D33 Dissolved Oxygen Analyzer

Polarographic Dissolve Oxygen Analysator

Brief description

D33 type dissolved oxygen analyzer is composed of panel mounting transmitter and corresponding sensor. Monitor dissolved oxygen concentration in water accurately and reliably. Selectable, on-line and automatic cleaning function enhances usage performance in specific environment and reduces to be the least for maintenance volume. Analyzer adopts three groups of four characters' backlight liquid crystal display analyzer (LCD). Provide three paths of relay output, two with isolated electric current output, two with editable pulse, one with RS232 or RS485 output and password protection.

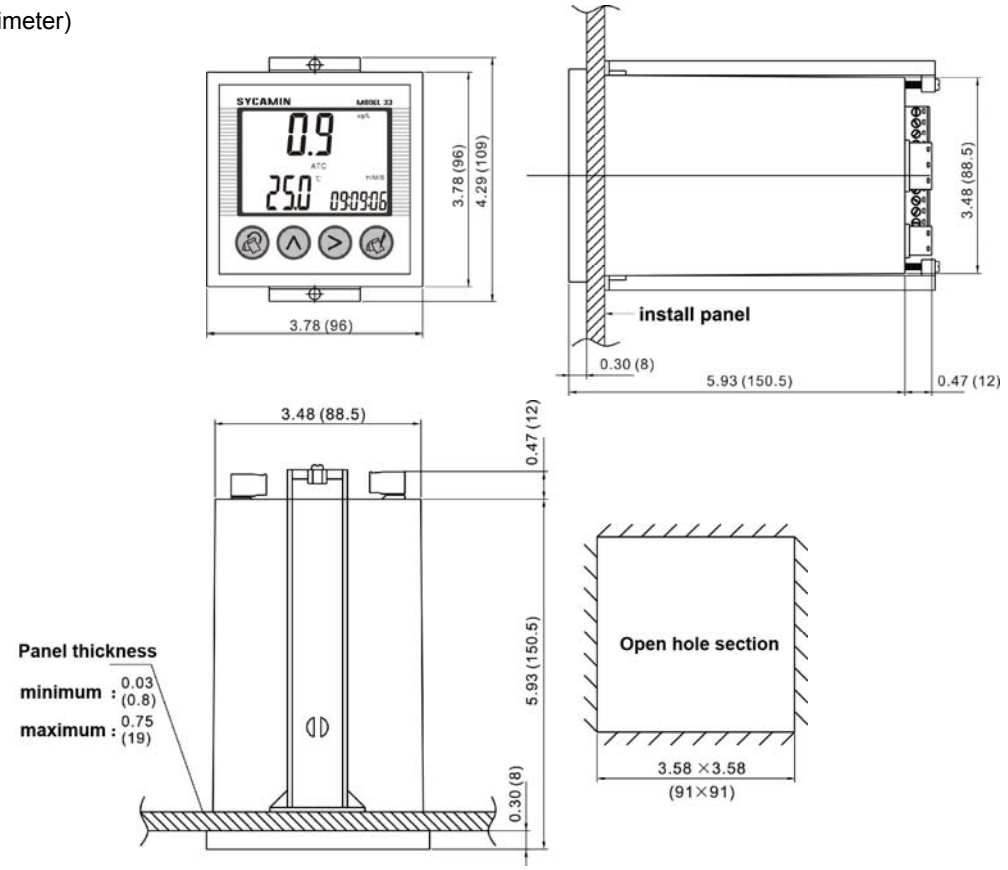
Application fields

Selecting appropriate sensor can be applied for monitoring of power station, exits and entrances of dearator; also for monitoring of each craft point in sewage treatment plant. Typical environment includes regulating reservoir, aeration tank, aerobitic/anaerobic dispelling tank and effluent monitoring and etc. It also can applied for measuring of various water body dissolved oxygen, such as surface water, sewage, etc.

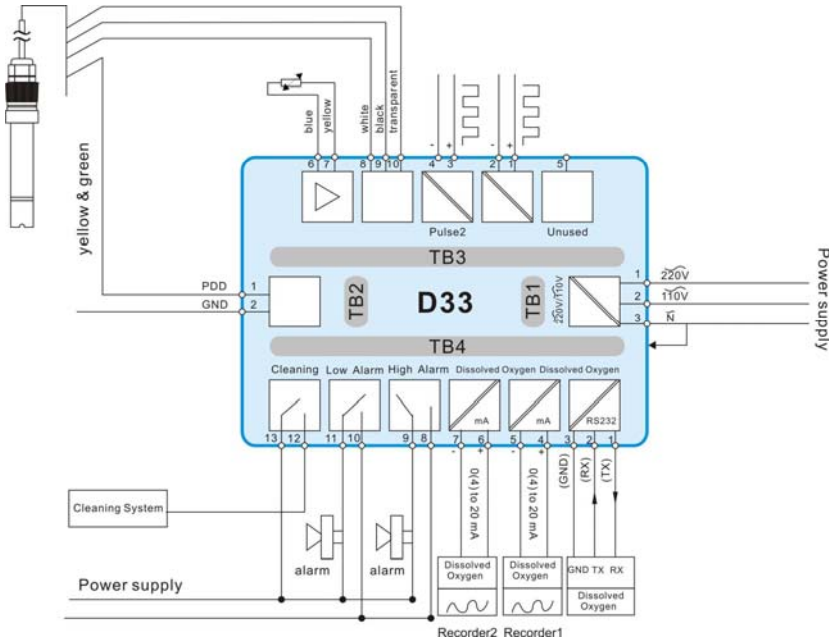
System description diagram

Installation dimension

Unit: inch (millimeter)



Electrical connection diagram

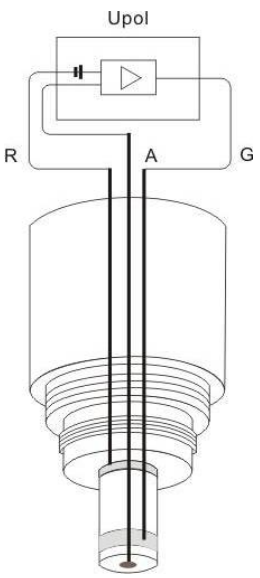


Features description

Backlight LCD reading	Three groups of four characters backlight LCD provides prominent view screen effect under any light condition. Advanced blue screen display technology.
Panel mounting 1/4DIN housing	The instrument is placed onto the plastic housing of 1/4 DIN, IP54, being suitable for panel installation.
Menu guide operation	Simple keyfield, reasonable menu structure, this analyzer is easy to be used, whose menu display screen designates user setting, calibration, operation, testing, maintenance function and so on.
Simple, interactive and diagnostic function	Built-in and diagnostic function continuously tests the operation of the instrument and sensor.
Digital communication	The instrument contains the function of RS-232 and HART communication (selectable) function. These digitization output conveniently and effectively realize configuration and invoking of measured data for determinator.
Automatic cleaning function	There are three relays for the instrument configuration, the third of which can control selectable electrode cleaning system of air impact wave.
Electromagnetic performance	This analyzer is up to the criterion of European EMI and RFI, according with American criterion.
Two paths of analogue output 0/4~20mA	The first analogue output end is designated as main estimated value (dissolved oxygen); the second analogue output end can select main estimated value (dissolved oxygen) or measured temperature value.
Password protection	For safety, please use password protection function to restrict instrument's setting and access. Just allow authorized personnel calibrating.
OEM version is available	To produce this type of instrument can be on the basis of OEM indication need.

Principle description

Clark-CK5500 series dissolved oxygen adopts constant potential three-pole test principle. The whole electrochemical testing system contains one gold cathode (working electrode A) and two silver electrode, among which one silver electorde is counting anode G, the other one is reference electrode R. There is no electric current passed for reference electrode, eletircal potantial on such reference electrode is very stable, enhancing stability of the electrode's sensing result, improving the accuracy of the whole dissolved oxygen test system.



Technical parameters

Input

Measured variable	Dissolved oxygen	Temperature
Range of measurement	0.00~200.0ug/L 0.00~2000ug/L 0.00~20.00mg/L Or 0.00~200% saturation	-4.0~302.0℉ (-20~150.0℃)
Resolution	0.1ug/L 1ug/L 0.01mg/L 0.1% saturation	0.1℃
Temperature compensation	Selectable NTC10kΩ or Pt1000 RTD Input one temperature to conduct compensation by automation or manual operation of user Setting range: 41.0~122.0℉(5.0~50.0℃)	
Pressure atmosphere compensation	1 pressure atmosphere (760mm mercury column)	
Salinity compensation	0.0~40 ppt	
Film coefficient compensation	0.0~4.999%	
Distance between sensor and instrument	Maximum length 30 m	
Calibration method	Zero oxygen	Only being used when sensor is calibrated in anaerobic water.
	Air calibration	Only being used when sensor is calibrated in air, basing on currently automatic calibration of measured temperature value
	Saturation calibration	Only being used when process has been one hundred percent saturated by air, determinator calculates and shows μg/L value based on input pressure atmosphere and marine value, as well as temperature and salinity with saturation of one hundred percent or rinsing time

Technical parameters

Output

Relay output	Three electromechanical relay; SPST (C type). UL level, 10A/5A @120/250 VAC, 5A @ 24 VDC contactor	Be respectively able to be setting as high alarm output, low alarm output as well as temperature alarm or cleaning output.
Electric current output	Two groups of isolated analogue output (#1 and #2) Each group can set as 0~20mA or 4~20mA Resolution: 0.004mA(12 位) Maximum drive load: 550Ω	#1 group is designated to represent measuring dissolved oxygen #2 groups is designated to represent measuring dissolved oxygen or temperature
Pulse output	Two groups of pulse output	Respectively following two groups of manufacture procedure value of electric current output
Communication way	RS-232	Be able to use IBM compatible personal computer and realize that determinator determines data communication
Storage backup	All the user settings are saved in EEPROM, and data will not be lost after outage.	
Measured performance	Accuracy: 0.1% of full range Sensitivity: 0.05% of full range Repeatability: 0.05% of full range .05% Temperature drift: zero and full range: less than 0.02% of full range of per ℃ Responsive time: 1~60 seconds reach 90% of step change	

System characteristics

Mechanical parameter

Housing	Polyester +ABS
Protection degree	IP54
Display	LCD liquid crystal 75x45mm
Weight	Approx 1.1 pounds (0.5kg)
Dimension (L×W×D)	96x96x150mm
Hole size	91x91mm

Electrical connection

Type	Terminal
Power requirement	90-130 VAC, 50/60 Hz or 190-260 VAC, 50/60 Hz
Power dissipation	Maximum 10VA

Environmental conditions

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

Matched info

Sensor model	Sensor characteristics
Clark-CK5500	The film thickness of analogue signal is only 25um, and the higher the resolution is, the quicker the responsive time is, therefore, analogue signal is fit for testing low dissolved oxygen, e.g., monitoring remained oxygen in the nitrifying process of biochemistry sewage treatment.
Clark-CK5600	Analogue signal is economic utility-type, excluding no diagnostic function, others, whose main design are used in regular DO test, but unnecessary to detect film all the time, e.g., being used in water quality analysis, are the same with 5700 type.
Clark-CK5700/5800	Analogue signal is standard type with very durable hydrophobic property film of 50um thickness. The minimum flow velocity requirement is 0.5cm/s and responsive time is less than 180 seconds. 5700 type is very fit for monitoring dissolved oxygen of the biochemical treatment stage in municipal sewage treatment plant. Slowing down of electrode response is beneficial for eliminating the interference caused by bubble, thus clearing up wrong reading to enhance stability. This characteristics is very important for test of dissolved oxygen in aeration tank. 5800 is specially used for testing the water with heavily industrial pollution.
Clark-CK5900	Film thickness of analogue signal is 20um, and the higher the resolution is, the quicker the responsive time is, therefore, analogue signal is fit for testing low dissolved oxygen, e.g., monitoring in the export process of deaerator plant.

Selectable accessories: pipe installation tool, submerged installation pipe, installation stent, accessories of stainless steel ball value, cable and air washing equipment

Structure form selection of sensor: submerged sensor of suffix T, plug-in sensor of suffix E

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

Cable is provided together with submerged sensor, connecting cable of plug-in sensor needs to be ordered additionally.

Attention: please use cable only supplied by ECKEN CONTROL. Using other cable may reduce the degree that equipment conforms to CE standard.