sisco

Economic Turbidity Meter SGZ-A series

Operating Manual

Please read the manual carefully before operating the instrument.

Content

1、Identification of External Parts

1	LCD display	2	Shade cover
3	Measuring Cell	4	CAL(Calibration)
5	Enter	6	Lightlight)
7	Shift (unit)	8	Unit indication light

9	Power switch	10	Power socket

2、General Description

SGZ-A series Economical Turbidity Meter is designed for turbidity measurement in accordance with International Turbidity Measurement Standards ISO7027, and provides measurements in traditional unit of NTU, EBC, ASBC.

3、Applications

The instrument may widely apply to the turbidity measurement in power plants, waterworks, life sewage treatment plants, drink factories, environment protection departments, process water, brewage and drug manufactures, guard departments, hospitals and so on.

4、Characteristics

a、The large bright LCD makes the reading more comfortable, and no natural light influence.

b、The succinct operation, broad survey scope and higher natural price ratio, can more suit to various professional applications.

c、The unique localization structure and high accuracy path of rays' system can effectively guarantee instrument to work steadily for a long time.

d、The automatic switch installment with precise measuring range and the reliable linear compensation system make the data more accurate and stable.

e、The newly-added chromaticity compensation system effectively avoids the disturbance caused by the samples'color and reflects the real turbidity.

5、Specifications

Model	**SGZ-200AS**	**SGZ-20A**	**SGZ-200A**	**SGZ-400A**	**SGZ-50A**
Measurement Range(NTU)	0-200	0-20	0-200	0-400	0-50
Resolution	0.1	0.01	0.01	0.01	0.01
Accuracy	±2.5%F.S	±2%F.S			

Repeatability	≤2%
Zero Draft	±1.5%(F.S 30min)
Stability	±1.5%(F.S 30min)
Dimension	365×325×175mm
Weight	3 kg

6、Precautions

SGZ-A Economical Turbidity Meter is a precise photoelectric measurement equipment. In order to obtain the accurate measurement results, please read the entire manual before operating the equipment.

a、The operating environment must satisfy the operating requirements.

b、The sample cell must always be kept clean dust-free, no dust and close the lid for shield the light when not in use.

c、The cold start time should be lengthened when used in humid environment.

d、The measured solution should be poured along the sample cell wall carefully to prevent producing air bubbles and affecting the accuracy of measurement.

e、The instrument must be re-calibrated after the replacement of the sample cells or maintenance.

f、Non-specialized services engineers; Please do not turn on the instrument to carry on repairing.

7、Operating Environments

a、Operating Temperature: 5-35℃;

b、Operating Humidity Range: less than 80％RH;

c、Power Requirement: 220V±22V, Frequency:50±0.5Hz,the power must be connected grounding reliably.

d、The instrument should be placed on a table that is free of vibration and avoidance the direct light effectively.

e、Enough space should be remained around the instrument in order to help the radiation and no intense vibration source and strong magnetic filed disturbance.

f、No obvious dust and caustic gas in the surrounding air.

8、Measurement Preparation

a、Turn on the power switch at the right below corner behind the instrument, warm up the instrument 30min.

b、Cells must be meticulously clean and free from significant scratches. Clean the inside and outside of the cells by washing thoroughly with nonabrasive laboratory detergent. Then continue cleaning with a bath followed by multiple rinses with distilled or deionized water.

c、Prepares the zero turbidity water for adjusting zero and the Formazine standard solution for calibration.

d、Collect a representative sample in a clean container.

9、Measurement Procedures

a、Fill the sample cell to the line with the zero turbidity water. Take care to handle the sample cell by the top. Cap the sample cell. Hold the sample cell by the cap and wipe to remove water spots and fingerprints.

b、Place the sample cell in the instrument cell compartment, ensure the scale line on the sample cell aim at the white orientation line in the instrument compartment, and then close the lid.

c、Adjust the zero-position button to set the display zero after the reading is stable.

d、Install the calibration standard solution using the same method. Place the sample cell in the instrument compartment, adjust the emendation button to adjust the reading to the standard value.

e、Repeat step b,c,d to ensure the accuracy and liability of the zero point and adjusted value.

f、Place the sample cell with representative sample in the instrument cell compartment, close the lid, record the data after the reading is stable.

10、Measurement Techniques

Accurate and repeatable turbidity measurements depend on good, consistent measurement techniques. Measurements are more accurate and repeatable if close attention is paid to proper measurement. Three important consideration are:

- Use clean sample cells.
- Use sample cells in good condition.
- Remove air bubbles(degassing).

a、Measure samples immediately to prevent changes in sample characterisitic due to temperature shift and setting. Avoid dilution whenever possible particles suspend in the original sample may dissolve or otherwise change characteristic when the temperature change or the sample is diluted. Thus the measurement may not be representative of the original sample

b、Cells must be meticulously clean and free from significant scratches. Clean the inside and outside of the cells by washing thoroughly with a nonabrasive laboratory detergent. Hand sample cells by the top only to minimize dirt and fingerprints. Using hydrochloric acid dip in two hours and then washing by distilled water when use for a long time.

c、Preparing the standard Formazine solution correctly at the aiming point is an important in turbidity measurement. To reduce the configuration tolerance, please ensure the computation is correct, pay attention to each step when preparing standard solution, mix the original solution equably, fill it accurately, note to the scale line when pouring the zero turbidity water and use large capacity measuring cylinder when the standard solution is low turbidity.

d、Choose the standard solution that the turbidity is close to the full measuring range for calibrating. Mix equably enough before calibration and ensure the calibrating value is correct before measuring. For low turbidity or high accuracy, the measuring difference between sample cells should be taken into account, the calibrating and testing bottles must be the same. Zero turbidity water is used in adjusting zero, and distilled water or air could also be used in adjusting zero when low accuracy. When the instrument has been calibrated, it need not be re-calibrated for long time if the position of the sample during measuring. For high measuring range, the instrument may automatically carry on the linear compensation. Therefore it is convenient for operation.

e、The representative sample accuracy reflects the true conditions of the source from which the sample was taken. To ensure a representative sample, gently but thoroughly mix every sample before collecting aliquots. Do not allow particles to settle before making measurements. Remove air bubbles in the sample cell when preparing. Make sure all moisture is thoroughly wiped from the outside of the sample cell prior to placing the cell in the instrument for measurement. It may be necessary to warm the sample slightly by letting it stand at room temperature for a short period of time.

f、When measuring, not only considerate the cleanness of the sample cell and accuracy of sampling , but also matching the position of sample cells is necessary. The scale line on the outside of the sample cell should aim at the localization line in sample compartment. Close the lid to avoid the influence of jumbly light. The data may appear back and forth changes because of the floating of grain in water. The value can gradually become stable after a bit period of time and the turbidity of water sample can be read out. If the value can not be steady long time, it is due to overabundance of air bubbles in sample or suspended particles. Choose the middle value when reading, namely the biggest value adds on the smallest value, and then divide by 2 obtains the middle value.

11、Maintenance & Repairs

Maintenance:

Correct measurement and periodic maintenance may lengthen the service life of the instrument affectively.

a、If stop using the instrument for a long time, please turn on the machine periodically to warm up a while to minimize the humidity in the instrument.

b、Please keep away from the high temperature, low temperature and moist place during storage and transportation period to avoid damaging the optional system and electrical part in the instrument.

c、Clean the sample cell and sample cell compartment timely can enhance the measurement accuracy effectively. Avoid scratching the glasscells and wipe all moisture, water spots and fingerprints off the cells before inserting them into the instrument.

d、In order to avoid affecting the light pass rate, do not touch the optic parts in the machine straightly. When maintenance, use absorbent cotton stained with the mixture of alcohol and aether to clean the surface.

e、The light source halogen tungsten lamp is damageable, but generally it can be used for a long time since the voltage has been reduced. Users could replace if it damaged. The method is as following: after taking down the back board and top lid of the instrument, the halogen tungsten lamp in light room appears. After unscrew the bolt at the foot of the lamp, take away the damaged lamp and install a new one with same specifications, then adjust it. Firstly place a white paper in front of the sample cell compartment, adjust the bolt on the sample base until the height of the center of filament 50mm is above the support stand base. Then adjust around the position correspondingly until the facula irradiating to the measurement room is bright and clear. Finally install the back board, then connect to the power and test.

Repairs

Fault	Probable Cause	Corrective Action
1、No display after power up.	a. The power switch or the fuse is damaged. b. The connection between power line and plug is not good or unstuck.	a. Replace the damaged parts. b. Tighten the socket or replace the power wire.
2、No response During measurement	a. Light source is damaged. b. The interior plug is disconnected to the socket. c. Electrical system have faults.	a. Replace the halogen tungsten lamp. b. Tighten it. c. Examine and repair it.
3、The reading is unstable or show shifts.	a. The air bubbles or drifting particles in the sample cell. b. The internal circuit is affected with damp. c. There are water spots outside of the sample cell. d. No grounded terminal or external interference. e. The power supply is unstable. f. Lights are unstable caused by bad light base connection. g. Radiation fan damage.	a. Resample or lengthen the read time. b. Prolong the warm-up period when cold start. c. Wipe to remove the water spots. d. Add ground terminal to reduce the effects of unwanted interferences. e. Install AC manostat. f. Tighten the light base. g. Replace the damaged fan.

12、Packing List

Series No.	Items Name	Items Q'ty
1	Economical Turbidity Meter	1
2	Power Cable	1
3	Shade Cover	1
4	Glass vial	2
5	Formazine Standard Turbidity Solution	1
6	Fusibility Tube 1A, 4A	2
7	Communication Line	1
8	Operating Manual	1

13. Service warranty

We supply one year warranty started from shipping date under normal use and service. Warranty does not include the malfunction is caused by misuse, negligence or accidents.

We provides a variety of services to support our customers after warranty expiration. Repair service can be provided by attractively priced service contracts or on a time and material basis.

Appendix 1

Ⅰ Preparation zero turbidity water

Referring to International Standards ISO7027 stipulated method, chosen 0.1 um (or 0.2 um)aperture microporous membrane filtration distilled water (or electrodialysis water, ion exchange water), which require repeated filtering twice more, the received filtrate approval by the zero turbidity water. The water stored in clean and rinse with the water in the bottles.

Zero turbidity water used for adjustment zero and dilution (Formazine) standard solution.

Appendix 2

Preparation Dilution Turbidity Standard Solution Table

Total Preparation Volume is 100 ml

Preparation Solution Concentration （NTU）	Original Solution 400NTU Imbibition Volume (ml)
10	2.5
50	12.5
100	25
200	50
400	———

Preparation Formula：

$$A=\frac{K \cdot B}{C}$$

Explain：A：Imbibition Original Solution Volume (ml)

B：Preparation Solution Concentration（NTU）

C：Original Solution Volume（NTU）

K：Total preparation volume (ml)

Appendix 3

1、 Filter use of instructions.

a、 Follow the picture height operation.

b、 It must to drain away the whole air and have outflow the distilled water before filterate, then installation the water pipe in the filter.

c、 Botter 1 mouth must keep air interspace when filtration.

d、 Termly replacement the filter-film and installation accord with sequence, pay more attention to not damage the filter-film.

2、 Accessories

Filter	1
Φ50 Filter-film(0.15um)	10