How To Guide

Princeton Applied Research

AMETEK

Subject: Checking Your Potentiostat's Cable for Continuity

Introduction

Our Global Support Team has decades of experience providing our users practical solutions to common issues in electrochemical measurements. This document is part of a series to formalize these suggestions and make them directly available to our users.

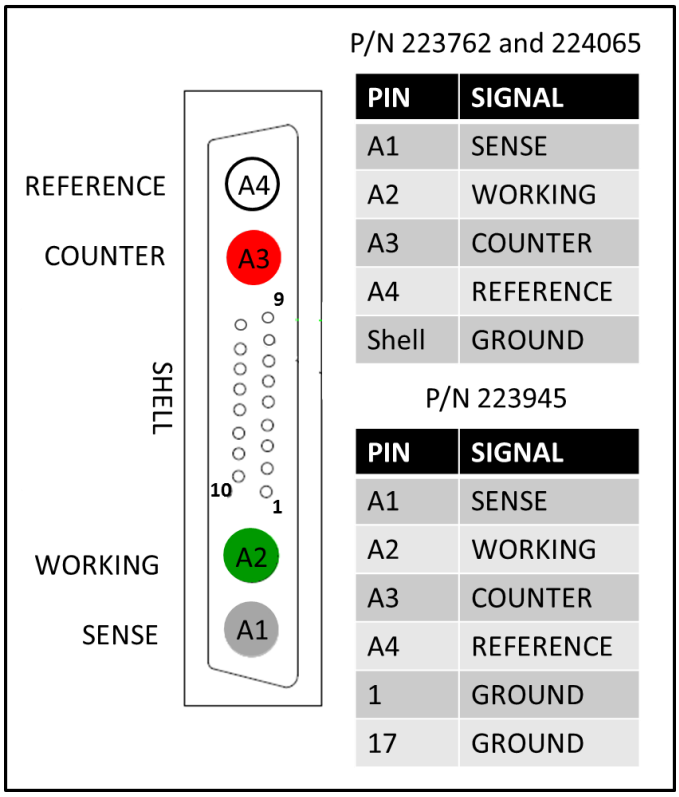
If an instrument passes the internal dummy cell test, but fails to pass the external dummy cell test, the next step is to check the cell cable for electrical continuity. Another common situation, in which the cell cable's integrity should be questioned, is the indication of intermittent connectivity. One scenario is an experiment that fails to start due to an overload, but then starts as expected after adjusting the connections between the cable and the cell. Intermittent connectivity or a poor electrical connection in one of the leads can cause the data to appear noisy. This noise may vary depending on slight adjustments to the position of the cable, which changes the amount and direction of pressure put on the connection. If any of these circumstances, or any similar to these, are encountered, the cable's electrical connectivity should be tested as described below.

Procedure

A multimeter or ohmmeter will be required. Using the meter and referring to the pinout diagrams in Figure 1, measure the resistance between each lead and the corresponding pin. The value should be near zero ohms for a properly functioning cable with good electrical connectivity. While making this measurement, move the terminal of each lead around to make sure the cable is not susceptible to an intermittent loss of continuity due to pressure put on the lead or its orientation.

Now assess the condition of each of the terminals. Do this by ensuring that all of the pins and alligator clips are well connected and that the pins appear to be securely attached to the cable. Movement of those terminals with respect to the coaxial cable can create a noisy connection.

Finally, check that the heat shrink tubing used to color code each of the leads is firmly in place. This can be verified by holding the black plastic housing of a terminal while gently trying to rotate the color coated heat shrink, as depicted in Figure 2. Rotation should not be possible. Again, any movement here can result in a noisy connection.



P/N 223762 and 224065

PIN	SIGNAL
A1	SENSE
A2	WORKING
A3	COUNTER
A4	REFERENCE
Shell	GROUND

P/N 223945

PIN	SIGNAL
A1	SENSE
A2	WORKING
A3	COUNTER
A4	REFERENCE
1	GROUND
17	GROUND

Figure 1: Pinout diagram for standard cell cables compatible with all VersaSTATs, the PARSTAT 4000, the PARSTAT MC-1000 and 500. (P/N 223762, 224065, 223945).

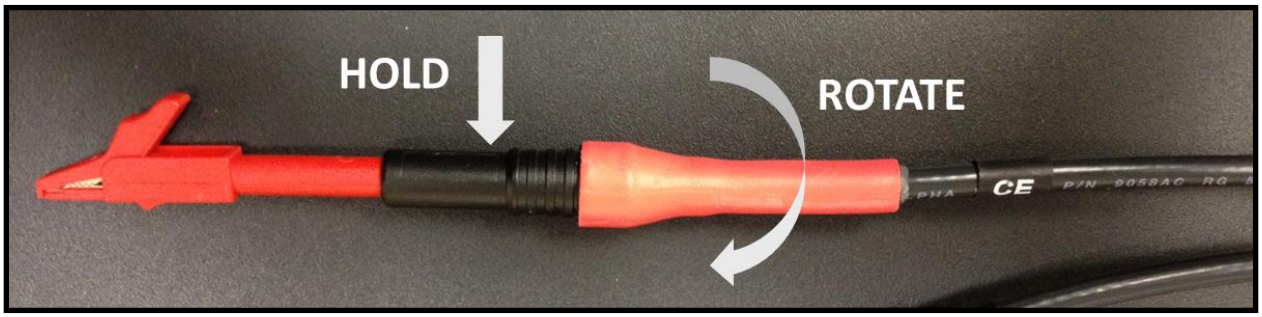


Figure 2: Image showing how to check the integrity of any standard cell cable leads.

Conclusion

If you determine that your cell cable is damaged in any way, it is highly recommended that you order a replacement cell cable to prevent unnecessary future complications. To order a replacement cable you may contact your sales representative directly or contact sales by email through our website at http://www.princetonappliedresearch.com/contact-sales.aspx. If you prefer to contact the representative for your area by phone, you may find his/her contact information on our website by following the same link and searching by country. If the cell cable does not appear damaged, please refer back to the Guide to Practical Solutions for Common Technical Questions for guidance on how best to proceed with troubleshooting.