pH Simulator – Instruction Sheet

The Broadley-James pH and DO Simulator allows the operator to troubleshoot a question-able pH or DO measurement by isolating the transmitter and cables from the actual pH and DO sensor inputs. It simulates an ideal pH electrode or DO sensor. Simply attach the simulator in place of the pH electrode or DO sensor, and check for the appropriate responses from the transmitter.

THIS SIMULATOR IS A TROUBLESHOOTING DEVICE, not a calibration instrument. It is used for testing cables and instruments, not electrodes or sensors.

Technical Specifications:

When a pH meter is reading incorrectly the simulator helps determine if the problem is related to the electrode or to the transmitter. It simulates pH and mV values: from 0-14 pH units in 1 pH unit increments (±414 mV). The simulator operates on a 9-volt battery and has a BNC connector, which attaches to the pH cable adapter.

- pH Output: 0-14 pH in 1 pH increments
- Power: 9-volt battery
- BNC jack for pH output
- Auto Off Feature
- Tactile Membrane Keypad
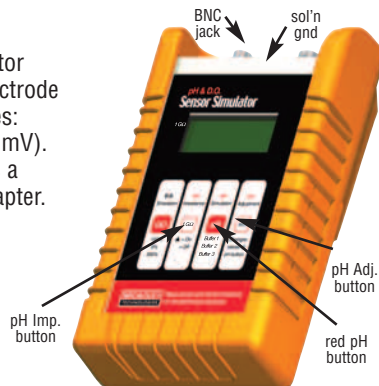
Recommended Procedure:

1. Using the simulator instead of a pH electrode, calibrate the transmitter before trou-bleshooting (see note 2 below).
2. Connect the BNC plug on the cable adapter, included with the simulator, to the BNC jack on the simulator (see image above).
3. Attach the transmitter cable to the simulator cable, allowing the simulator to act as a pH electrode. If you have a cable with a solution ground lead, plug the lead into the solution ground port on the simulator.
4. Press the red pH Simulation button until 7.0 appears in the simulator display. The buffer values may be changed by pressing the pH Adjustment button. It may take several seconds for the reading on the instrument being tested to show ~7pH.
5. Press the red button again to repeat this test with the next pH buffer value shown in the simulator display. (This step may be repeated a third time.)
6. This may be repeated after pressing the pH Impedance button, placing a 1 GW resis-tor in the circuit, which simulates the high impedance of an actual pH electrode.
7. The pH transmitter check procedure is complete.

Notes for both pH and DO:

1. If the transmitter display values are unstable and erratic, one of three things might be wrong. First, the transmitter cable might be too long. Second, the transmitter cable connections might be loose. Lastly, the internal amplification of the transmitter may be poor.
2. Actual values for pH and DO may vary significantly from expected values, dependent upon the previous calibration of the instrument being tested.
3. If the tests have not been completed successfully, look for possible faults in the sensor. (For sensor troubleshooting, refer to the sensor operating instructions.)

DO Simulator – Instruction Sheet

The Broadley-James pH and DO Simulator allows the operator to troubleshoot a question-able pH or DO measurement by isolating the transmitter and cables from the actual pH and DO sensor inputs. It simulates an ideal pH electrode or DO sensor. Simply attach the simulator in place of the pH electrode or DO sensor, and check for the appropriate responses from the transmitter.

THIS SIMULATOR IS A TROUBLESHOOTING DEVICE, not a calibration instrument. It is used for testing cables and instruments, not electrodes or sensors.

Technical Specifications:

The simulator isolates the transmitter by mimicking the load of a DO sensor. The 4-pin connector attaches directly to the DO cable, in place of the sensor. The sim-ulator can help confirm whether fluctuations in the transmitter display are caused by the sensor, or caused by problems with the instrument or cable.

- DO Output: 0% sat (0 nA)
                     100% sat (~67 nA)
                     300% sat (~200 nA)
- Power: 9-volt battery
- 4-pin connector for DO simulation
- Auto Off Feature

Recommended Procedure:

1. Using the simulator instead of a DO sensor, calibrate the transmitter before trou-bleshooting (see note 2 on other side).
2. Connect the D4 plug on the DO cable to the 4-pin connector on the simulator (see image above). The simulator is now acting as a DO sensor.
3. Press the red DO Simulation button (see image above) until 0 appears in the simula-tor display. Within several seconds, the transmitter display value should read approxi-mately 0% saturation.
4. Press the red DO button again so that 100 appears in the simulator display. Within several seconds, the transmitter display value should read approximately 100%.
5. OPTIONAL (for transmitters that go up to 300% saturation) – Press the red button again so that 300 appears in the simulator display. Within several seconds, the transmitter display value should read approximately 300%.
6. The DO transmitter check procedure is complete.