

LUWATECH DR-500 series

Viscosity, density, moisture,
water activity and temperature

5-in-1 Oil Characterisation Sensor

Product Description

DR-500 5-in-1 Oil Characteristics Sensor is our original core technology product, which combines five physical and chemical parameters of oil viscosity, density, moisture, water activity and temperature.

DR-500 is simple and easy to use, intelligent monitoring process without the involvement of personnel, all tests are automatically completed by the sensor. Users only need to install it on the pipeline to realise the oil viscosity, density, trace moisture, water activity and temperature during the operation of mechanical equipment.

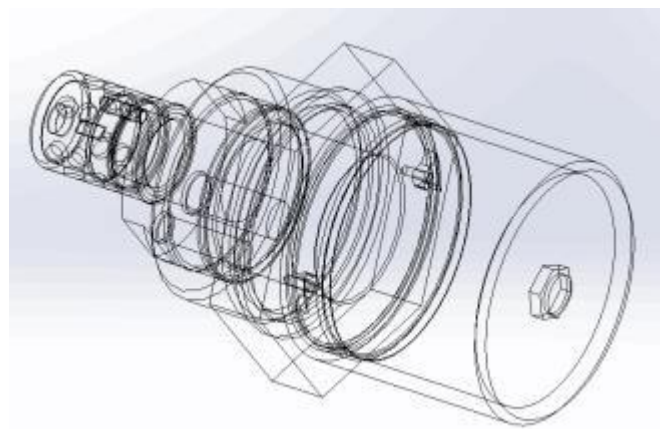
The DR-500 can be installed in the pipeline for real-time measurement of viscosity, density, trace moisture, water activity and temperature of oil during the operation of machinery and equipment, or it can be used as an offline kit for laboratory analysis of oil.

The appearance of the DR-500 greatly increases the user's return on investment. It makes users have a reliable basis for quality control in the production process, and also provides real-time monitoring data for the stable and reliable operation of users' major equipment, which is a compact, intelligent, reliable and feature-rich online monitoring sensor.



Key features

- Imported probe, high precision measurement
- Five parameters in one: viscosity, density, moisture content, water activity and temperature Viscosity range 1~400cP, accuracy up to 5%.
- Moisture content detection at ppm level to prevent the risk of water ingress into the oil Density accuracy of $\pm 5\text{kg}\cdot\text{m}^{-3}$
- 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 requires excellent chemical and pressure resistance properties
- No moving parts, no consumable parts, 10 year life Multiple approvals and test reports
- Compact, easy to set up and convenient for the system set of on-site calibration integrated module



Intelligent, robust and precise

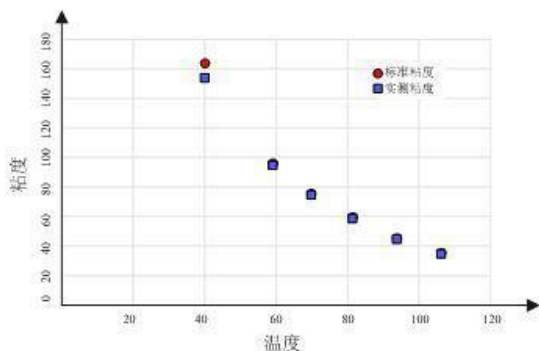
Applicable samples

- Lubricating Oil
- Hydraulic Oil
- Gearbox oil
- Petrol
- Diesel oil
- Aviation fuel
- Paraffin
- Biodiesel
- Ethanol
- Chemical Reagents
- Coatings & Inks
- Food Processing
- Laboratory Analysis

Applications

- Fuel Storage & Transportation Segment
- Refining, Oil Industry
- Wind power
- Thermal power generation and other power generation industries
- Aviation, marine, railway and other transport industries
- Offshore engineering such as drilling rigs
- Large engineering machinery and equipment
- Transport vehicles
- Seawater treatment and testing equipment
- Oil treatment equipment
- Chemical analysis
- Production Process Quality Management
- Oil treatment and filtration systems
- Coatings, Inks & Printing
- Medical equipment

Accurate detection

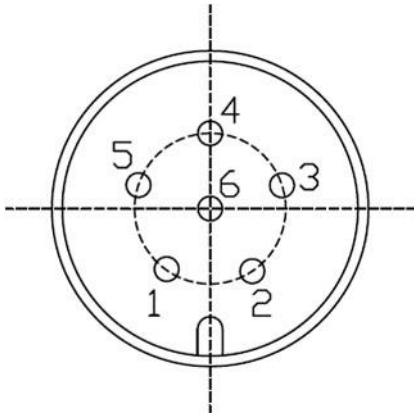


The BDIPPER laboratory uses National Institute of Standards and Technology (NIST) accredited standard solutions for calibration.

Technical parameters

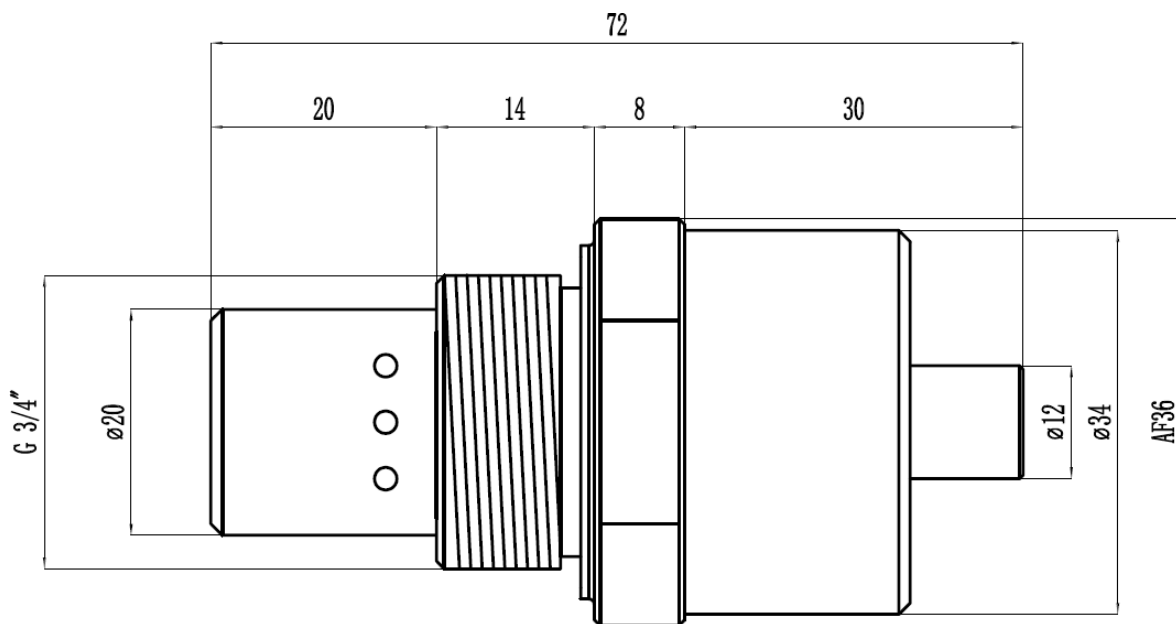
| | | |
|-------------------------------|--|--|
| Measurement indicators | Dynamic viscosity (cP), density (kg.m ⁻³), trace moisture (ppm), water activity aw, temperature (°C) | |
| Measurement range | viscosity | 1cP...400cP(500cSt) |
| | density | 600 kg.m ⁻³ ...1250 kg.m ⁻³ |
| | trace moisture | 0-30000ppm(calibrated for different oils) |
| | water activity | 0...1aw |
| | temperature | 0°C...100°C |
| Accuracy @25°C typical | viscosity | 5% or 1cP whichever is the greater |
| | density | 0.5% or 5kg.m ⁻³ whichever is the greater |
| | trace moisture | 10% or 10ppm whichever is the greater |
| | water activity | 3% |
| | temperature | 0.5°C |
| resolution | viscosity | 0.1cP |
| | density | 0.1 kg.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 | |
| Supply Voltage | DC 9-32V | |
| Power Consumption | < 20mA@24Vdc RS485 | |
| Probe withstand pressure | max 10bar(Please consult us for a larger range) | |
| fluid temperature | 0°C... 100°C | |
| environmental temperature | -40°C... 85°C | |
| Storage temperature | -40°C... 120°C | |
| Shell material | 316/304 Stainless steel Hastelloy | |
| mechanical interface | G 3/4" | |
| weight | 280g | |
| protection class | IP65 | |
| Seal Material | FKM fluoroelastomer | |
| connection cable | 2 mM8 6 core | |
| Maximum flow rate | <0.1 m/s | |
| standards-compliant | CE, ASTM1657, National Metrology 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 | |

Interface definition (M8 male)



| | |
|----------|------------|
| 1) red | DC 9-32V + |
| 2) white | RS485+/A |
| 3) black | GND |
| 4) green | RS485-/B |

Structural dimensions (mm)



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