cleaning and maintenance
- 7" colour touch screen with glass panel protection
- Built-in polymer battery, rugged engineering plastic waterproof case, stainless steel panel, suitable for complex working environments

Technical specifications

- Flow rate range: 10~50ml/min
- Viscosity of test sample: ⩽350cSt
- Detecting pressure: 0.1~0.5Mpa (optional pressure-reducing device up to 42Mpa)
- Particle size range: 1~500μm (use different types of sensors)
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 1μm or 4μm (c)

Technical specifications

- Limiting recombination error: 10000~40000 grains/ml
- Counting volume: 1~100ml (5 or 10ml recommended)
- Counting accuracy: ±0.4 contamination levels
- Protection class: IP56
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0~80°C
- Working temperature: -20~60°C
- Measurements: Moisture (PPM), Density (kg.m-3), Dynamic Viscosity (cP), Dielectric Constant, Water Activity, Temperature (°C)

Measurement range

- Moisture: 0~30000ppm (calibrated for different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100°C

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Ambient temperature: -40~85°C
- Storage temperature: -40~80°C
- Weight: 8kg
- External Dimension: 400×305×168mm

LWB-11 Portable Oil Quality Tester

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Built-in 4G cloud communication module for wireless remote monitoring from mobile phone and computer network

Key features

- Six-parameter oil characterisation sensor for online and offline measurement of: trace moisture PPM, density, viscosity, water activity, dielectric constant and temperature data
- Built-in precision metering pump, independent suction oil detection
- Built-in micro-printer, real-time printing of test reports, with a U disk interface for unlimited storage
- 7" colour touch screen with glass panel protection
- Built-in oil heating device, can be set at room temperature and constant temperature display 40 °C temperature detection of oil moisture PPM value, moisture saturation, viscosity, density, dielectric constant detection value
- Can pre-calibrate 1~8 kinds of oil detection curves, can detect a variety of oils
- You can set the number of tests and take the average value to print the test report
- Alarm can be set, enter the alarm value, can be compared with the detection value to give the alarm scheme, judgement: qualified or unqualified

Technical specifications

- Measurements: Moisture (PPM), Density (kg.m-3), Dynamic Viscosity (cP), Dielectric Constant, Water Activity, Temperature (°C)

Measurement range

- Moisture: 0~30000ppm (calibrated for different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100°C

Technical specifications

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Output interface: USB stick interface, power supply interface
- Supply voltage: DC 9~32V
- Fluid temperature: 0~100°C
- Ambient temperature：-40~85°C
- Storage Temperature：-40~80°C
- Shell material: 304 stainless steel panel, engineering plastic packaging box
- Protection class: IP65
- Seal material: FKM fluorine rubber
- Conformity standards: CE, ASTM1657, National Measurement and Testing
- Agency report
- EMC: EN 61326-1 EN 61326-2-3 ICES-003 Class B
- Weight: 5kg
- External dimensions: 335×236×176mm

LWB-12 Portable Oil Quality Tester

Applicable oils

- Turbine Oil
- Gear Oil
- Engine oil
- Hydraulic oil
- Lubricants
- Synthetic oils

Applicable industry

- Automotive Industry
- Engine Manufacturing
- Motor oil plants
- Wind power industry

Optional

- Water content sensor
- 4G Cloud Communication Module
- Pressure Reducing Valve

Key features

- Built-in iron filings sensor, six-parameter sensor, can detect the number of iron and non-iron filings, moisture PPM value, moisture saturation, viscosity, density, temperature and dielectric constant of oil detection value
- Built-in precision metering pump, can independently suction oil detection
- Built-in thermal printer, test reports can be printed in real time after the completion of testing
- Built-in mobile power supply for about 8 hours of outdoor use
- Built-in oil heating device, can be set at room temperature or constant temperature display 40 ℃ temperature detection of oil data
- Pre-calibrated detection curves for 1-8 types of oils
- Alarm can be set, input the alarm value, compared with the detection value to give the alarm scheme, to determine the pass or fail

Technical specifications

- Ferromagnetic abrasive particles: Fe>40μm (ESD) five grades
- Non-ferromagnetic abrasive particles: NFe>150μm (ESD) five grades

- **Fe size tape**
  40 ~ 99μm
  100 ~ 199μm
  200 ~ 299μm
  300 ~ 399μm
  ⩾ 400μm
- **NFe size tape**
  150 ~ 199μm
  200 ~ 299μm
  300 ~ 399μm
  400 ~ 499μm
  ⩾ 500μm

Technical specifications

Measurement range

- Moisture: 0~30000ppm (calibrated according to different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100℃

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Output interface: USB memory stick interface, power supply interface
- Protection level: IP67 (protection box)
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Testing sample temperature: 0-80 ℃
- Power supply: AC 220V±10%, 50/60Hz
- Weight: 8kg
- External dimensions: 435 × 343 × 150mm

LWB-15 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Pressure Reducing Valve
- 4G Cloud Communication Module

Key features

- Built-in particle counter, ferrous debris sensor, six-parameter sensor, can detect the oil particle cleanliness, ferrous and non-ferrous debris quantity, moisture PPM value, moisture saturation, viscosity, density, temperature and dielectric constant detection value
- Built-in precision metering pump, can independently suction oil detection
- Built-in thermal printer, test reports can be printed in real time after the completion of testing
- Built-in mobile power supply for about 8 hours of outdoor use
- Built-in oil heating device, can be set at room temperature or constant temperature display 40 °C temperature detection of oil data
- Pre-calibrated detection curves for 1-8 types of oils
- Alarm can be set, input the alarm value, compared with the detection value to give the alarm scheme, to determine the pass or fail

Technical specifications

- Ferromagnetic grits: Fe>40μm (ESD) five grades
- Non-ferromagnetic grains: NFe > 150μm (ESD) 5 grades

Fe size tape	**NFe size tape**
40 ~ 99μm	150 ~ 199μm
100 ~ 199μm	200 ~ 299μm
200 ~ 299μm	300 ~ 399μm
300 ~ 399μm	400 ~ 499μm
⩾ 400μm	⩾ 500μm

Particle counter

- Flow rate range: 10~50ml/min
- Viscosity of test sample: ⩽350cSt
- Particle size range: 1~500μm (choose different models of sensors)
- Sensitivity: 1μm or 4μm (c)

Technical specifications

- Limit overlap error: 10000~40000 grains/ml
- Counting volume: 1~100ml (5 or 10ml recommended)
- Counting accuracy: ±0.4 contamination level

Measurement range

- Moisture: 0~30000ppm (calibrated according to different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100℃

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Protection class: IP67 (protective box)
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Testing sample temperature: 0-80 °C
- Power supply: AC 220V±10%, 50/60Hz
- Weight: 8.5kg
- External dimensions: 435 × 343 × 200mm

S41 Portable Oil Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Key features

- Test principle of the photoresist (shading) method specified by the International Hydraulic Standards Committee (IHSC)
- High precision laser sensor, wide test range, stable performance, low noise, high resolution
- High-precision bi-directional piston pump sampling mode, adjustable feed rate, high precision sampling volume
- Pipes are made of 316L and PTFE to meet the detection of various organic solvents and oils
- For laboratory or on-site measurements, with built-in pressure-reducing device for on-line high-pressure measurements
- Positive/negative pressure can be formed by external pressure chamber for high viscosity sample detection and sample degassing
- Standard sampling bottles, sampling cups and other sampling containers can be used, or directly connected to the hydraulic system, to meet the testing requirements of different industries
- Built-in multiple calibration curves, compatible with all commonly used standards for calibration at home and abroad
- Automatic calibration, manual calibration and half-count calibration available
- Built-in NAS1638, GJB420A, GJB420B, ISO4406, SAE4059F, SAE4059CPC, GB/T14039, ГОСТ17216, QC/T29104, JB/T9737, DL/T432, SAE749D, HH005-2018 and other more than ten commonly used standards, a test can be given to give all the built-in standards under the data results
- Supports customised standard tests, and can set up 64 testing channels simultaneously according to customer requirements
- 1000 particle size channels for easy particle size analysis
- Built-in data analysis system, can automatically determine the sample level according to the standard, with automatic data processing, printing function
- 7-inch colour touch screen operation, Chinese and English input, free to switch the language interface, with preset, input, modification, storage, upload function, easy and fast operation
- Multiple user login accounts can be arbitrarily set up, new users can be added, permission settings and old user deletion operations
- Optional tablet control, win10 operating system, personalised signature can be edited for the operator
- With RS232 interface, can be connected to a computer or laboratory platform for data processing, can also use USB for data storage
- Built-in lithium battery, suitable for field operation, without external power supply can be used
- Swivelling stand design, free to adjust the instrument testing angle
- Chinese and English operation interface, one key switch
- Can be calibrated by the Defence Particle Size Testing Level 1 Station, with optional report issuance

Technical specifications

- Light source: Semiconductor laser
- Particle size range: 0.8-600 μm (calibrated to ACFTD calibration 1-100 μm or ISO MTD calibration 4-70 μm(c))
- Sensitivity: 0.1μm
- Customised detection channels: 8~64 channels are optional, arbitrary setting of particle size
- Sampling volume: 0.2-1000ml, interval 0.1mL
- Sampling accuracy: better than ±1 per cent
- Sampling speed: 5-80mL/min
- Cleaning speed: 5-80mL/min
- Cleaning volume: can be set between 0~90mL
- Counting accuracy: less than ±5 per cent error
- Resolution: ⩽10 per cent
- Repeatability: RSD＜2%
- Limiting recombination error: 12000-40,000 grains/mL
- Off-line detection of viscosity: ⩽100cSt (optional air pressure chamber for large viscosity)
- Pressure range: low pressure 0-0.6Mpa, high pressure up to 42Mpa (optional pressure reducing valve)
- Online detection interval: arbitrary setting
- Testing sample temperature: 0℃~80℃
- Working Temperature: -20℃~60℃
- Storage temperature: -30℃~80℃
- Screen size: 7 inch
- Power supply: AC100-240V, 50/60Hz
- Battery capacity: 5200mAh
- Battery run time: 6-8 hours
- Overall dimension: 310×305×135mm
- Instrument weight: 7.5kg

LWL-3 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- 4G wireless remote monitoring function
- External pressure reducing valve (420bar down to 5bar)
- Miniature stainless steel gear pump
- External display

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- For on-line detection in the field and real-time monitoring of particle contamination in oil systems
- Built-in data analysis system, can output the real data of the particle size of each channel and automatically determine the sample grade
- Standard model can directly withstand pressure of 6mpa, optional pressure reducing valve for 42mpa high pressure measurement
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, Г OCT17216, GB/T14039 particle contamination level standards
- Built-in calibration function, can be calibrated according to GB/T21540, ISO4402, ISO11171, GB/T18854 and other standards
- Printing, alarming and storing functions can be realised through secondary programming of data acquisition
- RS485 interface, support the standard modbus protocol can be connected to a computer, PLC system or other equipment for data monitoring and processing
- Rugged construction for complex work environments
- Inlet and outlet ports are distributed left and right for easy installation
- Continuous testing or any time interval can be set
- Optional external display, equipped with Chinese and English dual system (optional)
- Optional 4G module, support mobile phone or computer remote data monitoring, historical data, curve query (optional)

Technical specifications

- Light source: Semiconductor laser
- Measuring range: 1μm～1000μm
- Measurement standards: GJB420B, SAE4059F-CPC, ISO4406, GB/T14039, GJB420A, NAS1638, SAE4059F, GOST17216
- Flow rate range: 5mL/min～500mL/min (optimum 30mL/min)
- Sample viscosity: ⩽650cSt
- Sensitivity: 1μm or 4μm(c)
- Counting volume: 1～999mL
- Counting accuracy: ±0.4 contamination levels
- Recombination error limit: 40,000 grains/mL
- Online detection pressure: 0.1 ~ 10Mpa (optional pressure-reducing device up to 40MPa)
- Data output: RS485 port
- Power supply: DC 9-36V; ⩽5W
- Ambient temperature: -20～60°C
- Weight: <500g
- Size: 77.5 x 70 x 55mm

LWL-4 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- 4G wireless remote monitoring function
- External pressure reducing valve (420bar down to 5bar)
- External thermal printer
- Miniature stainless steel gear pump
- Mobile Power
- External Engineering Box

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensor, small size, high precision, stable performance
- Suitable for on-site online testing, real-time monitoring of particle contamination in the oil system
- Built-in data analysis system, can display the real data of each channel particle size and automatically determine the sample grade
- Standard version with 100kg direct pressure, optional pressure reducing valve for 400kg high pressure measurements
- Volumetric flushing and time flushing modes for ease of use and maintenance
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, ГОСТ17216, GB/T14039 and other particle contamination level standards
- Built-in calibration function, can be calibrated according to GB/T21540, ISO4402, ISO11171, GB/T18854 and other standards, a test can be given to all the built-in standard results
- All standards can be independently set any alarm level, to achieve pollution or cleanliness testing
- RS232, RS485 and USB interfaces, support for standard Modbus protocol can be connected to a computer, host computer, printer, PLC system or other equipment for data monitoring, processing
- Large storage, can choose to store in the instrument internal or external storage devices
- Sturdy structure, suitable for complex working environment.
- Dual oil outlet position left/right/top/bottom selectable, easy to install, bottom in/top out mode helps to minimise the interference of on-line air bubbles on the test results.
- Continuous testing or any time interval can be set.
- Touch screen operation, simple and convenient
- Optional 4G module for remote data monitoring, historical data and curve query (optional)

Technical specifications

- Light source: semiconductor laser
- Flow rate range: 5-500mL/min
- Testing sample viscosity: ⩽650cSt
- On-line testing pressure: 0.1~5Mpa (optional decompression device up to 40Mpa)
- Particle size range: 1~500μm (choose different types of sensors)
- Interface: USB interface, RS232 interface, RS485 interface
- Data storage: Provide 1000 groups of data storage space, and
- support the storage of USB memory stick
- Sensitivity: 1μm or 4μm (c)
- Limit overlap error: 40000 grains/ml
- Counting volume: 1~999ml
- Counting accuracy: ±0.5 contamination level
- Protection grade: IP56
- Test interval: 1 second~24 hours
- Testing sample temperature: 0~80°C
- Working temperature: -20~60°C
- Storage temperature: -30~80°C
- Power supply: AC 220V±10%, 50/60Hz or DC9-36V
- Weight: 0.54kg
- Volume: 75×100×62mm

LWL-5 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Built-in moisture detection function
- 4G wireless remote monitoring function
- Pressure reducing valve (420 bar down to 5 bar)
- External thermal printer
- Miniature stainless steel gear pump
- Mobile power supply
- External engineering box

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- For on-line detection in the field and real-time monitoring of particle contamination in oil systems
- Built-in data analysis system, can display the real data of the particle size of each channel and automatically determine the sample grade
- Standard model can directly withstand pressure of 6mpa, can be equipped with pressure reducing valve for ultra-high pressure on-line measurement
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, Г OCT17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to GB/T21540, ISO4402, ISO11171, GB/T18854 and other standards, a test can give all the built-in standard results
- All standard alarm levels can be set independently of each other for contamination or cleanliness testing
- RS232, RS485 and USB interfaces, support the standard Modbus protocol can be connected to a computer, host computer, printer, PLC system or other devices for data monitoring and processing
- Extra large storage, can choose to store in the instrument internal or external storage devices
- Rugged construction for complex work environments
- Bottom-in, top-out mode helps to minimise the interference of in-line air bubbles with the test results
- Continuous testing or any time interval can be set
- Switch between English and Chinese systems with one click
- Touch screen or membrane key operation, can be freely switched, the instrument interface can be freely controlled by the remote printer on and off
- Optional 4G module can be connected to achieve remote data monitoring, historical data, curve query (optional)
- Built-in moisture and temperature sensor module with simultaneous output of four parameters (optional)

Technical specifications

- Light source: Semiconductor laser
- Flow rate range: 5-500mL/min
- Testing sample viscosity: ⩽650cSt
- On-line detection pressure: 0.1~6Mpa (optional pressure-reducing device up to 42Mpa)
- Particle size range: 1~1000μm (use different types of sensors)
- Interface: USB interface, RS232 interface, RS485 interface
- Data storage: Provide 1000 groups of data storage space, and support the storage of USB flash drive
- Sensitivity: 1μm or 4μm (c)
- Limiting recombination error: 40,000 grains/ml
- Counting volume: 1~999ml
- Counting accuracy: ±0.5 contamination levels
- Protection class: IP56/IP67
- Temperature (optional): Acquisition range: 1~100°C; Measurement accuracy: 1°C
- Water activity (optional): Acquisition range: 1~100%RH; Measurement accuracy: 1%RH
- Water content (optional): Acquisition range: 1~360ppm; Measurement accuracy: 1ppm
- Test interval: 1 second ~ 24 hours
- Testing sample temperature: 0~80°C
- Working temperature: -20~60°C
- Power supply: AC 220V±10%, 50/60Hz or DC9-36V
- Weight: 1kg
- Volume: 115×85×60mm

LWL-6 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Key features

- Adoption of the counting principle of the photoresist (shading) method specified by the International Hydraulic Standards Committee
- High precision laser sensor, wide test range, stable performance, low noise, high resolution
- Adoption of high-precision bi-directional piston pump, stable feeding speed, high sampling accuracy
- Built-in pressure reducing device for on-line high pressure testing
- Built-in GJB-420A, GJB-420B, SAE4059E, ISO4406, GB/T14039, NAS1638 and ГOST17216 and other commonly used standards, support for customised standards testing, and can be set up according to the needs of customers required standards
- Built-in data analysis system, can automatically determine the sample level according to the standard, continuous monitoring of the system and has an alarm function, can be set for each standard level alarm settings and each channel size alarm settings
- Built-in multiple calibration curves, compatible with all commonly used standards at home and abroad for calibration
- Continuous automatic on-line detection, and can be set arbitrarily detection interval time
- Baud rate setting is possible
- Chinese and English dual system, users can switch at will
- Ability to add and set permissions for different accounts and passwords
- RS232, RS485 and USB interfaces for connecting to PCs or lab platforms, as well as to industrial fieldbuses
- With data storage, printing function, convenient data organisation, archiving
- Can be used stand-alone, can be used upstream and downstream online to calculate the filtration rate, can be more than one interconnected remote host computer unified monitoring, can generate graphs, history query, data export, etc., the combination of versatile, the application of the occasion to expand the strong
- High-strength metal casing, suitable for use in the field and other harsh environments
- Bulk instrument functions and external dimensions can be customised according to customer requirements

Technical specifications

- Light source: Semiconductor laser
- Particle size range: 0.8 μm to 600 μm (calibrated to 1 to 100 μm or 4 to 70 μm(c))
- Sensitivity: 1μm (ISO4402) or 4μm (c)
- Sampling volume: 0.2~1000ml (recommended 10)
- Sampling volume accuracy: better than ±1 per cent
- Detection speed: 20mL/min or 5~80ml/min according to customer's needs
- Limiting Recombination Error: 40,000 grains/mL
- Repeatability: RSD<2%
- Resolution: better than 10 per cent
- Counting error: better than 10 per cent (less than ±0.1 contamination level)
- Online detection pressure: 0.1~0.6Mpa (optional pressure-reducing device up to 42MPa)
- Online detection interval: 1 second ~ 23 hours 59 minutes 59 seconds
- Detection channels: 8 channels of arbitrary setting particle size
- Protection class: IP56
- Testing sample temperature: 0°C～80°C
- Operating Temperature: -20°C～60
- Power supply: 100～240VAC or DC24V
- Screen size: 5.0 inch
- Instrument size: 330*230*120mm

LWL-7 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- 4G wireless remote monitoring function
- Pressure Reducing Valve
- Trace moisture detection function

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- Suitable for laboratory or on-site testing, off-line and on-line testing of oil samples
- Built-in precision metering pump
- Built-in data analysis system, can display the real data of the particle size of each channel and automatically determine the sample grade
- Pipes are made of 316L and PTFE to meet the detection of various organic solvents and oils
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, ГOCT17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to ISO11171, GB/T18854 and other standards
- RS232 or RS485 interface, can be connected to a computer or other devices for data monitoring, processing
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Chinese and English bilingual, one-key switching, with preset, modify parameters, storage function, easy and fast operation
- Extra-large storage, optionally in the instrument's internal or external storage device, with the ability to print and export historical data
- Built-in 4.3" colour touch screen with glass panel protection
- Third-party calibration and verification certificates are available through and as an option
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

- Light source: Semiconductor laser
- Flow rate range: 10-50mL/min
- Viscosity of test sample: ⩽350cSt
- Particle size range: 1-500μm (with different types of sensors)
- Detecting pressure: 0-0.5Mpa (optional pressure-reducing device up to 42Mpa)
- Interface: USB port, power port
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 1μm or 4μm (c)
- Limiting recombination error: 10000~40000 grains/ml
- Counting volume: 1-100 ml (5 or 10 ml recommended)
- Counting accuracy: ±0.4 contamination levels
- Protection class: IP56
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0-80°C
- Working temperature: -20-60°C
- Power supply: AC 220V±10%, 50/60Hz or DC12-40V
- Weight: 5.5kg
- Volume: 315×265×125mm

LWL-8 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- 4G wireless remote monitoring function
- Pressure Reducing Valve
- Trace moisture detection function

Key features

- Adopting the principle of photoresist (shading) method, using high-precision laser sensors, small size, high precision, stable performance
- Suitable for laboratory or on-site testing, off-line and on-line testing of oil samples
- Built-in precision metering pump
- Built-in data analysis system, can display the real data of the particle size of each channel and automatically determine the sample grade
- Pipes are made of 316L and PTFE to meet the detection of various organic solvents and oils
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, Г OCT17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to ISO11171, GB/T18854 and other standards
- RS232 or RS485 interface, can be connected to a computer or other devices for data monitoring, processing
- Volume flushing and hourly flushing modes are available to facilitate the use and maintenance of the equipment
- Chinese and English bilingual, one-key switching, with preset, modify parameters, storage function, easy and fast operation
- Extra-large storage, optionally in the instrument's internal or external storage device, with the ability to print and export historical data
- Built-in 4.3" colour touch screen with glass panel protection
- Third-party calibration and verification certificates are available through and as an option
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

- Light source: Semiconductor laser
- Flow rate range: 10-50mL/min
- Viscosity of test sample: ⩽350cSt
- Particle size range: 1-500μm (with different types of sensors)
- Detecting pressure: 0-0.5Mpa (optional pressure-reducing device up to 42Mpa)
- Interface: USB port, power port
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 1μm or 4μm (c)
- Limiting recombination error: 10000~40000 grains/ml
- Counting volume: 1-100 ml (5 or 10 ml recommended)
- Counting accuracy: ±0.4 contamination levels
- Protection class: IP56
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0-80℃
- Temperature acquisition T (optional): 1. Acquisition range: 1-100 degrees Celsius; 2. Measurement accuracy: 1 degree Celsius; 3. response time: 30s
- Water activity collection aw (optional): 1. collection range: 1-100% RH; 2. measurement accuracy: 1% RH; 3. response time: 30s
- Absolute water content AH (optional): 1. Acquisition range: 1-350ppm; 2. Measurement accuracy: 1ppm; 3. Response time: 30s
- Working temperature: -20-60℃
- Power supply: AC 220V±10%, 50/60Hz or DC12-40V
- Weight: 5.5kg
- Volume: 315×265×125mm

LWL-9 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- 4G remote monitoring function
- Pressure reducing valve (42Mpa can be detected online)

Key features

- Oil particle laser sensor and six-parameter oil characterisation sensor for particle contamination, trace water ppm, viscosity, density, dielectric constant, water activity and temperature data
- The laser sensor adopts the testing principle of photoresist (shading) method, using the third generation of high-precision laser sensors, small size, high precision and stable performance
- Built-in ISO4406, NAS1638, SAE4059, GJB420A, GJB420B, ГОСТ17216, GB/T14039 and other particle contamination degree level standards
- Built-in calibration function, can be calibrated according to GB/T21540, ISO4402, GB/T18854 and other standards, you can calibrate your own instrument
- Six-parameter oil property sensor adopts imported probe, get accurate measurement, wide tolerance fluid temperature, fast response, data refresh every second measurement is not affected by external vibration, all stainless steel, suitable for on-line monitoring robustness requirements, excellent chemical corrosion resistance and pressure resistance characteristics
- Built-in precision metering pumps for on- and off-line testing in the field
- Built-in oil heating device, can be set to display 40 °C temperature detection of oil moisture PPM value, moisture saturation, viscosity, density and dielectric constant of the detection of values
- Pre-calibrated 1~8 kinds of oil detection curves, can accurately detect a variety of oils
- Built-in micro-printer, real-time printing test reports, data can be saved, query, export and print historical data
- Alarm function can be set, input the alarm value, can be compared with the detection value to give the alarm scheme, judgement: qualified or unqualified
- With volume flushing and flushing mode, convenient for users to use the equipment cleaning and maintenance
- Built-in 4.3" colour touch screen with glass panel protection
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

- Flow rate range: 10~50ml/min
- Viscosity of test sample: ⩽350cSt
- Detecting pressure: 0.1~0.5Mpa (optional pressure-reducing device up to 42Mpa)
- Particle size range: 1~500μm (use different types of sensors)
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 1μm or 4μm (c)

Technical specifications

- Limiting recombination error: 10000~40000 grains/ml
- Counting volume: 1~100ml (5 or 10ml recommended)
- Counting accuracy: ±0.4 contamination levels
- Protection class: IP56
- Test interval: 1 second - 24 hours
- Testing sample temperature: 0~80°C
- Working temperature: -20~60°C
- Measurements: Moisture (PPM), Density (kg.m-3), Dynamic Viscosity (cP), Dielectric Constant, Water Activity, Temperature (°C)

Measurement range

- Moisture: 0~30000ppm (calibrated for different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100°C

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Ambient temperature: -40~85°C
- Storage temperature: -40~80°C
- Weight: 6kg
- External Dimension: 315×265×125mm

LWL-10 Online Oil Quality Tester

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Pressure reducing valve
- 4G wireless remote monitoring function

Key features

- Built-in iron chip sensor can detect the quantity of iron chips and non-iron chips in the oil.
- Built-in precision metering pump, can independently suction oil testing
- Built-in thermal printer, can print the test report in real time after the test is completed.
- Built-in oil heating device, can be set at room temperature or constant temperature display 40 °C temperature detection of oil data
- Alarm can be set, enter the alarm value, compared with the detection value to give the alarm programme, judge qualified or unqualified
- Built-in 4.3-inch colour touch screen, glass panel protection
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

- Ferromagnetic grits: Fe>40μm (ESD) five grades
- Non-ferromagnetic grains: NFe > 150μm (ESD) 5 grades

Fe size tape	**NFe size tape**
40 ~ 99μm	150 ~ 199μm
100 ~ 199μm	200 ~ 299μm
200 ~ 299μm	300 ~ 399μm
300 ~ 399μm	400 ~ 499μm
⩾ 400μm	⩾ 500μm

Technical specifications

- Flow rate range: 10~50ml/min
- Testing sample viscosity: ⩽350cSt
- Detecting pressure: 0.1~0.5Mpa (optional decompression device up to 42Mpa)
- Particle size range: 1~500μm (with different types of sensors)
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Sensitivity: 1μm or 4μm (c)
- Limit overlap error: 10000~40000 particles/ml
- Counting volume: 1~100ml (5 or 10ml recommended)
- Counting accuracy: ±0.4 contamination level
- Protection grade: IP56
- Test interval: 1 second-24 hours
- Test sample temperature: 0~80℃
- Working temperature: -20~60℃
- Weight: 7kg
- External size: 400×300×150mm

LWL-11 Online Oil Quality Tester

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Pressure Reducing Valve
- 4G Cloud Communication Module

Key features

- Built-in six-parameter sensor, can detect the oil moisture PPM value, moisture saturation, viscosity, density, temperature and dielectric constant of the detection value
- Built-in precision metering pump, can independently suction oil testing
- Built-in thermal printer, real-time printing test report after the completion of testing
- Pre-calibrated 1-8 kinds of oil testing curve
- Alarm can be set, enter the alarm value, compared with the detection value to give the alarm programme, judge qualified or unqualified
- Built-in 4.3-inch colour touch screen, glass panel protection
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

Measurement range

- Moisture: 0~30000ppm (calibrated according to different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100℃

Technical specifications

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Protection grade: IP56
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Testing sample temperature: 0-80°C
- Power supply: AC 220V±10%, 50/60Hz
- Weight: 7kg
- External dimensions: 400×300×150mm

LWL-12 Online Oil Quality Tester

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Pressure Reducing Valve
- 4G Cloud Communication Module

Key features

- Built-in iron filings sensor, six-parameter sensor, can detect the number of iron filings and non-iron filings, moisture PPM value, water saturation, viscosity, density, temperature and dielectric constant of the oil detection value
- Built-in precision metering pump, can independently suction oil detection
- Built-in thermal printer, real-time printing test report after the completion of testing
- Pre-calibrated 1-8 kinds of oil testing curve
- Alarm can be set, enter the alarm value, compared with the detection value to give the alarm programme, judge qualified or unqualified
- Built-in 4.3-inch colour touch screen, glass panel protection
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

- Ferromagnetic grits: Fe>40μm (ESD) five grades
- Non-ferromagnetic grains: NFe > 150μm (ESD) 5 grades

- **Fe size tape**
  40 ~ 99μm
  100 ~ 199μm
  200 ~ 299μm
  300 ~ 399μm
  ⩾ 400μm
- **NFe size tape**
  150 ~ 199μm
  200 ~ 299μm
  300 ~ 399μm
  400 ~ 499μm
  ⩾ 500μm

Technical specifications

Measurement range

- Moisture: 0~30000ppm (calibrated according to different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100°C

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Protection grade: IP56
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Testing sample temperature: 0-80°C
- Power supply: AC 220V±10%, 50/60Hz
- Weight: 7kg
- External dimensions: 400×300×150mm

LWL-15 Online Particle Counter

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Pressure reducing valve
- 4G wireless remote monitoring function

Key features

- Built-in particle counter, iron filings sensor, six-parameter sensor, can detect the oil particle cleanliness, the number of iron filings and non-iron filings, moisture PPM value, water saturation, viscosity, density, temperature and dielectric constant of the test value
- Built-in precision metering pump, can independently suction oil testing
- Built-in thermal printer, real-time printing test report after the completion of testing
- Built-in oil heating device, can be set at room temperature or constant temperature display 40 °C temperature detection of oil data
- Pre-calibrated 1-8 kinds of oil detection curve.
- Alarm can be set, enter the alarm value, compared with the detection value to give the alarm scheme, judge qualified or unqualified
- Built-in 4.3-inch colour touch screen, glass panel protection
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

- Ferromagnetic grits: Fe>40μm (ESD) five grades
- Non-ferromagnetic grains: NFe > 150μm (ESD) 5 grades

Fe size tape	**NFe 尺寸带**
40 ~ 99μm	150 ~ 199μm
100 ~ 199μm	200 ~ 299μm
200 ~ 299μm	300 ~ 399μm
300 ~ 399μm	400 ~ 499μm
⩾ 400μm	⩾ 500μm

Particle counter

- Flow rate range: 10~50ml/min
- Viscosity of test sample: ⩽350cSt
- Particle size range: 1~500μm (choose different models of sensors)
- Sensitivity: 1μm or 4μm (c)

Technical specifications

- Limit overlap error: 10000~40000 grains/ml
- Counting volume: 1~100ml (5 or 10ml recommended)
- Counting accuracy: ±0.4 contamination level

Measurement range

- Moisture: 0~30000ppm (calibrated according to different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100°C

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Protection grade: IP56
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Testing sample temperature: 0-80°C
- Power supply: AC 220V±10%, 50/60Hz
- Weight: 7kg
- External dimensions: 400×300×150mm

LWL-15 Online Particle Counter - big screen

Applicable oils

- Common mineral oil
- Petroleum-based media
- Lubricating oils
- Hydraulic oils
- Transformer oil
- Turbine oil
- Aviation paraffin
- Phosphate oil
- Water glycol
- Organic fluids
- Polymer solutions

Optional

- Pressure reducing valve
- 4G wireless remote monitoring function
- Thermal printer

Key features

- Built-in particle counter, iron filings sensor, six-parameter sensor, can detect the oil particle cleanliness, the number of iron filings and non-iron filings, moisture PPM value, water saturation, viscosity, density, temperature and dielectric constant of the test value
- Built-in precision metering pump, can independently suction oil testing
- Built-in thermal printer, real-time printing test report after the completion of testing
- Built-in oil heating device, can be set at room temperature or constant temperature display 40 °C temperature detection of oil data
- Pre-calibrated 1-8 kinds of oil detection curve.
- Alarm can be set, enter the alarm value, compared with the detection value to give the alarm scheme, judge qualified or unqualified
- Built-in 7-inch colour touch screen, glass panel protection
- High-strength aluminium alloy shell, suitable for use in the field and other harsh environments

Technical specifications

- Ferromagnetic grits: Fe>40μm (ESD) five grades
- Non-ferromagnetic grains: NFe > 150μm (ESD) 5 grades

Fe size tape	**NFe 尺寸带**
40 ~ 99μm	150 ~ 199μm
100 ~ 199μm	200 ~ 299μm
200 ~ 299μm	300 ~ 399μm
300 ~ 399μm	400 ~ 499μm
⩾ 400μm	⩾ 500μm

Particle counter

- Flow rate range: 10~50ml/min
- Viscosity of test sample: ⩽350cSt
- Particle size range: 1~500μm (choose different models of sensors)
- Sensitivity: 1μm or 4μm (c)

Technical specifications

- Limit overlap error: 10000~40000 grains/ml
- Counting volume: 1~100ml (5 or 10ml recommended)
- Counting accuracy: ±0.4 contamination level

Measurement range

- Moisture: 0~30000ppm (calibrated according to different oils)
- Density: 600~1250kg.m-3
- Viscosity: 1~400cP (500cSt)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100°C

Accuracy @ 25°C typical

- Moisture: 10% or 10ppm whichever is greater
- Density: 2% or 5kg.m-3 whichever is greater
- Viscosity: 5% or 1cP whichever is greater
- Water activity: 3 per cent
- Dielectric constant: 5%
- Temperature: 0.5°C

Resolution

- Moisture: 1ppm
- Density: 0.1kg.m-3
- Viscosity: 0.1cP
- Water activity: 0.001
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Protection grade: IP56
- Data storage: provide 1000 groups of data storage space, and support U disk storage
- Testing sample temperature: 0-80°C
- Power supply: AC 220V±10%, 50/60Hz
- Weight: 8.5kg
- External dimensions: 310×250×140mm

HWR350 Trace moisture and temperature sensor

Product description

Two forms of expression of water in oil: 1. Water Activity Aw, English Water Activity. Refers to the actual value of the water content in the oil and the ratio of the saturated water content in the oil at the current temperature
2, water content ppm, refers to the absolute content of water in the oil (mass ratio or volume ratio), the English Parts Per Million, dimensionless.
HWR350 Moisture Content Sensor has a uniquely designed moisture sensing probe on the front of the sensor. The HWR350 Moisture Content Sensor is designed with a unique moisture sensing probe on the front of the sensor that captures changes in the electrical characteristics of the oil-water mixture in real time and compensates for these changes with a highly accurate temperature probe. The sensor is then compensated by a high precision temperature probe and an optimised algorithm is used to obtain the moisture content of the oil. The patented measurement technology held by the company The patented measurement technology successfully realises the accurate monitoring of the moisture content of oil in multiple ranges. The patented measurement technology of the company successfully realises the accurate monitoring of the moisture content in oil in multiple ranges.

Product Features

- Reliable: Patented product, resistant to all types of oils sensor life of up to 10 years. time high energy efficiency, operating current less than 5mA@24Vdc. unique grounding Unique grounding protection and signal sampling unit.
- Precise: Imported sensitive chip, unique temperature compensation algorithm, moisture activity measurement up to 2%, temperature up to 0%. Measurement of moisture activity up to 2%, temperature up to 0.3 ℃ national metrological institutions quasi-report traceability.
- Rugged: IP66 protection level, stainless steel body anti-power reverse connection design, industrial isolation measures, 9-36VAC, and a signal sampling unit. Industrial isolation measures, 9-36VDC wide power output, to meet all kinds of applications.
- Easy to use: G1/2" BSP standard interface, optimal length, easy to install in-situ digital output and calibration interface, on-site. Digital output and calibration interface, on-site completion of sensor calibration, built-in a variety of oil calibration curves. Built-in oil calibration curves.

Specifications

- Measuring range: 0~1aw
- Measurement accuracy: 0~0.6±0.02aw, 0.6~1±0.02aw
- Resolution: 0.001 aw
- Response time (typical): <1 minute
- Measurement range: 0~100ppm, 500ppm, 1000ppm, 2000ppm or customised
- Measurement Accuracy: ±10%
- Measurement range: -40~120°C
- Accuracy (at+25°C): ±0.3°C
- Operating temperature (ambient): -40~80°C
- Allowable oil temperature: -40~120°C
- Digital signal: RS485 MODBUS RTU, (RS232 optional)
- Analogue signal: 4~20mA load resistance 500Ω
- Mechanical interface: G1/2 "ISO or 1/2 "NPT
- Probe allowable working pressure: 20bar Other pressure ranges on request.
- Probe material: 316&304 stainless steel
- Protection class: IP65
- Power supply: 9V~36V DC (RS485 communication), 15V~36V DC (4~20mA communication)
- Power supply current: <5mA + load current
- Transmitter weight: 200g
- Cable specification: M8*16 core
- Cable length: 6 cores 2 metres UL20866 6*22AWG
- EMC standard: CE/ISO EN61326-1 EN61000-3 EN61010 Class B
- Packing specification: carton 172×117×53mm

HWR330 Moisture content sensor

Product description

The HWR330B is an intelligent sensor especially designed for on-line measurement of oil moisture content. Its unique measurement technology is extremely sensitive to changes in oil moisture content, and can continuously monitor the water content of oil in real time. Its unique measurement technology is extremely sensitive to the change of oil moisture content, and it can continuously monitor the water content of oil online in real time, providing 360° real-time online monitoring of the oil. provides 360°all-round real-time online monitoring, providing a strong guarantee for the reliable operation of your valuable equipment. provide a strong guarantee for the reliable operation of your valuable equipment.

Product Features

- Very sensitive to water contamination
- Simultaneous detection of dissolved, free and emulsified water in oils
- Up to 10-15 measurement basis for accurate measurements in harsh conditions
- Special earthing technology for extreme reliability and robustness
- Well-designed probe structure, extremely easy to clean Global commercial and technical standards certified
- 7*24 hours, 365 days, keep track of the oil quality of your equipment at all times
- Enables you to proactively maintain your equipment and avoid wasting money and time. Significant savings on oil changes and waste oil disposal costs
- Reduces carbon emissions and contributes to the environment whilst reducing wasteful use of oil.

Specifications

- Water content: 0~5%, 0~10%, 0~20% (customisable)
- Accuracy: 0.3% (typical) 0.5% (max)
- Resolution:0.1%
- Temperature: -40~120°C
- Accuracy: 0.3°C (typical) 0.5°C (max)
- Resolution: 0.1°C
- Output: RS485 digital output
- Operating power supply: DC9V~28V
- Operating current: <6mA + load current
- Allowable working pressure :<100bar
- Operating Temperature: -40~85°C
- Withstand oil temperature: -40~120°C
- Mechanical interface : G1/2" BSP
- Electrical interface: M8*16 core
- Connection cable: 6 core 2m UL20866 6*22AWG
- Electromagnetic compatibility standard: EN 61000-6-4:2007 EN 61000-6-2:2005
- Shell material: 316 stainless steel
- Protection grade: IP66
- Weight: 250g

DR-400 4-in-1 Oil Characterisation Sensor

Product description

DR-400 four-in-one oil properties sensor for my company's original core technology products, highly integrated oil viscosity, density, dielectric constant and temperature of four physical and chemical parameters and a body. Greatly increase the user's return on investment, so that the user has a reliable basis for quality control in the production process, but also to provide real-time monitoring data for the stable operation of the user's major equipment, is a compact, intelligent, reliable, feature-rich online monitoring sensor.

Product Features

- Imported probe, high precision measurement
- Four parameters in one: viscosity, density, dielectric constant and temperature
- Density accuracy up to ±5kg.m-3
- Viscosity range 1~400cP, accuracy up to 5%.
- Wide range of permissible fluid temperatures from 0°C to 100°C
- Fast response, data refresh per second
- Measurement is not affected by external vibration
- All stainless steel, suitable for on-line monitoring robustness requirements
- Excellent chemical and pressure resistance
- No moving parts, no consumable parts, 10 year life span
- Multiple certifications and test reports
- Compact size for easy system integration
- Convenient integrated module for on-site calibration

Specifications

Measurement index

- Dynamic Viscosity(cP), Density(kg.m-3), Dielectric Constant, Temperature(℃)

Measuring range

- Viscosity: 1~400cP(500cSt)
- Density: 600~1250kg.m-3
- Dielectric constant: 1~6
- Temperature: 0~100°C

Accuracy @25℃ Typical

- Viscosity: 5% or 1cP whichever is greater
- Density: 0.5% or 5kg.m-3 whichever is greater
- Dielectric Constant: 3%
- Temperature: 0.5℃

Resolution

- Viscosity: 0.1cP
- Density: 0.1kg.m-3
- Dielectric constant: 0.001
- Temperature: 0.1℃
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Digital output: RS485 MODBUS RTU
- Power supply voltage: DC9~32V
- Overall power consumption: <20mA@24Vdc RS485
- Probe pressure: max 10bar
- Fluid temperature：0~100℃
- Ambient temperature：-40~85℃
- Storage temperature：-40~100℃
- Shell material: 316/304 stainless steel Hastelloy
- Mechanical interface: G3/4"
- Protection grade: IP65
- Seal material: FKM fluorine rubber
- Connection cable: 2 metres M8 6 core
- Maximum flow rate: <0.1m/s
- Conformity standards: CE, ASTM1657, national measurement and testing agency report
- Explosion-proof grade: EXia IIB T6 Ga (optional)
- Electromagnetic compatibility: EN 61326-1 EN 61326-2-3 ICES-003 Class B
- Weight: 280g

DR500 5-in-1 Oil Characterisation Sensor

Product description

DR-500 5-in-1 oil property sensor is our original core technology. It combines five physical and chemical parameters of oil viscosity, density, moisture, water activity and temperature into one. Viscosity, Density, Moisture, Water Activity and Temperature.

Product Features

- Imported probe, high precision measurement
- Five parameters in one: viscosity, density, moisture content, water activity and temperature
- Viscosity range of 1~400cP, accuracy of 5% ppm level moisture content detection, to prevent the risk of water ingress into the oil
- Density accuracy of ±5kg.m-3
- Wide range of permissible fluid temperatures, from 0°C to 100°C
- Fast response, data refreshed every second
- Measurements are unaffected by external vibration
- All stainless steel for on-line monitoring robustness requirements
- Excellent chemical and pressure resistance
- No moving parts, no consumables, 10 year life span
- Multiple certifications and test reports
- Compact size for easy system integration
- Convenient integrated module for on-site calibration

Specifications

Measurement index
- Dynamic Viscosity(cP), Density(kg.m-3), Trace Moisture (ppm), Water activity aw, Temperature(°C)

Measuring range
- Viscosity: 1~400cP(500cSt)
- Density: 600~1250kg.m-3
- Trace Moisture: 0~30000ppm (calibrated according to different oils)
- Water activity: 0~1aw
- Temperature: 0~100°C

Accuracy @25°C Typical
- Viscosity: 5% or 1cP whichever is greater
- Density: 0.5% or 5kg.m-3 whichever is greater
- Trace Moisture: 10% or 10ppm whichever is greater
- Water activity: 3%
- Temperature: 0.5°C

Resolution
- Viscosity: 0.1cP
- Density: 0.1kg.m-3
- Trace Moisture: 1ppm
- Water activity: 0.001aw
- Temperature: 0.1°C
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Digital output: RS485 MODBUS RTU
- Power supply voltage: DC9~32V
- Overall power consumption: <20mA@24Vdc RS485
- Probe pressure: max 10bar
- Fluid temperature: 0~100°C
- Ambient temperature: -40~85°C
- Storage temperature: -40~120°C
- Shell material: 316/304 stainless steel Hastelloy
- Mechanical interface: G3/4"
- Protection grade: IP65
- Seal Material: FKM Fluorocarbon
- Connection cable: 2 metres M8 6 core
- Maximum flow rate: <0.1m/s
- Conformity standards: CE, ASTM1657, the national measurement and testing agency report
- Explosion-proof grade: EXia IIB T6 Ga (optional)
- EMC: EN 61326-1 EN 61326-2-3 ICES-003 Class B
- Weight: 280g

DR-600 6-in-1 Oil Characterisation Sensor

Product description

LUWATECH Six Parameter Oil Characterisation Sensor is a six parameter oil sensor that combines moisture, viscosity, density, dielectric constant, water activity, and temperature in one unit; it is simple and easy to use, and requires no personnel involvement to operate, as the sensor automatically performs all the measurements, and the user only needs to install the sensor in a pipeline to achieve in-process measurements of density, viscosity, and temperature during the production process, or to achieve laboratory analyses with the offline suite.

Product Features

- Imported probe, high accuracy measurement
- Up to six oil parameters: moisture, density, viscosity, water activity, dielectric constant and temperature
- Density accuracy up to ±5kg.m-3
- Viscosity range 1~400cP with 5% accuracy
- Wide range of permissible fluid temperatures from 0°C to 100°C
- Fast response, data refresh per second
- Measurements are unaffected by external vibration
- All stainless steel, suitable for on-line monitoring robustness requirements
- Excellent chemical and pressure resistance
- No moving parts, no consumables, 10 year life span
- Multiple certifications and test reports
- Compact size for easy system integration
- Easy on-site calibration integration
- Built-in standard test curves for 8 oil samples

Specifications

Measurement index

- Dynamic Viscosity(cP), Density(kg.m-3), Trace Moisture (ppm), Dielectric Constant, Water activity aw, Temperature(°C)

Measuring range

- Viscosity: 1~400cP(500cSt)
- Density: 600~1250kg.m-3
- Trace Moisture: 0~30000ppm (calibrated according to different oils)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Temperature: 0~100°C

Accuracy @25°C Typical

- Viscosity: 5% or 1cP whichever is greater
- Density: 0.5% or 5kg.m-3 whichever is greater
- Trace Moisture: 10% or 10ppm whichever is greater
- Water activity: 3%
- Dielectric Constant: 5%
- Temperature: 0.5°C

Resolution

- Viscosity: 0.1cP
- Density: 0.1kg.m-3
- Trace Moisture: 1ppm
- Water activity: 0.001aw
- Dielectric constant: 0.01
- Temperature: 0.1°C
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Digital output: RS485 MODBUS RTU
- Power supply voltage: DC9~32V
- Overall power consumption: <20mA@24Vdc RS485
- Probe pressure: max 10bar
- Fluid temperature: 0~100°C
- Ambient temperature: -40~85°C
- Storage temperature: -40~120°C
- Shell material: 316/304 stainless steel Hastelloy
- Mechanical interface: M39*1.5
- Protection grade: IP65
- Seal Material: FKM Fluorocarbon
- Connection cable: 2 metres M8 6 core
- Maximum flow rate: <0.1m/s
- Conformity standards: CE, ASTM1657, the national measurement and testing agency report
- Explosion-proof grade: EXia IIB T6 Ga (optional)
- EMC: EN 61326-1 EN 61326-2-3 ICES-003 Class B
- Weight: 280g

DR-800 8-in-1 Oil Characterisation Sensor

Product description

The DR-800 combines power viscosity, kinematic viscosity, density, dissolved water, water activity, dielectric constant, water content, and temperature, and other eight physical and chemical parameters with a combination of only its It is a compact and easy-to-use instrument for real-time measurement of various parameters during the operation of machinery and equipment. It is a compact, intelligent, reliable and feature-rich online monitoring It is a compact, intelligent, reliable and feature-rich on-line monitoring sensor.

Product Features

- Imported probe, high precision measurement
- Eight oil physical and chemical parameters in one unit
- Viscosity range 1~400cP(500cSt), accuracy up to 5%
- Moisture content detection at ppm level, preventing the risk of water ingress into the oil
- Density accuracy of ±5kg.m-3
- Wide range of permissible fluid temperatures, from 0°C to 100°C
- Fast response with data refresh per second
- Measurement is unaffected by external vibration
- All stainless steel for on-line monitoring robustness requirements
- Excellent chemical and pressure resistance
- No moving parts, no consumable parts, 10 year life span
- Multiple certifications and test reports
- Compact size for easy system integration
- Convenient integrated module for on-site calibration

Specifications

Measurement index

- Dynamic Viscosity (cP), Kinematic Viscosity (cSt), Density (kg.m-3), Trace Moisture (ppm), Water Activity aw, Dielectric Constant, Moisture Content (%), Temperature (°C), Viscosity Estimation at 40°C (Optional)

Measuring range

- Dynamic viscosity: 1~400cP (1000cP optional)
- Kinematic viscosity: 1~500cSt (40°C kinematic viscosity)
- Density: 600~1250kg.m-3
- Moisture: 0~30000ppm (calibrated according to different oils)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Water content: 0~10%
- Temperature: 0~100°C

Accuracy @25°C Typical

- Viscosity: 5% or 1cP (1cSt) whichever is greater
- Density: 0.5% or 5kg.m-3 whichever is greater
- Moisture: 10% or 10ppm whichever is greater
- Water activity: 3 %
- Dielectric constant: 5%
- Water content: 0.5%
- Temperature: 0.5°C

Resolution

- Viscosity: 0.1cP (0.1cSt)
- Density: 0.1kg.m-3
- Moisture: 1ppm
- Water activity: 0.001aw
- Dielectric constant: 0.01
- Moisture content: 0.01 %
- Temperature: 0.1°C
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Digital output: RS485 MODBUS RTU
- Power supply voltage: DC9~32V
- Power consumption: <20mA@24Vdc RS485
- Probe pressure resistance: max 10bar
- Fluid temperature：0~100°C
- Ambient temperature：-40~85°C
- Storage temperature：-40~120°C
- Shell material: 316/304 stainless steel Hastelloy
- Mechanical interface: G1/2"
- Weight: 280g
- Protection grade：IP65
- Seal Material: FKM Fluorocarbon
- Connection cable: 2 metres M8 6 core, elbow straight optional
- Maximum flow rate：<0.1m/sec
- Conformity standards：CE, ASTM1657, the national measurement and testing organisation report
- Compliance standards: EXia IIB T6 Ga (optional)
- Electromagnetic compatibility: EN 61326-1 EN 61326-2-3 ICES-003 Class B

LWO330A Dielectric Constant Sensor

Product description

LWO330A is an intelligent sensor especially designed for online measurement of oil quality changes: its unique measurement technology is extremely sensitive to changes in oil quality, and is capable of real-time continuous online monitoring of oil quality indicators, providing 360" all-around real-time online monitoring of the oil, providing a reliable and powerful guarantee for the continuous and reliable operation of your valuable equipment.

Product Features

- Imported probe, high precision measurement
- Detectable parameters: dielectric constant and temperature
- Wide range of permissible fluid temperatures from 0°C to 100°C
- Fast response, data refresh per second
- Measurement is not affected by external vibration
- All stainless steel, suitable for on-line monitoring robustness requirements
- Excellent chemical and pressure resistance
- No moving parts, no consumable parts, 10 year life span
- Multiple certifications and test reports
- Compact size for easy system integration
- Convenient integrated module for on-site calibration

Specifications

- Oil dielectric constant ε: 1~6
- Accuracy: 2%
- Temperature: -40~120℃
- Accuracy: 0.3℃
- Output: 4-20mA analogue output + RS485 digital output
- Operating power: DC12~28V
- Operating current: <20mA + load current
- Allowable working pressure: <20bar
- Operating Temperature: -40~85°C
- Oil temperature: -40~120°C
- Mechanical interface: G1/2" BSP
- Electrical connection: M8*1 6 core
- Connecting cable: 6 core 2m UL20866 6*22AWG
- EMC standard: EN 61000-6-4:2007 EN 61000-6-2:2005
- Housing material: 316 stainless steel
- Protection class: IP66
- Weight: 250g

S-Series Density, Viscosity and Temperature Online Sensor

Product description

Density and viscosity online monitoring sensor using the world's most advanced piezoelectric resonance MEMS components. components, through the internal integration of high-precision signal sampling and processing unit, combined with advanced Through the internal integration of high-precision signal sampling and processing unit, combined with advanced algorithms, it can automatically detect the density, viscosity and temperature of the liquid in real time.

Product Features

- Imported probe, high accuracy measurement of density, viscosity and temperature
- Density accuracy up to ±3kg.m-3
- Viscosity range 1~150cP(S150)/1~400cP(S400)/25~1000cP(S1000), accuracy up to 5%.
- Wide range of permissible fluid temperatures from 0°C to 100°C
- Fast response, data refresh per second
- Measurements are unaffected by external vibration
- All stainless steel for on-line monitoring robustness requirements
- Excellent chemical and pressure resistance
- No moving parts, no consumables, 10 year life span
- Multiple approvals and test reports
- Compact size for easy system integration
- Convenient integrated module for on-site calibration

Specifications

Measurement index

- Density (kg.m-3), Dynamic Viscosity (cP), Temperature (°C)

Measuring range

- Density: 600~1250kg.m-3
- Viscosity: 1~150cP/1~400cP/25~1000cP
- Temperature: 0~100°C

Specifications

Accuracy @25°C Typical

- Density: 2% or 3kg.m-3 whichever is greater
- Viscosity: 5% or 1cP, whichever is greater.
- Temperature: 0.3°C

Resolution

- Density: 0.1 kg.m-3
- Viscosity: 0.1cP
- Temperature: 0.1°C
- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Digital output: RS485 MODBUS RTU
- Analogue output: 2-way 3-wire 4~20mA, RL=500Ω (optional)
- Alarm node: 2-way 250VAC/3A or 30VDC/3A (optional DDU350)
- Supply voltage: DC 9V~32V@RS485, DC20V~32V@4~20mA
- Power consumption: <20mA@24Vdc RS485
- Probe pressure: max 10bar
- Fluid temperature: 0~100°C
- Ambient temperature: -40~85°C
- Storage temperature: -40~80°C
- Shell material: 316/304 stainless steel Hastelloy
- Structure size: ϕ32×90 mm
- Mechanical interface: NESSI
- Protection Grade: IP66
- Seal Material: FKM Fluorine Rubber Inner Diameter 21.8 Outer Diameter 25.8
- Wire Diameter 1.78
- Connection cable: 2 metres M8 6 core
- Maximum flow rate: <0.3 m/s
- Conformity standards: CE, ASTM1657, the national measurement and testing institutions report
- Explosion protection: EXia IIB T6 Ga (optional)
- Electromagnetic compatibility: EN 61326-1 EN 61326-2-3 ICES-003 Class B
- Weight: 360g

Product Selection

1~150cP (S150) /1~400cP (S400) /25~1000cP (S1000)

LWO800 Oil Conductivity Sensor

Product description

The LWO800 is an intelligent sensor for real-time, on-line measurement of conductivity changes in all types of lubricating oils, hydraulic oils, compressor oils, petrol, diesel, paraffin and other petroleum products. By measuring conductivity in real time, it can quickly understand the electrostatic safety, electrical insulation, purity and other physical properties of oil products.

LWO800's unique measurement technology is extremely sensitive to changes in oil quality, and is able to continuously monitor changes in oil quality in real time, providing 360° all-round real-time online monitoring of the oil, and providing a reliable and powerful guarantee for the continuous and reliable operation of your valuable equipment.

Product Features

- High sensitivity to all types of oil contamination
- High resolution up to 10^{-12}, accurate detection under all kinds of harsh conditions
- Extremely reliable and robust due to special grounding technology
- Global commercial and technical standards certification 24/7/365 control of the oil quality of your equipment at all times
- Enables you to proactively maintain your equipment, avoiding unnecessary waste of money and time
- Significant savings on oil changes and waste oil disposal costs
- Reduces carbon emissions and contributes to the environment whilst reducing wasteful use of oil

Applicable Oils

Lubricating oil, hydraulic oil, engine oil, petrol, paraffin, diesel oil, turbine oil, synthetic grease, all kinds of light oil, heavy oil, etc.

Specifications

- Conductivity measurement range: 100~800000 pS/m
- Conductivity resolution: 1 pS/m
- Conductivity Accuracy (Typical): 100~2000 pS/m : ±200 pS/m, 2000~800000 pS/m : <10%
- Temperature measurement range: -20~85°C
- Temperature resolution : 0.1°C
- Temperature accuracy (typical): 0.5°C
- Applicable oils: for most lubricating oils, hydraulic oils, petrol, diesel, paraffin, etc.
- Response time: <10 minutes
- Output: RS485 Modbus RTU
- Power requirements: DC12V-28V, <20mA
- Allowable pressure: <20bar
- Operating temperature: -20~85°C
- Storage oil temperature: -40~100°C
- Mechanical interface: G1/2" BSP
- Electrical interface: M8*1, 6 core
- Connection cable: 6 core 2m, UL20866 6*22AWG
- Electromagnetic compatibility standard: EN 61000-6-2 EN 61000-6-4
- Housing material: 316 stainless steel
- Protection class: IP65
- Weight: 220g

LWTX-4500 Metal Abrasive Sensor

Product description

The LWTX-4500 Metal Grain Sensor is a real-time ferromagnetic and non-ferromagnetic abrasive particle monitoring sensor. It adopts the advanced triple-coil electromagnetic induction principle and integrates a highly sensitive data sampling and processing unit. It incorporates a high sensitivity data sampling and processing unit, which enables real-time monitoring of the wear and tear of large industrial equipment. The LWTX-4500 can be used to monitor the wear of large industrial equipment in real time.

The LWTX-4500 captures ferromagnetic metal particles greater than 40um in diameter and non-ferromagnetic particles greater than 150um in diameter. non-ferromagnetic metal particles greater than 150um in diameter, with 10 size distributions for particle detection and data output. The LWTX-4500 also provides the functions of mass estimation and speed estimation of wear. The LWTX-4500 also provides the functions of wear quality estimation and speed estimation.

Product Features

- 40μm ferromagnetic 150μm non-ferromagnetic grit detection capability
- Tenth dimension tape output / abrasive mass estimation
- System flow rate estimation data output
- Abnormal wear detection to protect valuable assets
- Measurement is independent of external metal and magnetic fields
- Measurement is unaffected by air bubbles and water in the oil
- Fast response with adjustable data accumulation period
- Excellent chemical and pressure resistance
- No moving or consumable parts, 10 year design life
- 2.5kV isolated RS485 communication

Specifications

Detection Capability

- Ferrimagnetic metal abrasive grains: Fe > 40μm (ESD) 5 grades
- Non-ferromagnetic metal abrasive grains: NFe > 150μm (ESD) 5 steps
- Counting period: Start-up self-test 30 seconds (first time), counting interval 300~3600 seconds adjustable
- Number of particles: Max 100 pcs/sec.
- Allowable flow rate: 0.5~20 L/min (0.1~3m/s)
- Pipe size: Φ12mm
- Digital output: RS485 MODBUS RTU isolated voltage 2.5kv
- Operating power: DC 24V±10%, >200mA
- Probe pressure: max 10bar
- Applicable fluids: lubricating oil and hydraulic oil (synthetic and mineral base), etc.
- Fluid temperature: -20~80 °C
- Ambient temperature: -20~85 °C
- Housing material: stainless steel, anodised aluminium
- Dimensions: 136 x 110 x 95 mm (L x W x H)
- Threaded connection: ISO 228-G1/2"
- Weight: <2.5 kg
- Protection class: IP65
- Connection cable: 2 metres M12-8 core
- EMC: EN 61326-1 EN EN 61326-2-3 ICES-003 Class B

LWTX-4501 Metal Abrasive Sensor

Product description

The LWTX-4501 metal abrasive grain sensor is a real-time ferromagnetic and non-ferromagnetic abrasive particle monitoring sensor. It adopts the advanced triple-coil electromagnetic induction principle and integrates a highly sensitive data sampling and processing unit inside. It incorporates a high sensitivity data sampling and processing unit, which enables real-time monitoring of the wear and tear of large industrial equipment. The LWTX-4501 can be used to monitor the wear of large industrial equipment in real time.

The LWTX-4501 captures ferromagnetic metal particles greater than 40um in diameter and non-ferromagnetic particles greater than 150um in diameter. non-ferromagnetic metal particles greater than 150um in diameter, with 10 size distributions for particle detection and data output. The LWTX-4501 also provides the functions of mass estimation and speed estimation of wear. The LWTX-4501 also provides the functions of wear quality estimation and speed estimation.

Product Features

- 40μm ferromagnetic & 150μm non-ferromagnetic grit detection capability
- Tenth dimension tape output / abrasive mass estimation
- System flow rate estimation data output
- Abnormal wear detection to protect valuable assets
- Measurement free from external metal and magnetic fields
- Measurement is unaffected by air bubbles and water in the oil
- Fast response with adjustable data accumulation period
- Excellent chemical and pressure resistance
- No moving or consumable parts, 10 year design life
- 2.5kV isolated RS485 communication

Specifications

Detection Capability

- Ferrimagnetic metal grits: Fe > 40μm (ESD) 5 grades
- Non-ferromagnetic metal abrasive grains: NFe > 150μm (ESD) 5 steps
- Counting cycle: Start-up self-test 30 seconds (first time), counting interval 300~3600 seconds adjustable
- Particle count: Max 100 particles/sec.
- Allowable flow rate: 0.3~9 L/min (or 0.1~3m/s)
- Pipe size: Φ8mm
- Digital output: RS485 MODBUS RTU isolated voltage 2.5kv
- Operating power: DC 24V±10%, >200mA
- Probe pressure: max 10bar
- Applicable fluids: lubricating oil and hydraulic oil (synthetic and mineral base), etc.
- Fluid temperature: -20~80 °C
- Ambient temperature: -20~85 °C
- Housing material: stainless steel, anodised aluminium
- Dimensions: 108 x 70 x 80 mm (L x W x H)
- Threaded connection: M14*1.5
- Weight: <1 kg
- Protection class: IP65
- Connection cable: 2 metres M8-6 core straight connector
- EMC: EN 61326-1 EN EN 61326-2-3 ICES-003 Class B

LWTX-4502 Metal Abrasive Sensor

Product description

The LWTX-4501 metal abrasive grain sensor is a real-time ferromagnetic and non-ferromagnetic abrasive particle monitoring sensor. It adopts the advanced triple-coil electromagnetic induction principle and integrates a highly sensitive data sampling and processing unit inside. It incorporates a high sensitivity data sampling and processing unit, which enables real-time monitoring of the wear and tear of large industrial equipment. The LWTX-4501 can be used to monitor the wear of large industrial equipment in real time.

The LWTX-4501 captures ferromagnetic metal particles greater than 40um in diameter and non-ferromagnetic particles greater than 150um in diameter. non-ferromagnetic metal particles greater than 150um in diameter, with 10 size distributions for particle detection and data output. The LWTX-4501 also provides the functions of mass estimation and speed estimation of wear. The LWTX-4501 also provides the functions of wear quality estimation and speed estimation.

Product Features

- 40μm ferromagnetic & 150μm non-ferromagnetic grit detection capability
- Tenth dimension tape output / abrasive mass estimation
- System flow rate estimation data output
- Abnormal wear detection to protect valuable assets
- Measurement free from external metal and magnetic fields
- Measurement is unaffected by air bubbles and water in the oil
- Fast response with adjustable data accumulation period
- Excellent chemical and pressure resistance
- No moving parts or consumables, 10 year design life
- Supports USB memory stick storage and optional thermal printer

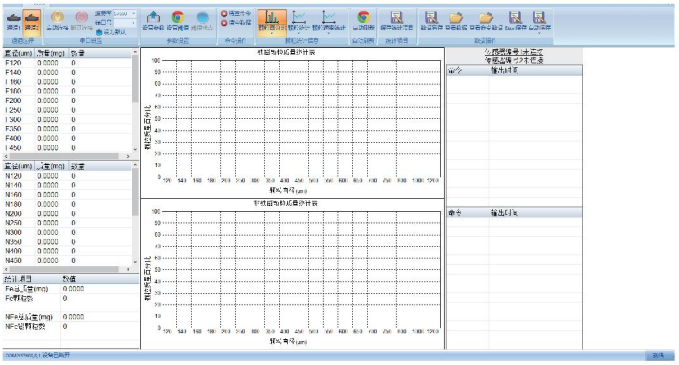
Specifications

Detection Capability

- Ferromagnetic grits: Fe>40um with customisable channel sizes
- Non-ferromagnetic particles: NFe>150um with customisable channel size
- Counting period: Counting interval can be adjusted arbitrarily
- Particle count: Max5000 particles/second
- Flow rate range: 0.1~40 L/min
- Pipe diameter: Φ8mm
- Output: touch screen, RS485 MODBUS, USB memory, printer, I/O alarm
- Power supply: DC 9~36V 10W
- Probe pressure: 10bar Max
- Applicable fluid: lubricating oil and hydraulic oil, etc.
- Fluid temperature: -20~85°C
- Housing material: hard aluminium oxide
- Dimension: 100x71x96mm(LxWxH)
- Threaded connection: M14*1.5
- Quantity: <1.0 kg
- Protection class: IP67
- Connection cable: 10 cores

Lubricating oil online monitoring sensor

Complimentary software, as pic. right



Product description

- The Slippery Oil Dust Monitor is an industry-leading online condition monitoring system that safely and reliably monitors the presence of metal particles in gearboxes as a result of wear and tear.
- The SOM detects the number, size and rate of occurrence of metal particles in the lubrication system and determines the properties of the particles (ferromagnetic or non-ferromagnetic). By capturing and analysing metal particles in the lubrication system in a timely manner, it provides reliable early warning and life expectancy for machinery and equipment.
- Online monitoring and 100% capture of metal particles from wear and tear
- Continuous monitoring of gearbox wear to estimate remaining gearbox life
- Rugged mechanical construction for use in harsh environments and easy installation
- Signal output via 485 communication

Work environment

- Oil pressure: Maximum 20bar (300psi)
- Oil temperature: -40~85℃
- Surrounding ambient temperature: -40~70℃
- Vibration: 10~50Hz: 3mm (displacement), 50~300Hz: 15g (accelera-tion)

Civilian products Specification

	Type		LWTX-07	LWTX -26	LWTX -39
Sensors Parameters	Tube inner diameter		Φ7	Φ26	Φ39
	Weight /kg		⩽3	⩽3	⩽3
	External dimension /mm		115 × 90 ×125	160 × 40 ×90	160 × 40 × 90
	Operating temperature /℃		-40~190	-40~190	-40~190
	Scope of monitoring of scrap metal	Fe /μm	⩾65	⩾255	⩾345
		NFe /μm	⩾300	⩾590	⩾980
Lubricants Parameters	Temp /℃		⩾190	⩾190	⩾190
	Pressure /MPa		⩾3.5	⩾3.5	⩾3.5
	Minimum flow rate L/min		⩾0.9	⩾10	⩾38

LWTX-100 Ferromagnetic particle sensor

Product description

LWTX-100 Ferromagnetic Particle Sensor is an on-line sensor for real-time monitoring of ferromagnetic wear particles in oil. The sensor has a continuous adsorption and detection capability, and releases the adsorbed wear particles after they reach saturation (100%). After the adsorbed wear particles reach saturation (100%), the sensor releases the adsorbed particles to achieve self-cleaning function and maintain continuous monitoring. The sensor is self-cleaning and continuously monitors the wear particles after saturation (100%).

The growth rate of the coarse and fine particles and the time between two self-cleaning sessions are recorded to give a real-time picture of the wear of the equipment. The user can monitor the real-time status of wear and tear by using the sensor's coarse and fine particle growth rate and recording the time between two self-cleaning cycles.

Product Features

- Continuous capture of ferromagnetic particles in oil
- Enables users to determine the level of wear and tear on their equipment
- Self-cleaning technology, no worries
- Compact size, no restrictions on pipework and wall mounting
- Standard threads, plug and play
- Industrial design, no moving parts
- Fast response, data refreshed every second

Specifications

- Measurement indicators: saturation of ferromagnetic particles, self-cleaning interval time
- Measuring range: fine + coarse particles 0~100%, fine particles 0~100%, coarse particles 0~10 pieces
- Resolution: fine particles 0.1%, coarse particles 1 block
- Adsorption range: 0~10mm
- Suggested flow rate: 0.05~1m/s
- Digital output: RS485 MODBUS RTU
- Power supply voltage: DC10~28V Max 0.5A@DC24V
- Probe pressure: Max 10bar
- Fluid temperature：-20~100℃
- Ambient temperature: -40℃~85
- Storage Temperature：-40~100℃
- Material: T6 aluminium alloy, NBR, epoxy resin.
- Structure size: 46.8×104 mm (max. outer diameter×overall length)
- Mechanical interface: G1"
- Weight: 200g
- Protection grade: IP65
- Connection cable: M12*1 8 core 2 metres
- Electromagnetic compatibility: EN 61326-1 EN 61326-2-3
- ICES-003 Class B

HWR-380M Impedance Spectrum Oil Condition Sensor

Product description

The HWR-380M sensor uses EIS impedance spectroscopy to continuously monitor and report on actual oil conditions. The oil condition monitoring technology ensures that Its oil condition monitoring technology ensures that any wear or contamination is detected, measured and reported in real time, with a real-time condition analysis accuracy of 0.001%. analysis with an accuracy of 0.001%.

Product Features

- EIS impedance spectroscopy
- Guaranteed accuracy and sensitivity
- Reliable and robust
- Certified to technical standards

Key Benefits

- 7×24h monitoring of oil conditions, in-depth understanding of the true state of the equipment
- Enables effective equipment management, increasing reliability, efficiency and profitability
- Reduce maintenance costs by identifying oil life
- Predictive maintenance scheduling eliminates unnecessary maintenance and downtime
- Ensure oil condition and early warning of wear particles and damage before they occur. Reducing breakdowns and damage, improving efficiency and extending equipment life
- Reduced oil sampling and consumption, reducing laboratory analyses
- Reduce carbon emissions and help protect the environment

Specifications

Measuring range

- TND oil condition: 0~1000
- Temperature: -40~100 °C

Measuring accuracy

- TND oil condition: ±1% FS max.
- Temperature: ±1 °C

Other parameters

- Applicable oils: applicable to most mineral oils, synthetic and semi-synthetic oils
- Detection content: oxidant, water, impurities, acid value, alkali value, wear particles, viscosity changes, oil temperature
- Output: RS485 digital output, optional (4~20mA analogue output, 4G cloud)
- Working power supply: DC 9V~30V (if choose 4~20mA output, voltage minimum DC20V)
- Working current: <20mA + load current
- Allowable working pressure: <10bar
- Operating Temperature: -40~85°C
- Probe oil temperature: -40~120°C
- Mechanical interface: G1/2" BSP
- Seal material: ED fluorine seal 23.9*18.5*1.5mm
- Torque: 25~30N-m
- Electrical connection: M8*1 6 core
- Connection cable: 6 core 2m UL20866 6*22AWG (elbow, straight can be (Optional)
- Shell material: 316 stainless steel
- Protection grade: IP65
- Weight: about 260g
- Electromagnetic compatibility standard: EN61000-6-4 EN61000-6-2

LWTD-1001 Iron Chip Integration Sensor

Product description

LWTD-1001 series integrated oil online monitoring sensor, integrated wear particles (ferromagnetic and non-ferromagnetic), kinematic viscosity, density, trace moisture, water activity (relative saturation), dielectric constant, water content and temperature and other detection probes, so as to complete the wear state of the oil and the physical and chemical characteristics of the oil all-in-one detection task. The device is compact and robust, very suitable for gearboxes and other heavy industrial equipment oil condition monitoring, is a preventive maintenance, intelligent monitoring of reliable products.

Key Benefits

- 40μm ferromagnetic & 150μm non-ferromagnetic abrasive particle detection capability
- Wear particle counting and material analysis
- Viscosity, density, trace moisture and many other physical and chemical indicators
- Flow rate estimation to ensure the typicality of detection
- Abnormal wear detection to protect valuable assets
- Measurement free from external metal and magnetic fields
- Measurement is unaffected by air bubbles and moisture in the oil
- Fast response with adjustable data accumulation period
- Excellent chemical and pressure resistance
- No moving or consumable parts, 10 year design life
- 2.5kV isolated RS485 Modbus communication

Specifications

Ferromagnetic and Non-ferromagnetic Wear Particle Inspection - Detection Capability

- Ferromagnetic grits: Fe > 40μm (ESD) 5 grades
- Non-ferromagnetic grits: NFe > 150μm (ESD) 5 grades
- Abrasive particle diameter: Φ 12mm
- Detection rate：>90%
- Ferromagnetic statistics: 40 ~ 99μm, 100 ~ 199μm, 200 ~ 299μm, 300 ~ 399μm, ⩾ 400μm
- Non-ferromagnetic statistics: 150 ~ 199μm, 200 ~ 299μm, 300 ~ 399μm, 400 ~ 499μm, ⩾ 500μm
- Counting period: Start self-test 30 seconds (first time), counting interval 300 ~ 3600 seconds adjustable
- Particle counting: Max 100pcs/sec.

Oil Characterisation - Viscosity Test

- Range: 1~1000 cSt (larger range on request)
- Accuracy: 5% or 5cSt whichever is greater.
- Resolution: 0.1 cSt

Specifications

Density Testing

- Range: 600~1250 kg.m-3
- Accuracy: 2% or 5kg.m-3 whichever is greater
- Resolution: 0.1 kg.m-3

Microwater Content

- Range: 1~5000ppm (calibrated according to oil)
- Accuracy: 10% or 10ppm
- Resolution: 1ppm

Water Activity

- Range: 0~1aw
- Accuracy: 3%
- Resolution: 0.001aw

Temperature

- Range: -40~85°C
- Accuracy: 0.5°C
- Resolution: 0.1°C

Dielectric Constant (optional)

- Range: 1~6εr
- Accuracy: 0.2εr
- Resolution: 0.1εr

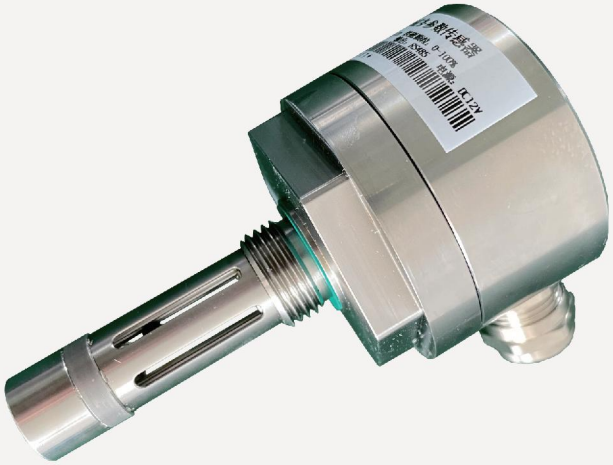
Moisture Content (optional)

- Range: 0~20%
- Accuracy: 0.5%
- Resolution: 0.1%

Other Parameter

- Allowable flow rate: 0.3~9 L/min
- Equivalent inner diameter: Φ8mm (can be customised)
- Digital output: RS485 MODBUS RTU, isolated voltage 2.5kV
- Operating power supply: DC 9~30V, 5W Max
- Allowable oil pressure: Max 1.0Mpa
- Applicable fluids: lubricating oil and hydraulic oil (synthetic and mineral base), etc.
- Fluid temperature: -40~80 °C
- Ambient temperature: -40~85 °C
- Storage temperature: -50~120 °C
- Shell material: stainless steel, anodized aluminium, polycarbonate
- Structure size: 150×80×80mm (L×W×H)
- Oil connection: G1/4" (can be customised)
- Weight: <4 kg
- Protection grade: IP66
- Connection cable: Standard: 2 metres of 5-core cable, M12*1.5 straight connector, or optional M12 waterproof glands
- Electromagnetic compatibility: EN 61000 EN 61326-1 EN 61326-2 EN 61326-4
- Explosion protection class (optional): Ex ib IIC T6 Gb

LWTD-1008 Ferromagnetic Integrated Sensor



Product description

LWTD-1008 is simple and easy to use, intelligent monitoring process does not require personnel involvement, all testing is done automatically by the sensor. Users only need to install it on the pipeline to achieve real-time measurement of lubricant viscosity, density, dissolved water, relative saturation, dielectric constant, ferromagnetic wear content and temperature during the operation of mechanical equipment.

Key Benefits

- Imported probe, high precision measurement
- Fast response, data refresh per second
- Measurement is not affected by external vibration
- All stainless steel, suitable for online monitoring robustness requirements
- Excellent chemical resistance and pressure resistance
- No moving parts, no consumable parts, ten-year life span
- Multiple certifications and test reports
- Compact size for easy system integration

Specifications

Measurement indicators

- Dynamic Viscosity (cP), Kinematic Viscosity (cSt), Density (kg.m-3), Trace Moisture (ppm), Water Activity aw, Dielectric Constant, Moisture Content (%), Total Ferro-magnetic Particles (%), Fine Ferro-magnetic Particles (%), Coarse Ferro-magnetic Particles (block), Temperature (° C), Viscosity Estimation at 40°C (optional)

Measurement range

- Dynamic viscosity: 1cP~400cP (1000cP optional)
- Kinematic viscosity: 1cSt~500cSt (40°C kinematic viscosity)
- Density: 600 kg.m-3~1250 kg.m-3
- Moisture: 0-30000ppm (calibrated according to different oils)
- Water activity: 0~1aw
- Dielectric constant: 1~6
- Water content：0~10%
- Total ferromagnetic particles: 0~100%
- Fine ferromagnetic particles: 0~100% (≤500um)
- Coarse ferromagnetic particles: 0~10 pieces (>500um)
- Temperature: 0°C~100°C

Specifications

Accuracy @ 25°C typical

- Viscosity: 5% or 1cP (1cSt) whichever is greater
- Density: 0.5% or 5kg.m-3 whichever is greater
- Moisture: 10% or 10ppm whichever is greater
- Water activity: 3%
- Dielectric constant: 5%
- Water content: 0.5%
- Total ferromagnetic particles: 1%
- Fine ferromagnetic particles: 1%
- Coarse ferromagnetic particles: 1 piece
- Temperature: 0.5°C

Resolution

- Viscosity: 0.1cP (0.1cSt)
- Density: 0.1 kg.m-3
- Moisture: 1ppm
- Water activity: 0.001aw
- Dielectric constant: 0.01
- Water content: 0.01 per cent
- Total ferromagnetic particles: 0.1%
- Fine ferromagnetic particles: 0.1%
- Coarse ferromagnetic particles: 1 piece
- Temperature: 0.1°C

Other parameters

- Response time: less than 30 seconds (first time), data refresh 1 time/second
- Digital output: RS485 MODBUS RTU
- Power supply voltage: DC 9-28V
- Overall power consumption: < 20mA@24Vdc RS485
- Probe pressure resistance: max 10bar (larger range please consult us)
- Fluid temperature：0°C~100°C
- Ambient temperature: -40°C~85
- Storage temperature: -40°C~120
- Shell material: 316 stainless steel Hastelloy
- Mechanical interface: G 1/2"
- Weight: about 380g
- Protection grade: IP66
- Seal material: FKM fluorine rubber
- Connection cable: M16 5 cores Granular head
- Maximum flow rate: <0.3m/s, recommended 0.1m/s
- Conformity standards: CE, ASTM1657, national measurement and testing agency report
- Explosion-proof grade: Ex ia IIB T6 Ga (optional)
- Electromagnetic compatibility: EN 61326-1 EN 61326-2-3

HWR-580M Acid Resistivity Sensor

Product description

HWR-580M adopts EIS impedance spectroscopy measurement technology to continuously monitor, measure and report the acid value of oil, as well as to monitor the resistivity of oil and oil temperature. It is capable of real-time, on-line measurement of changes in various types of lubricating oils, hydraulic oils, compressor oils, petrol, diesel, paraffin and other petroleum products.

Key Benefits

- 7×24h monitoring of oil conditions, in-depth understanding of the true state of the equipment
- Enables effective equipment management, increasing reliability, efficiency and profitability
- Reduces maintenance costs by accurately identifying oil service life
- Reliably predicts optimal maintenance schedules, eliminating unnecessary maintenance and downtime
- Ensure optimal oil condition and early warning of wear particles and damage before they occur, reducing breakdowns and damage, improving efficiency and extending equipment life
- Reduce oil sampling and consumption, reducing laboratory analyses

Specifications

Acid value indicator

- Acid value measurement range: 0.000 ~ 1.000 mgKOH/g
- Acid value resolution: 0.001 mgKOH/g
- Acid value accuracy (typical): 10% or 0.05 mgKOH/g whichever is greater

Resistivity Indicator

- Resistivity measurement range: 6×10^9~6000×10^9Ω-cm
- Resistivity resolution: 0.1×10^9Ω-cm
- Resistivity accuracy (typical): 10% or 1×10^9Ω-cm whichever is greater

Specifications

Temperature indicator

- Temperature measurement range: -40 ~ 85℃
- Temperature Resolution: 0.1℃
- Temperature Accuracy (Typical): 0.5℃

- Applicable oils: for most mineral oils, synthetic and semi-synthetic oils
- Feedback content: oxidant, water, impurities, acid value, alkali value, wear particles, viscosity change, oil temperature
- Output: RS485 digital output, optional (4-20mA analogue output, 4G cloud)
- Working power supply: DC9V-30V (if choose 4-20mA output, voltage minimum DC20V)
- Working current: <20mA + load current
- Allowable working pressure: <10bar (please consult for more pressure)
- Operating temperature: -40 ~ 85℃
- Probe oil temperature: -40 ~ 120℃
- Mechanical interface: G1/2" BSP
- Seal material: ED fluorine rubber seal 23.9*18.5*1.5mm
- Torque: 25 ~ 30N-m
- Electrical Interface: M8*1 6 core
- Connection cable: 6 core 2m UL20866 6*22AWG (elbow, straight optional)
- Shell material: 316 stainless steel
- Protection grade: IP65
- Weight: about 260g
- Electromagnetic compatibility standard: EN 61000-6-4 EN 61000-6-2

4G Cloud Communication Module

Key features

4G cloud communication module, access to the particle counter or sensor, you can achieve wireless remote monitoring function, real-time monitoring in the computer web page and mobile phone APP to achieve real-time monitoring, view the historical data and historical data curve.

Specifications

- Interface: 485 communication interface, 2 RJ45 interface, LAN interface
- Power supply: 18 ~ 28V power supply support, ups battery power supply
- Communication: Ethernet port supports S7-TCP and MODBUS TCP communication.
- Software: PC and mobile phone software monitoring

BB-13 Pressure Reducing Valve

Key features

- Durable piston sensing design
- Outlet pressure range is field adjustable
- Compact size
- Good leak tightness

Specifications

- Standard Pressure Ratings
- Maximum rated inlet pressure 6000 PSIG
- Outlet Pressure Range: Low Pressure 0 to 80 PSIG
- Operating Temperature 1~15F to +165F -25C to +74°C
- Flow rate Cv=06L
- 316 stainless steel construction
- Connection thread SAE7/16"
- Weight: 0.23kg

Needle Type Micro Flow Control Valve

Key features

- Applicable media: oil, water, gas and other multiple non-corrosive or weakly corrosive media
- Adjustable pressure

Specifications

- Thread: M10×1
- Nominal pressure: 32Mpa
- Nominal diameter: DN1.5~3
- Applicable temperature：-20~170°C
- Manufacturing material: stainless steel 304
- Flow rate: 0~100ml/min

QYQ-3 Pneumatic Pressurised Sampler

Key features

- Built-in pressure pump, fast boosting speed
- Positive and negative pressure can be switched, strong pressure holding capacity
- Can be used for high viscosity oil samples to improve the viscosity of the portable particle counter test samples
- Built-in pressure sensor, set the pressure value arbitrarily, high degree of intelligence
- Positive pressure conveying liquid samples to the instrument, negative pressure degassing to remove air bubbles
- Compact structure, small volume, light weight, easy to carry

Specifications

- Positive pressure range: 0~600kPa
- Negative pressure range: 0~80kPa
- Working Temperature: 10~40°C
- Power supply: AC 110~220V, 50/60Hz, ⩽120W

QYQ-4 Pneumatic Pressurised Sampler

Key features

- Built-in pressure pump, fast boosting speed
- Can be used for high viscosity oil samples to improve the viscosity of the portable particle counter samples
- Built-in pressure sensor, set the pressure value arbitrarily, high degree of intelligence
- Compact structure, small volume, light weight, easy to carry

Specifications

- Positive pressure range: 0~600kPa
- Working temperature: 10~40°C
- Power supply: AC 110~220V, 50/60Hz, ⩽120W

Sampling Bottles For Granularity

Key features

Granularity of special sampling bottles for a variety of liquid particles detection sampling and testing use, the cleanliness of the bottle to NAS1638 0 ~ 2 level
According to GB/T17484-1998 and ISO3722 "hydraulic transmission - sampling container cleaning method of identification" cleaning apparatus standard requirements for purification treatment
In the clean room using automatic cleaning equipment, ultrasonic oscillation, ultraviolet ultra-low temperature sterilization, vacuum aseptic drying process and a series of processes such as purification, high-precision particle counter cleanliness batch-by-batch verification testing, the highest can reach NAS1638 0, 1, 2 standards
Particle sampling bottles can be verified by: ISO3722, B/T17484, NAS1638, ISO4406, SAE749D, ISO16232, GJB420A/B, GB/T14039, DL/T427 and DL/T1096.

Specifications

- Cleanliness grade: NAS1638 0~2 grade
- Material: common glass, high borosilicate glass, PE plastic, PP plastic, PET plastic
- Capacity: 60ml, 100ml, 150ml, 250ml, 500ml, 1000ml
- Temperature: 60°C
- Packing: outer plastic vacuum aseptic packaging

LW-011C/LW-020C Ultrasonic Cleaning Machine

Key features

- De-bubbling of hydraulic oil fluids
- Breaking up large solid particles
- Heating function

Specifications

- Ultrasonic frequency: 40KHZ
- Ultrasonic power: 80W (LW-011C), 120W (LW-020C)
- Ultrasonic timing (numerical control): 180 seconds, 360 seconds
- External dimensions (L×W×H): 175×160×210mm (LW-011C), 265×165×220mm (LW-020C)
- Inner slot size (L×W×H): 150×135×100mm (LW-011C), 240×135×100mm (LW-0120C)
- Number of Shocker: 1pc (LW-011C), pc (LW-020C)
- Capacity: 2 litres (LW-011C), 3.2 litres (LW-020C)
- Heating power: 100W
- Temperature control (CNC type): Normal temperature ~ 80°C
- Lid: Yes
- Handle: Yes
- Operation mode: panel type
- Cleaning basket: Yes
- Machine weight: 2.2kg (LW-011C), 3.6kg (LW-020C)
- Power supply: single-phase AC220V 50HZ

Instrument Oil Inlet Screen

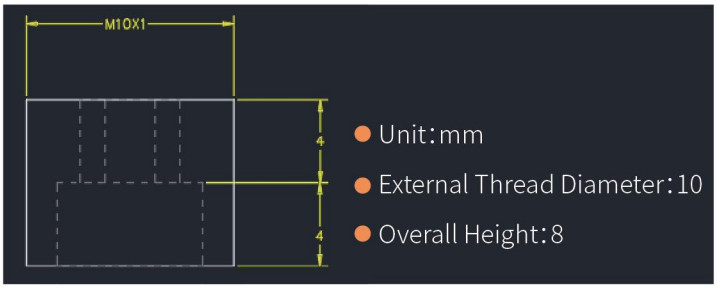
Key features

Customised oil inlet screen for our full range of particle counters to protect the laser sensor and prevent large particles from entering and clogging. It can be easily disassembled by using 4mm hexagonal spanner; petroleum ether, gas flushing or 95% or more concentration of alcohol can be used to clean the filter.

- L:500μm
- R:880μm

Specifications

- Dimension Structure



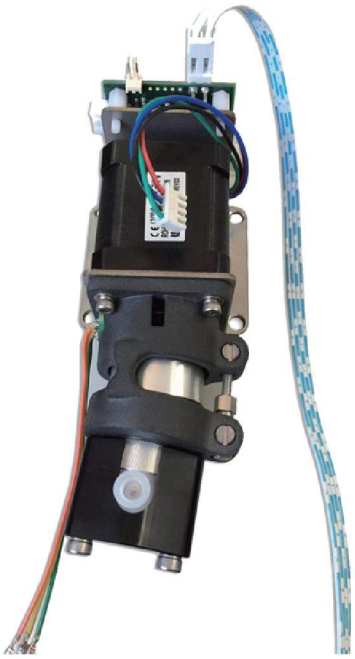
- Unit:mm
- External Thread Diameter:10
- Overall Height:8

- The actual instrument oil inlet screen

LW600-6 Precision Metering Pump

Key features

- Adopting valve-less design, only one motor drive is required, with simple control structure.
- The pump head is made of zirconia ceramic material, which improves the wear resistance of the pump, has high chemical compatibility and long service life.
- High-precision step adjustment, high resolution, accurate sampling
- Easy to adjust the flow size and direction
- Self-contained drive system, saving development cycle
- Support Modbus, CAN bus protocol, serial port protocol, can control the sampling speed, volume and other parameters
- Inlet and outlet connectors can be selected according to require-ments



Specifications

- Wide voltage input, 12-42V can work
- Sampling volume: 5~100μL/revolution
- Flow rate: 30~200μL/min
- Pressure: ⩽0.6Mpa
- Precision: 0.5%
- Repeatability: 0.5%
- Power supply: DC12~42V
- Current: 1~1.5A

LW400-5N Miniature Stainless Steel Gear Pump

Key features

- Stainless steel shell, corrosion resistance is obvious
- Gear material, modified PEEK, recognised as a high quality and expensive wear-resistant materials, wear-resistant performance is better than metal, ultra-quiet
- Teflon static seal, no leakage, interface seal EPDM, Viton, Teflon optional
- Rare earth rotor, brushless motor, controller built-in, compact size, total weight of about 0.7Kg

Specifications

- Motor standard power: 40W, can work intermittently 55W, three-phase inductive brushless motor
- Motor speed range: 0~5500PRM
- Standard working voltage: DC24V (allowable maximum 36 volts)
- Control voltage: 0~5V (control pump flow, pressure)
- Motor housing: aluminium, including product mounting bracket, aluminium, screws, etc.
- Flow rate range: 0~1.5L/M (litres/minute)
- Pressure output range: 0-10Bar
- Recommended working pressure: less than 0.6MPa
- Pump head connection: rc1/8
- Receiver size (OD×ID mm): 4×2.5, 6×4, 8×6, recommended Teflon tube (optional), standard quick-turn fittings
- Conveying medium: almost all mediums except strong acid and alkali.
- Viscosity range of conveying medium: less than 1500cps.
- With speed pulse feedback, shielding protection

LW400S-5N High Viscosity Stainless Steel Gear Pump

Key features

- Stainless steel shell, corrosion resistance is obvious
- Gear material, modified PEEK, recognised as a high quality and expensive wear-resistant materials, wear-resistant performance is better than metal, ultra-quiet
- Teflon static seal, no leakage, interface seal EPDM, Viton, Teflon optional
- Rare earth rotor, brushless motor, built-in controller, compact size, total weight of about 0.7Kg
- Suitable for high pressure and low flow occasions

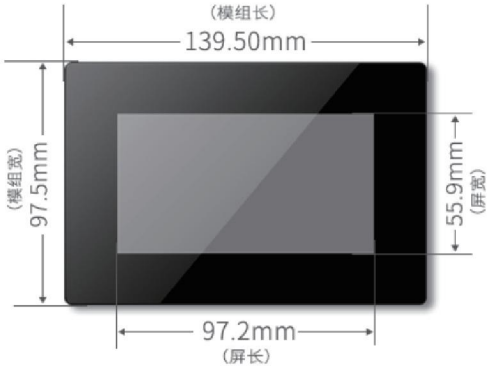
Specifications

- Motor standard power: 40W, can work intermittently 55W, three-phase inductive brushless motor
- Motor speed range: 0~3500PRM
- Standard working voltage: DC24V (allowable maximum 36 volts)
- Control voltage: 0~5V (control pump flow, pressure)
- Motor housing: aluminium, including product mounting bracket, aluminium, screws, etc.
- Flow rate range: 0~1.2L/M (litres/minute)
- Pressure output range: 0-15Bar
- Recommended working pressure: less than 0.6MPa
- Pump head connection: rc1/8
- Receiver size (OD×ID mm): 4×2.5, 6×4, 8×6, recommended Teflon tube (optional), standard quick-turn fittings
- Conveying medium: almost all mediums except strong acid and alkali.
- Viscosity range of conveying medium: less than 1500cps.
- With speed pulse feedback, shielding protection

Sensor Matching Display

Specifications

- Proportion: 16:9
- Effective display size: 95.04×53.86mm
- Resolution: 480×272
- TFT type: TN
- Brightness: 300nit
- Operating voltage: 4.65~6.5V
- Operating Current: 220mA
- Sleep current: 170mA
- Operating Temperature: -20~70°C
- Flash capacity: 128M
- Power-down memory capacity: 1K
- Running memory: 512K
- Serial command buffer: 4K
- RTC clock: Yes
- Extended I/Q: Yes
- Master frequency: 200M Hz
- Opening size: 12.9×8.7cm



QYQ-250 Hand Sampler

Key features

- Negative pressure sampler (tension type) can effectively prevent the oil from sticking to the tank and contamination of oil samples by external impurities during sampling
- Can be matched with all kinds of sampling bottle sampling
- Configuration of air pressure check valve, can prevent the return of oil when sampling and rapid sampling at the same time

Specifications

- Material: PP polypropylene
- Specification: general-purpose
- Flow rate range: 1000ml/min
- Hose size: 6mm

LW-F22 Embedded Printer

Key features

- Compact size
- Low noise thermal printing
- Fast printing speed and low power consumption
- Convenient paper loading

Specifications

- Printing method: line matrix thermal printer
- Print speed: up to 50mm/s
- Printing direction: unidirectional friction feed
- Print width: 8mm
- Input buffer: 8K bytes
- Operating temperature: 0~50°C
- Operating humidity: 20~85%
- Overall dimensions: 82 × 56.5mm, embedded in the chassis depth of 35mm
- Installation size：76×52mm
- Print head life: 50km
- Resolution: 8dot/mm(384dot/line)
- Input power supply: DC 5V,3A
- Paper Out Detection: Support

LW-PT2A Handheld Printer

Key features

- Compact size
- Built-in battery for on-the-go printing
- Low noise thermal printing
- Fast printing speed and low power consumption
- Long standby time

Specifications

- Printing method: line matrix thermal printing
- Printing direction: unidirectional friction feed
- Print speed: 50mm/s
- Print width: 48mm (384 dot positions)
- Cache capacity: 2K bytes
- Communication interface: Bluetooth communication interface, serial port and USB interface
- Power requirements: DC 9V, 2A
- Paper Out Detection: Support
- Overall dimensions: 92.3 x 75 x 37.5mm (L x W x H)
- Print head life: 50 km
- Built-in battery: 7.4V, 1500mAh
- Operating temperature: -10~50°C
- Operating humidity: 20~85%

Matching Printing Paper

Key features

- For use with thermal printers for particle counters
- Compact, easy to install and economical

Specifications

- Place of Origin: China/Import
- Size: 57×30mm
- Thickness of domestic radius: 10mm
- Imported radius thickness: 17.5mm
- Material: thermal paper

Oil-Based MTD Standard

Key features

This standard is used for the calibration or verification of liquid automatic particle counters, evaluation and testing of analytical methods, and also for the calibration and comparison of values of this instrument, and as a basis for comparison.

Specifications

- Specification: 250ml
- Valid period: one year
- Manufacturer: LUWATECH
- Test Methods: Random sampling method is used to take samples for testing, and the homogeneity is checked according to the analysis of variance (F) method, the result is F<F0.05, the minimum test sample volume is 10mL.

Assigned value: (/5ml)

<4μm	<6μm	<10μm	<14μm	<21μm	<30μm	<38μm	<70μm
39590	14480	2770	870	235	45	20	0.5

Assigned value: (/100ml)

<4μm	<6μm	<10μm	<14μm	<21μm	<30μm	<38μm	<70μm
791800	289600	55400	17400	4700	900	400	10

Cleanliness Grade Oil Sample

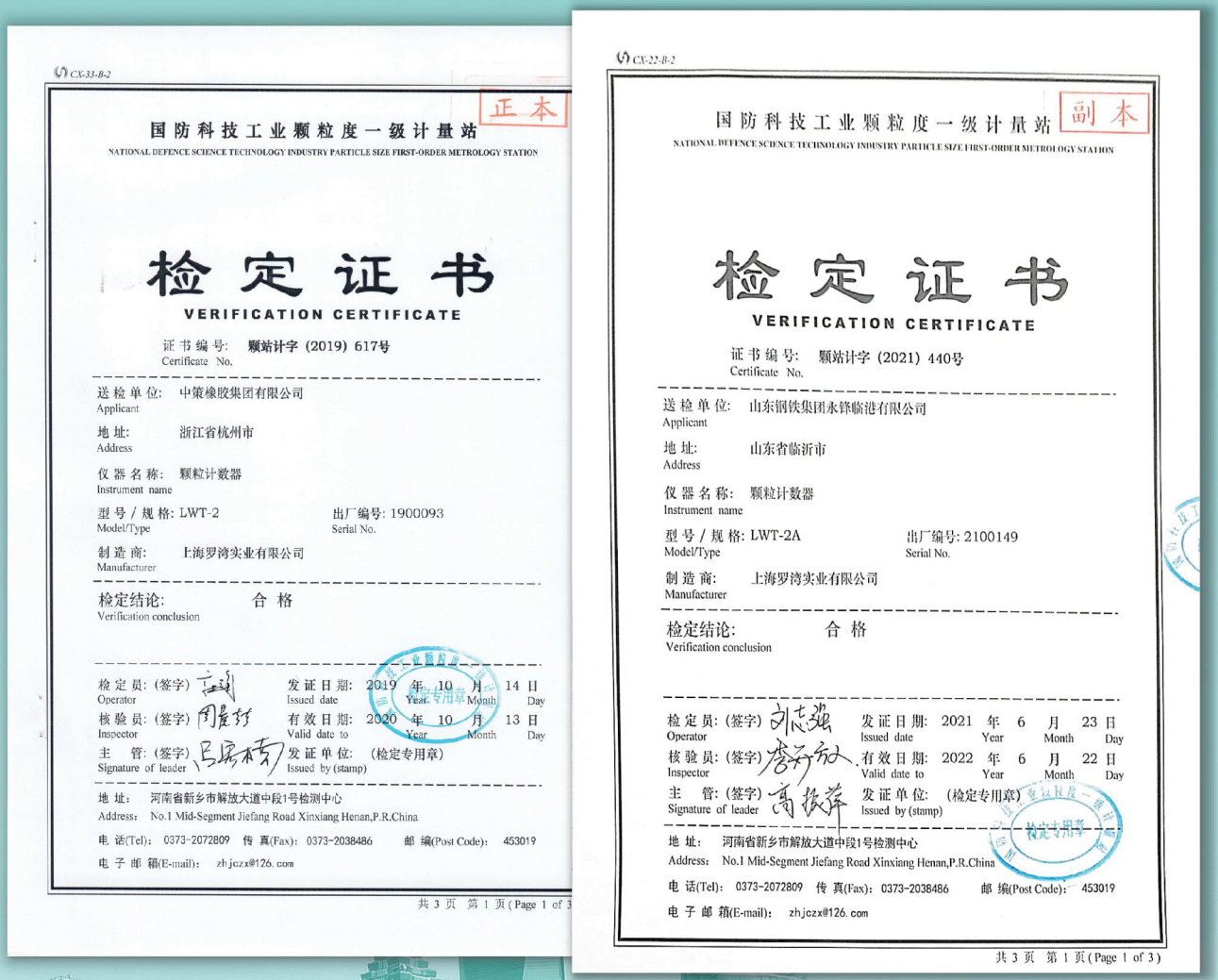
Key features

For testing the accuracy of oil particle counter instruments.

Specifications

- Nature: default No. 46 hydraulic oil (optional No. 32 hydraulic oil), transparent plastic bottle 250ml
- Oil sample capacity: 150~200ml
- Grade: NAS1638 Grade 2, Grade 3, Grade 4, Grade 5, Grade 6, Grade 7, Grade 8, Grade 9, Grade 10, Grade 11, Grade 12
- Report optional standards: NAS1638, ISO4406, SAE4059, GJB420A, GJB420B, GOST17216
- Oil sample cleanliness validity: 3 years
- Provided after purchase: 1 bottle of oil sample grade oil sample, 3 test reports (3 testing standards)

Certificate of calibration for Benchtop Automatic Oil Particle Counter



CX-33-B-2

正本

国防科技工业颗粒度一级计量站

NATIONAL DEFENCE SCIENCE TECHNOLOGY INDUSTRY PARTICLE SIZE FIRST-ORDER METROLOGY STATION

检定证书

VERIFICATION CERTIFICATE

证书编号: 颗站计字（2019）617号
Certificate No.

送检单位: 中策橡胶集团有限公司
Applicant

地址: 浙江省杭州市
Address

仪器名称: 颗粒计数器
Instrument name

型号/规格: LWT-2　　出厂编号: 1900093
Model/Type　　Serial No.

制造商: 上海罗湾实业有限公司
Manufacturer

检定结论: 合格
Verification conclusion

检定员: (签字)　发证日期: 2019 年 10 月 14 日
Operator　Issued date　Year Month Day

核验员: (签字)　有效日期: 2020 年 10 月 13 日
Inspector　Valid date to　Year Month Day

主管: (签字)　发证单位: (检定专用章)
Signature of leader　Issued by (stamp)

地址: 河南省新乡市解放大道中段1号检测中心
Address: No.1 Mid-Segment Jiefang Road Xinxiang Henan,P.R.China

电话(Tel): 0373-2072809　传真(Fax): 0373-2038486　邮编(Post Code): 453019

电子邮箱(E-mail): zhjczx@126.com

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CX-22-B-2

副本

国防科技工业颗粒度一级计量站

NATIONAL DEFENCE SCIENCE TECHNOLOGY INDUSTRY PARTICLE SIZE FIRST-ORDER METROLOGY STATION

检定证书

VERIFICATION CERTIFICATE

证书编号: 颗站计字（2021）440号
Certificate No.

送检单位: 山东钢铁集团永锋临港有限公司
Applicant

地址: 山东省临沂市
Address

仪器名称: 颗粒计数器
Instrument name

型号/规格: LWT-2A　　出厂编号: 2100149
Model/Type　　Serial No.

制造商: 上海罗湾实业有限公司
Manufacturer

检定结论: 合格
Verification conclusion

检定员: (签字)　发证日期: 2021 年 6 月 23 日
Operator　Issued date　Year Month Day

核验员: (签字)　有效日期: 2022 年 6 月 22 日
Inspector　Valid date to　Year Month Day

主管: (签字)　发证单位: (检定专用章)
Signature of leader　Issued by (stamp)

地址: 河南省新乡市解放大道中段1号检测中心
Address: No.1 Mid-Segment Jiefang Road Xinxiang Henan,P.R.China

电话(Tel): 0373-2072809　传真(Fax): 0373-2038486　邮编(Post Code): 453019

电子邮箱(E-mail): zhjczx@126.com

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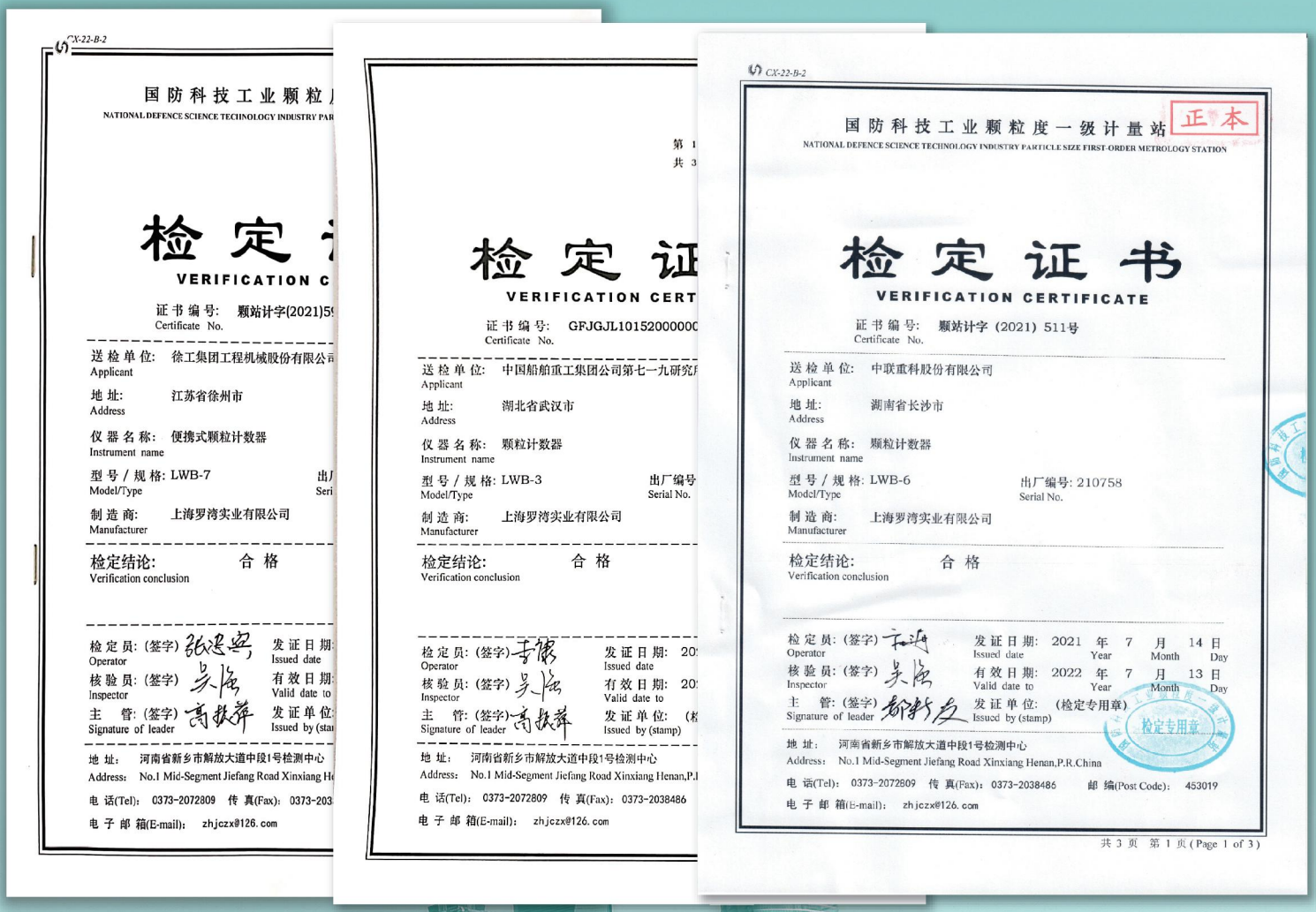
Certificate of calibration for Portable Oil Particle Counter



国防科技工业颗粒度一级计量站
NATIONAL DEFENCE SCIENCE TECHNOLOGY INDUSTRY PARTICLE SIZE FIRST-ORDER METROLOGY STATION

正本

检定证书
VERIFICATION CERTIFICATE

证书编号: 颗站计字（2021）511号
Certificate No.

送检单位: 中联重科股份有限公司
Applicant

地址: 湖南省长沙市
Address

仪器名称: 颗粒计数器
Instrument name

型号/规格: LWB-6　出厂编号: 210758
Model/Type　Serial No.

制造商: 上海罗湾实业有限公司
Manufacturer

检定结论: 合格
Verification conclusion

检定员: (签字)　发证日期: 2021 年 7 月 14 日
Operator　Issued date　Year Month Day

核验员: (签字)　有效日期: 2022 年 7 月 13 日
Inspector　Valid date to　Year Month Day

主管: (签字)　发证单位: (检定专用章)
Signature of leader　Issued by (stamp)

检定专用章

地址: 河南省新乡市解放大道中段1号检测中心
Address: No.1 Mid-Segment Jiefang Road Xinxiang Henan,P.R.China

电话(Tel): 0373-2072809　传真(Fax): 0373-2038486　邮编(Post Code): 453019

电子邮箱(E-mail): zhjczx@126.com

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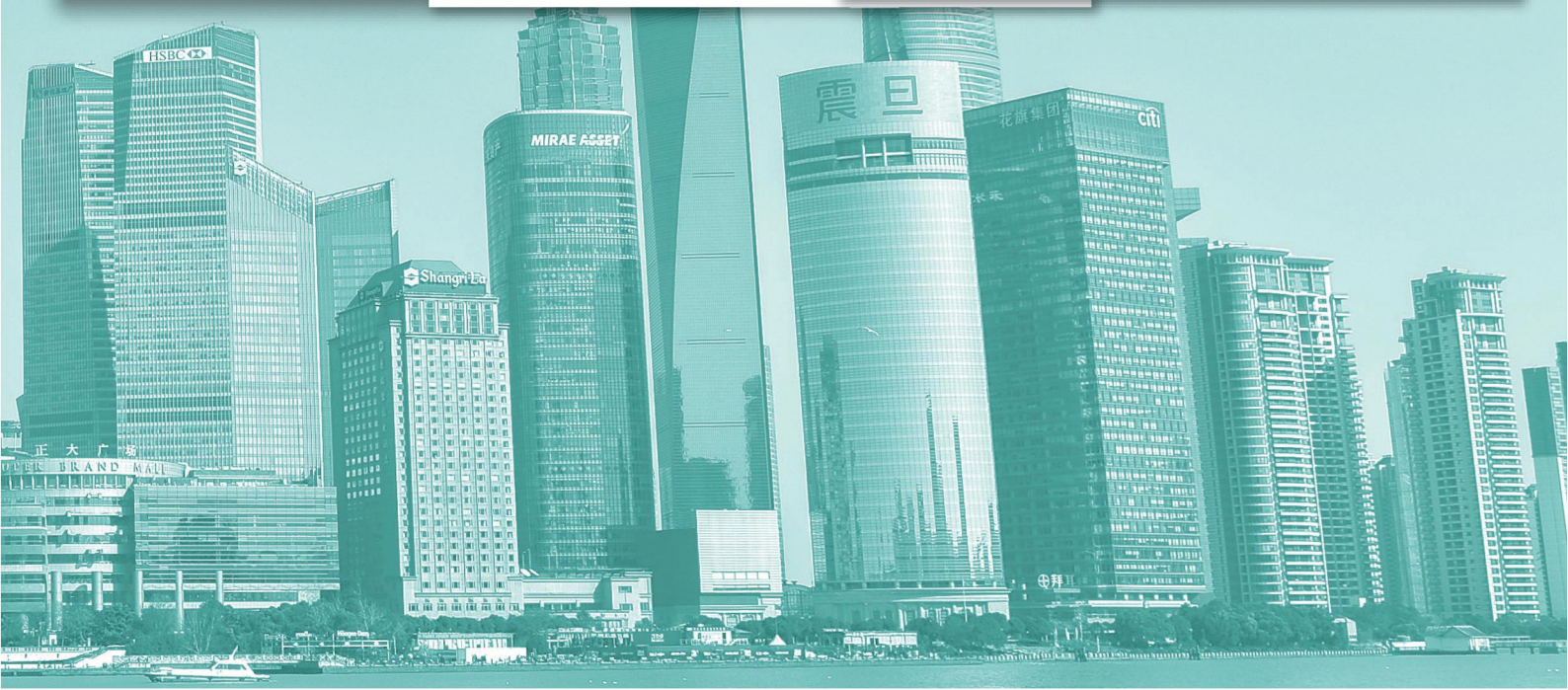

Certificate of calibration for Online Particle Counter

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国防科技工业颗粒度一级计量站

NATIONAL DEFENCE SCIENCE TECHNOLOGY INDUSTRY PARTICLE SIZE FIRST-ORDER METROLOGY S

检定证书

VERIFICATION CERTIFICATE

证书编号: 颗站计字（2021）064号
Certificate No.

送检单位: 海斯特美科斯叉车（浙江）有限公司
Applicant

地址: 浙江省杭州市
Address

仪器名称: 油液颗粒计数器
Instrument name

型号/规格: LWL-5 出厂编号: 210251
Model/Type Serial No.

制造商: 上海罗湾实业有限公司
Manufacturer

检定结论: 合格
Verification conclusion

检定员: (签字)
Operator

发证日期: 2021 年 2 月
Issued date Year Month

核验员: (签字) 张燕芳
Inspector

有效日期: 2022 年 2 月
Valid date to Year Month

主管: (签字)
Signature of leader

发证单位: (检定专用章)
Issued by (stamp)

地址: 河南省新乡市解放大道中段1号检测中心
Address: No.1 Mid-Segment Jiefang Road Xinxiang Henan,P.R.China

电话(Tel): 0373-2072809 传真(Fax): 0373-2038486 邮编(Post Code):

电子邮箱(E-mail): zhjczx@126.com

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国防科技工业颗粒度一级计量站 正本

NATIONAL DEFENCE SCIENCE TECHNOLOGY INDUSTRY PARTICLE SIZE FIRST-ORDER METROLOGY STATION

检定证书

VERIFICATION CERTIFICATE

证书编号: 颗站计字（2019）378号
Certificate No.

送检单位: 上海罗湾实业有限公司
Applicant

地址: 上海市
Address

仪器名称: 在线颗粒计数器
Instrument name

型号/规格: LWL-5 出厂编号: 190026
Model/Type Serial No.

制造商: 上海罗湾实业有限公司
Manufacturer

检定结论: 合格
Verification conclusion

检定员: (签字)
Operator

发证日期: 2019 年 7 月 4 日
Issued date Year Month Day

核验员: (签字) 周景芳
Inspector

有效日期: 2020 年 7 月 3 日
Valid date to Year Month Day

主管: (签字)
Signature of leader

发证单位: (检定专用章)
Issued by (stamp)

地址: 河南省新乡市解放大道中段1号检测中心
Address: No.1 Mid-Segment Jiefang Road Xinxiang Henan,P.R.China

电话(Tel): 0373-2072809 传真(Fax): 0373-2038486 邮编(Post Code): 453019

电子邮箱(E-mail): zhjczx@126.com

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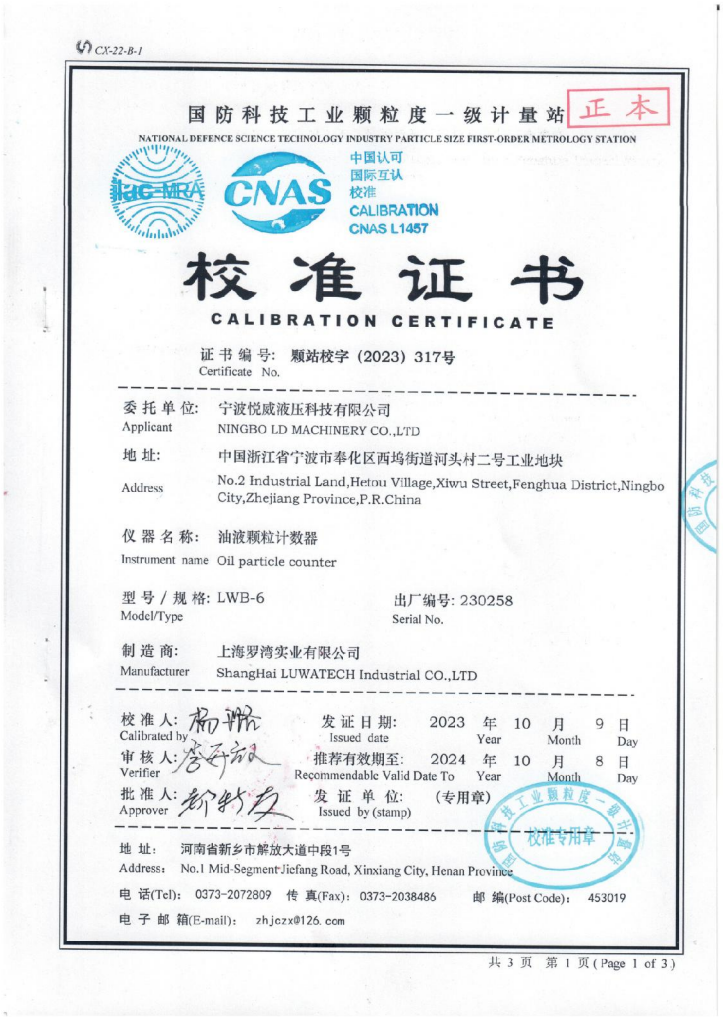
Calibration period

The calibration period for the Oil Cleanliness Tester is normally 6 months, with a maximum of 12 months. Calibration should be carried out immediately after the instrument is found to be abnormal or after repairs and readjustments have been made that affect the ability of the Oil Cleanliness Tester to measure and count particle size.

Factory testing

The instruments are strictly inspected before leaving the factory and the Factory Inspection Report is issued. The standard substances used are GBW(E)120017 (ACFTD oil particle standard substance) or GBW(E)120083 (oil-based MTD particle standard substance) produced by the "National Defence Science and Technology Industry Granularity First Grade Measuring Station".



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国防科技工业颗粒度一级计量站 正本

NATIONAL DEFENCE SCIENCE TECHNOLOGY INDUSTRY PARTICLE SIZE FIRST-ORDER METROLOGY STATION

中国认可 国际互认 校准 CALIBRATION CNAS L1457

校准证书

CALIBRATION CERTIFICATE

证书编号: 颗站校字（2023）317号
Certificate No.

委托单位: 宁波悦威液压科技有限公司
Applicant NINGBO LD MACHINERY CO.,LTD

地址: 中国浙江省宁波市奉化区西坞街道河头村二号工业地块
Address No.2 Industrial Land,Hetou Village,Xiwu Street,Fenghua District,Ningbo City,Zhejiang Province,P.R.China

仪器名称: 油液颗粒计数器
Instrument name Oil particle counter

型号/规格: LWB-6 出厂编号: 230258
Model/Type Serial No.

制造商: 上海罗湾实业有限公司
Manufacturer ShangHai LUWATECH Industrial CO.,LTD

校准人: Calibrated by 发证日期: 2023 年 10 月 9 日 Issued date Year Month Day
审核人: Verifier 推荐有效期至: 2024 年 10 月 8 日 Recommendable Valid Date To Year Month Day
批准人: Approver 发证单位: (专用章) Issued by (stamp)

地址: 河南省新乡市解放大道中段1号
Address: No.1 Mid-Segment Jiefang Road, Xinxiang City, Henan Province
电话(Tel): 0373-2072809 传真(Fax): 0373-2038486 邮编(Post Code): 453019
电子邮箱(E-mail): zhjczx@126.com

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ZSCS 溯天下 IEC-MRA CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L10073

中溯计量检测有限公司
Zhongsu Measurement and Testing Co.,Ltd.

校准证书

CALIBRATION CERTIFICATE

证书编号: LH096-230134563
Certificate No.

委托单位: 上海中远海运重工有限公司
Client
单位地址: 上海市崇明区长兴岛
Address
器具名称: 油液颗粒计数器
Instrument name
型号规格: LWB-7
Model/Type
仪器编号: 230389
No.
制造单位: 上海罗湾实业有限公司
Manufacturer

批准人: Approved by
校准专用章 Stamp
核验员: 陈灵杰 Inspected by
校准员: 朱敬 Calibrated by

接收日期: 2023 年 09 月 27 日 Date of acceptance
校准日期: 2023 年 09 月 28 日 Date of calibration
批准日期: 2023 年 09 月 28 日 Date of approval

未经本实验室批准，部分采用本证书无效
Partly using this certificate will not be admitted unless allowed by the laboratory

校准机构备案编号: （2017）浙量校（甬） S006号
地址(Add): 宁波市镇海区骆驼街道团桥村杭甬路399号
邮编(Post Code): 315200
邮箱(E-mail): wzb8080@163.com
服务电话(Tel): 0574-86567186
技术咨询(Consultation): 0574-86563833
公司网址(Http): http://www.zjzsjl.com
投诉电话(Tel): 0574-86567187

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Third Party Certification

The domestic calibration institution for the oil cleanliness tester is "National Defence Science and Technology Industry Granularity Level 1 Measuring Station", located in Xinxiang City, Henan Province. If you need a third-party calibration certificate when you first purchase the instrument, we are responsible for contacting and sending the instrument to the "National Defence Science and Technology Industry Granularity Level 1 Measuring Station" for calibration and issuing the "calibration certificate". When the oil cleanliness tester needs to be calibrated again, you can contact the "National Defence Science and Technology Industry Granularity Measuring Station" by yourself.

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国防科技工业颗粒度一级计量站 副本

NATIONAL DEFENCE SCIENCE TECHNOLOGY INDUSTRY PARTICLE SIZE FIRST-ORDER METROLOGY STATION

中国认可
国际互认
校准
CALIBRATION
CNAS L1457

校准证书

CALIBRATION CERTIFICATE

证书编号: 颗站校字（2020）158号
Certificate No.

送校单位: 成都富凯飞机工程服务有限公司
Applicant CHENGDU FALCON AIRCRAFT ENGINEERING SERVICE CO.LTD

地址: 四川省成都市
Address Chengdu City, Sichuan Province

仪器名称: 颗粒计数器
Instrument name Particle counter

型号/规格: LWB-3 出厂编号: 20190950229
Model/Type Serial No.

制造商: 上海罗湾实业有限公司
Manufacturer Shanghai LUWATECH Industrial CO.,LTD

校准人: 孙雯婧 校准日期: 2020 年 8 月 10 日
Calibrated by Calibration Date Year Month Day

审核人: 吴磊 推荐有效期至: 2021 年 8 月 9 日
Verifier Recommendable Valid Date To Year Month Day

批准人: 高振萍 发证单位: （专用章）
Approver Issued by (stamp)

校准专用章

地址: 河南省新乡市解放大道中段1号检测中心
Address: No.1 Mid-Segment Jiefang Road Xinxiang Henan,P.R.China

电话(Tel): 0373-2072809 传真(Fax): 0373-2038486 邮编(Post Code): 453019

电子邮箱(E-mail): zhjczx@126.com

共 3 页 第 1 页 (Page 1 of 3)

After-sales service

In line with the principle of equality, friendship and mutual respect, our company is willing to make the following commitments for the purchase of our products and provide the following services:

I The installation and commissioning and acceptance of the instrument acceptance in the demand side of the premises specified, the goods arrive at the designated location after receiving the notice of installation within 3 working days, the supply side to the demand side of the site for installation and commissioning and acceptance of the work. After the installation and commissioning and acceptance of the supplier's engineers, the demand-side personnel for the actual use of operational training to ensure that the demand-side operators can independently carry out the operation of the instrument, maintenance, simple troubleshooting, experimental data processing.

II The warranty period:
Calculated from the date of acceptance, the company's products on the machine free of charge warranty of 12 months; on the core components (laser sensor) free of charge warranty 24 months; warranty period is responsible for lifelong maintenance.

III Technical services:
During the warranty period, any equipment failure caused by the quality of the equipment (instrument) itself, the supplier is responsible for free maintenance or replacement parts, the cost of which is borne by the supplier. Normal instrument consumables are not included in the warranty. Outside the warranty period, the supplier shall guarantee the long-term provision of spare parts and high-quality maintenance services to protect the demand-side production needs.

The supplier is responsible for the lifelong maintenance of the equipment (instrument), equipment (instrument) failure, the supplier receives the maintenance notice within 24 hours to make a reply; such as the need to send someone to repair, the maintenance personnel within 3 working days to arrive at the scene of the demand side to use and troubleshooting. If the instrument still can not return to normal use within 10 working days, in order not to affect the normal use of the customer, our company will provide the user with a similar, the same type of instrument, to be replaced by the original instrument after normal.
The supplier will visit the customer from time to time to understand the customer's use of the instrument, and communicate in the application to ensure that the instrument is used normally for a long time. During or outside the warranty period, the supplier can provide lifelong preferential technical support for the equipment (instrument). The supplier's technical maintenance personnel, at least two times a year to visit the user (the form can be taken on-site, telephone, etc.).
The supplier shall provide the latest information about the instrument and its application to the demand side in time, and help the demand side to carry out feasible improvement and upgrading of the software related to the instrument, so as to keep the demand side in the advanced level of the instrument and technical information.

SHANGHAI LUWATECH INDUSTRIAL CO.,LTD.

2/F, South Gate, Building 5, No.333 Kangqiao East Road,
Pudong New Area, Shanghai, China
13917337146
021-58073569
maorong.long@luowansy.com
www.luwatech.com.cn

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