

## Setting up and Wiring Conductivity Sensors on CBWs

This document describes wiring and configuring conductivity sensors on a CBW. The CBW supports up to 3 conductivity sensor. These sensors are Rosemont submersion/immersion toroidal sensors model 226-56. They connect to Rosemont model 1056 analyzers. The analyzers then connect to an A/D board on the CBW.

### Operation

The CBW monitors the conductivity in the press / extractor tank, the pulse flow tank, and the incoming water line.

#### Press / Extractor tank operation

If the conductivity in the press tank is above a programmed maximum value, a fresh water valve turns on in the last module of the CBW. This valve turns on during pulse flow and stays on until the conductivity drops below a programmed minimum value. If the valve stays on longer than a programmed time, a warning is displayed.

#### Pulse Flow Tank Operation

If the conductivity in the pulse flow tank is above a programmed maximum value, the tank is drained and refilled with fresh water. If the conductivity is still over the maximum value after refilling, a warning is displayed.

#### Incoming water

The conductivity of the incoming water is displayed on the Mentor run screen for reference only. It does not affect conductivity control in the press tank or the pulse flow tank.

### Configuring the Analyzer

When the analyzer is powered up for the first time, it goes in to quick start mode. To select a menu option, press the “Enter” button. To move up and down, press the buttons above and below the “Enter” button. Configure the analyzer as follows:

1. Language – Select “English”
2. S1 Model – Select “226”
3. S1 Measurement – Select “Conductivity”
4. S1 Cell Constant – Hit “Enter” to select the default value
5. S2 Model – Select “226”
6. S2 Measurement – Select “Conductivity”
7. S2 Cell Constant - Hit “Enter” to select the default value
8. Upper – Select “Measure 1”
9. Center – Select “Measure 2”
10. Temp Units – Select “°F”
11. Ambient AC Rejection Frequency – Select “60 Hz”

A screen showing the conductivity readings for the two meters should be displayed.

1. Press “Menu” to configure the outputs from the analyzer.
2. Select “Program”
3. Select “Outputs”
4. Select “Configure”
5. Select “Output 1”
6. Select “Range”
7. Select “0-20mA”
8. Press “Exit”
9. Select “Output 2”
10. Select “Range”
11. Select “0-20mA”
12. Press “Exit”
13. Press “Exit”
14. Select “Range”
15. Select “O1 S1 20mA”
16. Change the value to “+3000uS/cm”. Use the button to the left and right of the “Enter” button to move left and right. Use the up and down buttons to change the numbers. Make sure to change the units from mS/cm to uS/cm by using the up and down buttons.
17. Press “Enter” when done.
18. Select “O2 S1 20mA”
19. Change the value to “+3000uS/cm”. Use the button to the left and right of the “Enter” button to move left and right. Use the up and down buttons to change the numbers. Make sure to change the units from mS/cm to uS/cm by using the up and down buttons.
20. Press “Enter” when done.
21. Press “Exit”
22. Press “Exit”
23. Press “Exit”
24. Press “Exit”

## **Configuring Mentor**

Conductivity control is enabled by setting the program constant “Number of Conductivity Meters”. Below are the constants and timers related to conductivity. The constants are under “Pulse Flow” on the program constants page. The timers are under “Pulse Flow Timers” on the output timers page

### Program Constants

- **Number of Conductivity Meters** – Set to 3 to enable full conductivity control. If this is set to 2, the incoming water conductivity is not displayed. If set to 1, only pulse flow tank control is enabled. Set to 0 to disable conductivity control
- **Max Conductivity in Press Tank** – Set to the maximum conductivity allowed in the press tank. See Press / Extractor tank operation above.

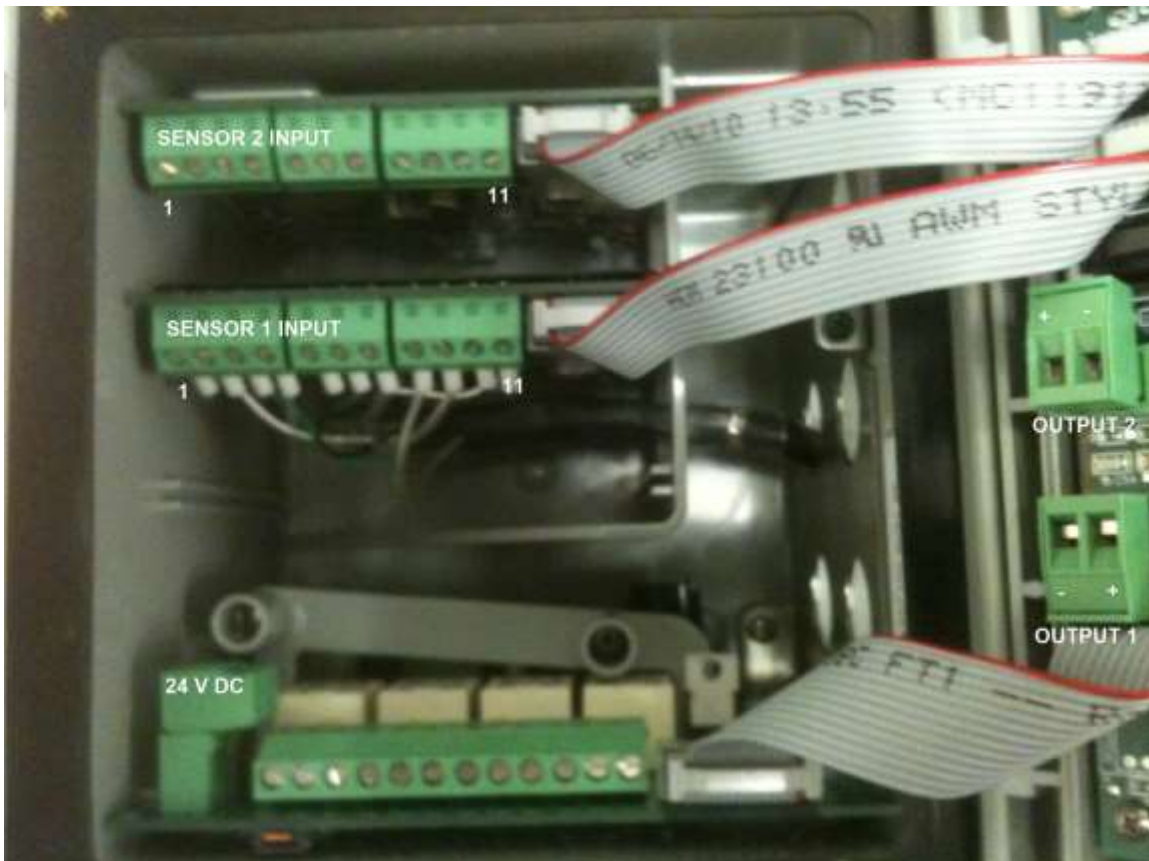
- **Min Conductivity in Press Tank** – Set to the minimum conductivity desired in the press tank. See Press / Extractor tank operation above.
- **Max Conductivity in Pulse Flow Tank** – Set to the maximum conductivity allowed in the pulse flow tank. See Pulse Flow Tank operation above.

### Output Timers

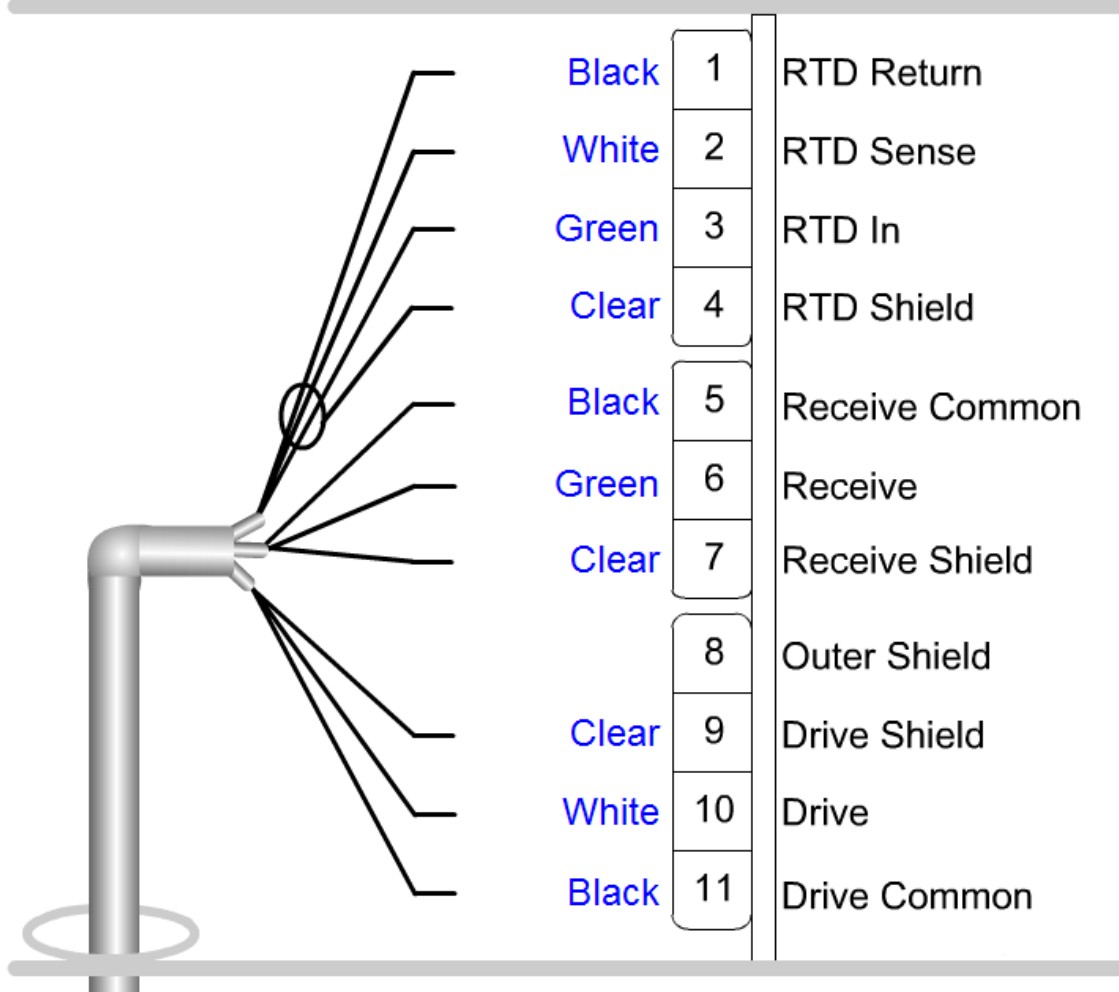
- **Max Time to Lower Conductivity in Press** – A warning is displayed if the conductivity in the press tank doesn't drop below the min value in the time configured here.
- **Press High Conductivity Debounce Time** – The press tank conductivity must be over the max value for the time configured here before the fresh water valve in the last module turns on.
- **Press Low Conductivity Debounce Time** – The press tank conductivity must drop below the min value for the time configured here before the fresh water valve in the last module turns off.
- **PF Tank Conductivity Debounce Time** – The pulse flow tank conductivity must be over the max value for the time configured here before the tank is drained.

### **Sensor Wiring**

Below is a picture of the inside of the analyzer with the terminal blocks labeled.



1. 24V DC – Wire +24V DC and ground to the terminal block labeled 24V DC
2. Conductivity Sensor – Wire the sensor as shown below to one of the two cards installed in the analyzer. Each analyzer can handle up to 2 sensors. See the picture above for the location and orientation of the terminal block. Wire the single clear wire to pin 8.



3. A/D Interface board – The analyzer wires to A/D board address 23H through an interface board.

### **Mentor Inputs and Outputs**

Conductivity control requires High Speed 8-16 board address 81H and A/D board address 23H

#### Outputs

Drain Pulse Flow Tank	81MTA5-10 & 5-19
Fresh Water Valve Last Mod	81MTA5-9 & 5-18

### Analog Inputs

Pulse Flow Tank Sensor	23MTA54-9
Press Tank Sensor	23MTA54-10
Incoming Water Sensor	23MTA54-11