

## Atlas Scientific Electrical Conductivity Circuit Calibration Procedure

Procedure Drafted By: Ian Black		Probe Serial Number:		OpenCTD Serial Number:
Calibration Date:		Calibration Performed By:		Ambient Temperature:
Step	Procedure	Check	Results	Notes
1.1	Turn the external switch to OFF. Open the unit by removing the six 2.5mm screws holding the face plate in place.			
1.2	Turn the Qduino switch to OFF. Disconnect the battery.			
2	Connect Qduino to computer via microUSB cable. Turn the Qduino switch to ON.			
3.1	Open the Arduino IDE.			
3.2	Navigate to Tools > Board. Ensure Qduino Mini is selected.			
3.3	Navigate to Tools > Port. Select available com port for Qduino.			
3.4	Navigate to File > Sketchbook > EC_Cal			
3.5	Navigate to Sketch > Upload. (Ctrl+U)			
3.6	After the IDE has confirmed a successful upload, navigate to Tools > Serial Monitor (Ctrl+Shift+M). The serial monitor should now be displaying EC, TDS, SG, and SAL in raw form at 1.4 second intervals.			
4	Ensure that the carriage return option is selected and that the baud rate is 9600 in the lower right corner of the serial monitor window. At the top of the window, type "C,0". This turns off continuous logging. This command may need to be sent more than once.			
5	Type "RESPONSE,1". This enables response code.			
6	Type "Name,?". The EC EZO will report the name of the device. The unit can be renamed at this step if desired.		EC EZO Name:	
7	Type "K,?". This queries the probe type. For seawater applications, it should be K1.0.		Probe Type:	

8.1	Type "T,?". This queries the default temperature for on the EC EZO. If it is a new unit, the default temperature will be 25C.			
8.2	Type "T,n". Where n is the temperature of the calibration solution.		Solution Temperature:	
9.1	Type "cal,clear". This clears any previous calibration data.			
9.2	Prior to a wet calibration, the probe must be calibrated dry. Type "cal,dry". Wait two seconds before proceeding.			
9.3	Place the probe in the lower value calibration solution. Type "cal,low,n". Where n is the lower value calibration solution in microsiemens. This value changes with temperature. No change will be seen in the conductivity reading. If successful, the EC EZO will respond with "*OK".		Low n:	
9.4	Remove the probe from the solution, rinse with DI water, and dry.			
9.5	Place the probe in the higher value calibration solution. Type "cal,high,n". Where n is the higher value calibration solution in microsiemens. This value changes with temperature. If successful, the EC EZO will respond with "*OK".		High n:	
9.6	Remove the probe from the solution, rinse with DI water, and dry.			
9.7	Type "cal,?". This queries the type of calibration saved on the EC EZO. If the two point calibration was successful, the EZO will respond with "?CAL,2"			
10	Power cycle the device. Place the probe in low calibration solution. In the serial monitor, type "R". This has the EC circuit send a single reading back to the serial monitor. If it is not within a couple hundred uS/cm of the low reading you input, redo the calibration.			

11	Remove the probe from the solution, rinse with DI water, and dry. Replace any protective caps.			
12	If no additional changes are required, type "RESPONSE,0" to disable response code.			
13	Type "c,1" to enable continuous reading mode. Numbers should start to stream across the serial monitor.			
14	Wait at least five seconds. Close the serial monitor window. Upload the next desired sketch to the Qduino.			



