

# EASY-TO-READ INSTRUCTIONS FOR OPERATING THE PIGI SYSTEM (VERSION 4.4)

## SUPPLEMENTARY MATERIALS FOR

### Design Update to “The Pressure of In-Situ Gases Instrument (PIGI) for Autonomous Shipboard Measurement of Dissolved O<sub>2</sub> and N<sub>2</sub> in Surface Ocean Waters”

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#### BEFORE STARTING

Make sure the following four items are ready: the yellow Pelican case, the white computer box, two yellow connector cables, and a power strip. Inside the computer box there is a screen attached to the top, a wireless mouse, and a wireless keyboard.

#### SETTING UP THE PIGI SYSTEM

1. Position the yellow Pelican case upright with the wheels down, close to a seawater source and a drainage option (preferably a sink).
2. Place the computer box within a meter from the top of the yellow Pelican case.
3. Plug in the computer box to the power strip (all cables take 110 or 220 V).
4. Connect the computer to the yellow case using the yellow cables and the black DB9 cable. If this is not connected, you will get an error when using the PIGI software.
5. Turn on the power strip (check if the fan is running to ensure power to the system).
6. Turn on the computer, mouse, and keyboard.
7. Open PIGI version 4.4 from the Desktop.

## CONFIGURING THE PIGI SOFTWARE

For steps 1–4, set the Deployment information as shown in [Figure S1](#).

- 1 The ID numbers for each sensor are also written in the read-only document on the Desktop.  
**Optode ID:** 4330-6302  
**TDGP ID:** 14-872-31  
**Type of optode:** fast response  
**Sample rate:** 5 sec
- 2 Parameters set to default:  
**O2 calib. Samples:** none  
**TDGP offset from atmosphere:** 0 mbar
- 3 Enter the cruise details: Deployment Name, Deployment ID, Platform/Ship, Location, Time offset from TSG clock, and Operator for the current deployment.
- 4 Set the save path for data to a new folder under C:/User/Rivero-Calle Lab/Documents/PIGI/Data. Create a new folder with the cruise ID and click “Use current folder.” DO NOT click save!

The screenshot shows the PIGI software configuration window. The 'Deployment information' tab is selected. The 'Type of Optode' is set to 'Aanderaa 4330f (fast response)'. The 'Optode ID' is '4330-6302' and the 'TDGP ID' is '14-872-31'. The 'Sample Rate' is '5 sec'. The 'O2 Calib. Samples' is set to 'None' and the 'TDGP offset from atm.' is '0 mbar'. The 'Deployment Name', 'Platform / Ship', 'Deployment ID', 'Location (e.g., main lab)', 'Time offset from TSG clock' (0 Hr, 0 Min, 0 Sec, ahead), and 'Operator name' fields are empty. The 'Save Path' is 'C:\Users\Rivero-Ca...\PIGI\Data\SAV23\_15' and the 'Backup Path' is 'D:\PIGI Backup'. The 'START ACQUISITION' button is highlighted in green, and the 'STOP ACQUISITION' button is highlighted in red. The status indicator shows 'System Starting' with a green dot. The 'ERRORS' section shows a status indicator with a green dot and a code field with the value '0'.

FIGURE S1. Deployment information. The the numbered boxes refer to the Configuring the PIGI Software steps (1–4) above.

5. Set the backup save path to a new folder on the USB drive. Create a new folder with the cruise ID and click “Use current folder.” DO NOT click save!
6. In the communication ports tab, set the Optode port to COM 3 and the TDGP port to COM 4 (blue arrows in [Figure S2](#)).

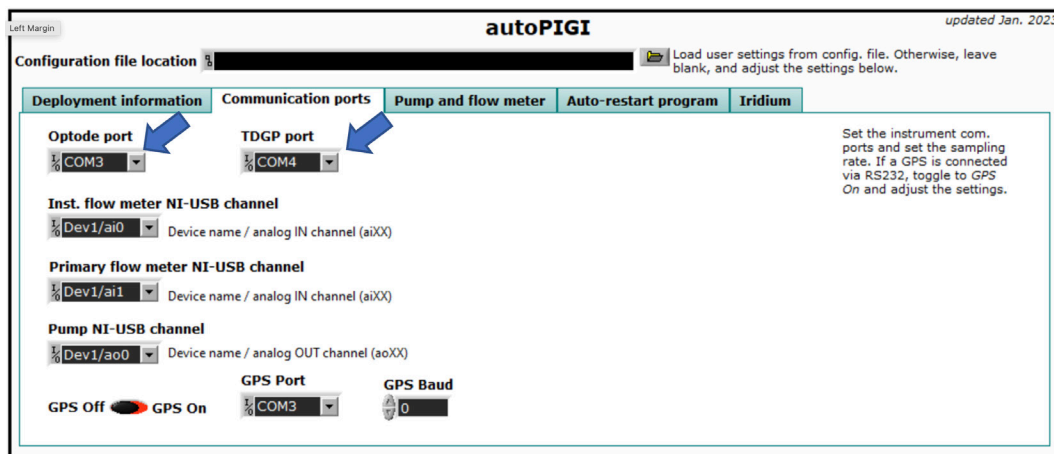


FIGURE S2. Communication Ports. The blue arrows indicate the COM ports to be set.

## GETTING WATER RUNNING

1. Check that valves 1 to 3 are open (handles parallel to water flow), valve 4 is set to all open, and valve 5 is closed (handle perpendicular to water flow) (Figure S3).
2. Attach the seawater source to the clear hose and place the blue hose in a waste water receptacle (sink).
3. Gradually turn on the seawater and let both chambers fill up before continuing (gentle shaking of the yellow case might be necessary to remove air).

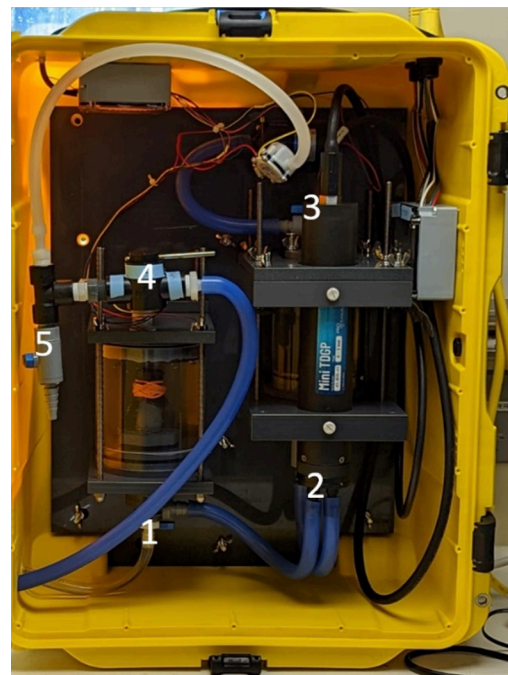


FIGURE S3: Valve positions.

## STARTING DATA ACQUISITION

1. On the computer screen, click the small arrow button in the top left-hand corner (hovering over it will display “Run”).
2. Press the “Start Acquisition” button.
3. Check that the lights under the start/stop bar have turned green for GTD running, Optode running, and **Startup complete**. If not, contact author Ben Lowin ([ben.lowin@uga.edu](mailto:ben.lowin@uga.edu)).
4. Scroll down on the computer program and go to the Ancillary tab.
5. Adjust the water pressure until the instrument loop shows a flow rate of 2 l/min on the graph.

## OPERATING THE SYSTEM

1. The system should now operate autonomously for the duration of the cruise, but check the flow rate every 6–8 hours and adjust if needed.
2. Before leaving, close the lid on the Pelican case and secure it and the computer box to the wall using ratchet straps.
3. **If the ship loses power:** You will need to restart the PIGI system.

## SHUTTING DOWN THE PIGI SYSTEM

1. Press “Stop” on the Start/Stop bar and wait for the lights to turn off.
2. Make sure all data is saved in your folder (equal to the number of dates on which the system operated).
3. Turn off the PC and then the power to the system.
4. Disconnect the Pelican case from the computer box.
5. Drain the PIGI system: Close valves 1 and 2, position the open lid facing a sink, remove both hoses from the TDGP-mini (be careful and take your time), point the hoses into the sink, and open the valves to drain the system. Reconnect the hoses after draining.
6. Thoroughly clean the PIGI system after deployment to prevent fouling.
7. As soon as possible, flush the system with DI water to prevent growth.
8. Clean the system within the next 2 days to prevent damage to the instruments and system (this process takes about 45 minutes).

## TROUBLESHOOTING

- Ship loses power: Turn the computer back on and then restart the PIGI program following the steps above.
- Error: Optode/TDGP can read information – Check that the cables are all attached.
- No Oxygen data: The type of optode was not selected.
- Flow rate does not read: Probably needs to be cleaned, if it has been deployed in estuary conditions.