FISON

Oil in Water Analyzer

FM-OWA-A10

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Oil In Water Analyzer FM-OWA-A100

1. Introduction

Oil in Water Analyzer FM-OWA-A10 is a handheld device based on the dual-channel photometer principle technology, which measures the light absorbance and calculates the oil content in water according to Lambert-Beer law. It offers 0 to 1000 ppm test range and operating temperature ranges from -20 to 40˚C. It offers wide detection range with reliable results, convenient to use, also commonly used for detection instrument for testing oil concentration in water.

2. Features

- ✓ Analysis and detection of oil leakage in oil pipelines and cooling water
- ✓ Designed with Fast and accurate measurement, high sensitivity and stable performance
- ✓ Oil pollution concentration display
- ✓ Operating temperature ranges from -20 to 40˚C
- ✓ Designed with digital LCD display
- ✓ Test ranges from 0 to 1000 ppm
- ✓ Supplied with universal charging adaptor
- ✓ Equipment can be used after charging, no need of plugging-in

3. Specifications

Model No.	FM-OWA-A10
Test range	0 to 1000 ppm (Can be adjusted according to user requirements)
Reaction time	5 seconds
Precision	± 5% FS
Operating temperature	-20 to 40˚C
Display	Digital LCD display
Humidity	10 to 90 %RH
Power consumption	< 10 W
Power supply	9 V
Dimension	450 × 350 × 200 mm
Weight	5 kg

4. Applications

Oil in Water Analyzer is used in Oil leakage monitoring in cooling water, water treatment plant also used in petrochemical water treatment, boiler water oil content detection and supporting oil removal equipment, oil field water treatment.

5. Instrument Introduction

1) The instrument is calibrated with a “zero sample” and a standard concentration sample (about 300ppm), and the extinction coefficient Em for the main channel (254) and Er for the reference channel (473) are calculated using Beer's law.
2) This requires setting the optical range, i.e., the distance between the two glasses.
3) Often this calibration is sufficient to guarantee the proper use of the instrument.

6. Installation

1) **Acceptance:** Check if there is any damage during transportation or other problems.
2) **Unpacking:** Check the ordered parts according to the list.
3) **Connection:** Select the components according to the manual and connect the relevant cable.
4) **Preparation for operation:** prepare for power supply.
5) **Start-up check:** check if the basic status is normal.
6) **Test:** start us

7. Operations

7.1 Common Test

During common use, the instrument performs data acquisition in 100ms frequency and updates the display about every 1 second.

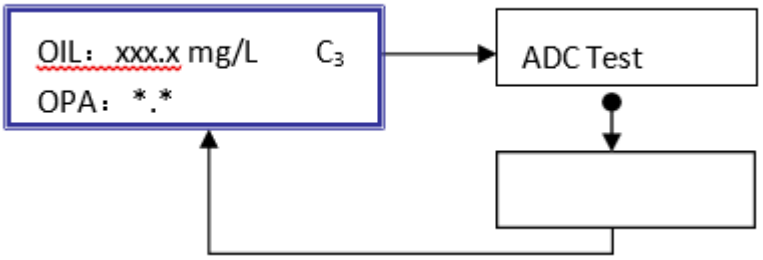


Figure-1

7.2 Operation Direction

1) Insert the sensor probe part into the sample to be measured. Make sure there are no air bubbles on the surface of the probe.
2) The probe can be first inserted obliquely into the sample to be measured and placed vertically after confirming no bubbles.
3) Then turn on the power switch.
4) After about ten seconds, the test value is displayed on the LCD, and during the process of reading the test value, the sensor must be kept inserted in the sample.

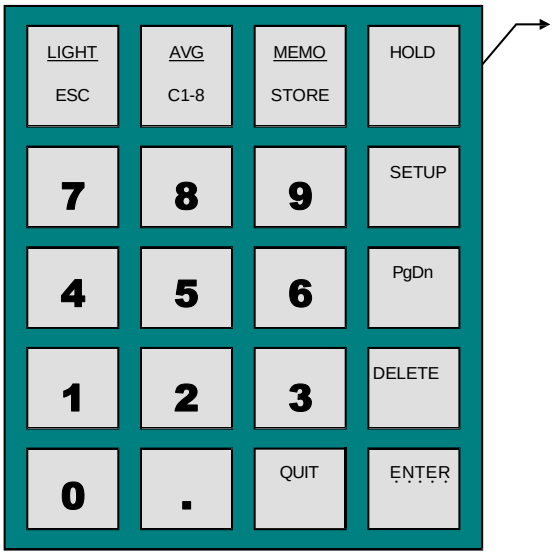


Figure-2

7.3 Calibration Method

This calibration method is based on the standard liquid preparation method for instrument calibration mentioned in the standard method "Water Quality-Determination of Oils— Gravimetric Method".

1) Sample Preparation

(1) Calibration instruments and utensils

1×oil in water equipment, 1×100ml glass beaker, 4×250ml glass beakers, 3×250ml glass volumetric flasks, 1×1ml pipette, 1×5ml pipette, 1×25ml pipette, glass stirring bar.

(2) Preparation [C]=1000ppm standard solution

Baseline sample: Dissolve 1 ml of crude oil (liquid state) in a 100 ml beaker containing 39 ml of acetone solution with a pipette and stir well with a glass stirring bar.

(3) Sample configuration

- **0ppm oil in water sample**: appropriate amount of distilled water. Measure about 100ml of distilled water into a 250ml beaker for stand-by calibration.
- **100 ppm oil in a water sample**: Pipette 1ml of base liquid sample in a 250 ml volumetric flask, add distilled water to the scale line, and measure 100 ml of sample into a 250 ml beaker for stand-by calibration.
- **200 ppm oil samples in water**: Pipette 2 ml of base liquid in a 250 ml volumetric flask, add distilled water to the scale line, and measure 100 ml samples into a 250 ml beaker for stand-by calibration.
- **500ppm oil sample in water**: Pipette 3ml of base liquid in 250ml volumetric flask, add distilled water to the scale line, measure 100ml of sample into 250ml beaker for stand-by calibration.

Note: Since the instrument has been calibrated before leaving the factory, users can use it directly. In case the user feels that the measurement error is large, he/she can configure and calibrate the standard sample.

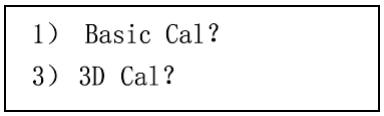
Calculation Formula

100ppm=((1/40)/250×0.01) ×100=100ppm;200ppm=((2/40)/250×0.01) ×100=200ppm

2) Calibration Interface

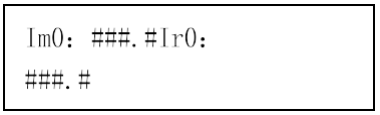
(1) Press the "SETUP" key, enter the password "123" and press the "ENTER" key to enter the operation function options.
(2) Select channel "3"-oil.
(3) Press "ENTER".

(4) Press the number button to select "1" - Calibrate.
(5) Press "ENTER", select the unit "1" - ppm, and press "ENTER" to enter.

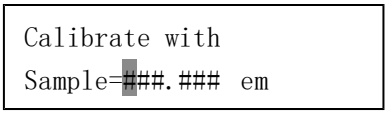


3) Calibration Interface

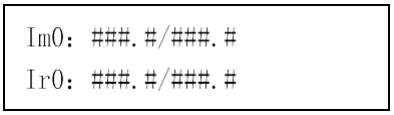
(1) Press the number button to select "1" to start the basic calibration, then press "ENTER", and the screen will display "Put the sensor in 0 standard samples".
(2) Please put the sensor into the beaker of 0mg/l sample, the screen prompts "Are you ready? <CR>to begin!", press "ENTER" to start the measurement. The screen will display:



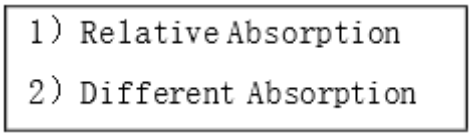
(3) After the value is stable, press "ENTER" and the screen prompts "Put the sensor in standard sample", then put the sensor into the beaker of the upper limit standard liquid measurement (For example, the user's upper measuring limit is 300ppm, the prepared 300ppm standard liquid will be used as the highest range point for calibration), wait for a few seconds and then the screen will display:



(4) Press the numeric keys to enter the number 300.0 (be sure to enter the decimal point), then press "ENTER".
(5) When you are ready, press "ENTER" again, and the screen prompts "Are you ready"? <CR>to begin!", then press "ENTER" and the screen will display:



(6) When the two values following Im0 and Ir0 are stable, press "ENTER" five times until the screen displays:



(7) Select "1", and press "ENTER", the instrument returns to the initial interface. The basic calibration is completed, and the measured value of the current calibration solution is displayed.
(8) If there is a large deviation in the measured value, please repeat the above steps to recalibrate.

7.4 Attention

1) In the calibration process, the sensor calibration order is from low concentration to high concentration, and before each calibration, the sensor and its test window should be cleaned and wiped with clean distilled water.
2) The handheld sensor should be put into the solution slowly and tilted to ensure that no bubbles are generated at the quartz glass to prevent putting the sensor fast and vertically into the solution to be calibrated which will affect the measurement results.
3) In the user calibration process, an appropriate concentration of calibration points can be selected by the water quality measurement range.
4) Basic calibration must choose the lower and upper limits of the measurement range respectively as the first and second calibration points.
5) In the calibration process, once data input errors appear, press the "DELETE" key to delete the wrong number and re-enter the correct number.
6) Other remaining problems the user does not know how to deal with appear, the user can also choose to turn off the instrument, and then re-calibrate the calibration point.
7) The instrument is powered by 9V DC, please make sure the instrument is full of charge before measurement.
8) If the interface display is abnormal due to misoperation, contact the instrument technicians for parameter setting in time.

8. Troubleshooting

Problems	Solution	Password	Operations	Remarks
Crash or system chaos	Large reset		• After turning on the power switch, when the LCD stops moving, press (within 1 second) the <CLEAR> key; the system asks, "Confirm to Init??". • Press the <ENTER> key again, the microcomputer displays some symbols, and after several minutes, the normal test interface will be displayed.	• Note: After a large reset, the data from the user's calibration will be erased. • It is best to record the calibrated temp-AD value when calibrating.
System deviation of test value	Recalibrate	123	Refer to the relevant part of the manual	
	Zero set	123>	Refer to the relevant part of the manual	
	Add calibration on point	123>		
Breakpoint warning	View calibration table	5521	• After pressing the <SETUP> key, type 5521, and press the <ENTER> key, and the LCD will first show the concentration value of the lowest concentration sample (in the upper right corner of the LCD), then press <ENTER> key again, the following line will show the interface of temperature _ADC signal value. • Press the <ENTER> key to display the data of the next pair of temperature and AD values. • After the concentration data is displayed, press the <ENTER> key again to automatically display the calibration data of the next concentration sample.	