Document number : T181126A-E

Oil mist transmitter operation manual

(For Inboard space)

MEIYO ELECTRIC CO.,LTD

Created date : Nov 26th 2018

Please read this instruction manual before use and use it correctly after understanding. In case you handle incorrect handling or operation, there is a possibility that it may result in an accident, so please be sure to observe when handling the oil mist transmitter.

【Safety Precautions】

The warnings and precautions shown below are for preventing danger and injury to you and surrounding people handling oil mist transmitters.

Warning indicates a case where there is a risk of causing an accident unless it complies with this.

Note means a case where malfunction or equipment damage may result unless it complies with this.

About installation

Warning

Do not rough handle oil mist transmitters.

If throwing or dropping it, accurate measurement can not be performed due to shock, so careful handling is necessary.

About maintenance and replacement

Warning

Turn off the power during maintenance / replacement

It is dangerous to start working while turning on the power. Please do maintenance and replacement work after turning off the power.

Note

1) Clean the mist sensor once every a year or when the measured value drops markedly (the pollution indicator lights up).
   Please do not use thinner, gasoline, kerosene, diesel oil for cleaning, please be sure to use he specified item.
2) Please tighten the screw once a year.
3) Clean the connectors when cleaning the mist sensor or once every three years.
4) For fan replacement, when the FAN abnormality indicator lights, or 3 to 4 years as a guide please.
5) Please disassemble and clean the oil mist transmitter once every five years.
6) We recommend to renew the oil mist transmitter around the 10th year.

1. Foreword

This transmitter is used in combination with a separately arranged oil mist monitor. By installing it on the side of an inboard device where oil mist etc. such as oil tankers and chemical tankers are likely to occur, it is possible to detect oil mist caused by equipment malfunction at an early stage and prevent fire.

2. Caution in handling

(1) About adjustment.

Please do not disassemble it unnecessarily because there is a risk that the mist will leak or you will not be able to measure accurately. If cleaning is necessary, disassemble, clean and assemble according to the instruction manual.

(2) About adjustment

Adjusted with standard equipment. In principle, please do not adjust on site. If adjustment is inevitable, follow this instruction manual.

(3) Operation test

The test can be performed easily when M4 screw at the top of body is removed, and the thin stick of Φ2～3mm. Is inserted in the screw hole. When inserting a stick to the screw hole, be careful enough not to break the fan.

(4) Cleaning of mist sensor contained in the body

Do not use thinner, gasoline, kerosene and diesel oil. Use of thinner may melt the resin case and the light emitting and receiving part. Use aerosol spray of washing / lubricating oil (Kure CRC5-56 non-fragrance or an equivalent article), when cleaning the unit.

(5) Additional tightening of screw

Screws are tightened in good balance in order to maintain sealing of the case. When tightening screws, keep good balance.

(6) Do not let drop or strike the unit.

It may cause damage inside.

(7) Installation location

Place along the air flow is desirable, please place within 1 ~ 2 m from the source of oil mist generation. It can not detect if oil mist does not exist around transmitter.

(8) Mounting position and angle

Install the unit with the lid faced upward having M4 screw. Also install the unit within pecified angle. Reverse installation or installation out of specified angle may turn sucked oil mist into oil accumulation, which makes measurement impossible.

3. Structure

Structure of main part is shown in Fig 1.

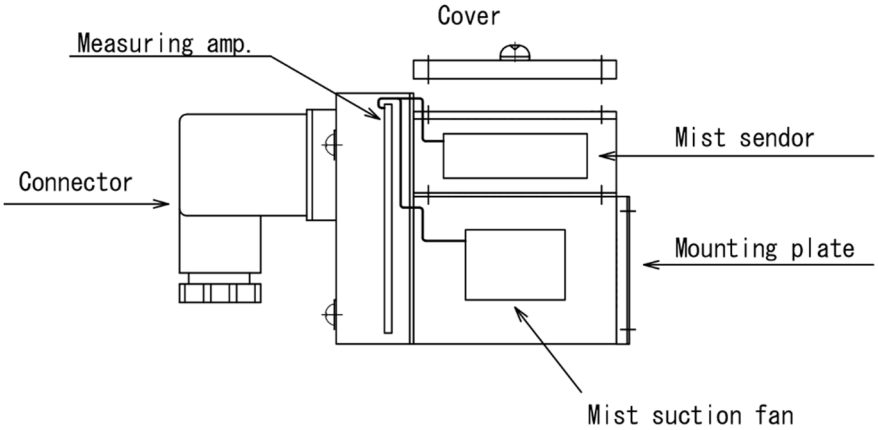

Fig 1 Oil mist transmitter structure

4. Operation

Light emitting diode (LED) and photo diode (receiving element, PHD) are contained in the mist sensor. It is arranged so that LED light does not reach PHD directly. When mist is present between the two, LED light is scattered by mist particle. When this scattered light reaches PHD, voltage is generated in proportion to incoming light quantity. Such voltage is amplified and converted into current, and output as a measurement signal (DC4 - 20mA).

5. Mounting position

According to Fig 2 and 3.

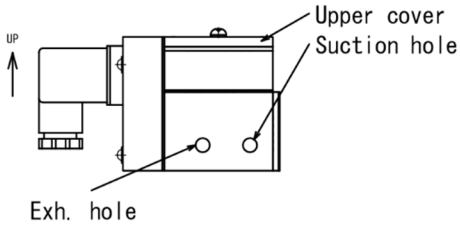

Fig 2

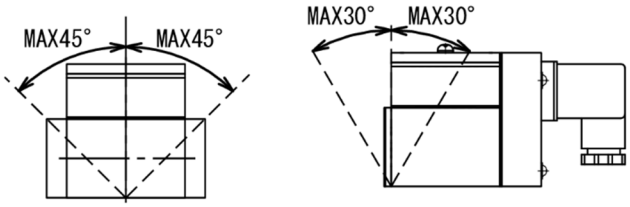

Fig 3

6. Wiring

According to Fig 4.

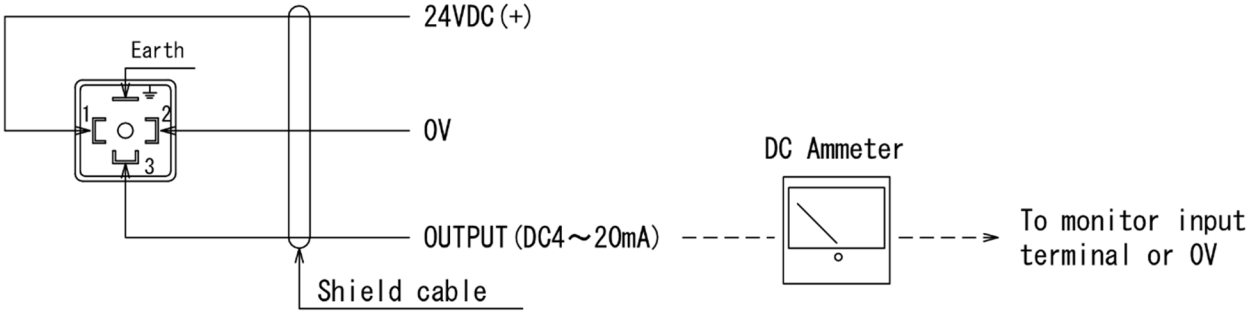

Fig 4

7． Operation test

Remove the lid M4 screw of the oil mist transmitter. When inserting a rod of Φ 3 into the M4 screw hole, the output of the transmitter becomes larger and you can check visual audible alarm including pre-alarm and high alarm.

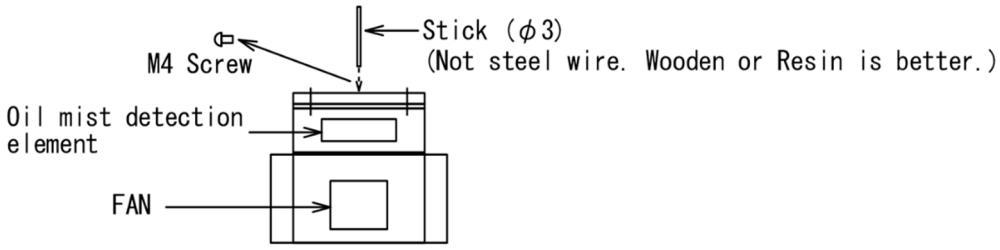

Fig 5

8． Adjustment

（1） Zero adjustment

When the oil mist does not exist, please adjust so that the output signal becomes DC 4mA. Rotating clockwise will increase the output.

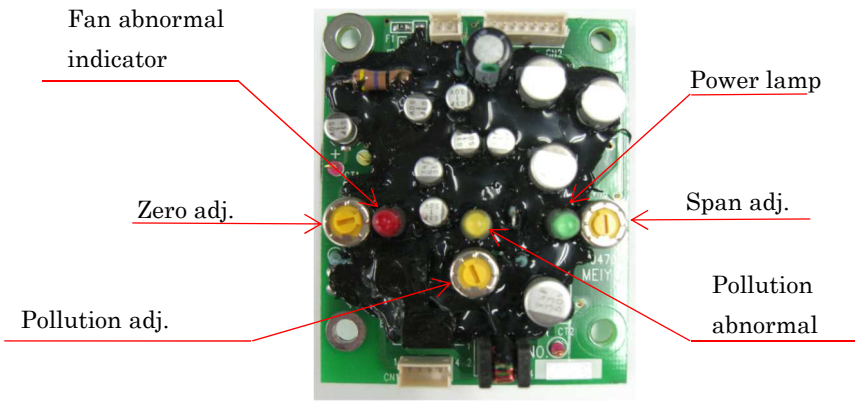

Fig 6　Amp.（When GDM connector lid is removed.）

（2） Span adjustment

No adjustment on site. It can be adjusted only with our standard test equipment.

9． Self check function

（1） Fan abnormal indicator (Red LED)

Fan fault indicator lights when fan lock, break of fan circuit or short-circuited.

（2） Pollution abnormal indicator(Yellow LED)

Cleaning shown in clause 12 when the pollution abnormal indicator lights.

10． Maintenance and check

（1） Cleaning of mist sensor

Cleaning should be done once a year or when the pollution indicator light is on. Please do not use thinner, gasoline, kerosene, diesel oil for cleaning. Mist sensor may melt.

（２）Tightening of screw

Tighten the screw once a year or when oil or mist leaks from the case. Tighten the screw in good balance.

（３）Cleaning of connector

Clean the connector when cleaning the mist measuring part or once three years, using alcohol, cloth, etc.

（４）Replacing fans

When the FAN abnormality indicator lights, or 3 to 4 years as a guide please.

（５）Please disassemble and clean the oil mist transmitter once every five years.

（６）We recommend to renew the oil mist transmitter around the 10th year.

１１．Troubleshooting

（１）Measurement is impossible.

Please check the power supply is normal, disconnection of the power supply line or output signal line, dropping of the internal connector, clogging of the mist pipe, etc. Also please make sure the fans are not stopped.

（２）Measured value is unstable.

Please check the power supply is stable, contact failure of the connector part, disconnection of the cable etc.

（３）Fan fault indicator is on.

Check for break of current converter fuse, short-circuit of fan circuit, or fan lock. Check or replace the current converter or the fan.

１２．Cleaning method

（１）Removing the upper lid of Fig.7, mist detection element shown in Fig.8 will appear. Position that is easy to clean, as shown in Fig.8 and Fig.9. When removing the mist detection element, that of careful not to damage.

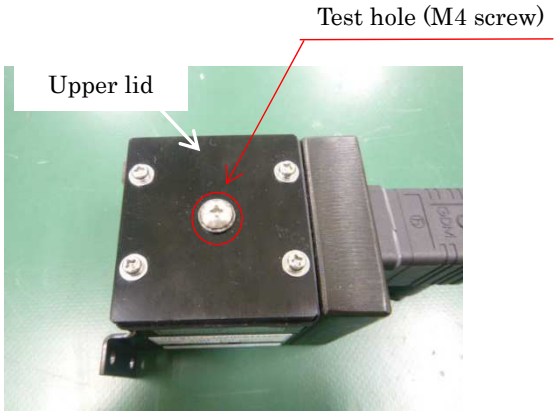

Fig 7

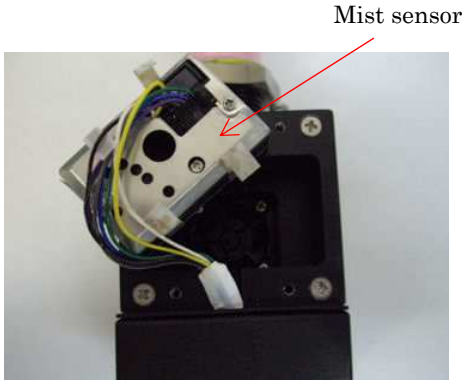

Fig.8
Removed state mist sensor

（2） Wash spray the acrylics cover on the surface such as a CRC(*1) from the back hole of the detection element. Fig.9 shows the positional relationship for the acrylics cover. Clean the LED for pollution detection too.

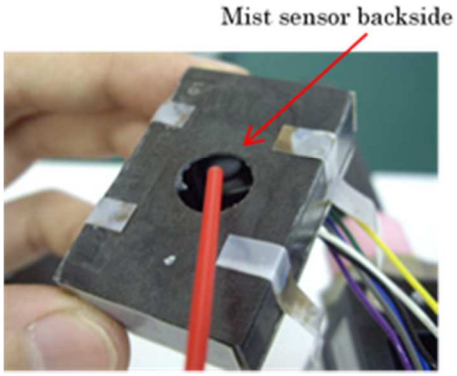

Fig 8

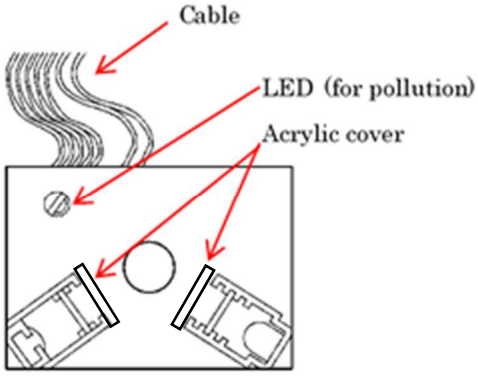

Fig 9 Mist sensor internal

（3） After cleaning, replace the detection element, After cleaning, replace the detection element, mounting the upper lid. Then, be careful to mounting upper lid direction. Refer to Fig 10. If the wrong position,can not be measured.

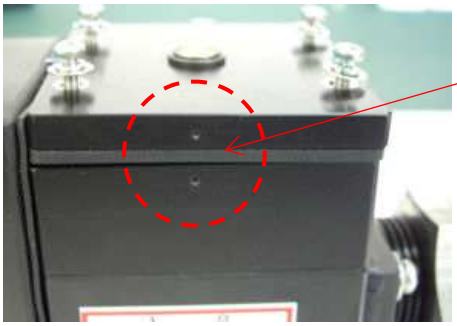

Fig 10

（4） The completion check of cleaning

Power supply after the above cleaning. Then check that pollution abnormal lamp is off.

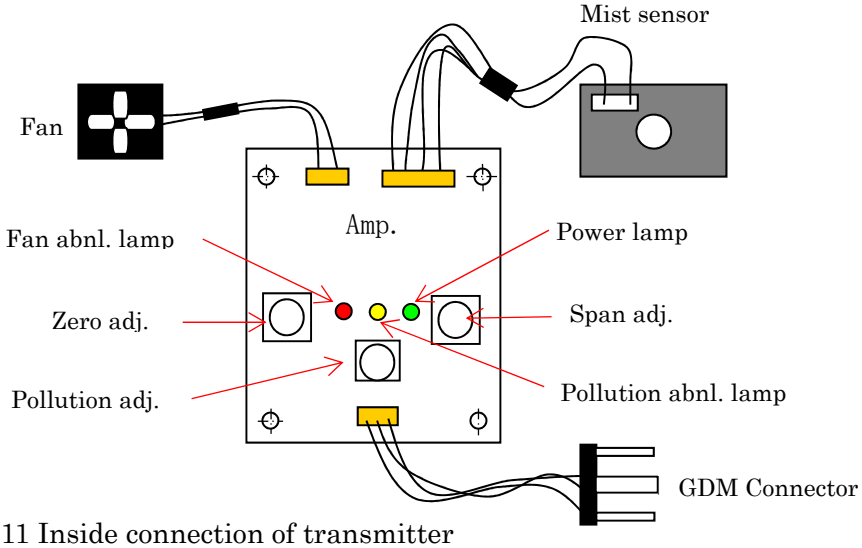

Fig 11 Inside connection of transmitter

Remove the lid with GDM connector and the amplifier shown in Fig.11 will appear. Replace the fan and mist detection element for each connector.

*1 **The cleaning method of the mist sensor element**

Note : Thinner, gasoline, kerosene, diesel oil can not be used. Alcohol can be used. Please use spray type cleaning / lubricant shown in item 12. Please use CRC 5 - 56 (white can / Non-fragrance) made by Kure Industries, TB 2706 (acrylic, rubber usable) made by Three Bond or equivalent.
Be careful not to scratch the acrylic cover and the contamination detection LED. When cleaning, please clean all oil mist transmitters at the same time.

Specification

1. Type : MOT- □M002JA

   2R5: Measuring range (0～2.5mg/liter)

2. Case : Aluminum and SPCC 1.0t
3. Color : Black alumite
4. Weight : 0.75kg
5. Power supply : DC24V
6. Method of detection : Self-suction scattering method (infra-red ray)
7. Measuring range : 0～2.5mg/liter
8. Measuring accuracy : ±5% at F.S
9. Output signal : DC4～20mA(load resistance≦400Ω)
10. Operation temp : 5～55℃ (MAX.70℃)
11. Storage temp : -15～80℃
12. Relative humidity : Less than 95% (without no condensation)
13. Vibration : 5～25Hz±1.6mm 25～100Hz 4G
14. Shock : Less than 10G
15. Inside connection of transmitter : Refer to Fig 11