FD93 Fluorescence Dissolved Oxygen Analyzer

Fluorescence Dissolve Oxygen Analysator

Brief description

D93 type dissolved oxygen analyzer adopts innovative fluorescence method to substitute the traditional film-type electrode without replacing diaphragm and electrolyte, therefore reducing maintenance workload and enhancing operational reliability, specially applying to the severe working condition of sewage treatment field. Furthermore, fluorescence method sensor doesn't consume oxygen, so there there is no requirement of velocity and agitating and free from the interference of the substances, such as sulfide and etc.

Field application

Applying to the monitoring of each craft point in sewage treatment plant. Typical application environment contains adjusting tank, aeration tank, aerobiotic/anaerobic dispelling tank, effluent monitoring and so on. Also being available to be used in the determination of dissolved oxygen of various water body, such as surface water, sewage, saline and etc.

System descriptive graph

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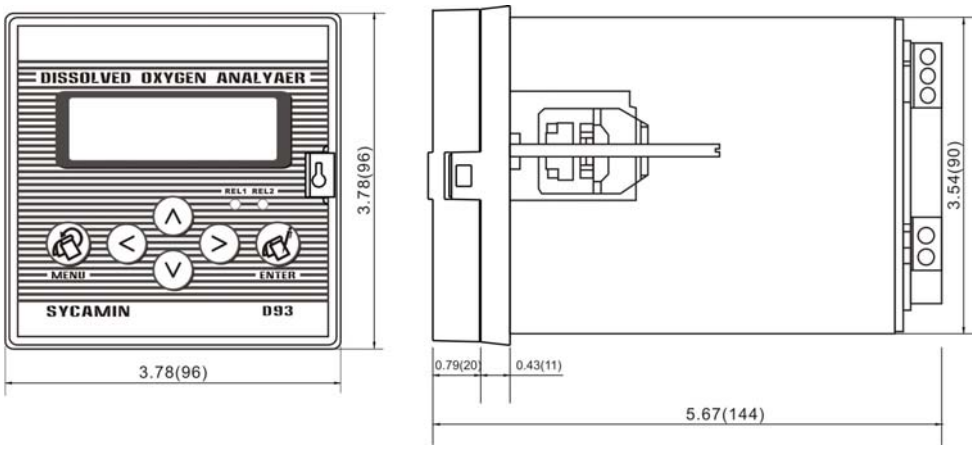
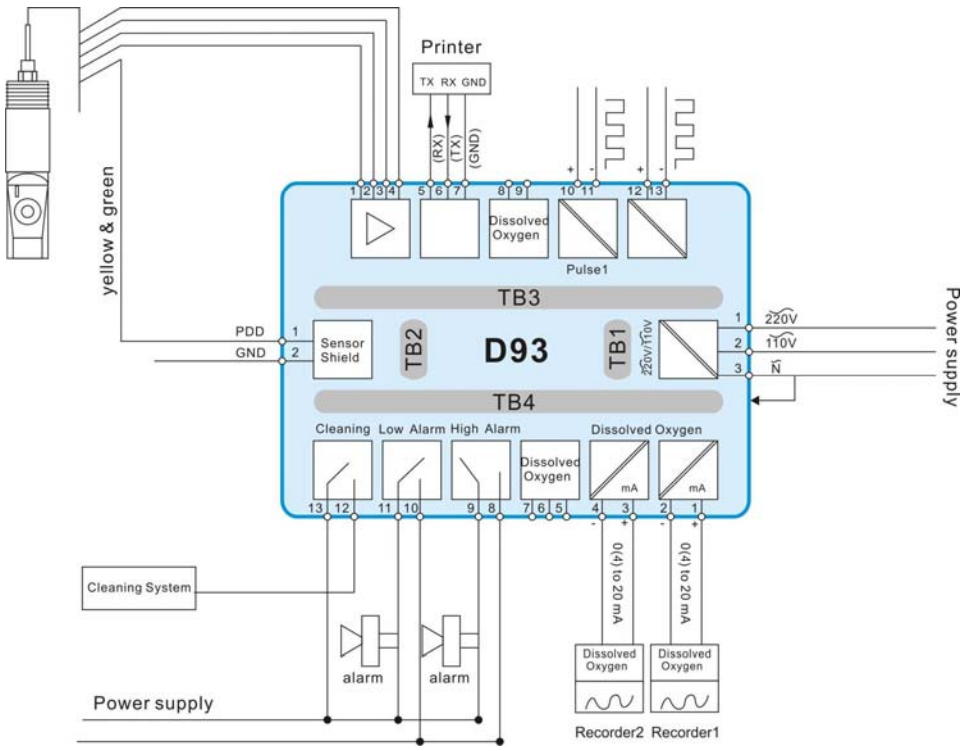
Unit: inch (mm)



Electrical connection diagram



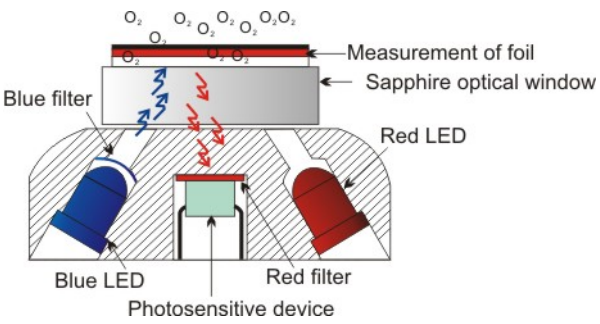
Characteristic description

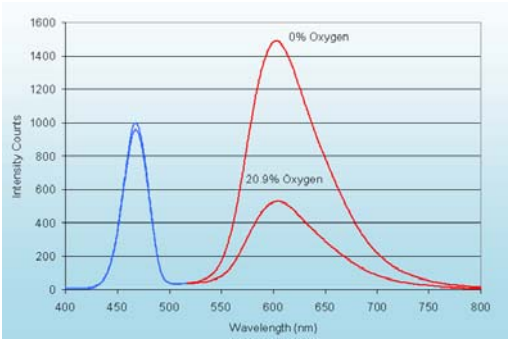
- Fluorescence method principle, reflection is flexible, measurement is stable and reliable
- Special optics membranae tectoria, no need to replace, no electrolyte, maintenance-free.
- Don't consume oxygen, no requirement of velocity and agitating
- Be free from the interference of chemical substances, such as sulfide and etc.
- ppm level sensor suits for various kinds of sewage treatment measurement control
- 1/4 DIN housing of panel mounting, level of protection IP54
- Graph dot matrix Liquid Crystal Display, convenient keys operation
- RS-232 485data interface

Principle description

This phenomenon and principle that optics principle determines the concentration of oxygen is found in many application fields, such as monitoring the aquatic organism in sewage water, analyzing the gas in the blood and monitoring the population of the cell. Compared with the traditional measuring method of the electrochemical dissolved oxygen, the advantage of using fluoremetry is pretty striking. The fluoremetry doesn't need to consume oxygen, is free from the influence of the sample flow velocity and there is no electrolyte, thus the maintenance workload is very small.

Fluorescence dissolved oxygen electrode is based on the quenching principle that the specific substances is to the active fluorescent in physics. The left diagram is the working schematic diagram, the fluorescent substance of the sensor front-end is that the special platinum porphyrin composites the polyester paillon allowing the gas molecule to pass, on surface of which is coated a layer black light insulation material to avoid the interference of the sunlight and the other fluorescent substance in water. Conduct insulation by sapphire light window, red and blue light source in watertight titanium alloy housing as well as photosensitive element. The modulating blue light irradiates to the fluorescent substance to make it arouse and give out red light. Because the oxygen molecule can take away energy (quenching effect), the time and intensity of aroused red light is inversely proportional to the oxygen molecule. We adopt the red light source synchronized with the blue light as reference, measuring the phase difference between the red light and the reference light and comparing with its interior calibration value, consequently working out the concentration of the oxygen molecule, through linearization and temperature compensation to output the final value.





Technical parameters

Input

Measured variable	Dissolved oxygen	Temperature
Range of measurement	0.00～20.00ppm	32.0～140.0℉(0～60.0℃)
Resolution	0.01ppm	0.1℃
The distance between sensor and instrument	The longest 500 m	
Calibration method	Zero oxygen calibration: only being used when sensor is calibrated in anaerobic water Air calibration: only being used when sensor is calibrated in air based on the current measured temperature value to automatically do calibration Saturated calibration: only being used when process has been known to be 100 percent saturated by air, based on input pressure atmosphere and elevation value, determinator figures out and shows g/L value as well as 100% saturation or temperature and salinity when clear water.	

Output

Relay output	3 relay electromechanical relay, SPST (C type), UL level, 10A/5A @120/250 VAC, 5A @ 24 VDC contact	Be available respectively to set as high alarm output, low alarm output and temperature alarm or cleaning output.
Current output	Two groups of independent analog output (#1 and #2), each of which can be set as 0～20mA or 4～20mA Resolution 0.004mA (12 digits) Max. Drive load 550Ω Provide site analog output rectifying	#1 group is designated to represent measuring dissolved oxygen or temperature #2 group is designated to represent measuring dissolved oxygen or temperature
Pulse output	Two groups of pulse output	Respectively follow two groups of electric current output's manufacturing procedure value
Communication way	RS-485 Stylus printer function (selectable)	Be available to use IBM compatible PC and realize measured data by determinator
Storage backup	All the users setting are stored in EEPROM (EEPROM), after outage, date will not be lost.	
Testing performance	Accuracy: 0.1% of the full scale Flexibility: 0.05% of the full scale Repeatability: 0.05% of the full scale Temperature drift: zero and the full scale: less than 0.02% of per ℃of the full scale Response time: 1~60 seconds reaches to 90% of the step change	

MEASURING SYSTEM

SPECIFICATION SHEET

Technical parameters

Mechanical parameters

Housing	Polyester+ABS
Level of protection	IP54
Display	122×32 LCD dot matrix display
Weight	Approx. 2.2 pounds (1.0 kg)
Hole (L×W×D)	97×97×141mm
Hole size	91×91mm

Electrical connection

Type	Terminal
Power requirement	90-130 VAC, 50/60 Hz or 190-260 VAC, 50/60 Hz
Power consumption	Max. 10VA

Environmental conditions

When operating	-4～140℉ (-20～60℃); relative humidity 0～95%, no condensing
When depositing	-22～158℉ (-30～70℃); relative humidity 0～95%, no condensing
More info	www.sycamin.de

Mated info

Sensor model	**Analyzer mating**
Clark-CK65X0ISOC	**D93**
Clark-CK65X0ISNC	**Polywater100**
Clark-CK65X0WIFI	**Polywater200**
Missile Series Digital Fluorescence 66X0 series	

Selectable accessories: pipe installation tool, submerged type installing pipe, installation bracket, stainless steel ball valve accessories, cable, air cleaning device

Sensor structure form selection: suffix T submerged sensor, suffix E plug-in sensor

Cable length: standard length is 10 m (33 inches).

Cable just can be provided together with submerged sensor, but the connecting cable of the plug-in sensor needs to be ordered additionally.

Attention: please only use the cable provided by ECKEN CONTROL. Using other cable may reduce the degree that the device accords with the CE criterion.