# SPECIFICATION SHEET

### AUTOMATIC COD ANALYZER

## COD-203A

This instrument is suitable for analysis of Chemical Oxygen Demand (COD) in river water or plant effluent designed in compliance with JIS K 0806, "Automatic Chemical Oxygen Demand (COD) Analyzer", and has been widely used in various fields.

The measuring principle is based on the oxygen consumption (CODMn) by potassium permanganate at 100°C described in 17 section JIS K 0102 of "Test Methods for Industrial Wastewater". or samples that contain a large amount of chloride, such as seawater, a method based on the "Oxygen Demand (CODAlk) with Potassium Permanganate at Alkaline 100°C" was adopted.

#### Features

- ○High reliability: proven oxidation-reduction potentiometric method is adopted
- ○Reducing routine maintenance work:
- Adoption of pinch valves and larger tubes (4mm or larger), and cleaning system of the sample line for every measurement, reduces clogging.
- OTitration curves indication and print-out is available.
- OUser-friendly interactive operation using touch-screen
- OSufficient data storage capability: internal memory for 14-day measurement data, and data retrieval function
- Oxalic acid cleaning system cleans up the reactor vessel and electrode contaminated with overprovided permanganate
- ○Ammonia cleaning is available as an option to remove contamination with precipitated silver chloride.

In the case of acidity measurement by adding silver nitrate, application of ammonia cleaning function greatly reduces contamination of the reactor vessel and electrode caused by silver chloride.

#### **Standard Specifications**

Product name	: Automatic COD Analyzer			
Model	: COD-203A			
Measurement object : Oxygen consumption by potassium				
	permanganate			
Measurement	: (KMnO4) at 100°C (acidic and alkaline			
method	methods)			
End point detection	: Oxidation-reduction potentiometric titration			
Measurement range : ( Unit: mg/L)				
&flow path				
(1) Single flow path	/range ; From 0 to 20 to 0 to 2000			
(2) Single flow path/dual range; (Auto range switching)				
Range 1; From 0 to $20$ to 0 to $1000$				
Range 2; From 0 to $40$ to 0 to $2000$				
	Range 1 <range 2;="" 2<="" range="" ratio:="" td=""></range>			
(2) Cingle range 2 fl	ow paths: Enorm 0 to 20 to 0 to 2000			





(4) Dual range, 2 flow paths

Range 1; From	0 to	20	to 0	to	1000	(flow	path	1)
Range 2; From	0 to	30	to 0	to	2000	(flow	path	2)
Rang	e 1 <	Ra	nge	2				

The measurement range selection is recommended to make the maximum concentration of the sample to be approximately 60% of the full-scale value.

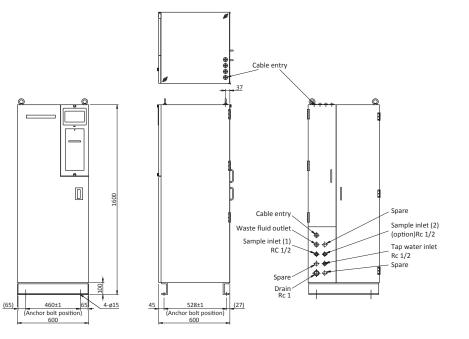
Measurement cycle : One measurement/hour (Measurement schedule is settable at 1-hour unit) or measurement start by external signal. Display & recording : Digital, touch-screen

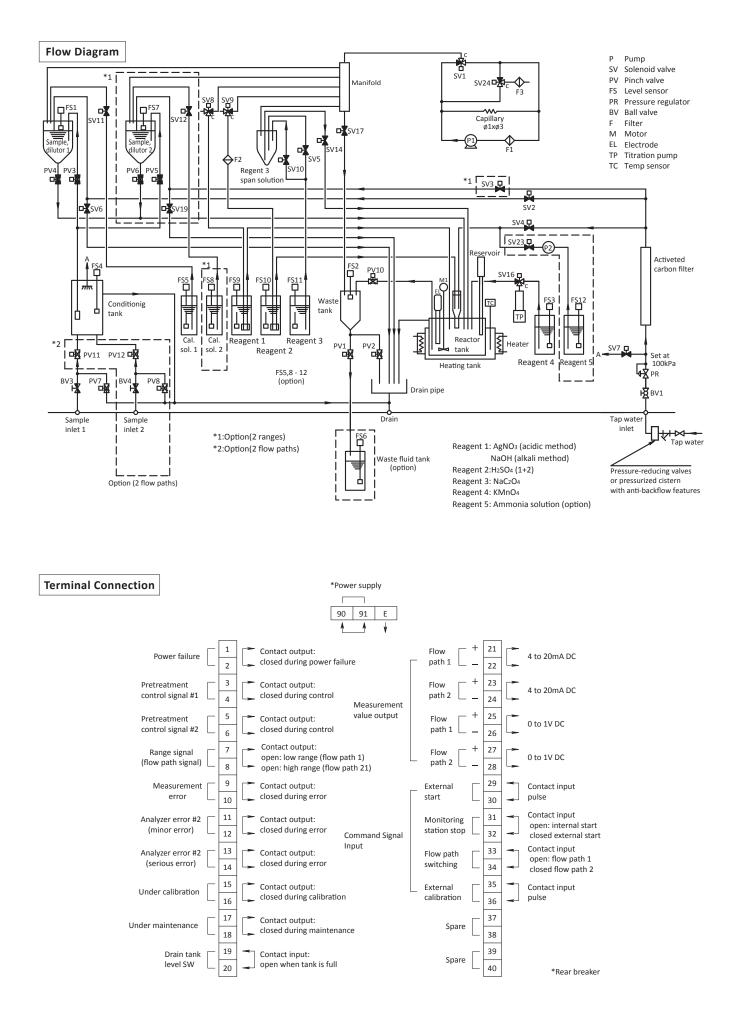
(Japanese, English, or Chinese) Printing; English only

- : Year, month, day, time; measurement Items for record values, measurement parameters; daily report (max., min., averages, number of measurements), etc. Repeatability : (With calibration solution) 0 to 20mg/L range ; Within ±1% FS Over 20, up to 200mg/L range ; Within  $\pm 2\%~FS$ Other ranges ; Within  $\pm 5\%$  FS Stability : (With calibration solution) Zero drift ; Within ±3% FS/day Span drift 20mg/L range ; Within ±3% FS/day
- Over 20, up to 200mg/L range ; Within ±4% FS/day Other ranges ; Within ±5% FS/day Installation : Indoors or inside cubicle. conditions - where protected from exposi
  - where protected from exposition to the direct sunlight and weather, and from vibration and shock, allowing sufficient maintenance space and away from noise sources.
    - provision of adequate ventilation where corrosive vapors are present.
    - provision of air-conditioning where the ambient temperature is 5°C or lower, or 40°C or higher.

Sample conditions Temperature Pressure Flow rate Coexisting	<ul> <li>5 to 40°C, 85% (RH) or less (No condensation)</li> <li>2 to 40°C</li> <li>0.02 to 0.05MPa</li> <li>0.5 to 3L/min.</li> <li>Masking by AgNO<sub>3</sub> is required when the</li> </ul>	Output signal	: 4 to 20mA DC (Isolated max. load 600) and 0 to 1V DC (Isolated min. load 100k) Under maintenance, under calibration, power cut off, abnormal measurement value, pretreatment control, analyzer fault 1, analyzer fault 2, etc.		
components	sample contains chloride ion like sea	Power source	: 100 to 240V AC ±10%, 50/60Hz		
	water. Too much chloride ion contained in the sample may precipitate AgCl and	Power consumption : Max; approx. 550VA Average; approx. 200VA			
	affect the measurement. Masking limit	Structure	: Indoor, floor mounting type;		
	by AgNO <sub>3</sub> is 100 times of the full scale.		Equivalent to IP30		
	(ex.) The limit is 2g Cl <sup>-</sup> /L at 0 to 20mg/	Wetted part	: Hard PVC, PFA, PP, silicone, hard glass		
	L range.	material			
	(when one measurement/hour)	Dimensions	: 600 (W) × 600 (D) × 1600 (H) mm		
Reagent consumption : $5 \text{mmol/L KMnO}_4$ solution;			r : Munsell 5PB8/1		
	approx. 6Lfor 2 weeks	Weight	: Approx. 160kg (excluding reagents)		
	12.5mmol/L Na <sub>2</sub> C <sub>2</sub> O <sub>4</sub> solution;				
	without Na <sub>2</sub> C <sub>2</sub> O <sub>4</sub> cleaning;				
	approx. 3.7Lfor 2 weeks with hourly Na <sub>2</sub> C <sub>2</sub> O <sub>2</sub> cleaning;	Utilities			
	approx. 6L for 2 weeks	Tap water Temperature Pressure Flow rate	· For cleaning and diluting		
	H <sub>2</sub> SO <sub>4</sub> (1+2); approx. 3.7L for 2 weeks AgNO <sub>3</sub> (200g/L); (acidic method)		; 2 to 35°C		
			; 0.1 to 0.5MPa		
	approx. 1.85L for 2 weeks	Consumption	; Approx. 2L/min(max.) ; Approx. 5L/measurement		
	NaOH (40g/L); (alkali method)	consumption	, rippiox. of measurement		
	approx. 1.85L for 2 weeks				
	Ammonia water (3.5%);	Options			
	(with ammonium cleaning) approx. 0.2L/cleaning	No AgNO <sub>3</sub> addition	: For sample with no coexisting chloride ion : RS-485 or RS-232C		
	Please dispose of waste liquids properly	Ammonia cleaning	: For reducing contamination by AgCl,		
Input signal	<ul> <li>by asking a specialist disposal processor.</li> <li>Non-voltage contact input (contact capacitance DC30V, 0.3A) observation station stop signal, external start signal, external</li> </ul>		combined with AgNO3 addition in acidic		
input signal			method		
		Related equipment			
	calibration signal, flow channel	Pollutant integrator : Model CALD-2030			
	switching signal, waste tank full signal				
	(for optional waste tank float switch)	calculator			

### Dimensions Unit : mm





#### Selection of Specifications

Selection of Specifications						
COD203A-2-						
	— Delivery area					
1	Japan					
2	English					
3	Chinese					
8	Other					
	— Power source					
A	100V AC					
B	110V AC					
<u>C</u>						
Z	Custom spec*1					
	- Transmission output					
1	- Communication function	DC 4 to 20mA / DC 0 to 1V simultaneous output				
1	····· None (standard),					
<sup>1</sup> / <sub>2</sub>	$ m RS-485^{*2}$					
3	$\operatorname{RS}^{100}$					
	— Measurement method					
A	····· Acidic method					
B	Alkali method					
	<ul> <li>Endpoint detection method</li> </ul>					
1	····· Oxidation-reduction potentio	meter titration (standard)				
	<ul> <li>Flow paths and measurement range</li> </ul>	es				
1	1 flow path with single range	, ,				
2	1 flow path with dual ranges					
3	2 flow paths with single rang					
4	2 flow paths with dual range					
	<ul> <li>Measurement range of the flow part</li> </ul>	th 1 in mg/L* <sup>3</sup>				
A	0 to 20					
B	0 to 30	*1. When Power supply voltage is other than 100VAC,				
C	0 to 40	a step-down transformer is built in.				
D	0 to 50	*2. If the communication function of RS-485, RS-232C				
E	0 to 100 0 to 200	is to be added, please contact our overseas sales				
G	0 to 300	department with your required specifications.				
Н	0 to 400	*3. The measurement range should be selected as				
	0 to 500	Range $1 < \text{Range } 2$ . In the case of one flow path				
к	0 to 1,000	with two ranges, generally the range ratio should				
<u>`</u>	0 to 2,000	be doubled.				
	<ul> <li>Measurement range of the flow part</li> </ul>	th 2 in mg/L* <sup>3</sup>				
B to L	Same as 1st range measurem	<b>0</b> .				
γ	····· N/A (Single range)	Note 1.When Japanese, English, or Chinese is				
	— Ammonia cleaning function	specified as the notation format, the operation				
0	····· None (standard)	panel will be in the specified language, but all				
1	····· Provided	print will be in English.				
	— Auto-roller (roll paper)	Note 2. Contact our overseas sales department for the				
0	····· None (standard)	recommended water pump.				
2	Provided	Note 3. The water tank is built-in, no external attachment				
- 1	<ul> <li>Internal adjustment tank</li> </ul>	is required.				
0	140	Note 4. The reagent deprivation signal is detected by				
1	····· Yes (Standard)	the potassium permanganate reagent tank only.				
0	— Marking	Separate specification is required for other				
0 Japanese (standard), Separate specification is required for o 1 English deprivation information.						
8	Note 5. State separately if the arresters are attached					
8	Unnese	to the power supply and transmission lines.				

TOA DIKK DKK-TOA CORPORATION

Overseas Sales Division: DKK-TOA Corporation 29-10, 1-Chome, Takadanobaba, Shinjuku-ku, Tokyo 169-8648 Japan Tel : +81-3-3202-0225 Fax : +81-3-3202-5685 E-mail : intsales@dkktoa.com



Please read the operation manual carefully before using producuts.