Turfschipper 114 | 2292 JB Wateringen | Tel. +31 (0)174 272330 | www.catec.nl | info@catec.nl

Features & Benefits

- Zirconium Dioxide(ZrO_2) sensing elements
- Stably for a long time
- Multiple output
  Analog 4-20mA, 0 ~ 5VDC
  Communication RS-485(Modbus RTU)
  Open collector 2 contacts for remote control
- High precision & accuracy
- Output signal with good linearity
- Simple calibration
- Easy installation in any environment

- Application
- protection of human life due to lack of oxygen.
- Prevention of worker safety accidents in confined areas.
- Controller of combustion equipment such as gas and oil.
- Monitoring air quality in workplace and laboratories.
- For gas mixing process control such as steelworks.
- For oxygen generator control.
- Medical and related laboratory equipment such as cell culture.
- Crop storage, storage and transportation equipment.
- Detection for fermentation, decay.

- Notice

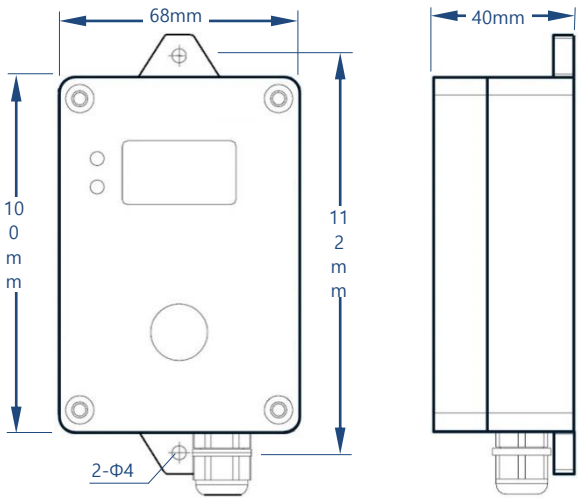
Concentration of oxygen in the atmosphere is known to be about 20.9% (20.946%), which is a dry standard. It is set to 20.7% considering the ambient and humidity conditions when calibrated by the atmospheric reference button.
Any value can be set as a communication method if the correct condition of the gas for calibration can be achieved.
For the setting method, please refer to separate communication protocol data.

Specification

	Measurement range	0.1(1) ~ 25.0 %O_2
	Sensing method	Zirconia (ZrO_2)
	Accuracy After Calibration(2)(3)	<±1 %
	Repeatability	±1 % of measured value
General Conditions	Operating Temperature	-20 ~ 70 ℃
	Operating Humidity	98%RH, (non condensing)
	Permissible gas temperature	-10℃ to +50℃
	Initial start-up time	2min. after power on
Interface	Display	Concentration display : FND 3 Digit Control output (1) LED (When Open collector On, On) Control output (2) LED (When Open collector On, On)
		Rotary encoder switch
Electrical	Power supply	12~24 VDC (5)
	Power consumption	3W below
	Analog output	4~20mA, 0 ~ 5VDC
	Communication	RS-485 (Modbus RTU)
	Open collector output	Control(1),Control(2) : 100mA, DC24V below
Dimensions	Body	68mm x100mm x40mm Fixed hole space 112mm
	Weight	165g

(1) Prolonged operation below 0.1%O2 can damage the sensing element.
(2) Please calibrate under stable atmospheric pressure.
(3) As the O2 sensor measures the partial pressure of oxygen within the measurement gas deviations in the barometric pressure from that present during calibration will cause readout errors proportional to the change.
(4) If the current concentration is known, it is possible to calibrate the current value through communication.

Outside View



※ Specifications and appearance are subject to change without notice.

Oxyzen Gas Controller

(Zirconia Type) KCD-ON200

■ Precautions

Please read the safety precautions carefully before use and use it correctly. The cautions indicated in the manual are classified into danger, warning, and caution symbols according to importance.

⚠Danger	Indicates a dangerous situation that, if not observed, will result in death or serious injury.
⚠Warning	If not observed, it indicates that there is a possibility that death or serious injury may occur.
⚠Caution	If this is not followed, it indicates that there is a possibility that minor injury or property damage may occur.

⚠Danger :

There is a risk of electric shock at the input/output terminals, so do not touch your body or any conductive material.

⚠Warning :

- If a malfunction or abnormality of this product may lead to a serious accident in the system, install an appropriate external protection circuit.
- In case of use other than the method specified by the manufacturer, injury or property damage may occur.
- In order to prevent damage and failure of this device, supply a power voltage suitable for the rating.
- Since it is not an explosion-proof structure, do not use it in a place with flammable or explosive gas.
- Be sure to turn off the power before disassembling this device. It may cause electric shock, malfunction.
- Because there is a risk of electric shock, use this device while it is being energized and installed on the panel.

⚠Caution

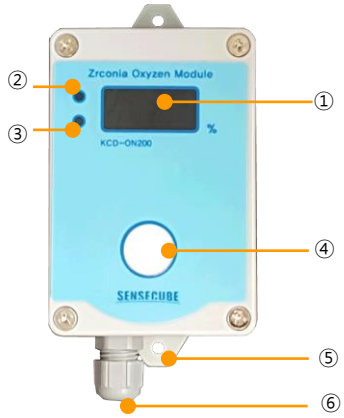
- The contents of the user manual are subject to change without prior notice.
- Check that there is damage to the product during transportation.
- Use in a place where vibration or impact is not directly applied to the main body.
- Use in a place free from water, oil, chemicals, steam, dust, salt, iron, etc..
- Avoid places with large induction disturbances and generating static electricity and magnetic noise.
- Separate the input signal line and the output signal line. If separation is impossible, use a shielded line for the input signal line.
- • If there is a lot of noise from the power supply, it is recommended to use an insulating transformer and a noise filter. The noise filter must be attached to a grounded panel, etc., and the wiring between the noise filter output side and the instrument power terminal must be short.
- Control (1) and control (2) terminals are open collector outputs with a capacity of 100mA below.
- Do not connect the control device directly, as it may cause malfunction.
- The warranty period of this device including accessories is 1 year under normal use.

■ Component

① Controller Body,
② Users's Guide

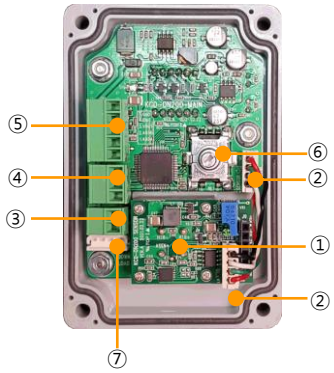
⚠ Caution : Cables for wiring are not included. Cables may differ depending on the intended use and environment.

■ Body and name of each part



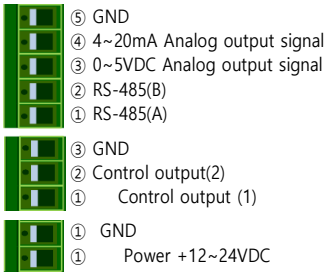
① Display
② Control output (1)
③ Control output (2)
④ Sensing unit
⑤ Fastening part
⑥ External cable inlet

■ Inner structure



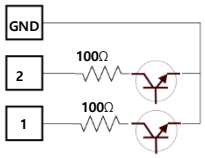
① Oxygen gas sensor
② Sensor connection connector
③ Power connector
④ Control(1),Control(2)output
⑤ Communication and analog output connector
⑥ Setting switch
⑦ Download connector (Utility connection)

■ Connector pin configuration for wiring



[Control(1), Control(2) output]

This is an open collector output. The protective resistor connected to the collector is 100Ω. Use within the DC24V, 100mA range.



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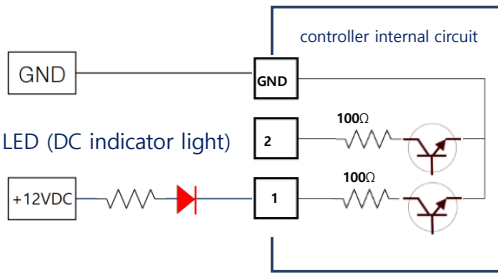
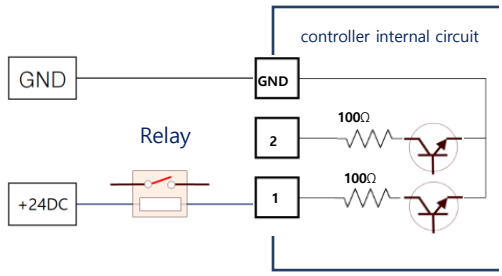
<Example of using open collector>





In case of remote display of control output from outside, Depending on the set concentration, such as when using an external relay contact, the variety of outside can control the device.

■ Setup method

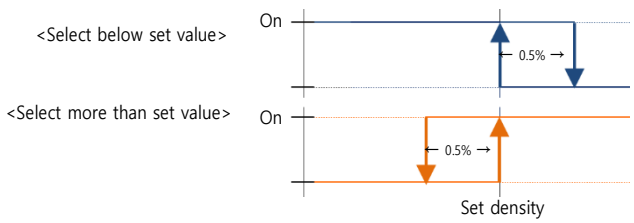
[Factory default setting]

Control output (1) : Set density 18.0%, output signal is On under the setting.
Control output (2) : Set density 20%, output signal is On under the setting.

When the oxygen concentration falls below 18.0%, (or 20.0%), the open collector It becomes On (Low Level) state.
The return density is about 0.5% different from the set density..

The On of the output signal is between the output terminal and GND terminal, that is, the internal transistor. It means continuity between collector and emitter.

The output signal has different operating functions depending on the setting..
1) In case of operation when it falls below the set value.
2) If it exceeds the set value, it may operate.



Analog output : 4~20mA, 0~5VDC
RS-485 Modbus : ID 31, Baudrate 38,400bps

[Menu selection method]

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		1.Co	Press the switch to go to the menu page.
Selection Menu		8.88	Rotate the switch to browse the menu.
			Press the switch to select the corresponding menu.

※ If there is no switch operation within 5 seconds, it automatically moves to the initial display state.

[Menu configuration]

Contents	Display	Description
1. Control output(1) Set	1.Co	Initial set: 18.0%
2. Control output(2) Method	2.LH	Initial set: 'On' when it is lower than the set value.
3. Control output(2) Set	3.AL	Initial set: 20.0%
4. Control output(2) Method	4.LH	Initial set: 'On' when it is lower than the set value.
5. Communication ID (station number) set	5.Id	Initial set: 31
6. Communication speed set	6.br	Initial set: 48,000bps
7. Analog output signal	7.ou	Initial set: 0~5VDC, 4~20mA
8. Firmware version check	8.bu	

※ If the switch is pressed for more than 6 seconds, it enters the calibration and factory reset menu.

[Density setting for control output (1), (2)]

Output(1), Output(2) same method.

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		1.Co	Press the switch to go to the menu page.
Selection Menu		1.Co	Rotate the switch to browse the menu.
		18.0	Initial setting value displayed.
Control value change		8.88	Change the control density by rotating the switch.
		1.Co	Save the control density by pressing the switch.

[Control output (1), (2) control method setting]

Output(1), Output(2) same method.

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		1.Co	Press the switch to go to the menu page.
Selection Menu		2.LH	Rotate the switch to browse the menu.
		Lo	Initial setting method displayed
Output set			Change the control method by rotating the switch.
		Lo	Set value >If the measured value condition, output"On".
		HI	Set value < If the measured value condition, output"On".
		2.LH	Save by pressing the switch.

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[Communication ID(station number) change]

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		I.Co	Press the switch to go to the menu page.
Selection Menu		S.Id	Rotate the switch to browse the menu.
		031	Initial setting value displayed.
Output set			After changing the ID by rotating the switch.
			Save ID at the push of a switch.

※ ID can be set within the range of 001 to 031.

[Communication speed change]

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		I.Co	Press the switch to go to the menu page.
Selection Menu		6.br	Rotate the switch to browse the menu.
		38	Initial setting value displayed.
Output set			Communication speed set by rotating the switch.
		6.br	Save by pressing the switch.

Communication menu

2 : 2,400 bps
4 : 4,800 bps
9 : 9,600 bps
19 : 19,200 bps
38 : 38,000 bps
57 : 57,600 bps
115 : 115,200 bps

[Analog output set]

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		I.Co	Press the switch to go to the menu page.
Selection Menu		7.ou	Rotate the switch to browse the menu.
		5.0	Initial setting value displayed. (0~5VDC)
Output set			Output range selection by rotating the switch.
		7.ou	Save by pressing the switch.

Analog output menu

5.0 : 0 ~ 5.0VDC, 4~20mA
10.0 : 0 ~ 10VDC, 4~20mA
1.25 : 0 ~ 1.25VDC, 4 ~20mA

[Firmware version check]

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		I.Co	Press the switch to go to the menu page.
Selection Menu		8.bu	Rotate the switch to browse the menu.
		001	Initial setting value displayed.

[Calibration method]

Calibration or factory reset menu is entered when the switch is pressed for more than 6 seconds.

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		CAL	Press the switch for more than 6 seconds to enter.
Selection Menu		CAL	Rotate the switch to browse the menu.
		20.7	Initial setting value displayed.
Output set			After turning the switch to set the standard concentration,
			Save by pressing the switch.

[Factory Reset]

Calibration or factory reset menu is entered when the switch is pressed for more than 6 seconds.

In case of factory reset, recheck the changed settings before initialization.

Contents	Switch	Display	Description
Initial display		20.9	Current measurement value display.
Enter Menu		CAL	Press the switch for more than 6 seconds to enter.
Selection Menu		rSt	Rotate the switch to browse the menu.
		no	Initial setting value displayed.
Output set		YES	Rotate the switch to select YES,
			Reset at the push of a switch.

※ Factory reset may change existing settings.
Be sure to use it with caution.

[Other]

- The detection method uses a zirconia element. Due to the nature of the detection method, there is some heat in the detection part. Heat that is not overheated is due to normal operation.
- The zirconia sensor has the advantage of a long lifespan, however, the expected lifespan may vary depending on the usage environment. .