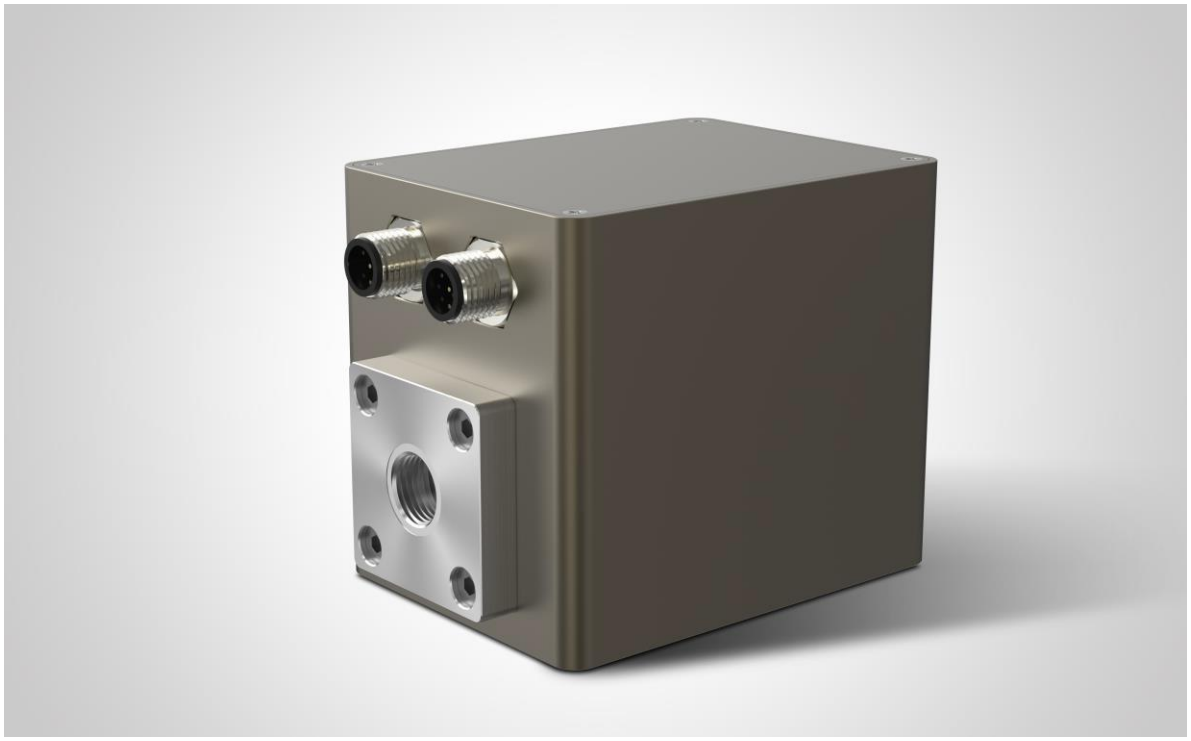
LUWATECH

LWTX-4501 Iron Chip Series

Metal Abrasive Sensor



High speed, Precision, Robustness

Product Description

The LWTX-4501 metal abrasion sensor is a real-time ferromagnetic and non-ferromagnetic abrasion monitoring sensor. It utilises an advanced triple coil electromagnetic induction principle with an integrated high sensitivity data sampling and processing unit to provide real-time monitoring of wear and tear on large industrial equipment.

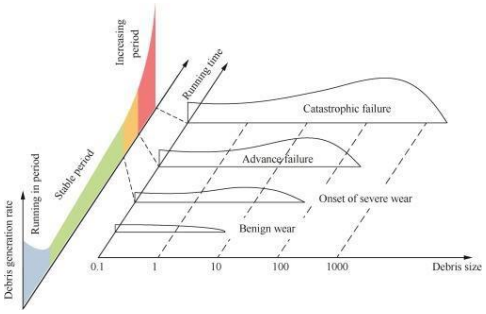
The LWTX-4501 captures ferromagnetic metal particles greater than 40um in diameter and non-ferromagnetic metal particles greater than 150um in diameter, and detects abrasive particles and outputs data through 10 size distributions.The LWTX-4501 also provides temperature measurement inside the sensor and flow rate estimation of abrasive particles.

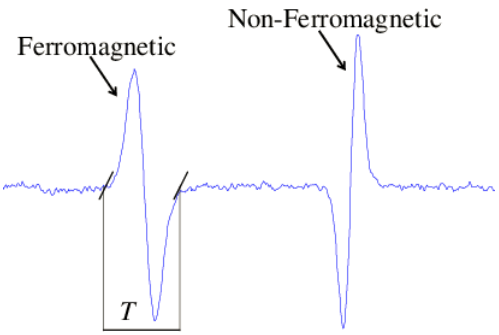
By continuously monitoring the production of wear debris, the LWTX-4501 alerts the user to the earliest stages of equipment failure, allowing for less costly maintenance measures compared to traditional schedules.

Measuring Principle

The LWTX-4501 incorporates two sets of high performance reverse wound excitation coils and one set of high performance induction coils. Both the excitation and induction coils operate at resonance. When a metal grain passes through the pipeline, the magnetic flux change of the excitation coil is received by the induction coil, and the signal is captured and reported in real time by the high sensitivity sampling unit, bandpass filtering unit, phase and amplitude comparison unit, signal amplification unit, low-pass filtering unit and signal extraction unit, etc. The LWTX-4501 is capable of detecting 40um iron particles.

LWTX-4501 achieves the detection capability of 40um iron particles (Fe) and 150um non-ferrous particles (NFe).

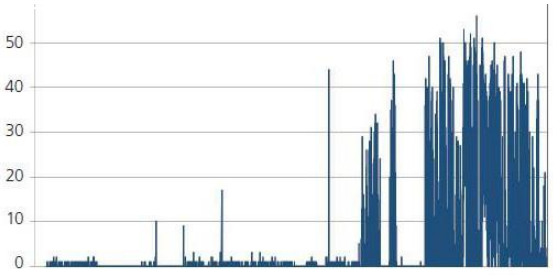




Key Features

- 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 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 communications

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



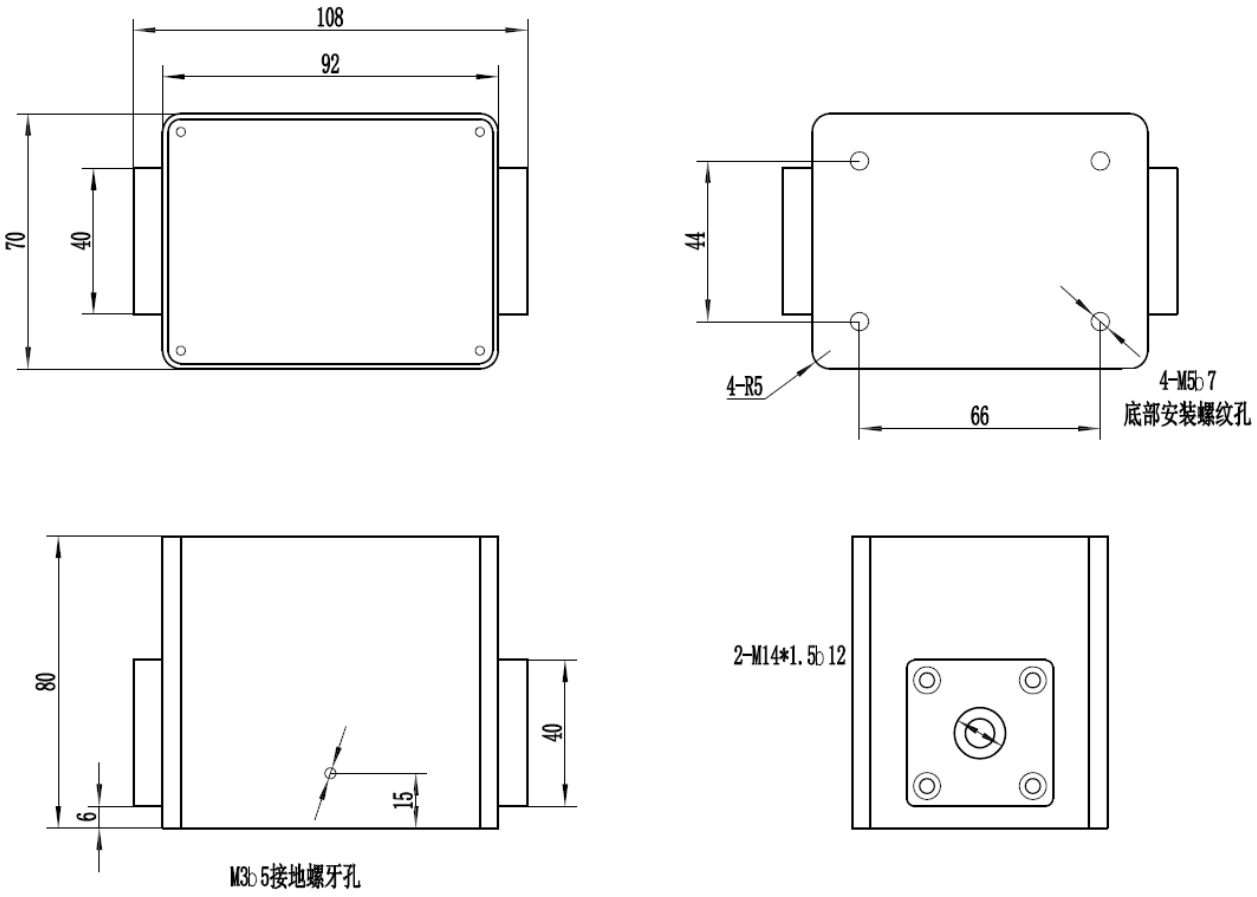
Applications

- Large-scale engineering machinery and equipment for wind, thermal and hydroelectric power generation industries
- Transport vehicles
- Aviation, navigation, railway and other transport industries
- Offshore engineering such as drilling platforms
- Fuel storage and transport link refining, oil industry
- Seawater treatment and testing equipment oil treatment equipment
- Chemical analysis
- Oil treatment and filtration systems for production process quality management
- Coating, ink and printing industry medical equipment

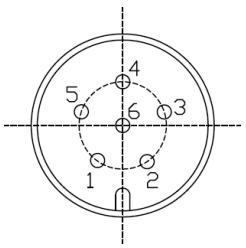
Technical Parameters

Detection capability	Ferromagnetic abrasive Fe > 40μm (ESD) 5 grades
	Non-ferromagnetic abrasive grain NFe > 150μm (ESD) 5 grades
Statistical cycle	Start-up self-test 30 seconds (first time), counting interval 300 ~ 3600 seconds adjustable
Particle count	Max 100 pcs/sec
Allowed flow	0.3 ... 9 L/m（0.1 ... 3m/s）
Pipe Size	Φ8mm
Digital output	RS485 MODBUS RTU，Isolated Voltage 2.5kv
Operating power	DC 24V±10%，< 200mA
Probe pressure resistance	10bar Max
Applicable fluids	Lubricants and hydraulic fluids (synthetic and mineral base), etc.
Fluid temperature	-20 ... 80 ℃
Environmental temperature	-20 ... 85 ℃
Shell material	Stainless Steel, Anodised Aluminium
Structural dimension	108×70×80 mm (Length x Width x Height)
Screw interface	M14*1.5
Weight	<1.0 kg
Protection class	IP65
Connection cable	2 m M8 - 6 core straight
Electromagnetic compatibility	EN 61326-1 EN 61326-2-3 ICES-003 Class B

Structural dimension（mm）



Interface definition (M8 male)



1）	+24V DC	RED
3）	GND	BLACK
2）	RS485+/A	WHITE
4）	RS485-/B	GREEN

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