Oil Mist Transmitter Instruction Manual

ＬＯＴ Series

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Please read this instruction manual for correct operation before usage. If the product is handled or operated incorrectly, it may lead to equipment failure or accident depending on the situation, so be sure to do according to this manual when operation.

1. Overview

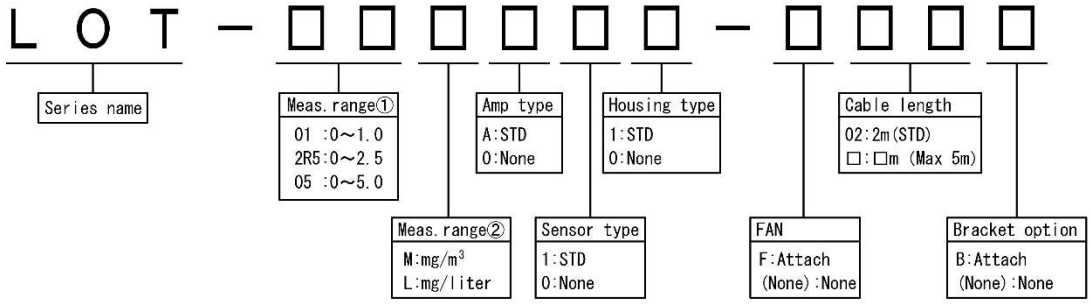
This oil mist transmitter has achieved 1000 times higher sensitivity than our conventional products. This makes it possible to continuously measure even the slightest amount of oil mist generated during cutting without a time lag. In addition, by separating the sensing parts and the amplifier parts, the sensor part has been made lighter (weight ratio 1/20) and more compact, so it can be installed anywhere.

2. Features

- Can measure from 0.1mg / m3 diluted oil mist and be applied in various ways.
- The measured value has a linearity with respect to the mist concentration change, and even a slight concentration change can be observed.
- Continuous data is possible to get by instantly measuring changes in concentration.
- Output DC 4~20mA (Ex: 0 to 5mg / m3) is compatible with other monitors.
- Light weight and compact by separating the sensor and amplifier section

3. Specification

Model



Material	Sensor PBT	
	Amplifier SPCC	
Power	DC24V±10%	
Method	Self-suction infrared scattering method	
Measurement range	0～5.0mg/m³ (Standard) or 0～2.5mg/m³	
Measurement accuracy	Within ±5% of full scale	
Output	DC4～20mA	
Maximum Load	400Ω	
Operating Temperature	5～55℃	
Power Consumption	2.4W	
Weight	Sensor (Cable 2m)	approximately 180g
	Amplifier	approximately 180g

4．Appearance

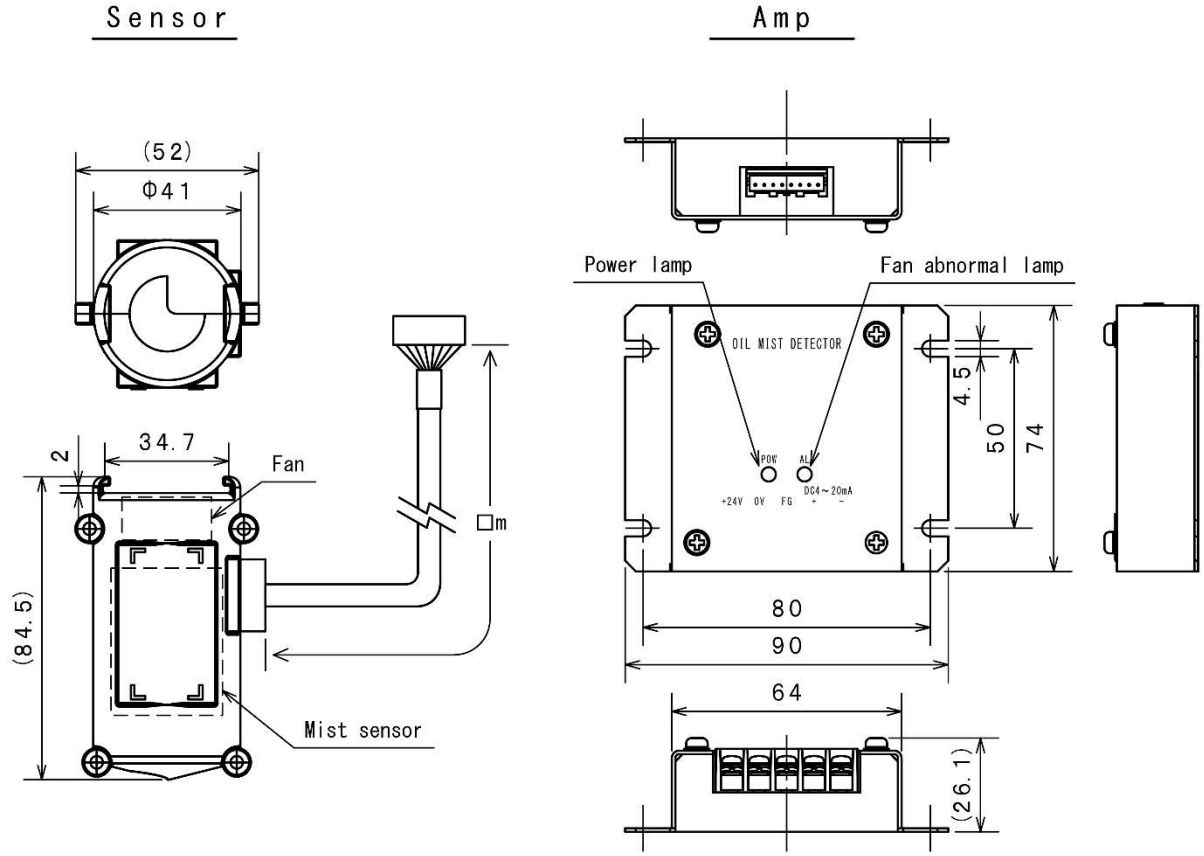


Fig. 1

5．Operation

5．1　Method

A light emitting diode (LED) and a photodiode (PHD) are incorporated in the mist sensor (detection element). The LED light is arranged not to reach the PHD directly. When mist enters between the LED and PHD, the mist particles scatter the LED light, and this scattered light causes the PHD to generate a voltage proportional to the amount of incident light. The generated voltage at that time is amplified, current conversion (DC4 to 20mA) is performed by the amplifier, and it is output as a measurement signal.

5．2　Wiring

Wire according to Fig. 2.

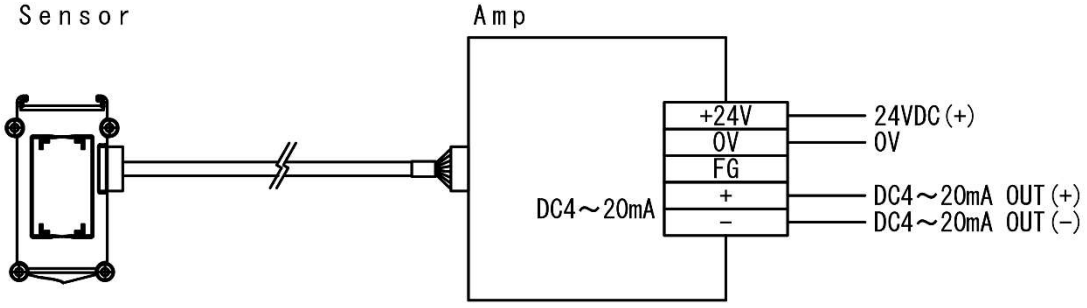


Fig. 2

5．3　Operation test

The output signal (DC4 to 20mA) changes by spraying a lubricating oil spray near the mist suction hole.

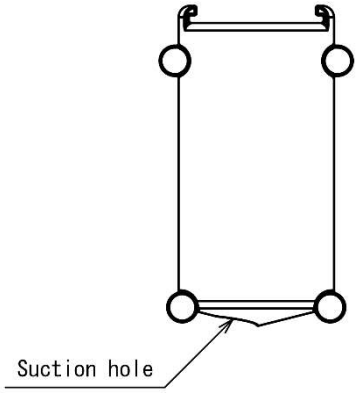


Fig. 3

6．Recommended mounting posture

When using it continuously in a place with oil splashes or at a high concentration, use it within the installation range shown in Fig. 4 below.

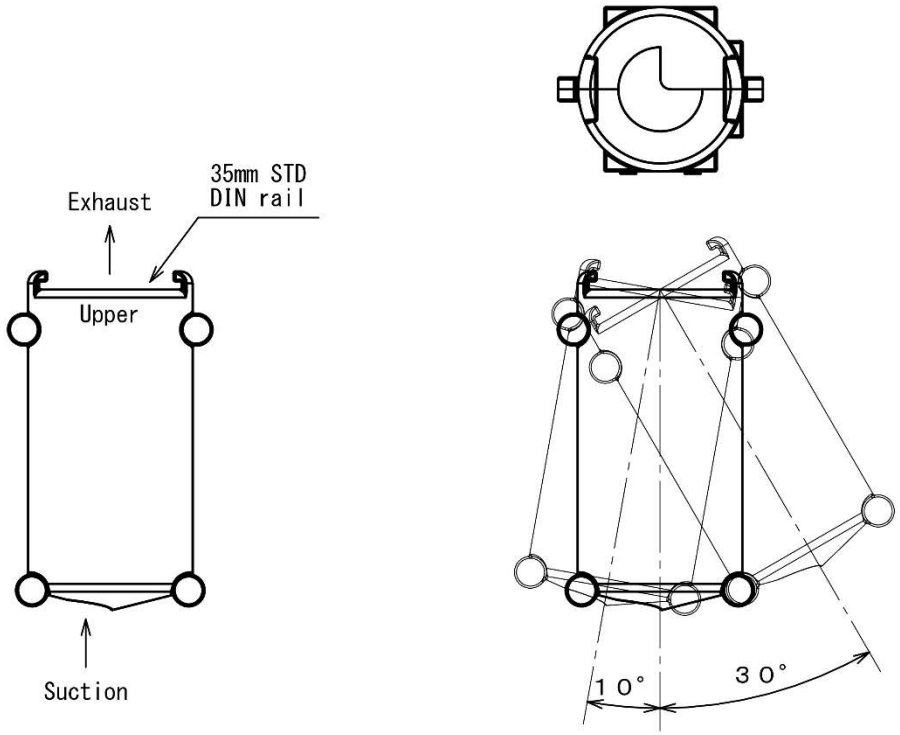


Fig. 4

7．Adjustment

When shipping inspection, we use our original adjustment tester to actually generate oil mist (*) and make adjustments based on the piezo balance dust meter. (* Oil used: Castrol SAE5W-40)

7．1　Zero adjustment

If the output is not DC4mA without oil mist, the output value can be adjusted with zero volume. At this time, if you rotate it clockwise, the output will increase.

Thus, zero adjustment is possible on site, but be sure to perform it under the environment of no oil mist.

7．2　Span adjustment

On-site adjustment is not possible and can only be adjusted with our standard tester.

If you need to make adjustments, please contact our sales office or sales agent.

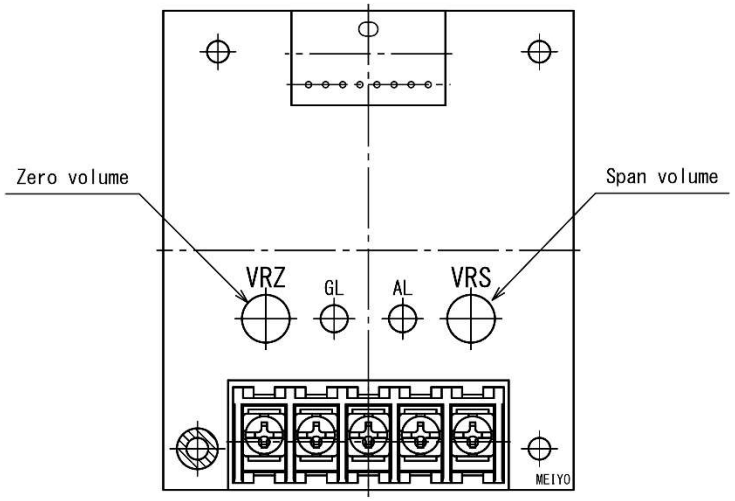


Fig. 5　Amplifier board

8．Cautions

（1）Use the same serial number combination for the sensor and amplifier.

There is a one-to-one relationship between the sensor and the amplifier. Be sure to use the same combination of serial numbers. If you use different combinations, you may not be able to obtain the correct measured values.

（2）About factory adjustment and zero point adjustment:

The standard tester has been adjusted at the time of shipment.

For zero adjustment, if you are concerned about output reduction (less than DC4mA) due to lens contamination, follow Section 7.1.

（3）About the mounting posture

Please do according to the point 6 mounting posture

（4）Do not drop or strong shock it

Although the sensor housing is designed with sufficient strength, the internal elements may be damaged. Please be careful when handling this product.

（5）Prohibition of disassembly or opening the housing

Do not disassemble our products.

Accurate measurement values may not be obtained or mist leakage may occur.

（6）About measured values with other devices

Depending on the type of oil and particle size, the measured values may not match those of other manufacturers' similar equipment such as piezo balance dust meters. Since it is a technical issue that depends on the measurement principle, it is difficult to make a perfect match, but since the linearity is the same, it is possible to find the trend by

comparison and operate it.

（７）About the usage environment

Please choose a place where there is no strong electric or magnetic field. Due to a strong electric field or local field, the measured value of this sensor may be disturbed or noise may be added, making it impossible to measure an accurate value.

９．Maintenance and inspection

（１）Under the environment of pure oil mist concentration of 5 mg / m3,, the product can be used without adjustment for about a year.

（２）If you are concerned about output reduction (less than DC4mA) in an environment where there is no oil mist, adjust to zero according to Section 7.1.

（３）Although it depends on the operation status and the measured concentration, we recommend that you return it to our company or via an agency within 2 years after operation. We will maintain the product.

１０．Failure and countermeasures

（１）Cannot measure

-Make sure that the power indicator is on.

If it is not lit, check the power supply voltage. (The power supply voltage of this device is DC24V)

-Check if the cable is disconnected.

-Check for loose screws in the wiring section (terminal block).

-Make sure that the fan indicator is not lit.

If it is lit, refer to item (3)

（２）The measured value is abnormal

-Check if the power supply voltage is stable.

-Check if the cable is disconnected.

（３）If the sensor output value is less than DC4mA in the absence of mist, lens contamination may be progressing. Adjust to DC4mA with zero volume only if you are concerned. (See Section 7.1)

（４）The fan indicator is on

There is a possibility that the fan circuit is broken or short-circuited, or the fuse on the amplifier board is broken, so please return it to the manufacturer. Please contact our sales or sales agent.

１１．Warranty

The warranty period is one year after our shipment. During the warranty period, we will repair free of charge for failures due to our responsibility (manufacturing, circuit parts, materials, etc.). However, even within the warranty period, if the following reasons apply, it will be out of the warranty range.

a) Malfunction due to specification error and improper repair or modification.

b) Failure due to dropping after purchase.

c) Failure due to natural disasters such as fire, earthquake, flood, and lightning strike.

d) When used for purposes other than oil mist.

e) When it is judged that it is not the responsibility of our company.

End