

CD 200
Chemical Oxygen Demand
(COD) Detector

Important notice

- Please study this instruction manual carefully before using this product.
- Please operate the instrument at room temperature and proceed with COD measurement after the vial cools down to the room temperature and the uniformly-mixed reagent is completely precipitated.
- Please make sure the supply voltage and frequency conform to power specified on main unit. (input power: 12Vd.c. 1.5A; IP code: IP20)
- If using a 9V square battery, please make sure to remove the battery when the instrument is unused for a long term to prevent leakage.
- Please discard packing material according to local related regulations.
- Please make sure that the instrument is operated under the following conditions:
 - A. Indoor use
 - B. Altitude up to 2000 m
 - C. 5°C to 40°C
 - D. 80% RH Max
 - E. Over voltages category I
 - F. POLLUTION degree II
- In case of any questions in using this product, please make sure to contact your local distributor for help. Do not do any improper assembly or disassembly without authorization.
- Please clean and maintain the instrument and accessories according to the maintenance method after every use.

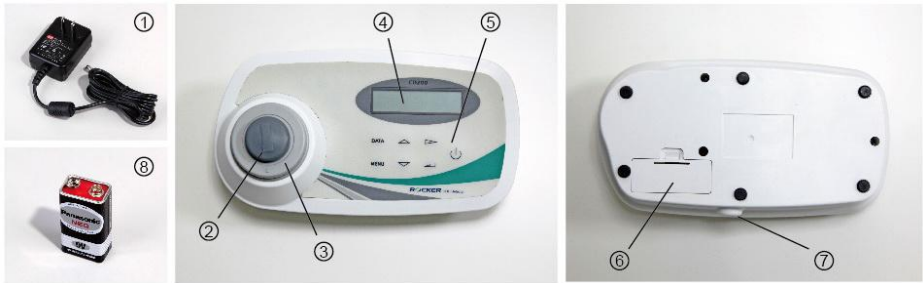
Unpacking

Carefully check if the shipping carton is in good condition before unpacking. Please check all supplied items according to standard package list. If you have any questions, please keep serial no. & shipping carton and contact your local dealer for help.

Item	Assembly
1	CD 200 Detector
2	Vial Dust Cap
3	Transformer
4	Instruction manual








CD 200 Composition table








Position	Designation	Position	Designation
1	Transformer	5	button
2	Vial Dust Cap	6	Battery cover
3	Tube insertion port	7	Power outlet
4	Screen	8	9V square battery (optional)

Buttons and Symbols Introduction

(1). Operation Button Description :

Buttons	Function	Description
Data	Data	Show the data in the display
Menu	Menu	Back to the previous menu
	UP Arrow	Scrolls up through selected menus or stored data
	Down Arrow	Scrolls down through selected menus or stored data
	Right Arrow	Scrolls right through selected menus or stored data
	Enter	Within a menu, selects the displayed menu item. During numeric entry, accepts the displayed value.
	Power	Power switch

(2). Screen Symbol Description :

Symbols	Description
	Show the state of using a transformer
	100% full power.
	66% power.
	33% power.
	5% low battery, replace the battery as soon as possible. (Backlight and sound closed)
<<	Selected option
<	Selected option

Operation






Please ensure that the power supply voltage matches the voltage rating for CD 200 (100-240V AC power), the output voltage is DC12V. In the absence of the power supply case, the user can directly use 9V square battery. Please press the power button, and you can start to use CD 200.





1. Operation menu items

Content	items	Description	Remark
Main Menu	1: COD TEST	Curve menu	
	2: Time	Date and time setting	
	3: Backlight	Backlight setting	
	4: Sound	Sound setting	
	5: Auto Shut	Auto power setting	
	6: Memory	Memory setting	
Curve menu	1: HACH	HACH standard curve	
	2: Lovibond	Lovibond standard curve	
	3: CHEMetrics	CHEMetrics standard curve	
	4: User-1	User-1 curve	Need calibration
	5: User-2	User-2 curve	Need calibration
	6: User-3	User-3 curve	Need calibration

	7: User-4	User-4 curve	Need calibration
	8: User-5	User-5 curve	Need calibration
	9: User-6	User-6 curve	Need calibration
Curve range menu	150	Measuring range 10 ~ 150 mg/L	
	1500	Measuring range 100 ~ 1500 mg/L	
	15000	Measuring range 1000 ~ 15000 mg/L	
Work menu	Start	COD test screen	
	Info	User calibration data	Standard curve range values
	CAL	Calibration parameter	

2. COD test description






Item	Steps	Display
1	Turn on the power, the screen shows LOGO	ROCKER
2	Curve menu appears after 2 seconds	1: H A C H <<  2: L o v i b o n d
3	Press Δ button and ∇ button to select the standard curve (H A C H · Lovibond · CHEMetrics) or User curve (User-1 ~ User-6) · "<<" symbol represents the position of the option · Press \leftarrow button to enter the Curve range menu	1: H A C H <<  2: L o v i b o n d
4	Press \triangleright button to select 150 · 1500 or 15000 · "<" symbol represents the position of the option · Press \leftarrow button to enter the Work menu	H A C H - 1 5 0  1 5 0 1 5 0 0 < 1 5 0 0 0
5	Select "Start" option · Press \leftarrow button to enter COD test	H A C H - 1 5 0  S t a r t < I n f o
6	Insert Blank tube	H A C H - 1 5 0  I n s e r t B l a n k









7	Insert the blank vial into the vial holder and OK message will appear after 2 seconds	H A C H - 1 5 0 0  B l a n k O K
8	Pull out the Blank vial and Insert Sample message appears	H A C H - 1 5 0 0  I n s e r t S a m p l e
9	Insert the sample vial into the vial holder and COD value will appear after 2 seconds, and then automatically save the data	H A C H - 1 5 0 0  1 0 0 1 m g / L
10	Insert other sample vial into the vial holder, and retest COD value	H A C H - 1 5 0 0  4 8 7 . 1 m g / L



Note:

- A. Make sure to insert each sample vial into the vial holder in the same direction to make COD value more consistent.
- B. Before using the User curve, please proceed with the calibration curve.
- C. Pressing Data button can show the storage data in the display.
- D. Over range error or below range error during a measurement, the concentration is too high or too low.

3. User curve calibration description

Item	Steps	Display
1	Turn on the power, the screen shows LOGO	ROCKER
2	Curve menu appears after 2 seconds	1 : H A C H <<  2 : L o v i b o n d
3	Press Δ button and ∇ button to select User curve (User-1 ~ User-6) · "<<" symbol represents the position of the option · Press \leftarrow button to enter the Curve range menu	3 : C H E M e t r i c s  4 : U s e r - 1 <<
4	Press \triangleright button to select 150 · 1500 or 15000 · "<" symbol represents the position of the option · Press \leftarrow button to enter the Work menu	U s e r - 1 - 1 5 0  1 5 0 < 1 5 0 0 1 5 0 0 0
5	Select "CAL" option · Press \leftarrow button to enter Calibration parameter	U s e r - 1 - 1 5 0  S t a r t I n f o C A L <
6	Insert Blank message appears	U s e r - 1 - 1 5 0  I n s e r t B l a n k






7	Insert the blank vial into the vial holder and OK message will appear after 2 seconds	User - 1 - 150  Blank OK
8	Pull out the Blank vial and check if it is correct, press ← button to confirm	User - 1 - 150  Blank OK <
9	After confirmation, insert a standard COD test vial	User - 1 - 150  InsertStd 1
10	Insert the sample vial into the vial holder and input concentration value message appears after 2 seconds	User - 1 - 150  <u>00000</u> mg / L
11	Press △ button , ▽ button and ▷ button to enter the standard concentration values	User - 1 - 150  000<u>50</u> mg / L
12	Pull out the sample vial, and press ← button to make sure the concentration value is correct	User - 1 - 150  S1 : 50.0 mg / L OK <
13	After confirmation, insert another standard COD test vial	User - 1 - 150  InsertStd 2
14	Then the following message will appear: Save: Save the calibration parameter then exit Exit: Exit without saving calibration	User - 1 - 150  SaveExitCAL <


	parameter CAL: go back to the calibration parameter	
15	Select CAL button to go back to the calibration parameter	U s e r - 1 - 1 5 0  I n s e r t S t d 2
16	Repeat steps 10 to 12 for continuous adjustment of other standard concentration up to six. Finally save the calibration parameters then exit.	U s e r - 1 - 1 5 0  S a v e E x i t

Note:

- A. Make sure to insert each sample vial into the vial holder in the same direction to make COD value more consistent.
- B. In order to store the user curve calibration, please complete the Blank calibration and more than one set of Standard sample calibration procedure.
- C. Do not calibrate the same concentration twice to avoid calibration parameters error.
- D. Please select the appropriate concentration value for calibration. Make sure the reagent concentration in three ranges more than 10/100/1000 mg / L individually.
- E. User curve name can be changed by following "Change the name of user curve description" below.




4. Review the calibration concentration description




Item	Steps	Display
1	Turn on the power, the screen shows LOGO	ROCKER
2	Curve menu appears after 2 seconds	<p>1: H A C H << </p> <p>2: L o v i b o n d</p>
3	Press Δ button and ∇ button to select the User curve (User-1 ~ User-6). "<<" symbol represents the position of the option, Press \leftarrow button to enter the Curve range menu	<p>5: U s e r - 2 </p> <p>6: U s e r - 3 <<</p>
4	Press \triangleright button to select 150 \ 1500 or 15000. "<" symbol represents the position of the option, Press \leftarrow button to enter the Work menu	<p>U s e r - 3 - 1 5 0 0 </p> <p>1 5 0 1 5 0 0 < 1 5 0 0 0</p>
5	Select "Info" option, Press \leftarrow button to enter the User calibration data	<p>U s e r - 3 - 1 5 0 0 </p> <p>S t a r t I n f o < C A L</p>
6	Calibration result: OK: Calibration parameters are correct. NG: Calibration parameters are in error, please go back to CAL and check again	<p>U s e r - 3 - 1 5 0 0 </p> <p>C A L p o i n t = 2 O K <</p>

7	Press Δ button and ∇ button to check concentration value and press \leftarrow button or Menu button back to the previous menu	U s e r - 3 - 1 5 0 0  S 1 = 1 5 0 0 . 0 m g / L <
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Note: Standard curve can show the displayed range of reading value.


5. Change the name of user curve description

Item	Steps	Display
1	Turn on the power, the screen shows LOGO	ROCKER
2	Curve menu appears after 2 seconds	1 : H A C H <<  2 : L o v i b o n d
3	Press Δ button and ∇ button to select the User curve (User-1 ~ User-6) . "<<" symbol represents the position of the option . Press \leftarrow button to enter the Curve range menu	5 : U s e r - 2 <<  6 : U s e r - 3
4	Under the range of the curve menu, press Δ button and wait 2 seconds to change the name	U s e r - 2 - 1 5 0  1 5 0 < 1 5 0 0 1 5 0 0 0

5	Press Δ button , ∇ button and \triangleright button to change the name (up to 10 words)	U s e r - 2  => <u>U</u> s e r - 2
6	After typing, press \leftarrow button to store and leave or press the Menu button to leave without save	U s e r - 2  => R O C K E R <u>R</u>
7	Back to the User curve and confirm the changed name again	R O C K E R - 1 5 0  1 5 0 < 1 5 0 0 1 5 0 0 0




6. Check data description

Item	Steps	Display
1	Press the Data button in the work menu and it will display the stored information	1 : H A C H < <  2 : L o v i b o n d
2	Data include the date, test time, the name of the curve, the curve range, document number and COD concentration value.	H A C H - 1 5 0 0  0 2 2 4 8 7 . 1 m g / L
3	Test date and curve range will display in the first row and switch in every 2 seconds. Press \triangleright button to switch the information	2 0 1 6 / 0 2 / 0 6 0 8 : 3 4  0 2 2 4 8 7 . 1 m g / L
4	Press Δ button and ∇ button to display different data	2 0 1 6 / 0 2 / 0 6 0 8 : 3 3  0 2 1 9 9 9 . 9 m g / L

5	After checking data, press the Menu button to leave	1 : H A C H <<  2 : L o v i b o n d
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Note: Save up to 100 records.

7. Time setup description

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1 : H A C H <<  2 : L o v i b o n d
2	Press ▽ button to select the Time, "<<" symbol represents the position of the option, Press ← button to enter the time setup	1 : C O D T e s t  2 : T i m e <<
3	Press △ button , ▽ button and ▷ button to change the time, and press ← button to store and leave	D a t a : 2 0 1 6 / 0 2 / 0 6  T i m e : 0 9 : 3 4




Note: Time setting is automatically saved even if pressing the Menu button to leave.

8. Backlight setting description




Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1 : H A C H <<  2 : L o v i b o n d
2	Press ▽ button to select the Backlight, "<<" symbol represents the position of the option, Press ↵ button to enter the Backlight setup	3 : B a c k l i g h t <<  4 : S o u n d
3	Press ▷ button to select an option, and press ↵ button to save. On: turn on the backlight and without auto turn -off. Auto: turn on the backlight and with auto turn-off. Off: turn off the backlight	B a c k l i g h t [A u t o]  O n << A u t o O f f

Note: When using Auto option, the backlight will be turned off if no operation in 3 minutes.

9. Sound settings description




Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1 : H A C H < <  2 : L o v i b o n d
2	Press ▽ button to select the Sound, "<<" symbol represents the position of the option, Press ↵ button to enter the sound setup	3 : B a c k l i g h t  4 : S o u n d < <
3	Press ▷ button to select an option, and press ↵ button to save. On: Turn on the sound; Off: Turn off the sound	S o u n d [O n]  O n < < O f f

10. Auto Shut setting description


Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1 : H A C H < <  2 : L o v i b o n d
2	Press ▽ button to select the Auto Shut, "<<" symbol represents the position of the option, Press ↵ button to enter the Auto Shut setup	5 : A u t o S h u t < <  6 : M e m o r y
3	Press ▷ button to select an option, and press ↵ button to save. On: Turn on the Auto Shut; Off: Turn off the Auto Shut	A u t o S h u t [O n]  O n < < O f f

Note: When using Auto Shut option, the power will be turned off if no operation in 10 minutes

11. Memory setting description

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1 : H A C H < <  2 : L o v i b o n d
2	Press ▽ button to select the Memory, "<<" symbol represents the position of the option, Press ↵ button to enter the Memory setup	5 : A u t o S h u t  6 : M e m o r y < <
3	<p>Press ▷ button to select an option, and press ↵ button to save.</p> <p>Yes: Every time you turn on the power, the screen automatically shows the menu before shutdown.</p> <p>No: Every time you turn on the power the screen automatically shows the curve menu.</p>	M e m o r y [N o]  Y e s < < N o

12. Shutdown description

Item	Steps	Display
1	<p>Press the power button and Press▷ button to select an option, and press ← button to save.</p> <p>Yes: Turn off the power</p> <p>No: Back to the previous menu</p>	<p>S h u t d o w n ? </p> <p>Y e s < < N o</p>

Maintenance

1. Clean the exterior of the instrument with a moist cloth and a mild soap solution and then wipe the instrument dry.
2. If the instrument is not used for a long time, be sure to put on the dust cover.
3. Explosion hazard. Expired batteries can cause hydrogen gas buildup inside the instrument. Replace the batteries before they expire and do not store the instrument for long periods with the batteries installed.
4. If the tube insertion port is dirty, please swab it with alcohol to avoid reading interference problems.

Troubleshooting

Possible cause	Solution
Instrument fails to start	<ol style="list-style-type: none"> 1. No electrical supply → Check the power supply conform to power specified on main unit or the switch is broken 2. Battery error → Change a new 9V square battery 3. Internal part failure → Contact technical support
The screen is not displayed	Contact technical support
Screen without backlight	<ol style="list-style-type: none"> 1. Backlight setting → Turn on the backlight 2. Battery error → Change a new 9V square battery 3. Internal part failure → Contact technical support
No button sound	<ol style="list-style-type: none"> 1. Sound setting → Turn on the sound 2. Battery error → Change a new 9V square battery 3. Internal part failure → Contact technical support
No response after pressing the button	Contact technical support
No response after inserting the vial	Contact technical support
Instrument is not configured	Contact technical support
Could not read program data	Contact technical support
Could not write program data	Contact technical support

Ordering Information

198200-01	CD200, COD Detector with US plug adaptor (100-240V)
198200-02	CD200, COD Detector with EU plug adaptor (100-240V)
179200-11	CR 25, COD Reactor, AC110V, 60Hz
179200-22	CR 25, COD Reactor, AC220V, 50Hz
HAC-2125825	HACH COD vial 150 mg/l (25/PK)
HAC-2125815	HACH COD vial 150 mg/l (150/PK)
HAC-2125925	HACH COD vial 1500 mg/l (25/PK)
HAC-2125915	HACH COD vial 1500 mg/l (150/PK)
HAC-2415925	HACH COD vial 15000 mg/l (25/PK)