



## *Troubleshooting Guide and Frequently Asked Questions (FAQ)*

*Manufacturer of High Performance Instrumentation and Control Systems*

This document contains troubleshooting information and answers to frequently asked questions about our controllers and bubbler level measurement systems. For further assistance, please call **727-547-1622** or toll free **1-800-335-5219**. Our office hours are: 9 A.M. to 6 P.M. EST (MON-FRI). You can also send us your questions via e-mail at [support@digitalcc.com](mailto:support@digitalcc.com).

### **WARNING:**

Service must be performed by qualified personnel. High voltages and currents may be present when troubleshooting this equipment, which can result in serious injury or death.

### **CAUTION:**

Observe correct voltage and polarity as stated on product specification prior to installation. Failure to do so can cause damage to the unit and will void the warranty.

### **CAUTION:**

Some units may require the secondary side of a control transformer to remain isolated (not connected to ground). Failure to do so may cause damage to the unit or may prevent the unit from operating correctly. Refer to product specification for further information.

### **NOTE:**

It may take several seconds for the air pressure of the bubbler level measurement system to build up sufficiently to produce a correct level measurement after the unit is initially turned ON.

### **NOTE:**

When using float switches, they must open and close in a particular order for the controller to work correctly. For example, if a low level alarm float is not used, then a jumper wire must be installed to simulate a float in the up (closed) position. Refer to product specification for further information.

### **NOTE:**

The float switch contacts must be open when the float is hanging (down position) for the controller's logic to operate correctly. Float switches with normally open (NO) contacts are required.

### **NOTE:**

Some units may require the installation of a jumper wire to prevent the control system from trying to go into backup control mode if backup floats are not used. This will also prevent the low level alarm from being activated continuously. Refer to product specification for further information.

### **NOTE:**

Some units may require the installation of a jumper wire to provide internal power to its isolated analog output modules when an external 24 VDC power supply is not used. Failure to do so will prevent the analog outputs from working correctly. Refer to product specification for further information.

### **Troubleshooting Recommendations:**

#### **Unit Identification**

Identify the unit and locate the product specification document. The model number appears in the front of most units. Each one of our products comes complete with documentation. Please contact us if you may need an additional copy. Product datasheets are available for download at our website. Also, the serial number on the unit may be required to determine warranty coverage or custom unit modifications. A label with a serial number can be found on the back of the unit.

#### **Wiring Inspection**

Visually inspect all connectors and wiring on the controller or bubbler level measurement system. Make sure that the unit is wired correctly and that all of the connectors are connected properly. Check for signs of damage, such as burned areas or corrosion. If so, contact our factory for repair or replacement.

#### **Float Switches**

Visually inspect float switches in wet well for secure mounting and proper location. Verify that the floats are not entangled or covered with debris. Hand switches can be used as inputs to simulate the floats by by-passing the floats to test the controller. Restore all original connections and reset unit if applicable.

#### **4-20 mA Sensors**

Visually inspect all connectors and wiring on the controller or bubbler level measurement system to ensure that it's wired correctly. Some sensors may require an external power supply to operate. Refer to product specification for specific application information.

#### **Bubbler Level Measurement Systems**

There are four common components on most bubbler systems that are prone to fail as time goes by. Any of these failures may prevent the bubbler system from operating correctly. They are as follow.

- **Blocked Bubbler Probe Tube**

If possible, visually inspect the stainless steel cable on the bubbler probe assembly for any signs of damage. Verify that the probe is secured to the wet well. Typically, the periodic purging cycle will keep the bubbler tube free of material and functioning properly. If material in the wet well causes a tube blockage, then the controller will detect a reduction in air flow and will execute a purging sequence automatically. If the unit cannot clear the blockage, then the system will try to continue purging the bubbler tube. If an obstruction is suspected, then disconnect the bubbler tube from the unit to see if the purging sequence is completed and the unit returns to normal operation (unit should measure zero level). If it does, most likely there is a blockage inside the bubbler tube.

- **Clogged Filter / Flow Restrictor**

The flow restrictor is protected by a dust filter but may become clogged with dust or other particles found in the air. Any obstructions inside of the filter will cause the air flow to decrease and may even affect the accuracy of the level measurement. The best way to check for this is to replace the filter / flow restrictor with a new one.

- **Air Compressor Failure**

Our units are designed to automatically detect and indicate air compressor failures. The defective air compressor should be replaced. If the problem persists, then the failure could be caused by an air leak, a defective solenoid, or the unit itself.

- **Air Leaks**

Any air leaks within the system may affect the accuracy of the level being measured and could potentially cause the entire system to fail. They are usually caused by improperly sealing tubing connections or damaged tubing. To check for an air leak, disconnect the bubbler tube from the unit and replace it with a pressure gauge (if available). Verify that this connection is properly sealed. If the unit starts its purging sequence and the pressure either increases or remains stable, then there are no leaks. If the pressure decreases, then there could be an air leak within the system.

### **Frequently Asked Questions:**

Q: The unit does not power up. What could be the problem?

A: Possible causes:

1. Control circuit breaker open
2. Blown fuse
3. Defective transformer
4. Loose connector
5. Incorrect wiring
6. Defective controller unit

Q: Why are the air compressors either running all the time or every couple of seconds?

A: Possible causes:

1. Air leak(s)
2. Air reservoir tank pressure limit adjustment set too high
3. Defective purge solenoid
4. Defective air reservoir tank water dump solenoid
5. Defective controller unit

Q: Which problems can cause the unit to indicate that there is a compressor failure?

A: Possible causes:

1. Defective air compressor
2. Defective check valve
3. Air leak(s)
4. Defective purge solenoid
5. Defective air reservoir tank water dump solenoid

Q: Why does the unit appears to be purging continuously?

A: Possible causes:

1. Clogged filter / flow restrictor
2. Clogged bubbler probe tube
3. Defective controller unit

Q: Why is the unit constantly displaying a low level alarm?

A: Possible causes:

1. Float switch not present
2. Missing jumper wires
3. Defective float switch
4. Wrong type of float switch (NO required)
5. Defective controller unit

Q: Why is the measured level on the unit either erratic or too low?

A: Possible causes:

1. Air leak(s)
2. Unit may require calibration
3. Defective controller unit

Q: Why is the measured level on the unit too high?

A: Possible causes:

1. Clogged bubbler probe tube
2. Unit may require calibration
3. Defective controller unit

Q: Which problems can cause the unit to indicate that there is a system failure?

A: Possible causes:

1. Floats not present or out of sequence
2. Sensor(s) malfunctions
3. Clogged filter / flow restrictor
4. Air leak(s)
5. Defective purge solenoid
6. Defective air reservoir tank water dump solenoid
7. Defective air compressors
8. Defective controller unit