



# Reverse Osmosis User Manual

## WERO4

### Models

•WERO4-1

•WERO4-2

WERO4-4

WERO4-6

WERO4-8

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# 1. INTRODUCTION

Your WERO4 Series system is a durable piece of equipment and with proper care, will last for many years of continuous service. This User's Manual outlines installation, operation, maintenance and troubleshooting details vital to the sustained performance of your system.

The WERO4 user manual will guide you through system set up and correct installation. If your system is altered at the site of operation or if the feed water conditions change, please contact your local dealer or distributor to determine the proper recovery for your application.

**NOTE: IN ORDER TO MAINTAIN THE MANUFACTURER'S WARRANTY, AN OPERATING LOG MUST BE MAINTAINED AND COPIES WILL NEED TO BE SENT TO YOUR LOCAL DEALER OR DISTRIBUTOR FOR REVIEW.**

**NOTE: PRIOR TO OPERATING OR SERVICING THE REVERSE OSMOSIS SYSTEM, THIS USER'S MANUAL MUST BE READ AND FULLY UNDERSTOOD. KEEP THIS AND OTHER ASSOCIATED INFORMATION FOR FUTURE REFERENCE AND FOR NEW OPERATORS OR QUALIFIED PERSONNEL NEAR THE SYSTEM.**

## 2. SAFETY

The Safety section of this User's Manual outlines the various safety headings used throughout this manual's text and are enhanced and defined below:

**NOTE: INDICATES STATEMENTS THAT PROVIDE FURTHER INFORMATION AND CLARIFICATION.**

**CAUTION: INDICATES STATEMENTS THAT ARE USED TO IDENTIFY CONDITIONS OR PRACTICES THAT COULD RESULT IN EQUIPMENT OR OTHER PROPERTY DAMAGE.**

**WARNING: INDICATES STATEMENTS THAT ARE USED TO IDENTIFY CONDITIONS OR PRACTICES THAT COULD RESULT IN INJURY OR LOSS OF LIFE. FAILURE TO FOLLOW WARNINGS COULD RESULT IN SERIOUS INJURY OR EVEN DEATH.**

**DO NOT UNDER ANY CIRCUMSTANCE REMOVE ANY CAUTION, WARNING, OR OTHER DESCRIPTIVE LABELS FROM THE SYSTEM.**

# 3. Glossary of Terms

## And main system components

**Media filter:** A filter used to remove sediment from water. Sand or glass media is commonly used as a pre filter to remove suspended solids greater than 5um.

**Activated Carbon Filter:** Activated carbon is used to remove chlorine and contaminants such as tastes, odors and other dissolved organic matter.

**Water Softener:** Is used to remove scaling material such as calcium and magnesium from hard water.

**Sediment Cartridge Filter:** This filter is found on the inlet to the WERO4. Typically a 20' Blue housing with a sediment filter of 5 or 1um used to ensure (last line of defense) sediment free water to the membranes.

**Inlet Solenoid Valve:** This valve will open on start up when the system is in ready mode. It will close on shut down to protect the system from damage.

**Conductivity Probe:** There are two conductivity probes found on the WERO4. The first probe is on the raw water inlet after the sediment cartridge filter. It will read the inlet conductivity back to the WERO4 controller. The second conductivity probe is after the membranes on the treated water line. It will read the conductivity of the treated water back to the WERO4 controller.

**Feed Pump:** If the WERO4 is not connected to mains feed, then a feed pump is used to ensure minimum water pressure to the WERO4. It may be used as the pre-filtration pump prior to the WERO4.

**HP (High-Pressure) Pump:** The HP pump is used to boost water pressure to the RO membranes.

**Throttling Valve:** The throttling valve is used to control the pressure and flow of water to the RO membranes. It is a stainless steel globe valve directly after the HP pump. Slow adjustments will control the membrane pressure.

**RO Membrane Housing:** Membrane housings can be stainless steel or fiberglass construction. They are used to house the RO membranes and have ports on both end to allow flow of filtrate and concentrate.

**RO Membranes:** Ro membranes are the elements inside the membrane housings. The WERO4 uses 4040 size membranes.

**Product water valve:** This valve can be adjusted to control the amount of permeate flow from the membranes. It should be open in normal operation.

**Recycle Valve:** This valve is used to control the amount of recycle back to the HP pump.

**Concentrate Valve:** This valve is used to control the amount of concentrate water ratio to the waste line

**Rotameter:** Rotameters are used as an indicator of flow. WERO4 rotameters are in LPM (Liters Per Minute) showing flow rate past the meter. The meter is read from the top line of the rotameter bubble (orange floating center piece) The WERO4 has 3 rota meters. **Product water, Recycle, Concentrate.**

**Pressure Gauge:** Pressure gauges are used as a visual representation of the pressure inside the pipe work at various stages of the WERO4. The WERO4 has 3 pressure gauges. **Feed Gauge** shows pressure at the inlet of the system. **RO Pump Gauge** shows pressure at the over the membranes from the HP pump. **Concentrate Gauge** shows the pressure of the concentrate line to drain.

**Pressure Switch:** A pressure switch is a switch that is triggered under pressure. The WERO4 has two pressure switches used as safety devices. A **Low Pressure Switch** is used to ensure that enough feed pressure is available for normal operation. A **High Pressure Switch** is used to ensure that the system is stopped when the pressure is too high.

**Flush Solenoid Valve:** This valve is used to flush the system on start up and after 12 hours of continuous operation.

**Control Box:** The control box houses the electrical components and controller. The box has an emergency stop button and 3 x 3 position switches. It has a ROC controller.

**ROC:** Reverses Osmosis Controller

**3 position Switch:** A switch on the front panel of the control box. It has an Auto Off Manual position.

**Low Level Float:** A float and weight used in the raw water feed tank. It will control the tank level and shut down the WERO4 when tank is low.

**High Level Float:** A float and weight used in the product water tank. It will control the tank level and shut down WERO4 when tank is full.

**Product Water:** A term used to describe the treated water from the WERO4

**Concentrate:** A term used to describe the waste water rejected from the membranes.

**Recycle:** A term used to describe the amount of concentrated used to retreat and help even out osmotic pressure over the membranes

**Recovery:** A term used to describe the amount of water recovered from the raw water as a percentage of recovered pure water.

**Rejection:** A term used to describe the amount of contaminants rejected from the RO membrane

## 4. FEED WATER AND OPERATION SPECIFICATIONS

**Nothing has a greater effect on a reverse osmosis system than the feed water quality.**

**CAUTION: IT IS VERY IMPORTANT TO MEET THE MINIMUM FEED WATER QUALITY REQUIREMENTS. FAILURE TO DO SO WILL CAUSE THE MEMBRANES TO FOUL AND VOID THE MANUFACTURER'S WARRANTY.**

### 4.1 OPERATING LIMITS

Maximum Feed Water Temperature	30 degC
Minimum Feed Water Temperature	10 degC
Maximum Feed Pressure	500KPA
Minimum Feed Pressure	220KPA
Maximum Operation Pressure	1250KPA
Maximum SDI Rating SDI	<5
Maximum NTU (Turbidity)	1
Maximum Free Chlorine	0
Maximum TDS	2000
Maximum Water Hardness	60
Maximum pH	10
Minimum pH	5
Maximum pH for cleaning	12
Minimum pH for cleaning	3

**NOTE: HIGHER TDS AND/OR LOWER TEMPERATURES WILL REDUCE THE SYSTEM'S PRODUCTION.**

### 4.2 SYSTEM DESIGN

<b>WERO Size</b>	<b>WERO4-1</b>	<b>WERO4-2</b>	<b>WERO4-4</b>	<b>WERO4-6</b>	<b>WERO4-8</b>
<b>Temperature</b>	20deg	20deg	20deg	20deg	20deg
<b>No Membranes</b>	1	2	4	6	8
<b>Permeate Flow</b>	200-250L	400-500L	900-1000L	1500L	2000L
<b>Membrane Size</b>	4040	4040	4040	4040	4040
<b>Membrane Array</b>	1	1:1	2:2	2:2:2	2:2:2:2
<b>Pump Model</b>	CDLF 2-13	CDLF 2-13	CDLF 2-15	CDLF 2-18	CDLF 4-14
<b>Pump Size</b>	.75kw	.75kw	1.1kw	1.5kw	2.2kw
<b>Voltage Type</b>	240v	240v	240v	240v	415v
<b>Water Quality</b>	>2000TDS	>2000TDS	>2000TDS	>2000TDS	>2000TDS
<b>Salt Rejection</b>	98%	98%	98%	98%	98%

### 4.3 REJECTION, RECOVERY AND FLOW RATES

WERO4 reverse osmosis systems are designed to produce permeate water at the capacities indicative of membrane projections over water quality. Ask for a membrane projection from your WERO4 supplier.

WERO4-1	200-250L/hr
WERO4-2	400-500L/hr
WERO4-4	800-1000L/hr
WERO4-6	1300-1500L/hr
WERO4-8	1600-2000L/hr

Note: Table shows maximum product water flow rates. Flow rates will vary depending on water quality.



WERO4 RO controller with Rejection percentage

### 4.4 RECOVERY

The amount of total dissolved solids (TDS) rejected by the membrane is expressed as a percentage. For example, a 98.5% rejection rate means that 98.5% of total dissolved solids do not pass through the membrane. To calculate the % rejection, use the following formula:

$$\% \text{ Rejection} = [( \text{Feed TDS} - \text{Product TDS} ) / \text{Feed TDS}] \times 100$$

Example:

$$98.5\% = [(550 - 8.25) / 550] \times 100$$

**NOTE: ALL TDS FIGURES MUST BE EXPRESSED IN THE SAME UNITS, TYPICALLY PARTS PER MILLION (PPM) OR MILLIGRAMS PER LITER (MG/L).**

WERO4 Series reverse osmosis systems are designed to reject up to 98.5% NaCl, unless computer projections have been provided or state otherwise.

The amount of permeate water recovered for use is expressed as a percentage. To calculate % recovery, use the following formula:

$$\% \text{ Recovery} = ( \text{Product Water Flow Rate} / \text{Feed Water Flow Rate} ) \times 100$$

Example:

$$28\% = (0.14 / 0.50) \times 100$$

**NOTE: ALL FLOW RATES MUST BE EXPRESSED IN THE SAME UNITS, TYPICALLY LITERS PER MINUTE (LPM).**

# 5.Components

## 5.1 Major components list

1. Control Board
2. Flow Meter
3. Emergency Stop
4. Raw Water Connection
5. Cartridge Pre filter
6. Blending Valve
7. Throttling Valve
8. HP pump
9. High Pressure Switch
10. Low Pressure Switch
11. Flow Adjustment Valves
12. Pressure Gauges



Picture 5.1 WERO4



## 5.2 Gauges and Flow Meters

### 1. RO Pump Pressure Gauge

This gauge shows the pressure in the high pressure line feeding the membranes

### 2. Concentrate Pressure Gauge

This gauge shows the pressure in the Concentrate line to waste.

### 3. Feed Pressure Gauge

This gauge shows the pressure in the feed line to the RO.

### 4. Product Water Flow Meter

Flow rate indicator. Opening the controlling valve will adjust flow rates.

### 5. Recycle Flow Meter

Flow rate indicator. Opening the controlling valve will adjust flow rates.

### 6. Permeate Flow Control Valve

Adjustments can be made to this valve to control permeate flow rates. In normal operation this valve should be open.

### 7. Concentrate Flow Meter

Flow rate indicator. Opening or closing the controlling valve will adjust flow rates.

### 8. Recycle Flow Control Valve

Adjustments can be made to this valve to control Recycle flow rates. In normal operation this valve should be open.

### 9. Concentrate Flow Control Valve

Adjustments can be made to this valve to control Concentrate flow rates. In normal operation this valve should be open.



Picture 5.2 WERO4 Flow meters and pressure gauges

## 5.3 Control Box

### 1. Controller

ROC controller shows the operational mode of the system. It also shows the percentage of rejection with pre and post conductivity readings

### 2. Feed Pump Switch

On Off Manual Switch for control of the feed pump

### 3. RO Pump Switch

On Off Manual Switch for control of the High Pressure pump

### 4. Flush Valve

On Off Manual Switch for control of the Flush Valve

### 5. Control Board Lock

### 6. Stop Button



Picture 5.3

## 5.4 RO Images for General Information

### 5.4.1 RO Inlet and Pre Filter Cartridge Housing



Picture 5.4

#### 1. Raw water connection point.

The pre filter to the RO can hold sediment or carbon filter cartridges.

### 5.4.2 Product Water and Concentrate connections



Picture 5.5

#### 1. Product Water (Permeate)

Connect pipe work to product water line. Connect line to holding tank.

#### 2. Concentrate Water

Connect pipe work to product water line. Connect line to waste or drain.

### 5.4.3 Blend Valve



Picture 5.6

#### 1. Blend (RAW) Water Flow Meter

Adjustments can be made to this switch to control shut off pressure acting as high level



**Picture 5.7**

#### **5.4.4 Optional switching WERO4 with pressure switch (High Level shut down)**

**Product Water Pressure Switch**  
Adjustments can be made to this switch to control shut off pressure acting as high level

## 6. System preparation for start-up

Before operating the WERO4 it is important to read through the step by step start up procedure. All systems will operate differently to the next subject to water variations. Therefore the following start up procedure is a guide for operating a WERO4 and all safety measures should be adhered to prevent injury or harm. All consideration by the operator must be taken to minimize risk to persons and the environment.

### 6.1 Pre filtration System

6.1.a If your WERO4 has a pre treatment system it is likely to be a media filter, carbon filter and softener. Other pre filter systems may include iron removal filters.

It is essential that the raw water to the WERO4 is clean of sediment and biological contamination. A water analysis of raw water containments will determine the pre filtration system required to ensure water to the WERO4 is suitable for treatment.

6.1.b Pre filters may be required to clean and remove sediment and other containments in the raw water prior to the WERO4. There are many types and combinations of filters considered as pre filtration.

- Media filtration is used to remove sediment
- Carbon filtration is used to remove oxidants and organics (color, taste, odor, oxidants)
- Water Softener is used to remove hardness from the water to reduce the effects of scaling and contamination.
- Iron removal filtration is used to remove iron and or manganese

**Note:** It is essential that the pre filtration system be commissioned and flushed prior to connection to the WERO4.

#### 6.1.2 Lockout Cables for Pre Filtration

Lock out cable may be used to shut the WERO4 down while the pre filtration system goes into a back wash sequence or regeneration of the water softeners. Check the ROC 8220 controller manual for connection terminals.

#### 6.1.3 Post Filtration System

If your WERO4 has a post RO filter such as a calcite or re-mineralization filter, ensure it is connected and commissioned ready for use.

#### 6.1.4 Feed Pump

If a feed pump is used to supply water to the WERO4 then it should be connected to the provisions supplied in the control box.

#### 6.1.5 Pre Filter Cartridge Housing

Before operation the WERO4 install the sediment filter cartridge into the filter housing. Screw filter housing back together and do up tight. (Picture 5.4)

#### 6.1.6 Inlet Connection

The inlet to the WERO4 is the Cartridge filter housing. Make a connection to the housing from the Pre filters or other supply pipe work. (Picture 5.4)

### 6.1.7 Outlet Connections

6.1.7.a Connect the product water line to a holding tank

6.1.7.b Connect the concentrate line to the drain or waste line.

### 6.1.8 Membranes

5.1 Before operating the WERO4, membranes will need to be installed into the membrane housings. Follow the guide Pressure Vessel Preparation for correct installation procedure.

### 6.1.9 Electrical power connections

6.1 Before operating the WERO4 you will need to have power connected to the WERO4 control box. Provisions are made for mains power or electrical lead to be connected.

**WARNING:** All electrical connections must be made by a qualified electrician

## 7. Pressure Vessel Preparation / Membrane Installation Steps

1. The pressure vessels are all properly mounted in their respective positions. Refer to the pressure vessel manufacturer's instructions in the appendix to identify all vessel components. Inspect all O-rings on the end caps for proper fit. Lubricate all O-rings with glycerin.

2. Remove end cap from each membrane housing and lubricate the end spigot o rings.

3. Unwrap the membrane elements and place them on a clean surface to drain the preservative – usually sodium meta-bi-sulfite solution. Latex gloves should be worn when handling the elements and all surroundings should be kept in a clean state. Not all membranes are fluid preserved, some membranes will be dry packed and draining is not required.

4. First, all membranes should have brine seals on one end which becomes the feed end. The brine seals should be lubricated with glycerin. Follow flow direction to correctly install membranes.

5. On the downstream end of the first membrane, install one of the membrane adapters if applicable. (Lubricate all O-rings) . The membrane adapter will push into the product water tube of the membrane. This is located in the end cap of each end of the membrane housing.

6. Next, once correct direction is established push the membrane all the way into the housing. With mild force push the membrane home and into the end cap of the membrane housing.

7. Repeat this procedure to push the last membrane into the pressure vessel. 1 to 8 membranes should be installed this way. Should seating the adapter in the end-cap prove difficult, try tapping the downstream end cap to help align it with the adapter.

8. Finally, install the feed end end-cap assembly. Refer to the manufacturers' manual for complete installation instructions regarding the pressure vessels and membranes. Replace end cap and clamps, tighten clamp bolts so the membrane and housing are complete.

9. Connect pipe work unions, tighten and make leak free.

**NOTE:** Be careful not to roll any of the O-rings. Rolled, broken, or nicked O-rings will result in raw feed water entering the permeate tube of the membrane, which will reduce permeate water quality.

## 8. Start Up Procedure

1. Make sure all connections are made hydraulically and electrically. Ensure the system is leak free and safe to use. Turn on raw water and pressurize inlet to RO through pre filters.
2. Turn all panel switches to OFF position.
3. Make sure the pre filter cartridge has been installed and is tight and secure. Depress the red button on top of the pre-filter to bleed any air out of the housing. Bleed air until only water releases from housing.
4. Open the concentrate valve 2-3 turns
5. Turn power on to unit. Make sure the stop switch is turned on by twisting the red knob and switch will spring into on position.
6. Bleed air from HP pump. The bleed screw for the HP pump is located on the top of the pump stack. Turn screw until air is release from the pump stack. Tighten screw back up once water comes out of the bleed screw.
7. Open throttling valve on discharge side of HP pump. Open one full turn.

**CAUTION: Do not open throttling valve to full open position.**

8. Turn on Feed Pump switch to Manual position
9. Turn Flush Valve switch to AUTO position
10. Allow the system run this way for 10-30 minutes. Allow time for air to be bleed out to membrane housings and pipe work. Concentrate flow meter contents will look white and heavily aerated. run the system at low pressure until water in concentrate flow meter runs clear. The system is now ready to turn on.
11. Turn RO Pump panel switch to AUTO. The HP pump will start and run. Allow the system to run for another 5 minutes.

**NOTE: If the system shuts down on low or high pressure it is usually the result of air in the pipe work. The system may need to be re-started several times until it is free from air.**

12. Adjust the throttling valve on the HP pump to show 600KPA on the RO Pump gauge.
13. Adjust concentrate flow rate to desired level
14. Adjust recycle flow rate to desired level
15. Keep slowly adjusting flow rate valves and throttling valve until desired flow rates and pressures are achieved. Adjusting the recycle and concentrate valves will alter the product water flow. Run the system for 1-2hrs. If pressures and flow rates are stable and in the desired position, no further adjusting is required.
16. Make sure all product water is flushed to drain for the first 1-2hr of operation. This will allow enough time to flush membranes and pipe work of any foreign matter.

17. Check for leaks, make sure all leaks are fixed and system is leak free.
18. Check over system and make sure it is safe to use.

**Your system is now ready for production of pure water.**

**WARNING:** Make sure the membranes are not over pressurized by opening the throttling valve beyond the system design. When membranes are new they will allow more water to pass and achieve higher than desired flow rates. Do not run membranes at full system capacity as they will prematurely fail.

If you are unsure consult your water treatment expert for advice on membrane and system flow rates.

## 9. Machine Maintenance

The WERO4 requires minimal maintenance to operate. The following is a step by step guide to maintaining your WERO4.

1. Change pre filter regularly. Keeping the pre filter clean will ensure that the system is free from foreign matter. Follow the shut down and start up guide to turn the WERO4 off and on.
2. Turn the machine off daily and turn back on. This will open the flush valve and purge the system. It is a good practice to purge your WERO4 daily.
3. Visually inspect your WERO4. Perform routine inspections of the WERO4. Fix any leaks that appear and make sure the system is in good order.
4. Daily Log. Keep a daily log of flows and pressures. On a daily log write down the feed, RO pump, Concentrate pressure readings. On the same log write down the flow rates in the rota-meters. This will allow for trending and identify problem with membrane fouling.

## 10. Shut Down Procedure

The WERO4 will automatically shut down and go into standby mode when called by the ROC. Multiple functions ie product tank high level, feed tank low level. The machine will sit idle waiting for a signal from the ROC to begin production.

If the WERO4 needs to be shut down manually then the shut down procedure should be followed.

1. In an emergency push the red stop button on the front panel of the control box. The system will automatically shut down and stop production.
2. If the system needs to be turned off. Turn all 3 position switches on the control box to the off position. Push in the red stop button.
3. Isolate the all valves.
4. If the system is turned off for long periods of time then a preservative may be used to prevent fouling and degradation of the membranes.



# 11. Reverse Osmosis Controller

11.1 ROC-8221 is a combined control instrument of a single-stage reverse osmosis controller and double-channel on-line conductivity instrument. It can perform the operational test, status control and the on-line monitoring of inlet water, producing water, the temperature of the water and desalinization ratio of the water quality conductivity, displayed by LCD large screen. The interface is friendly, menu-driven operation is used; multiple group parameter can be set and modified. The requirement of automatic operation of the multiple controlling ways of the reverse osmosis system can be met.



Diagram 1 ROC-8221 Reverse Osmosis Controller Appearance

## Features

1. LCD large screen with back light, monitor and display of double-channel conductivity meter, The monitor will display both channels at the same time, Temperature of the medium, desalinization rate can be displayed on the same screen. The measurement range of conductivity for raw water and product water. 0 - 20.00µS/cm Product water and 0 -200.0µS/cm Feed/Raw water.
2. Intelligent microchip for data processing, friendly and easy operation interface; Menu-style operation, if multiple parameters are needed they can be inputted or modified; kinds of requirement can be satisfied. Multifunction, simply operation, supports kinds of executors and running modes.
3. Three system protections (dampness, static, rot) make the controlling system strong enough to endure the high damp and rugged environments. Test ports of the reverse osmosis controller adopt low pressure up-draw electrical bit. Photo electricity input is isolated with high anti-jamming capability. Reference points adopt passive output to drive the contact device directly.

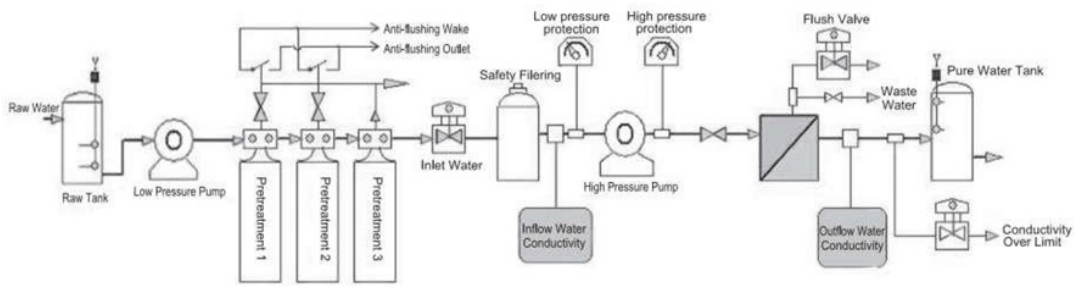


Diagram 2a First -stage reverse osmosis flow with raw water reserve tank

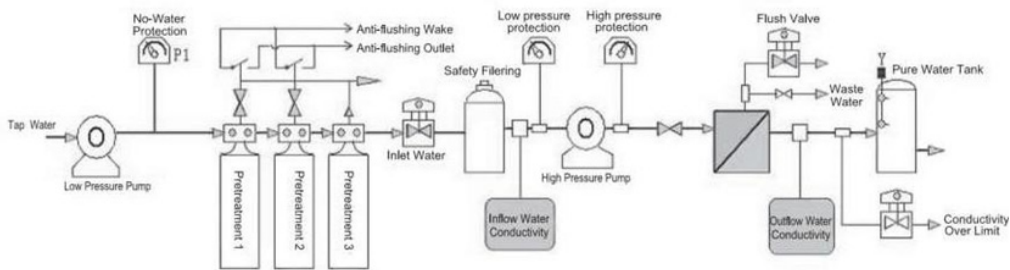


Diagram 2b First-stage reverse osmosis flow with direct pipeline water supply

## 11.2 Function and Main Technical index

### Function

#### **Output controlling function :**

Low-pressure pump ,inlet water valve, high-pressure pump, flushing valve, over-limit output water drain valve can be controlled according to the alarm signal and flow time parameters such as the start time the low-pressure pump, start-flushing time ,normal-flushing time, running flushing time, waiting flushing time, timing interval etc can be set by the user.

#### **Main input signal:**

Feed tank high liquid level, feed tank low liquid level, low pressure alarm, high pressure alarm, pure water high liquid level, pure water low liquid level, pretreatment engaging the back flush process.

#### **Pretreatment back flush linkage function:**

When pretreatment steps into back flush status, if there are no standby system inputs, the water supply is not available and by closing the status signal contact point, the RO system will recognize the pretreatment back flush status, stopping the machine automatically. The RO system will start working only the back flush is over. When the pretreatment mode is low-pressure pump on, the low-pressure pump will open till the signal disappears. And when the pretreatment mode is low-pressure pump off, the output will be closed in the pretreatment process.

#### **Automatic flushing function:**

The system will start flushing automatically when the system starts, full-water stop, and continuous service can be set. Flushing time and interval can be set in menu and the functions can be closed respectively. (Flushing time set at "0")

#### **Waiting flushing function:**

When the water is full and RO system stops, the system will wait until the interval time is reached and then membrane flushing will start to avoid the growing of the bacteria in the film cavity. The waiting flushing time can be set in the menu

#### **No-water protection function:**

The alarm information bar of the displaying interface will show No Water alarm , if the raw water is stopping. RO controller will stop the system realizing no-water protection. The controller will scan and test the water-supply on-off status with no interval till the pressure of the untreated water is resumed, then the system will start again. There are 2 kinds of the No water alarm of the raw water signal, reference to the Feed Tank Level type setting.

#### **Low-pressure protection function:**

To avoid failures of pretreatment and security filter ,high-pressure pump appearing empty, system without low-pressure protection function, such as low-pressure shortage ,the system will stop the machine, display low-pressure alarm . Though the low- pressure on-off has already been on. RO controller will try to start only one minute later, if the water pressure is satisfying, the process of producing water will go on. if three times try all fail, the system will be on a deadlock status and the info-bar will show 'system locked automatically', the system waits until the failure being removed by the workers , then the system stop and power-on again ,or press the ' back 'key to stop the machine and start it again.

**High pressure protection functions:**

If high pressure appears at the high-pressure side (before the membrane) .The RO controller sends out a high-pressure alarm and stops the RO system, the controller then tries to start one minute later. If the pressure is normal, the water-producing process will go on. If the system fails 3 times in a row it will be in a deadlock status.

**Controlling of the liquid level of product water tank:**

The RO controller starts the RO system according to the condition of the liquid level of product water tank. The controller will stop the machine at a high liquid level, starting automatically at a low liquid level, stopping the machine from continuous running. The controlling mode of the liquid level of the product water tank can be set by the user according to the system.

**Conductivity over-limit alarm function:**

If the measuring value of conductivity exceeds the set-value, the normally open contact point of the controlling relay will switch to On from Off, a solenoid valve will be opened to discharge the contaminated water. When the value reduces to the low limit value the solenoid valve will close.

**NOTE: FOR MORE INFORMATION ROC8220 MANUAL IS PROVIDED SEPARATELY TO THIS MANUAL**

## 12. Trouble Shooting

The following is a guide to trouble shooting your WERO4.

<b>Problem or Issue</b>	<b>Probable Cause</b>	<b>Remedy</b>
System does not turn on.	No power	Check power supply for connection
	Low pressure on inlet to WERO4	Check controller for operational status
		Check inlet valve is open
		Check inlet solenoid is operating
		Check cartridge filter for blockage
	Product water tank full	Check tank is full
		Check high level float for operation
	Feed tank low level	Check feed tank is low
Check low level float for operation		
Feed Pump will not start	Pump has failed electrically	Check Circuit breaker/ reset
		Check Overload has tripped/ reset
	Motor temperature	Check temp and allow to cool
HP pump will not start	Pump has failed electrically	Check circuit breaker/ reset
		Check Overload has tripped/ reset
	Motor temperature	Check temp and allow to cool
HP pump low flow	NO/low flow from HP pump	Check inlet solenoid for operation
		Check pre filter for blockage and replace
		Bleed air from pump stack
High membrane pressure	Membranes are blocked	Clean membranes or replace
	Throttling valve open	Reduce the flow/ pressure by turn the throttling valve down
	Incorrect concentrate and recycle valve position	Adjust valves to release membrane pressure.
Low membrane pressure	HP pump off	Check pump HP pump for operation
	Throttling valve shut	Adjust throttling valve to increase flow/ pressure
	Blockage	Check inlet pre filter



