USER MANUAL FOR RO 11

Congratulations!! We thank you for purchasing the RO control Panel.

1. OPERATING LOGIC

Keep “Panel Power on” switch in ON mode, if the level of permeate tank is low then raw water pump starts and the reject solenoid valve will open for a programmed time for flushing the membrane. After the flush time is over the advance microcontroller will check for low pressure input LPS signal, if the signal is ON, the high pressure pump will start after the set de-bounce time. The de-bounce time helps in avoiding unnecessary chattering of the high pressure pump contactor due to initial dipping in the suction pressure.

This panel is also equipped to suit the application with auto multiport valve treatment and gsm connectivity.

2. STARTING SEQUENCE

After switching ON the power supply of the RO controller, it checks for the following inputs

1) If the level of the permeate tank is low, the raw water pump will starts and the reject solenoid valve will open for a pre programmed time period.
2) After flushing is over the advance microcontroller will check for low pressure input signal (LPS), if the signal is ON, the high pressure pump will starts after the set de-bounce time.

3. STOPPING SEQUENCE

Under following condition RO controller will stop its operation.

1. If power ON switch kept in OFF mode.
2. If auto/manual switch operate on manual mode.
3. If treated water tank becomes full.
4. If high pressure switch is ON.

4. TRIP SEQUENCE AND CASUSES

Under following condition RO controller will trip

1. Overload: Raw water pump(RWP) / High pressure pump (HPP)
2. Dry run: High pressure pump(HPP) / High pressure pump (HPP)
3. EHC (extreme high current) : High pressure pump (HPP) / Raw water pump(RWP)
4. Conductivity above the set limit.
5. High or Low pressure
6. High or Low Voltage
7. RWT empty
8. TWT Full
9. Auxiliary 1 & 2 inputs activated

If any of the above condition occurs, then high pressure pump stops (HPP) and Raw water pump (RWP), flushing solenoid valve will open for a pre programmed time.

5. PARAMETER SETTING METHOD

1) Auto setting of RWP and HPP overload - Once all connections are made keep "Set" Switch Pressed and Start "Power ON" Mode, Panel will measure pump currents and set overload automatically.
2) Auto/Manual key: for starting settings ,keep this key in manual mode
3) ↑ : This key used for increment the settable parameter.
4) ↓ : This key used for decrement the settable parameter. This key also has a reset function at fault condition.
5) Accept: This key used to store the settable parameter.
6) Setting: keep this key pressed to enter setting menu.
7) Put on the 'Auto/Manual' switch in manual mode, after completing the system OFF process press “Setting” switches till display shows Enter password.
8) Use '↑ 'arrow key for increment the number and '↓ ' arrow key for curser shifting to the next position. Operator password is 1234 (menu 1 to 6) & master password is xxxx (menu 1 to 30) with dealer.
9) After entering the four digit password press 'Accept' key. If password ok, Ro controller enters in the setting mode or if password is wrong display shows invalid and allows entering password again.

Using '↑ 'arrow and '↓ ' arrow key scroll the setting menu and 'Accept' key is used to select the parameter and store the selected parameter setting.

6. MENU DESCRIPTION FOR SETTING

1. RWP OL & DRY:

Set the overload and dry run trip current of raw water pump (RWP).

2. HPP OL & DRY:

Set the overload and dry run trip current of high pressure pump (HPP).

3. HPP OPRN delay

Set the high pressure pump (HPP) de-bounce ON/OFF time delay.

4. Conductivity

Set the conductivity alarm set point and alarm ignore time delay

5. Tank float: RW tank float/TW tank float

Set the treated water tank float signal ON/OFF

6. **LPS & HPS SW**

   Set the low pressure switch (LPS) and high pressure switch (HPS) signal ON/OFF

7. **Flow constant**

   Set the flow constant pulse count per liter for flow sensor.

8. **RWP trip delay**

   Set the overload and dry run trip time delay of raw water pump (RWP).

9. **HPP trip delay**

   Set the overload and dry run trip time delay of high pressure pump (HPP).

10. **DRY Auto-start timer for RWP**

    Set the dry run auto start function of raw water pump (RWP)

11. **Flushing VLV (on timer)**

    Set the reject solenoid valve ON time duration

12. **Auto flushing (interval valve ON)**

    Set the auto flushing time interval and reject solenoid valve ON time duration at the time of auto flushing.

13. **Power On Time**

    Set Power on delay timer for auto mode.

14. **Aux IP1 & IP2**

    Set the auxiliary input 1 & 2 as follows

    OFF- Disable the auxiliary input.

15. **MPV operation**

    Set the auto multiport valve operation ON/OFF and select multiport valve manufacturer and also can set MPV service time.

16. **Auxiliary O/P (output)**

    Set the auxiliary output as follows

    OFF- disable the auxiliary output

    Alarm- output will be ON at the time of every fault condition

    DOSING- Connect the dosing pump, output on with the hpp

17. **New password**

    Set the 4- digit new password for parameter setting

18. **Check RWP relay O/P**

    In this menu you can ON and OFF the RWP relay output using ↑ and ↑ key also display the RWP current.

19. **Check HPP relay**

    In this menu you can ON and OFF the HPP relay output using ↑ and ↑ key also display the HPP current.

20. **Check Solo relay**

    In this menu you can ON and OFF the solenoid relay output using ↑ and ↑ key.

21. **Check float**

    In this menu you can check the float signal high and low.

22. **Check LPS & HPS**

    In this menu you can check the LPS and HPS switch signal high and low.

23. **Check Aux I/P**

    In this menu you can check the Aux1 IP signal high and low.

24. **Check Flow**

    In this menu you can flow sensor working.

25. **Cal Cond / TDS (conductivity calibration)**

    In this menu you can calibrate the conductivity sensor with actual conductivity reading.

26. **Check Aux O/P**

    In this menu you can ON and OFF the third relay output using ↑ and ↑ key.

27. **Set HV/LV**

    In this menu you can set high and Low cut off voltage.

28. **Cal Prod Flow**

    In this menu you check Flow sensor pulses for production flow.

29. **Cal Reject FL**

    In this menu you check Flow sensor pulses for reject flow.

30. **Escape:**

    In this menu you can exit from setting menu.

Note:

1. Parameter 18 to 27 is in auto fault testing section.
2. Display scroll on & off facility

When plant is on, press “Accept” switch for 5 secs to start and stop the scroll, you can also use ↑ & ↓ switch to change display matter.

SR.NO	Parameter	Range	Default
1	RWP OL & DRY (Raw water pump overload & dry run trip current)	Overload : 1A - 25A Dry run : OFF 1A- 25A	5A OFF
2	HPP OL & DRY (High pressure pump overload & dry run trip current)	Dry run : OFF 1A- 25A Overload : 1A - 25A	10A OFF
3	HPP OPRN delay (High pressure pump on time delay)	(De bounce) On delay: 01-99sec HPP OFF delay: 01-99 sec	15sec 15sec
4	Conductivity (High conductivity alarm & ignore time delay)	Alarm:OFF-01-999uSM Ignore time: 01-60min Refresh Time	80uSM 02min 45 Sec.
5	TW(permeate) tank float RW tank float (Permeate tank & raw water tank float setting)	Float signal : ON/OFF Float signal : ON/OFF	ON ON
6	LPS & HPS SW (Low pressure & high pressure switch on/off)	LPS signal : ON/OFF HPS signal: ON/OFF	ON ON

Setting parameter 7- 29 available with master password. (Available with dealer)

SR.NO	Parameter	Range	Default
7	Flow constant (Set flow pulse counT per liter for flow sensor)	Pulse per/ liter:OFF-05-3000	OFF
8	RWP trip delay (Raw water pump over load & dry run trip time delay)	Overload : 01- 30 sec Dry run : 01-180 sec	15 sec 180 sec
9	HPP trip delay (High pressure pump overload & dry run trip time delay)	Overload : 01- 30 sec Dry run : 01-180 sec	15 sec 180 sec
10	DRY auto- start timer for RWP (If raw water pump is off because of dry run it will automatically start after set time delay)	Operation: ON/OFF Time: Off-5-720min	OFF OFF
11	Flushing VLV (ON timer) (Flushing valve on time duration)	Time: Off-5-100sec	15sec
12	Auto flushing interval	Operation: ON/OFF Interval Period: 01-720min Valve ON time: 05-100sec	OFF 60min 15sec
13	Power On timer	Power On Timer: 03 – 300 sec	60 Sec
14	Aux IP1 & IP2 (Set the auxiliary input1 & 2)	Aux IP1: OFF Aux IP2: OFF	OFF OFF
15	MPV operation (To ON/OFF multiport valve operation)	Operation : ON/OFF	ON
16	Auxiliary O/P (Set auxiliary output from options)	OFF Alarm Dosing	DOSING
17	Change Password (To change panel setting password)	4 digit password	1234
18	Set High Voltage / Low Voltage	HV - 240 - 280 LV - 150 - 200	270 150

TERMINAL CONNECTION

INPUT		HPP		RWP		FLUSH VALVE		DOSING		LPS		HPS		RW FLOAT NO	RW FLOAT C	TW FLOAT		AUX I/P			CONDUCTIVITY SENSOR		FLOW2		
P	N	P	N	P	N	P	N	P	N	NO	C	NO	C	NO	C	NO	C	NO	C	NO	NO	C	R	G	B

FLOW1			
R	G	B	

MPV		SER	
C	NO	C	NO

TROUBLESHOOTING CHART

SR NO	LED BLINKING	MESSAGE ON DISPLAY	CAUSE AND ACTION
1	Fault	Fault: Overload	When current crosses the set trip current 1.Check cause of increase current 2.Check overload trip current
2	Fault	Fault: Dryrun	When current goes below the set trip current If tank is empty If current transformer is faulty
3	Fault	Fault: RWP EHC	If RWP motor current is 2 times more than normal rating please check the motor
4	Fault	Fault: HPP EHC	If HPP motor current is 2 times more than normal rating please check the motor
5	Fault & LPS	Fault: LPS	Pressure lower than set value Increase pressure or reduce set point
6	Fault & HPS	Fault: HPS	Pressure higher than set value Reduce pressure or reduce set point
7	Fault & conductivity	Fault: Conductivity	High conductivity in the line or set point is low in that case increase the set point
8	Zero Flow	Flow rate remains zero on display	Check sensor connecting wiring Check flow sensor setting Remove sensor from line and check for any obstacle
9	RWT Empty	RWT Empty	Check for water in RWT Check float Connection
10	Product Tank full	Fault: TW full Product tank full	Check water in treated tank(product tank) Check float connection
11	Display Dead	Panel Display OFF	Check presence of power at input Check power on switch position

WIRING CONNECTIONS IN CASE OF AUTO MULTIPORT VALVE

1) **Initiative**

   For initiative multiport valve selection goes to setting menu option 15. MPV Operation

   Turn on MPV interface and select Initiative valve option. If want to set MPV service time you can set that time up to 720 minutes. When plant runs for set service time in auto mode then panel gives command to MPV for backwash.

2) **Runxin**

   For initiative multiport valve selection goes to setting menu option 15. MPV Operation

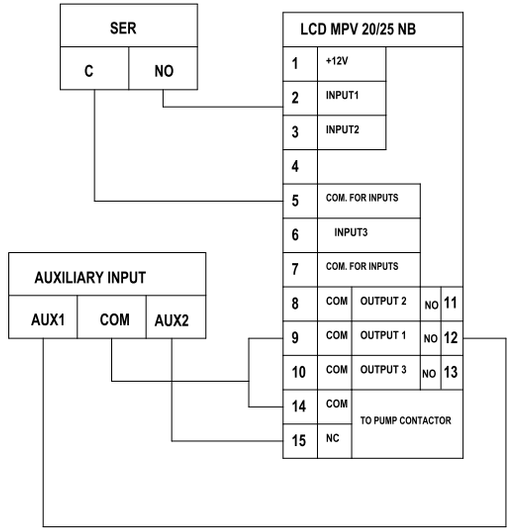
   Turn on MPV interface and select Runxin valve option.

Note: Connections for flushing solenoid valve is directly for terminal P for phase and N for neutral. Ensure solenoid valve coil voltage is 230VAc & valve is normally closed type.

AUTO MULTI PORT VALVE CONNECTIONS FOR RO CONTROL PANEL

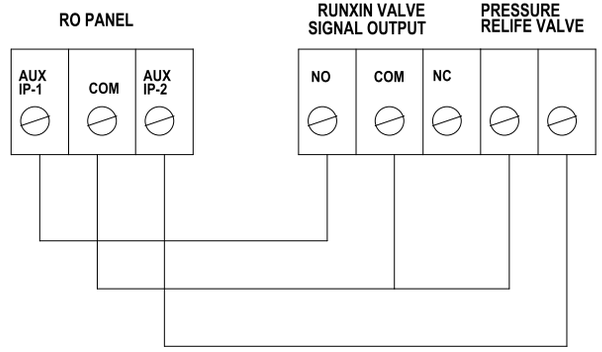
INITIATIVE MULTIPORT VALVE CONNECTION USING SERVICE RELAY

MVP: IN MPV ENTER PASSWORD 84
SENSOR: NONE AUX1 O/P: MODE 8, AUX1 I/P: PULSE



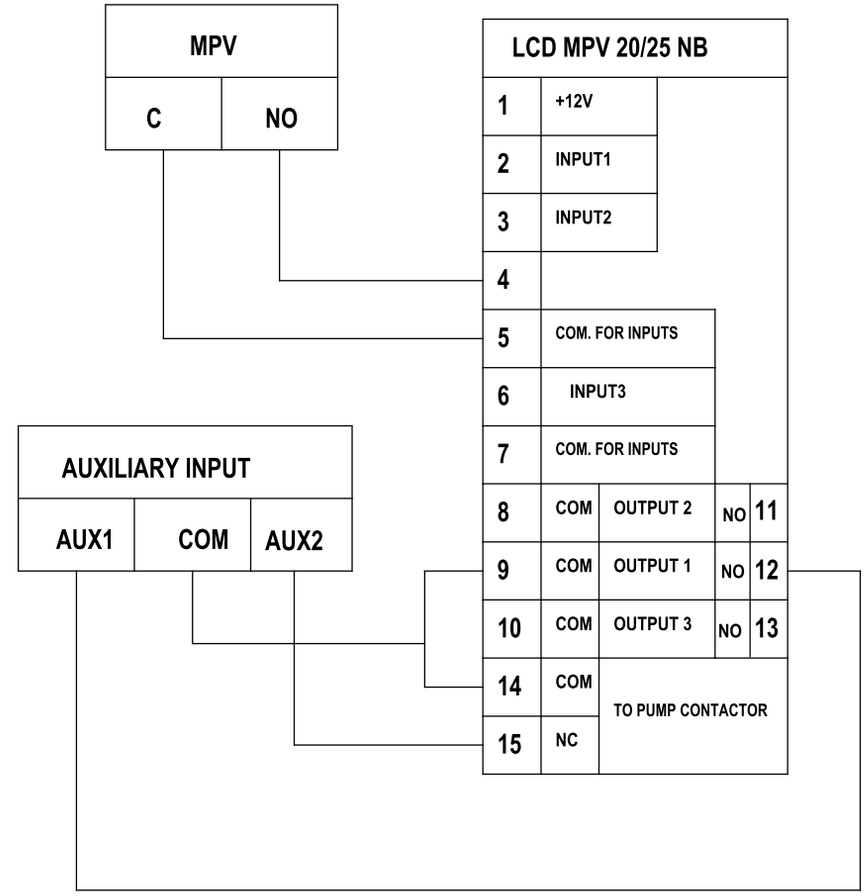
RUNXIN MULTIPORT VALVE CONNECTION

MPV : MODE : b - 01



INITIATIVE MULTIPORT VALVE CONNECTION USING PLANT ON TIME

MPV: IN MPV ENTER PASSWORD 84
SENSOR: NONE AUX1 O/P: MODE 8

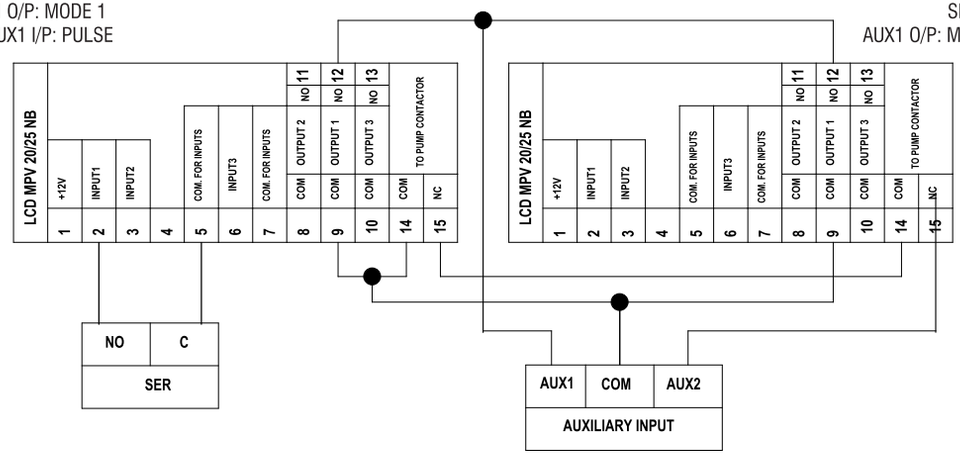


AUTO MULTI PORT VALVE CONNECTIONS FOR RO CONTROL PANEL

TWO INITIATIVE MULTIPORT VALVE CONNECTION USING SERVICE TIME

MPV 1:
IN MPV ENTER PASSWORD 84
SENSOR:NONE, AUX1 O/P: MODE 1
AUX3 O/P: MODE 6, AUX1 I/P: PULSE

MPV 2:
IN MPV ENTER PASSWORD 84
SENSOR:NONE
AUX1 O/P: MODE 1, AUX1 I/P: PULSE



TWO INITIATIVE MULTIPORT VALVE CONNECTION USING PLANT ON TIME

MPV 1:
IN MPV ENTER PASSWORD 84
SENSOR:NONE
AUX1 O/P: MODE 1
AUX3 O/P: MODE 6
AUX1 I/P: PULSE

MPV 2:
IN MPV ENTER PASSWORD 84
SENSOR:NONE
AUX1 O/P: MODE 1
AUX1 I/P: PULSE