WD 100

Multiparameter Colorimeter

Important notice

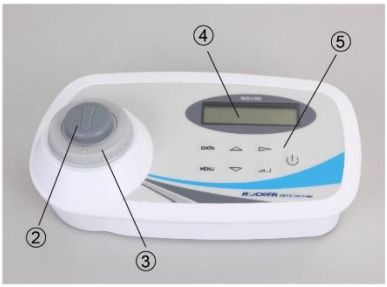
- Please study this instruction manual carefully before using this product.
- Please operate the instrument at room temperature and proceed with COD measurement after the vial cools down to the room temperature and the uniformly-mixed reagent is completely precipitated.
- Please make sure the supply 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℃ to 40℃
  - 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.

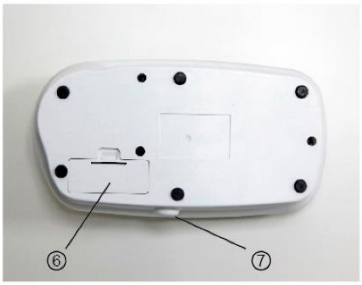
Unpacking

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	WD 100 Colorimeter
2	Vial Dust Cap
3	Transformer
4	Instruction manual

WD 100 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	1. Scrolls right through selected menus or stored data 2. Set the favorite curve and enter the adjustment function.
	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 WD 100 (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 WD 100.

1. Operation menu items

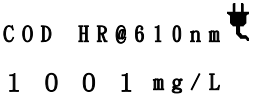
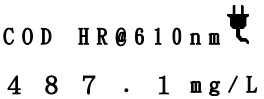
Content	items	Description	Remark
Main Menu	**1: PROG List**	Standard Curve menu	
	2: Favor Set	Favorite Curve setting	
	3: Time	Date and time setting	
	4: Backlight	Backlight setting	
	5: Sound	Sound setting	
	6: Auto Shut	Auto power setting	
	7: Memory	Memory setting	
	8. List Way	Curve menu setting	

Curve Menu	**1: COD LR**	Low range COD detection curve	10 - 150 mg/l
	2: COD HR	High range COD detection curve	150 - 1500 mg/l
	3: COD HR+	High Plus range COD detection curve	1500-15000 mg/l
	4: NH3-N LR	Low range Ammonia Nitrogen detection curve	0.02 - 2.50 mg/l
	5: NH3-N HR	High range Ammonia Nitrogen detection curve	0.4 - 50.0 mg/l
	6: PO4 LR	Low range Total Phosphorus detection curve	0.06 - 3.50 mg/l
	7: PO4 HR	High range Total Phosphorus detection curve	1.0 - 50.0 mg/l
	8: TN LR	Low range Total Nitrogen detection curve	0.5 - 25.0 mg/l
	9: TN HR	High range Total Nitrogen detection curve	2 - 150 mg/l
	10: User-01	User-01 curve	Need calibration
	11: User-02	User-02 curve	Need calibration
	12: User-03	User-03 curve	Need calibration
	13: User-04	User-04 curve	Need calibration
	14: User-05	User-05 curve	Need calibration
	15: User-06	User-06 curve	Need calibration
	16: User-07	User-07 curve	Need calibration
	17: User-08	User-08 curve	Need calibration
	18: User-09	User-09 curve	Need calibration
	19: User-10	User-10 curve	Need calibration
	20: User-11	User-11 curve	Need calibration

Work Menu	**Start**	Test screen	
	Info	User calibration data	Range values show in standard curve
	Set	Calibration parameters	No function in standard curve
Setting Menu	**1: Name**	Setting curve names	
	2: Wavelen	Setting the wavelength	
	3: Unit	Setting the concentration unit	
	4: Range	Setting the concentration range	The resolution is automatically set according to the setting range
	5: CAL	Calibration parameter	

2. Standard Curve and User Curve Instruction

Item	Steps	Display
1	Turn on the power, the screen shows LOGO	
2	Curve Menu appears after 2 seconds	1: COD LR<< 2: COD HR
3	Press △ button and▽ button to select the standard curve or User curve, "<<" symbol represents the position of the option · Press ↵ button to enter the Work Menu	1: COD LR 2: COD HR<<
4	Select "**Start"** option · Press ↵ button to start the test	COD HR@610nm Start< Info
5	Insert Blank tube	COD HR@610nm InsertBlank
6	Insert the blank vial into the vial holder and OK message will appear after 2 seconds	COD HR@610nm BlankOK
7	Pull out the Blank vial and Insert Sample message appears	COD HR@610nm InsertSample

8	Insert the sample vial into the vial holder and test value will appear after 2 seconds, and then automatically save the data	
9	Insert other sample vial into the vial holder, and retest test value	

Note:

A. Make sure to insert each sample vial into the vial holder in the same direction to make test value more consistent.

B. Before using the User curve, please proceed with “**3. User curve calibration instruction”**

C. Pressing Data button can show the storage data in the display.

D. “Over range” or “Under range” error indicates the sample concentration is too high or too low, please make a dilution or change test vials to try again.

3. User curve calibration instruction

a. Set Calibration Parameters

Item	Steps	Display
1	Turn on the power, the screen shows LOGO	ROCKER
2	Curve menu appears after 2 seconds	1: COD LR<< 2: COD HR
3	Press △/▽button to select User curve（User-1 ~ User-11）, "<<" symbol represents the position of the option , Press↵ button to enter the Work Menu	9:TN HR 10: User-01<<
4	Press ▷ button and "<"symbol represents the position of the option , Press↵ button to enter the Setting Menu	User-01@420nm Start InfoSet<
5	Select "**CAL"** option , Press↵ button to enter Calibration parameter. Press △/▽ button and "<"symbol represents the position of the option	1: Name< 2: Wavelen-420

6	Press△/▽ button and press↵ button to enter the Name setting	Name [User-01] =>User-01
7	Wait for the input position and press △/▽ button to switch letters, numbers or symbols, Press↵ button to select the position of the number (cyclically switch), and the name can be entered up to 10 words.	User-01 =>SeaCOD
8	After completing, Press↵ to confirm the save, or press the Menu button not to save and return to the previous screen.	1: Name 2: Wavelen-420
9	Press △/▽ button and "<"symbol represents the position of the option · Press↵ button to enter the Wavelen setting menu	Wavelen[420] 420nm610nm<
10	There are two wavelengths to choose, Press↵ button to confirm the storage, or press the Menu button to return to the previous screen.	2: Wavelen-610< 3: Unit-mg/L

11	Press △/▽ button and “ < ”symbol represents the position of the option · Press ↵ button to enter the Unit setting menu	Unit[mg/L] g/L mg/L < ug/L
12	There are three Units to choose, Press ↵ button to confirm the storage, or press the Menu button to return to the previous screen.	3: Unit-mg/L < 4: Range-32000
13	Press △/▽ button and “ < ”symbol represents the position of the option · Press ↵ button to enter the Range setting menu	Range[0-32000] 0-320000-3200 <
14	There are four Range to choose, Press ↵ button to confirm the storage, or press the Menu button to return to the previous screen.	4: Range-3200 < 5: CAL

b. Start Calibration

Item	Steps	Display
1	Before starting calibration, press the △/▽ button to view the settings of 2~4 items and confirm that the settings are correct.	2: Wavelen-610 < 3: Unit-mg/L

2	Press the △/▽ button to select the CAL option and Press ↵ to enter the calibration parameter.	4: Range-3200< 5: CAL
3	Insert Blank message appears	SeaCOD@610nm InsertBlank
4	Insert the blank vial into the vial holder and OK message will appear after 2 seconds	SeaCOD@610nm Blank OK
5	Pull out the Blank vial and check if it is correct, press ↵ button to confirm	SeaCOD@610nm Blank OK<
6	After confirmation, insert a standard vial	SeaCOD@610nm InsertStd 1
7	Insert the sample vial into the vial holder and input concentration valve message appears after 2 seconds	SeaCOD@610nm 00000mg/L
8	Press △/▽/ ▷ button to enter the standard concentration values	SeaCOD@610nm 00050mg/L
9	Pull out the sample vial, and press ↵ button to make sure the concentration value is correct	SeaCOD@610nm S1:50.0mg/LOK<
10	After confirmation, insert another standard vial	SeaCOD@610nm InsertStd 2

11	After completing the calibration, press Menu button and ↵ button to finish. Then the following message will appear: **Save:** Save the calibration parameter then exit **Exit:** Exit without saving calibration parameter **CAL:** back to the calibration parameter	SeaCOD@610nm SaveExitCAL<
12	Select CAL button to go back to the calibration parameter	SeaCOD@610nm InsertStd 2
13	Repeat steps 10 to 12 for continuous adjustment of other standard concentration up to six. Finally save the calibration parameters then exit.	SeaCOD@610nm Save<Exit

Note:

A. Please select the appropriate calibration range to avoid insufficient resolution and increase the error.
B. The test tube should be fixed in each direction. Ex: Align the letter A of the HACH tube with the ▲ symbol.
C. Please prepare one Blank and at least one set standard solution for calibration experiment.
D. Do not calibrate the same concentration standard twice to avoid the error message.
E. Please select the appropriate concentration standard for calibration. If the absorbance of the two concentrations are too close, there will be an error message.
F. If the set concentration exceeds the maximum value, it will automatically become the maximum value.

4. Calibration Information Instruction

Item	Steps	Display
1	Turn on the power, the screen shows LOGO	ROCKER
2	Curve menu appears after 2 seconds	1: COD LR<< 2: COD HR
3	Press △/▽ button and "<<" symbol represents the position of the option, Press ↵ button to enter the Work Menu	11: User-02 12: User-03<<
4	Select "**Info"** option, Press ↵ button to enter the User calibration data	User-03@420nm Start Info<Set
5	Calibration results: OK: Calibration parameters are correct. NG: Calibration parameters are in error, please go back to CAL and recalibrate.	User-03@420nm CAL point=20K
6	Press △/▽ button to check concentration value and press ↵ button or Menu button back to the previous menu	User-03@420nm S1=150.00mg/L

Note:

(1) Standard curves show range of reading value, and sser curves show calibration information.

5. Storage Data Instruction

Item	Steps	Display
1	Press the Data button in all menu excepting setting menu and it will display the stored information	1: COD LR<< 2: COD HR
2	Storage information includes the date, test time, curve name, curve range, data number and concentration value.	COD HR@610nm 0224 87 . 1 mg/L
3	Date, time, curve name and range will show in the first row and switch in every 2 seconds. Press ▷ button to manual switch the information	2018/07/1608:34 0224 87 . 1 mg/L
4	Press △/▽ button to display different number of measurement data	2018/07/0608:33 0219 99 . 9 mg/L
5	After checking data, press the Menu button to leave	1: COD LR<< 2: COD HR

Note:

(1) The maximum storage number is 100 records, the oldest record will be replaced if storage data is more than 100 records.

6. Favorite Curve Setting Instruction

a. Set the favorite curve

Item	Steps	Display
1	Turn on the power and switch to the Curve Menu	1: COD LR<<  2: COD HR
2	Press △/▽ button to select the curve to be set as the favorite set, and the "<<" symbol represents the option position.	8: TNLR<<  9: TNHR
3	Press ▷ button to set the curve as favorite collection. The indicator symbol * displays in front of curve name. Press ▷ button again to cancel the setting.	8:*TNLR<<  9: TNHR
4	Repeating step 3~4 and complete the setting, press Menu button to return to Main Menu, press △/▽ button to select Favor Set and ↵ button to enter it.	☆ 1: TNLR<<  ☆ 2: TNHR
5	Press △/▽ button to select the curve name, press ↵ button to enter the work menu, and start measurement with reference to Instruction 2.	TN HR@420nm  Start< Info

Note:

A. When turning on WD 100, it will choose the curve list: "Favor Set" or "PROG List" automatically according to the list you used and turned off last time.

B. The maximum number of favorite curves can be up to 8.

b. Delete the favorite curve

Item	Steps	Display
1	In the favorite curve menu, press △/▽ button to select the curve to be deleted, and the ″<<″ symbol represents the option position.	☆ 1: TNLR<<  ☆ 2: TNHR
2	Press ▷ button, and delete message shows up. 1. ThisOne: delete only this one curve 2. All: delete all curves	☆ 1: TNLR<<  Del? ThisOne<All
3	Press ↵ button to confirm execution or press Menu button to leave.	☆ 1: TNHR<<  ☆ 2: P04 LR
4	If you select ″All″, you will see the message “No Favor Data”.	 No Favor Data

7. Ranking of Curve Set Instruction

Item	Steps	Display
1	Turn on the power, the screen shows LOGO	ROCKER
2	Curve menu appears after 2 seconds	1: COD LR<<  2: COD HR
3	Press △/▽ button to select the curve, then press ▷ button for more than 1 sec to start twinkling, and the curve ranking setting is on.	8: TNLR  9: TNHR<<
4	Press the △/▽ button to change the curve ranking, press ↵ button to confirm the change and save it, or press the Menu button to discard the change and return to the Curve Menu.	1: TNHR  2: CODLR

Note:

(1) Curve ranking in “Favor Set” cannot be changed, the ranking will refer to the “PROG List”.

8. Date and Time Setup Instruction

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1: COD LR<<  2: COD HR
2	Press △/▽ button to select Time, press ↵ button to enter the time setup	2: Favor Set  3: Time<<
3	Press△/▽/▷ button to change the number, and press ↵ button to store setting and leave	Data:2017/07/16  Time:09:34

Note:

(1) Date and Time setting is automatically saved even if pressing the Menu button to leave.

9. Backlight Setting Instruction

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1： COD LR<<  2： COD HR
2	Press △/▽ button to select the Backlight, press ↵ button to enter the Backlight setup	4：Backlight<<  5：Sound
3	Press▷ button to select an option, and press ↵ button to save. On: Turn on the backlight without auto turn-off. Auto: Turn on the backlight and auto turn-off. Off: Turn off the backlight.	Backlight[Auto]  On<<Auto Off

Note:

(1) When selecting “Auto”, the backlight will be turned off to save power if no operation in 3 minutes and turn on automatically as soon as any operation.

10. Sound Settings Instruction

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1: COD LR<< 2: COD HR
2	Press △/▽ button to select the Sound and press ↵ to enter the sound setup	4:Backlight 5:Sound<<
3	Press▷ button to select an option, and press ↵ button to save. On: Turn on the sound; Off: Turn off the sound	Sound [On] On<<Off

11. Auto Shutoff Setting Instruction

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1: COD LR<< 2: COD HR
2	Press △/▽ button to select the Auto Shut and press ↵ button to enter the Auto Shut setup	6:Auto Shut<< 7:Memory
3	Press ▷ button to select an option, and press ↵ button to save. On: Turn on the Auto Shut; Off: Turn off the Auto Shut	Auto Shut [On] On<<Off

Note: When “Auto Shut” is on, the machine will turn off automatically if no operation in 10 minutes.

12. Memory Setting Instruction

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1： COD LR<< 2： COD HR
2	Press △/▽ button to Memory and press ↵ button to enter the Memory setup	6：Auto Shut 7：Memory<<
3	Press ▷ button to select and press ↵ button to save. Yes: Screen shows the menu according to menu used and shutdown last time. No: Screen shows the Curve menu every time.	Memory [No] Yes<<No

Note:

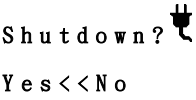
(1) If you change to the Yes option, the menu before shutdown will be saved and next time you turn it on, it will appear. The Memory setting is convenient for users who use the same curve and range every time the same.

(2) The original setting is No option. If change to the Yes option, you can press the Menu button return to the Curve menu.

13. Curve Arrangement Instruction

Item	Steps	Display
1	Turn on the power and press the Menu button back to the Main Menu	1: COD LR<<  2: COD HR
2	Press △/▽ button to select the List Way, press ↵ button to enter the List Way setup	6: Memory  7:List Way<<
3	Press▷ button to select an option, and press ↵ button to save. Fix: The ranking of arrangement is fixed. Auto: The ranking is automatically adjusted according to the measurement frequency. Reset: The reset is arranged in the original set.	List Way [Fix]  Fix< AutoReset

14. Shutdown Instruction

Item	Steps	Display
1	Press the power button and Press ▷ button to select an option, and press ↵ button to save. Yes: Turn off the power No: Back to the previous menu	

Note:

(1) In the shutdown screen, the power button is equivalent to ↵ button; Menu button can cancel the shutdown directly.

(2) Data loading and storage will be performed during power-on and power-off. It takes a few seconds before pressing the power button to turn it on and off.

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	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	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	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

191100-01	WD100 Portable Multiparameter Colorimeter with US plug adaptor(100-240V)
191100-02	WD100 Portable Multiparameter Colorimeter with EU plug adaptor(100-240V)
179250-11	CR 25, COD Reactor, AC110V, 60Hz
179250-22	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)
HAC- 2672245	HACH Total Nitrogen vial 0.5 - 25.0 mg/l (50/PK)
HAC- 2714100	HACH Total Nitrogen vial 2 - 150 mg/l (50/PK)
HAC- 2742645	HACH Total Phosphorus vial 0.06 - 3.50 mg/l (50/PK)
HAC- 2767245	HACH Total Phosphorus vial 1.0 - 100.0 mg/l (50/PK)
HAC- 2604545	HACH Nitrogen Ammonia vial 0.02 - 2.50 mg/l (50/PK)
HAC- 2606945	HACH Nitrogen Ammonia vial 0.4 - 50.0 mg/l (50/PK)