

# RSC Max System Controller

**STARTUP MANUAL** 



It is the installer's responsibility to read, understand, and comply with these instructions. Please follow all OHSA safety regulations and local codes.

The RainFlo RSC Max offers simple to use, all in one monitoring, automation, and control. For ease of use, each system controller includes a color touch screen human machine interface (HMI) for clear viewing and easy adjustments of functions and parameters. Follow the steps below to configure your RainFlo RSC Max.

**PLEASE NOTE:** All images in this manual include a **default numerical nomenclature.** The numbers are placeholders and are not representative of the data that should be entered into the fields. The images are included for visual reference.

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# **1. PLC VOLTAGES**

The PLC is powered by 120VAC and 24VAC.

# **2. STARTUP INSTRUCTIONS**

#### **Overview Screen**

When the PLC is powered on, an Overview screen will appear. Press the Menu button and choose Output Setup. NOTE: Alarms will only appear on the Overview screen.

Press Reset under flow totalizer when the flow total needs to be reset to zero or for tracking flow totals daily, weekly, monthly, or yearly.



## **Output Setup Screen**

Configure the pressure setpoints and the ozone run time.



Enter the Pressure Cut In/Out Setpoints in PSI. The minimum or cut in PSI is when the system will go into source mode from recirculation mode. The maximum or cut out PSI is when the system will go from source mode back to recirculation mode. Enter these based on system PSI.

Set the time frame to run ozone (military time). This will be in hours only. For example, if you want the ozone to run from 5 AM to 5 PM, enter 5 in Start Hour, and 17 in Stop Hour.

#### **Tank Configuration Screens**

Set the tank level for your storage tank.



Choose the tank style: Rectangle, Cylinder, or Capsule.

Once the tank style is chosen, input the tank parameters:

- · Rectangle: length, width, and height
- · Cylinder: height and diameter
- Capsule: length and diameter

If tank 2 is used repeat the steps in the Tank 2 Configuration screen.

## Limits Configuration Screen

There are four feed and valve level low and high limits and the pre filter rinse to set based on the application.



Domestic Start/Stop Level

- Start (low)- Lowest level (%) the tank can be before it switches from system water to domestic backup water.
- Stop (high)- Level (%) that the water in the tank needs to reach before it switches out of domestic water, back to system water.

Feed Valve Start/Stop Level

- Start (low)- Level (%) the water in the tank needs to be before a secondary water source adds water to the tank.
- Stop (high)- Level (%) that the water in the tank needs to reach before it switches off the secondary water source to the tank.

Transfer Start/Stop Level

- Start (low)- Level (%) the water in the tank needs to be to turn off the overflow transfer valve.
- Stop (high)- Level (%) the water in the tank needs to be to turn on the overflow transfer valve.

Total Drain Stop Level

• Lowest level (%) tank can go before turning off the drain valve. Pre Filter Rinse Run Time

- Set the frequency (hour or day) and the duration (minutes) of the pre filter rinse function.
- NOTE: Must choose hours or days. To enable rinsing on an hourly basis, set the hour frequency between 1 and 23 hours. To enable rinsing on a daily basis, set the desired number of days accordingly. Example: setting the frequency to 3 days will start a rinse cycle for the duration set every third day.
- Duration: 1 min (suggested)

## **ACF Flush Control & Configuration Screen**

Set the time and frequency of the auto clean filter feature.



Delta, or Differential, Pressure Setpoint

- The maximum pressure difference between pre ACF pressure and post ACF pressure before the ACF flushes itself. This number must be between 1 and 20 PSI.
- Flush Duration
  - Set from 1 to 30 seconds
- Max Flushes per hour
  - Set from 1 to 10 times per hour
- Initiate Self Clean
  - Manual ACF flush button, will stay on for the time in flush duration
- Reset Alarm/Trip
  - Resets the ACF flush count and puts the system out of domestic bypass and back to normal operation if the max flushes per hour was exceeded

#### **HMI Control Screen**

Ability to manually open and close valves listed on the HMI screen.



The domestic bypass valve, overflow transfer valve, feed valve, total drain valve, and pre filter rinse valves can be controlled manually by toggling the start and stop buttons next to each valve. The Start and Stop buttons MUST be untoggled for the system to go back into normal operation. To put the source and recirc valves into manual, first push the Off button, then stop and start the valves as needed. Only one of these valves can be open at a time. The Off button MUST be untoggled for the system to go back into normal operation again.

#### Maintenance Alerts Screen

Set the desired maintenance frequency. Recommended frequencies are:

- System 90 days (suggested)
- UV 365 days (suggested)
- Filter dependent on water quality



#### **Discrete and Analog I/O Screens**

A quick overview of the PLC capabilities and the valves and functions this system can offer. The buttons can be toggled to turn off certain inputs and outputs.

| MENU       | DISCRET                | E IO | <b>RAIN</b> FLO                     |
|------------|------------------------|------|-------------------------------------|
| DO1<br>DO2 | FEED VALVE             | DI1  | DOMESTIC BYPASS OPEN LIMIT          |
| DO3        | PRE FILTER RINSE VALVE | DI2  | DOMESTIC BYPASS BUTTON              |
| DO4        | DRAIN VALVE            | DI3  | SYSTEM SHUTDOWN BUTTON              |
| DO5        | DOMESTIC BYPASS        | DI4  | DOMESTIC BYPASS CLOSED LIMIT SWITCH |
| DO6        | SOURCE VALVE           | DI5  | SOURCE VALVE OPEN LIMIT             |
| DO7        | RECIRCULATION VALVE    | DI6  | SOURCE VALVE CLOSED LIMIT SWITCH    |
| DO8        | ACF FLUSH VALVE        | DI7  | RECIRC VALVE OPEN LIMIT SWITCH      |
| DO9        | SPARE VALVE            | DI8  | RECIRC VALVE CLOSED LIMIT SWITCH    |
| DO10       | OZONE POWER            |      |                                     |
|            |                        |      |                                     |
|            |                        |      |                                     |

MENU

| Al1  | TANK 1 LEVEL TRANSDUCER  |
|------|--------------------------|
| Al2  | TANK 2 LEVEL TRANSDUCER  |
| Al3  | PRE-ACF PSI SENSOR       |
| Al4  | DOMESTIC PSI SENSOR      |
| AI5  | POST-ACF PSI SENSOR      |
| Al6  | ORP SENSOR               |
| Al7  | UV INTENSITY             |
| Al8  | SOURCE OUTPUT PSI SENSOR |
| Al9  | PUMP PRESSURE PSI SENSOR |
| AI10 | FLOWMETER                |
|      |                          |

ANALOG IO



# Clock

This is the clock used for run times in the system. To reset the clock, push the Input Current Hour button and enter the hour in military time. Then input the current minute in minutes and current seconds in seconds, then press Reset Clock. The Current Time should be displayed at the top of the screen.







# Wiring



#### **Analog Inputs**

- TB-1: Tank 1 level transducer
- TB-2: Tank 2 level transducer
- TB-3: Pre ACF PSI sensor
- TB-4: Domestic PSI sensor
- TB-5: Post ACF PSI sensor
- TB-6: ORP sensor
- TB-7: UV intensity sensor
- TB-8: Source output PSI sensor
- TB-9: Pump PSI sensor
- TB-10: Flowmeter

Back Row: 24VDC+ for analog inputs



## **Discrete Inputs**

- TB-11: Domestic bypass open limit
- TB-12: Not used
- TB-13: Not used
- TB-14: Domestic bypass closed limit
- TB-15: Source valve open limit
- TB-16: Source valve closed limit
- TB-17: Recirculation valve open limit
- TB-18: Recirculation valve closed limit

Back Row: 24VDC+ for discrete inputs



**24VDC Outputs** TB-19: Not used TB-20: Feed valve 24VDC TB-21: Transfer valve 24VDC TB-22: Pre filter rinse valve 24VDC TB-23: Drain valve 24VDC Back Row: 24VDC negative for discrete outputs



## 24VDC Valves and 120VAC Outputs

- TB-24: Domestic valve 24VDC+ from 12 of relay
- TB-25: Domestic valve 24VDC -
- TB-26: Domestic valve 24VDC+ from 14 of relay
- TB-27: Not used
- TB-28: Source valve 24VDC+ from 12 of relay
- TB-29: Source valve 24VDC- from 22 of relay
- TB-30: Source valve 24VDC+ from 14 of relay
- TB-31: Source valve 24VDC- from 24 of relay
- TB-32: Recirculation valve 24VDC+ from 12 of relay
- TB-33: Recirculation valve 24VDC- from 22 of relay
- TB-34: Recirculation valve 24VDC+ from 14 of relay
- TB-35: Recirculation valve 24VDC- from 24 of relay
- TB-36: ACF flush valve+ from 12 of relay
- TB-37: ACF flush valve- from 22 of relay
- TB-38: ACF flush valve+ from 14 of relay
- TB-39: ACF flush valve- from 24 of relay
- TB-40: Ozone power 120VAC L
- TB:41: Ozone power 120VAC N



**120VAC Hookups** TB-L: 120VAC L TB-N: 120VAC N

# **3. TROUBLESHOOTING**

| Issue                         | Solution  |
|-------------------------------|---|
| Basic functions               | <ul> <li>If system does not have power, check disconnect with multimeter to check power</li> <li>If the domestic bypass, feed valve, or total drain are not starting and stopping at correct levels, check the limits configuration (page 4)</li> </ul>   |
| No reading on HMI             | Ensure tank configuration has been com-<br>pleted   |
| Inaccurate tank level reading | <ul> <li>Ensure the height dimension in the tank configuration is based on max fill height (Not total tank height which includes any dimensions over the overflow)</li> <li>Change level transducer height to match the suction height on tank</li> </ul> |
| No or low pressure            | <ul><li>Troubleshoot the pump</li><li>Check pipe for damage or debris</li></ul>   |

# 4. WARRANTY

RainFlo products are covered by a one-year limited warranty from the date of purchase. The warranty only applies to materials and workmanship and does not cover incidental damage to other property. Warranty does not apply to incorrect handling, use, assembly, or installation. Within the warranty period, we will repair or replace the defective component at our discretion. Return shipping is not included. If failure is a defect in materials or workmanship, the product will be repaired or replaced and returned free of charge. Please refer to RainHarvest Systems' terms and conditions of sale for other applicable details and restrictions.



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