

DOG-2092Pro
Online Dissolved Oxygen Meter
User Manual



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Product description

DOG-2092Pro online dissolved oxygen meter is a brand-new online intelligent analog dissolved oxygen meter independently developed and manufactured by Shanghai BOQU instrument Co.,Ltd.

Complete functions, stable performance, easy operation, low power consumption, safety and reliability are the outstanding advantages of this instrument.

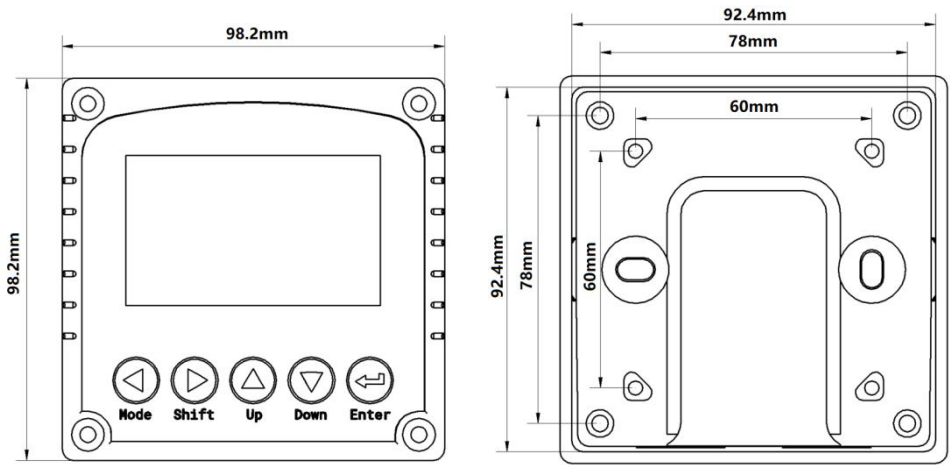
This dissolved oxygen meter uses matching simulated dissolved oxygen sensor, which can be widely used in industrial occasions such as thermal power generation, chemical industry, metallurgy, environmental protection, pharmaceutical, biochemical, food and tap water.

Product Specification Sheet

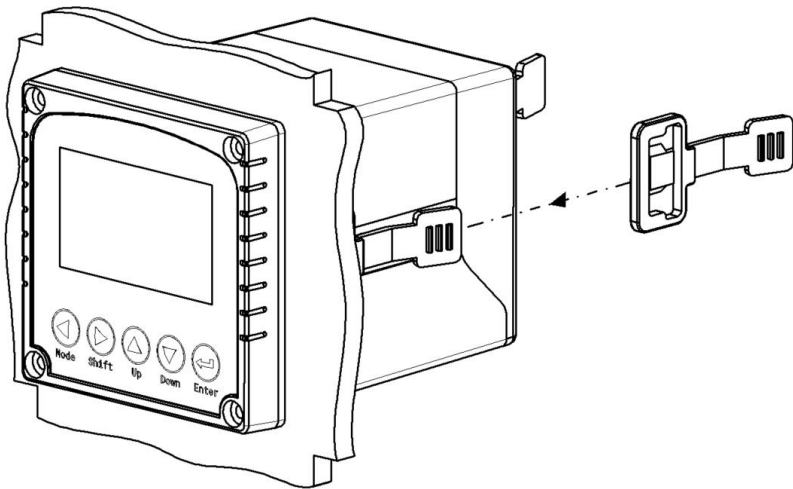
Item	Specification
Name	Online Dissolved Oxygen Meter
Model	DOG-2092Pr
Measurement	0~20 mg/L(ppm) 0~200 % -30.0~130.0°C
Accuracy	±1%FS ±0.5°C
Shell material	ABS
Power	90 – 260V AC 50/60Hz
Power consumption	4W
Output	Two way of 4-20mA
Relay	5A/250V AC 5A/30V DC
Communication	RS485 Modbus RTU
Shell material	ABS
Measurement	0~50 mg/L 0~50 mg/L(ppm) 0~500 % -30.0~130.0°C
Dimension	98.2×98.2×128.3mm
Hole size	92*92mm
Protection	IP65

Installation and wiring

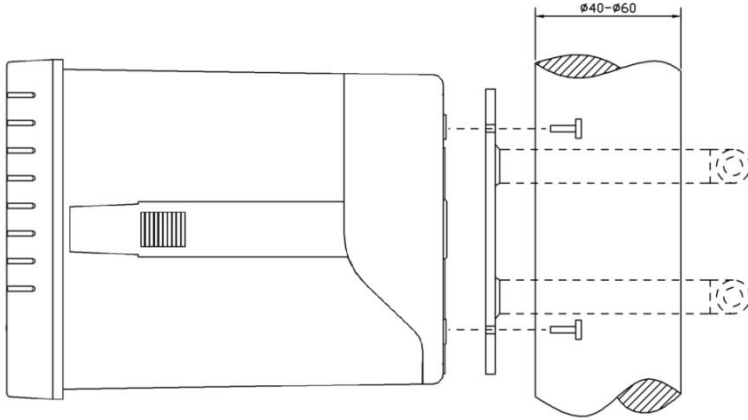
Panel size chart



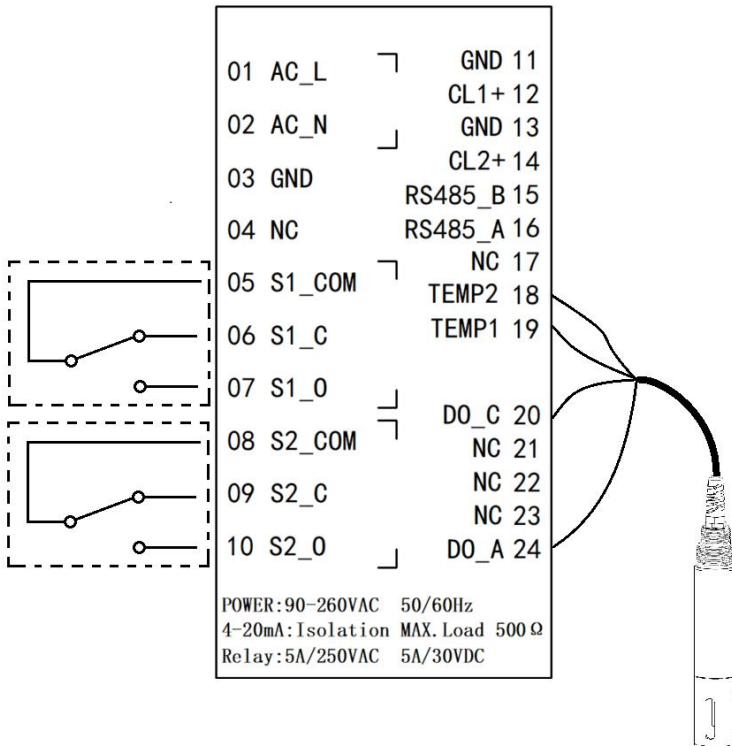
Embedded installation diagram



Pipeline installation diagram



Wiring diagram



1. Operation panel

The main panel of the dissolved oxygen meter has 2 modules, the LED liquid crystal display module and the button module.

The user can set and adjust the parameters of the instrument through the 5 keys on the panel.

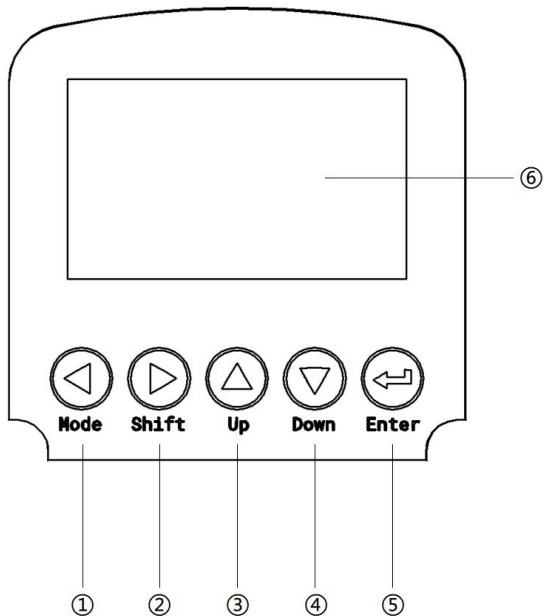


Figure 1 Measuring instrument operation panel

- ① Set/Exit button
- ② Select/change button
- ③ Up selection button
- ④ Down selection button
- ⑤ Confirm button
- ⑥ Instrument Display

1. Measurement interface

After the start-up animation ends, enter the main measurement interface.

When the meter is working normally, the LED display shows the following contents.

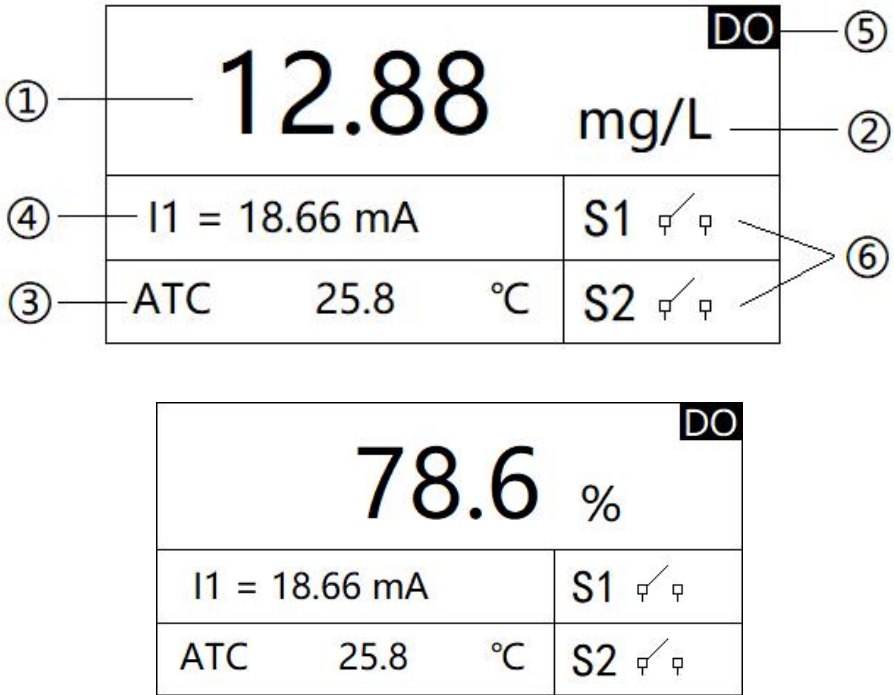


Figure 2 The main interface of measurement display

- ① Measurement reading
- ② Measurement unit
- ③ Measure temperature
- ④ 4-20mA corresponding value of dissolved oxygen
- ⑤ Measurement mode
- ⑥ Alarm Reminder when the upper/lower limit is exceeded

Three, settings

Press the "Set/Exit button" to enter the password input interface.

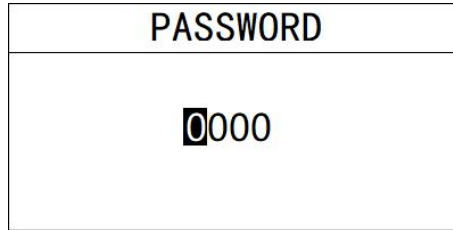


Figure 3 Enter the password

Enter settings:

Enter the password "3700" to enter the setup menu.

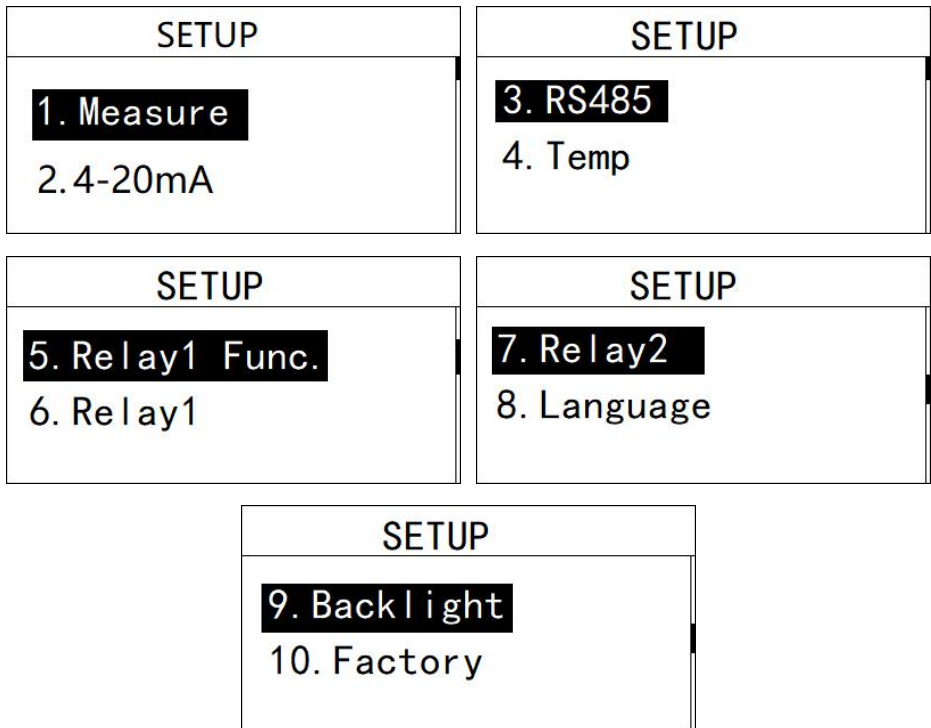


Figure 4 Setting menu

3.1 Measurement settings

In this menu, the user can change the measurement method %/mg/L/ppm.

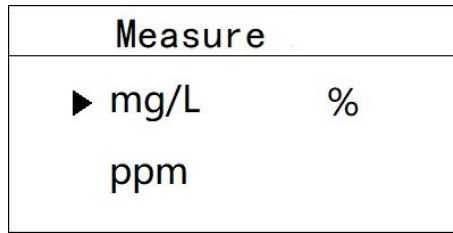
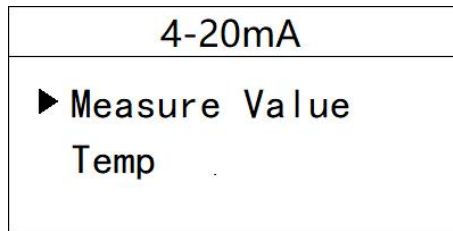


Figure 3.1 Measurement settings

3.2 4-20mA setting

In this menu, the user can change the corresponding value of 4-20mA and set the corresponding effective range.

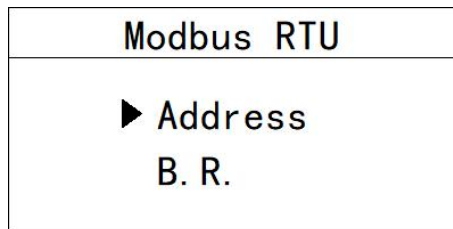


Measure Value	Temp
4mA : 00.00 mg/L	4mA : + 000 °C
20mA : 1 4.00 mg/L	20mA : + 100 °C

Figure 3.2 4-20mA setting

3.3 Communication settings

In this menu, the user can change the communication address and communication speed.



Address	▶ 4800 bps 9600 bps 19200 bps
001	

Figure 3.3 Communication settings

3.4 Temperature setting

In this menu, the user can set the temperature compensation type and manually set the temperature.

Temp	
▶ Sensor MTC	

Sensor	MTC
▶ NTC22k Pt1000 NTC10k	+025.0°C

Figure 3.4 Temperature setting

3.6 Relay 1 setting

In this menu, the user can switch the relay 1 function, set the parameter alarm upper limit, alarm return difference, and alarm delay time.

Relay1	Relay1Function
▶ Function Parameter	▶ HighLimit Cleaning

High: <input checked="" type="checkbox"/> 10.00 mg/L
Hyst. : 1.00 mg/L
Delay: 030 s

Figure 3.6 Relay 1 setting

3.7 Relay 2 setting

In this menu, the user can switch the relay 2 function, set the parameter alarm lower limit, alarm return difference, and alarm delay time.

Relay2
▶ Function Parameter

Function	Low: <input checked="" type="checkbox"/> 4.00 mg/L Hyst. : 1.00 mg/L Delay: 030 s
▶ OFF ON	

Figure 3.7 Relay 2 setting

3.11 Language setting

In this menu, users can change the language of the system interface. Simplified Chinese and English are built-in.

Language
简体中文 ▶ English

Figure 3.11 Language setting

3.12 Backlight setting

In this menu, the user can change the backlight mode of the LCD screen, select the backlight to be always on or delay to turn off (the default is to delay the turn off), change the backlight brightness (brightness level 1-5, brightness increase), and change the contrast.

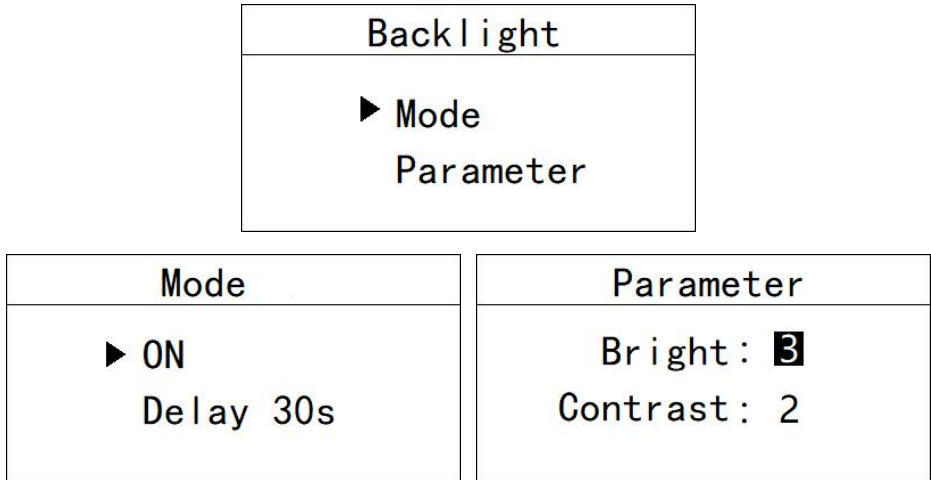


Figure 3.12 Backlight setting

3.13 Restore factory settings

In this menu, the user can restore the current output and relay to the factory parameters.

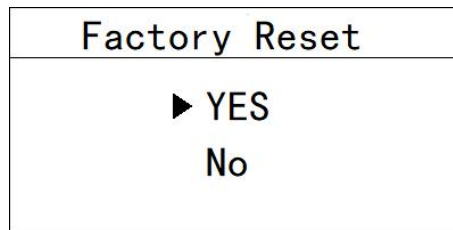


Figure 3.13 Restore factory settings

Four, calibration

Press the "Set/Exit button" to enter the password input interface. Four, calibration

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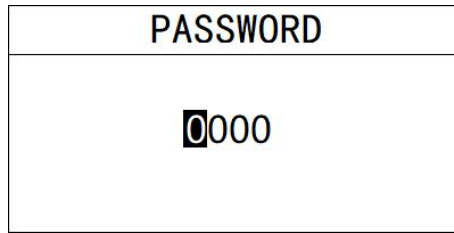


Figure 5 Enter the password

Enter calibration:

Enter the password "3900" to enter the calibration menu.

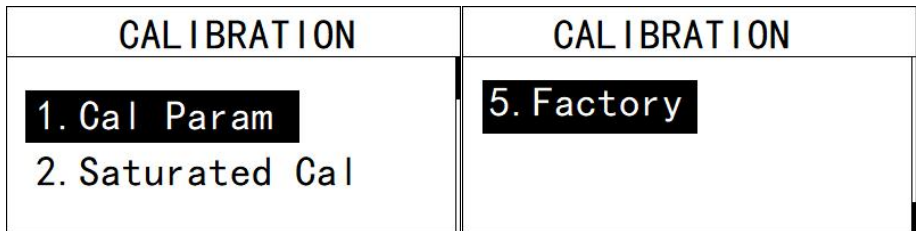
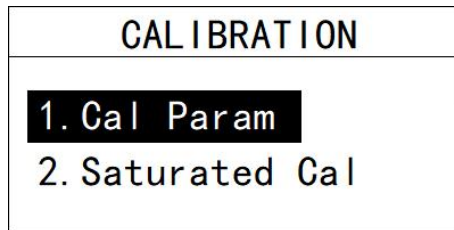


Figure 6 Calibration menu

4.1 Calibration parameters.

In this menu, users can manually change the parameters of atmospheric pressure and salinity.

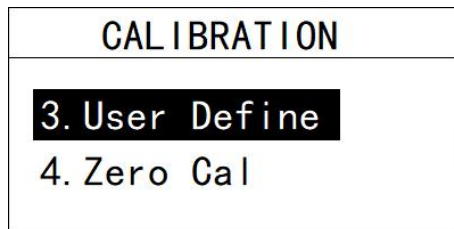


Figure 4.1 Calibration parameters

4.2 Saturation calibration menu

Place the sensor 3-5cm above the liquid level and press the confirm button to perform saturation calibration after the value is stable.

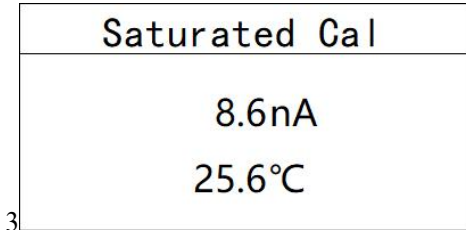


Figure 4.2.1 Saturation calibration

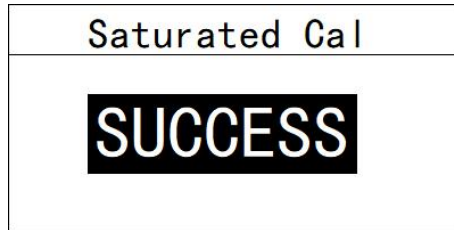


Figure 4.2.2 Successful saturation calibration

4.3 Calibration Menu of Known Concentration

Put the sensor in the measuring liquid of known concentration, set it to the ppm value of the solution of known concentration, and press the confirm key,

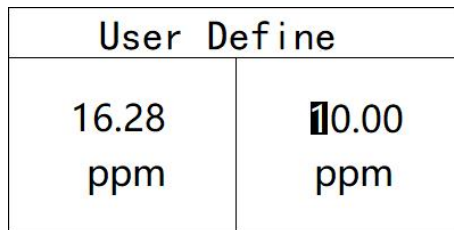


Figure 4.3 Calibration of known concentration

4.4 Zero point calibration menu

Put the sensor in anaerobic water and press the confirm button to perform zero oxygen calibration after the value is stable.

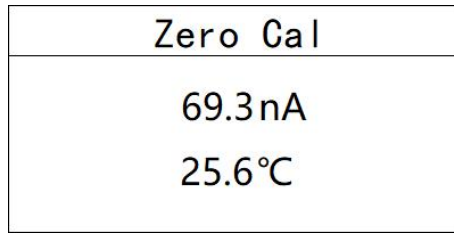


Figure 4.4.1 Zero point calibration

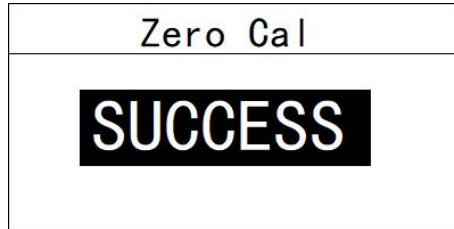


Figure 4.4.2 Successful zero calibration

4.5 Restore factory settings menu

Restore the factory settings to initialize the sensor parameters to the factory parameters



Figure 4.5 Restore factory settings

Appendix

1. Communication protocol

Communication parameters:

Baud rate: 4800, 9600, 19200 (default is 9600)

Serial data format: 8N1 (8 data bits, no parity, 1 stop bit)

Function code: 03

Device address: Dissolved oxygen controller defaults to 3

Register definition:

Register address (decimal)	Register definition	R/W	illustrate
0	Temp	R	×0.1°C,sint16
1	DO	R	×0.01mg/L,uint16
2	nA	R	×0.01nA,uint16
3	saturation	R	×0.1%,uint16
8	RTU Address	R/W	ModbusMailing address, dissolved oxygen defaults to 3
9	Baud rate	R/W	4800,9600,19200,默认为 9600

Detailed example of communication format:

Data read instruction:

Address + function code + register start address + register read number + CRC check code (hexadecimal)

For example Tx: 03 03 00 01 00 01 D4 28

Address	Function Code	Register start address	Number of read registers	CRC Check code
03	03	0001	0001	D428

Data return instruction:

Address + function code + data length + data + CRC check code (hexadecimal)

For example, Rx: 03 03 02 00 DF 80 1C

Address	Function Code	Data length	Dissolved oxygen value	CRC Check code
03	03	02	00DF	801C

DF

HEX DF
DEC 223

Use a calculator (programmer mode) to convert the hexadecimal number DF to decimal, and get the value 223.

The actual value contains 2 decimal places, the actual value is $223 \times 0.01 = 2.23$

2. sensor parameter table for industrial online dissolved oxygen controller

Model	DOG-209F	DOG-209FA
Range	0~20.00mg/L	
Temp	-5~50.0°C	
Accuracy	3%,±0.5°C	
Film thickness	50um	100um
Zero oxygen	<0.1mg/L	
Drift	<2%/month	
shell material	316L stainless steel,PVC	
Pressure	0.06MPa	
waterproof	IP68/NEMA6P	
Polarization time	60min	
Measurement error	±<0.1mg/L	

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