HCT

SOLUTIONS TO WATER

# FS1 Setup Manual

Flow Switch Controller and Pumps
HCT Chemigation System for Pressurized Water Systems
Golf Courses, Landscape, water pressure systems exceeding 60 psi

**Description**

The FS1 is a Switch Box, taking the signal from a flow switch or flow meter, then providing an on/off signal and or flow meter pulses which can then be relayed form the box to the chemical injection pumps for chemical pumping accuracy based on flow rates.

The pumps are designed to receive either an on/off signal to pump or not pump, or a variable signal to pump an appropriate amount of chemical based on the flow rate of the water. The p[umps are designed for HCT's aggressive acid and oxidizer chemistry – they low amount of chemistry necessary and the pressure of the water system.

The FS1 will operate up to three pumps. Each pump can be adjusted to deliver the precise amount of chemicals needed plus an extra pig tail to operate perhaps a third pump for periodic or continuous fertilizer injection.

You'll see below the FS1 is capable of being connected to a variety of flow switches and or flow meters so that a single FS1 is adaptable to a variety of flow switches and meters.

# In essence – one size fits all.

FSC-1 has no maintenance components, can operate from one and up to three pumps, takes almost any flow switch or meter signal. .

# Contents

## For Use with Flow Switch:

On/Off pump activation
-See Wiring Diagram #1.

-Plug each of the metering pumps into the receptacles provided by the controller.
-Plug the power cord of the controller into a 120VAC GFIC outlet.
-Turn the Main Power switch to the On position.

From the home screen press the Menu Button, as shown in figure 1. Scroll down to Flow Meter Selection by pressing the F4 key, then press Enter by pressing the F5 key, as shown in figure 2. The Flow Switch is selected by default, press the Menu button again and select the Chem Feed Settings, as shown in figure 4. On the Chemical Feed Selection, press the Fixed Speed button, as shown in figure 5, then press the menu button and navigate back to the home screen. If the Pump switch is turned to the Hand (H) position, the pumps will turn on and run manually. With the pump switch in the Auto (A) position, the pumps will only run when flow is detected, as shown in figure 6.

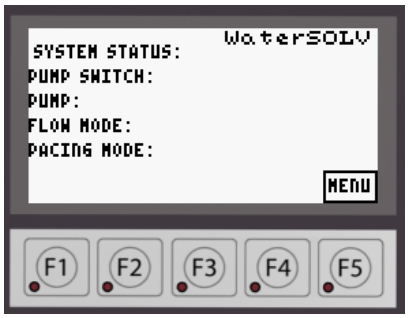



*Figure 1. Home Screen*

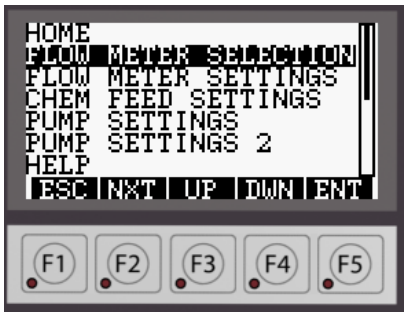



*Figure 2. Menu Screen*

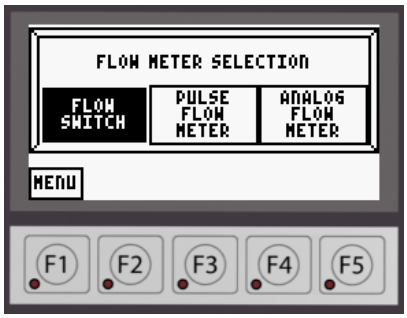



*Figure 3. Flow Meter Selection Screen*

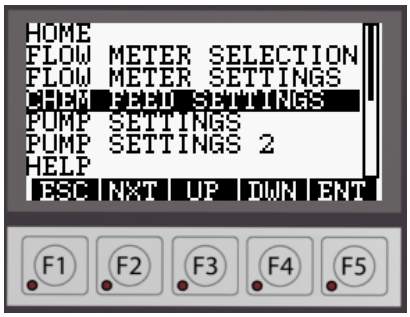



*Figure 4. Menu Screen*

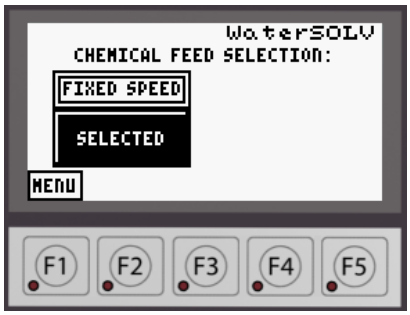



*Figure 5. Chemical Feed Screen*

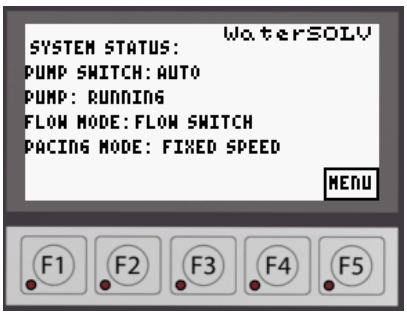



*Figure 6. Home Screen*

## For Use with a Pulse Flow Meter:

For a two (2) wire flow meter.
-see Wiring Diagram #2.
(For a three (3) wire flow meter, see Wiring Diagram #3.)

-Plug each of the metering pumps into the receptacles provided by the controller.
-Plug the power cord of the controller into a 120VAC GFIC outlet.
-Turn the Main Power switch to the On position.

The metering pump(s) will need to be set to external mode (EXT) and within external mode it needs to be set to Multiply by 1 (MUL 1). From the home screen press the Menu Button, as shown in figure 1. Scroll down to Flow Meter Selection by pressing the F4 key, then press Enter by pressing the F5 key, as shown in figure 2. Flow Switch is selected by default, but the Pulse Flow Meter will need to be selected. Do this by simply pressing it. Next press the Menu button and select the Flow Meter Settings and then select which type of meter it is, as shown in figure 7. If a Badger Flow meter is being used, select that by pressing the button. Once the button is pressed, the display will show two boxes that need information, as shown in figure 8. The K-Value and Offset can be found in the manual for the Badger flow meter. These values are dependent on the pipe size and schedule.

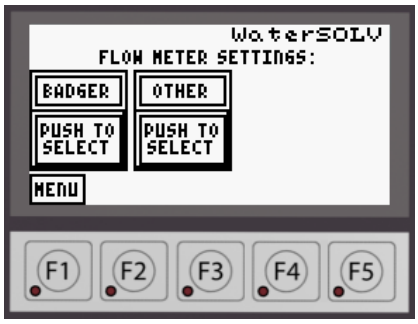



*Figure 7. Flow Meter Selection Screen*

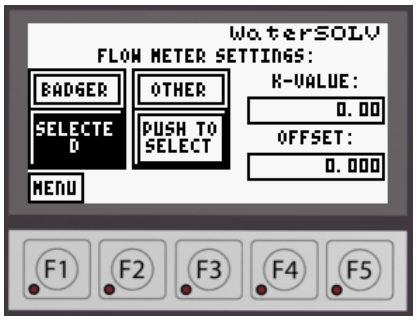



*Figure 8. Badger Flow Meter Settings Screen*

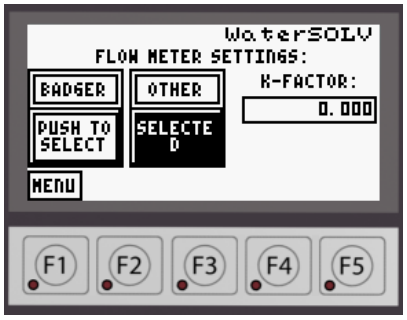



*Figure 9. Other Flow Meter Settings Screen*

If a different flow meter is being used, select Other by pressing the button. Once the button is pressed, the display will show one box that need information, as shown in figure 9. The K-Factor can be found in the manual for the flow meter and is dependent on the pipe size and schedule.

Once the Flow Meter Settings have been set, press the Menu button again and select the Chem Feed Settings, as shown in figure 4. If the pump will be pumping at a fixed speed when flow is detected, press the Fixed Speed button on the Chemical Feed Selection, as shown in figure 5, then press the menu button and navigate back to the home screen. If the Pump switch is turned to the Hand (H) position, the pumps will turn on and run manually. With the pump switch in the Auto (A) position, the pumps will only run when flow is detected, as shown in figure 6.

If the pump will be pumping proportional to the flow rate, press the Proportional button on the Chemical Feed Selection, as shown in figure 10. Press the menu button and navigate to the pump settings screen. If two pumps will be used, select the Multiple Pumps, then select if the pumps will be pumping at different PPM's, as shown in figure 11. Next press the Next button and select the Pump Settings 2 screen. On this screen enter the specified information, then return to the home screen.

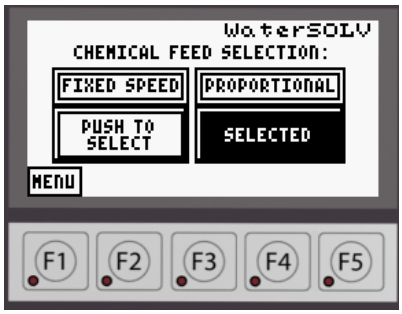



*Figure 10. Chemical Feed Screen*

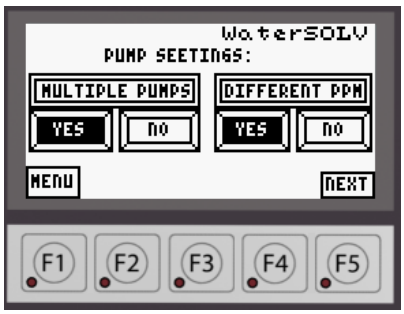



*Figure 11. Pump Settings Screen*

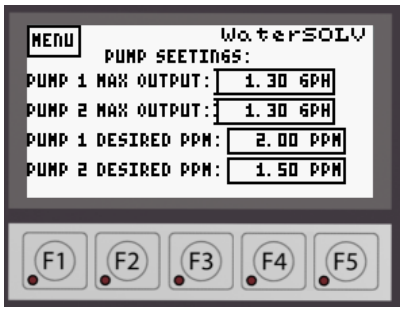



*Figure 12. PPM Settings Screen*

## For Use with an Analog Flow Meter:

-For an analog loop powered flow meter
-see Wiring Diagram #4.

-Plug each of the metering pumps into the receptacles provided by the controller.
-Plug the power cord of the controller into a 120VAC GFIC outlet.
-Turn the Main Power switch to the On position.

The metering pump(s) will need to be set to external mode (EXT) and within external mode it needs to be set to Analog Rigid (ANA. R). From the home screen press the Menu Button, as shown in figure 1. Scroll down to Flow Meter Selection by pressing the F4 key, then press Enter by pressing the F5 key, as shown in figure 2. Flow Switch is selected by default, but the Analog Flow Meter will need to be selected. Do this by simply pressing it. Next press the Menu button and select the Flow Meter Settings and then enter the maximum system flow rate, as shown in figure 13. To enter the maximum flow rate, click on the box with the flow rate and a new display will appear, as shown in figure 14. Once the value is entered, press the enter (ENT) button. ESC is escape and will bring you back to the previous screen and clear any value that was entered, BS is back space, and CL is clear and will clear the value.

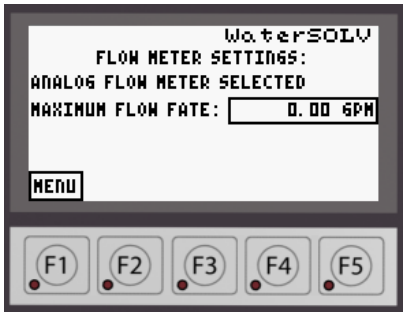



*Figure 13. Flow Meter Selection Screen*

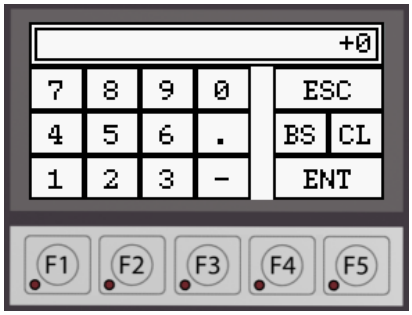
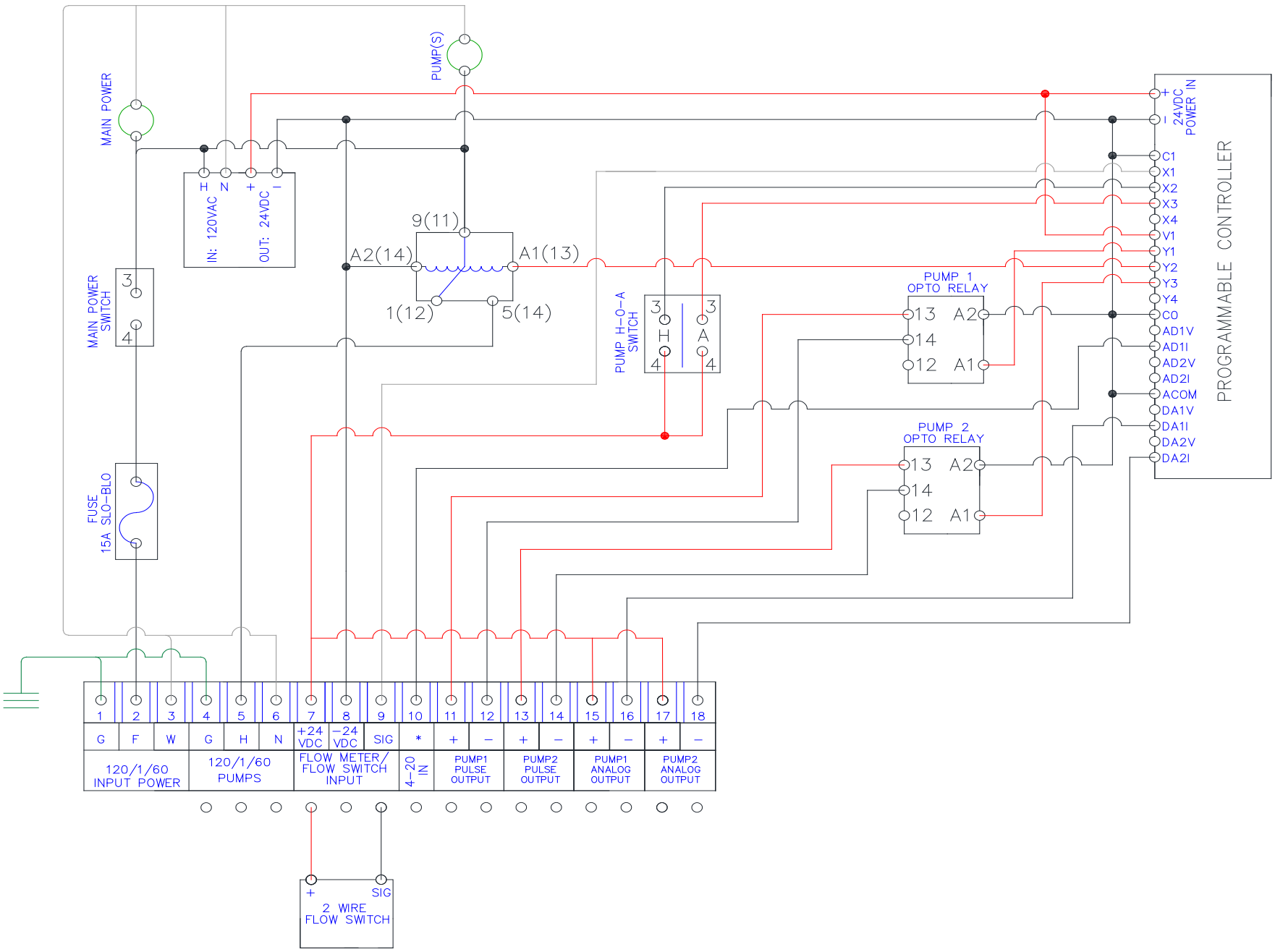



*Figure 14. Flow Rate Value Selection Screen*

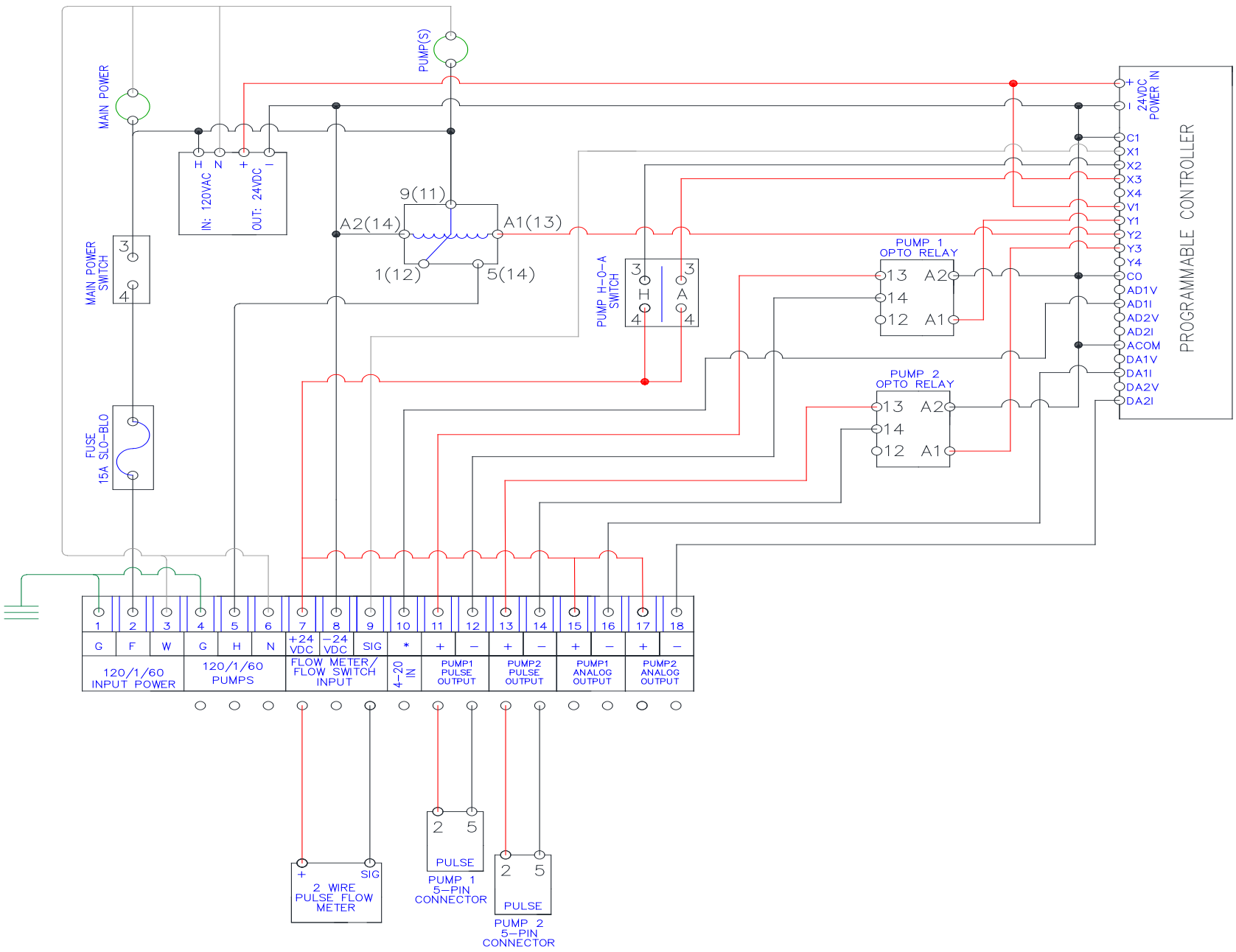
Once the maximum flow rate has been set, press the Menu button again and select the Chem Feed Settings, as shown in figure 4. If the pump will be pumping at a fixed speed when flow is detected, press the Fixed Speed button on the Chemical Feed Selection, as shown in figure 5, then press the menu button and navigate back to the home screen. If the Pump switch is turned to the Hand (H) position, the pumps will turn on and run manually. With the pump switch in the Auto (A) position, the pumps will only run when flow is detected, as shown in figure 6.

If the pump will be pumping proportional to the flow rate, press the Proportional button on the Chemical Feed Selection, as shown in figure 10. Press the menu button and navigate to the pump settings screen. If two pumps will be used, select the Multiple Pumps, then select if the pumps will be pumping at different PPM's, as shown in figure 11. Next press the Next button and select the Pump Settings 2 screen. On this screen enter the specified information, then return to the home screen.

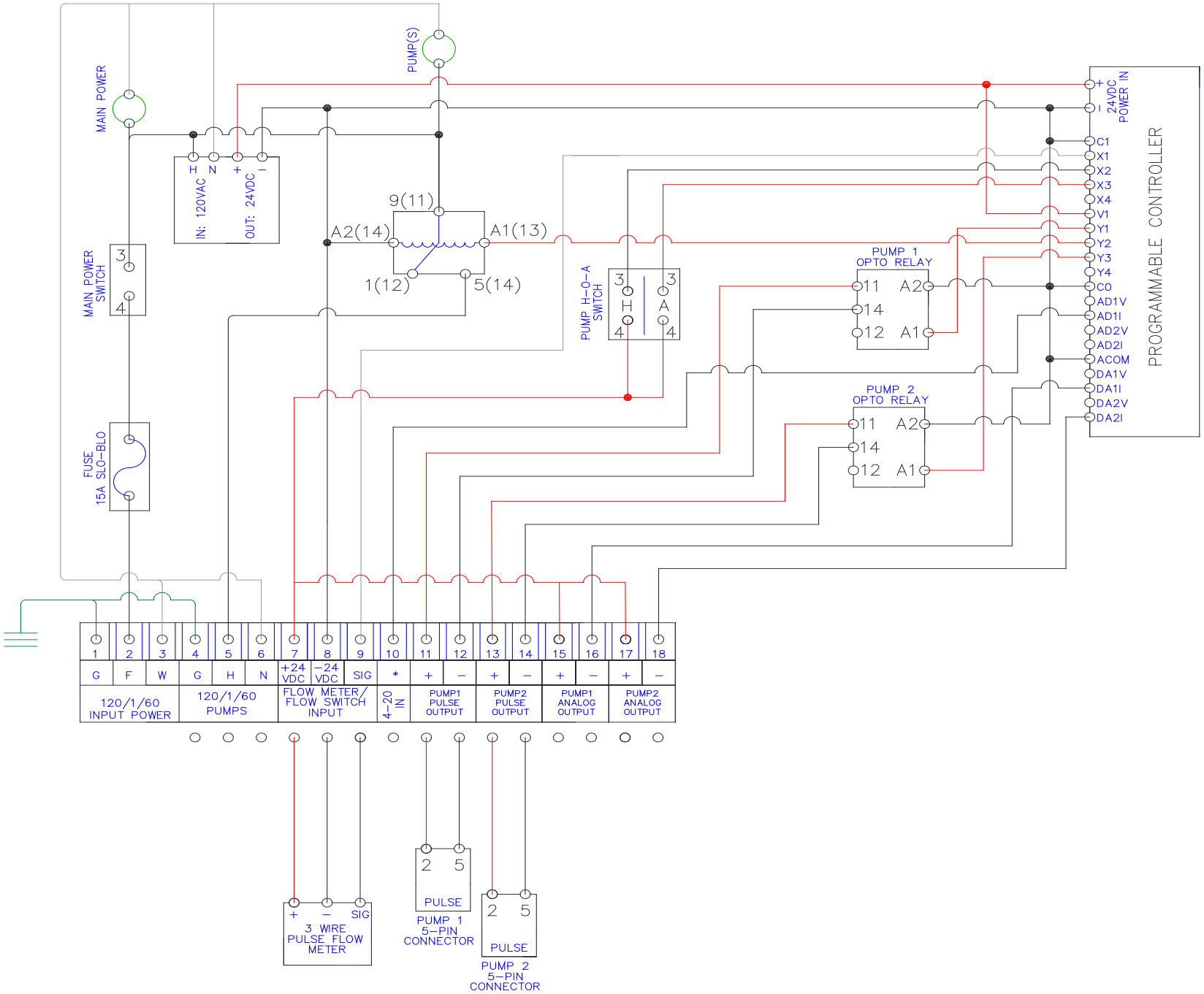
# Wiring Diagram 1



# Wiring Diagram 2



# Wiring Diagram 3



# Wiring Diagram 4