

Application Note: PQube® 3 Calibration Requirements

1. **General:** Your PQube 3® does not require periodic recalibration.
2. **NIST-Trace Certificates:** If you have a PQube serial number, you can download an individual NIST-trace Calibration Certificate from <http://www.powerside.com/calibration>. (NIST is the United States National Institute of Standards and Technology, the official government institute that controls all calibration measurements.) The Certificate for your PQube includes an official Certificate Number, a list of reference instruments used to provide the NIST-trace, and the results of many individual measurements made on your PQube.
3. **Excess accuracy:** When you examine your PQube 3's NIST-Trace Certificate, you will notice that the actual accuracy of your PQube is typically much better than its specifications. This excess accuracy is included in your PQube 3 to allow for drift during its 10-year expected life.
4. **Component, not instrument:** PQube 3 is a component, not an instrument. It is intended to be incorporated into a system or enclosure by an engineer. As a component, under typical rules it may be exempt from many calibration requirements.
5. **Verification vs Calibration:** Under certain circumstances, it may be necessary to provide annual or bi-annual accuracy certification. To do so you need to remove the PQube from operation and return it to our factory or a calibration lab. You can validate its accuracy without removing it by measuring the voltage on its terminals using a calibrated, certified portable meter. Verify that your PQube provides the same readings and write the report.
6. **Technical comments:** There are no traditional adjustments inside a PQube 3 (i.e. there are no trim pots, variable capacitors, etc.). Instead, the PQube has calibration constants saved in EEROM memory. Each module in a PQube 3 assembly has its own on-board EEROM memory that contains the calibration constants necessary for that module. This means that you can plug in or replace any module without requiring recalibration of your complete PQube system.

Every PQube, and every PQube module, passes through one of Powerside's automatic calibration stations. (The modules also pass through automated high-potential insulation testing, but that is a separate process.) These calibration stations contain custom-designed high-voltage and high-current signal sources and laboratory-grade reference meters that are independently calibrated to NIST standards. To calibrate a PQube 3, the calibration station first verifies the functionality of the PQube 3. Then it measures a large set of calibration signals with both the PQube 3 and the reference meter and calculates a series of calibration constants. It burns those constants into the PQube 3, then re-tests the PQube 3 – now using its calibration constants – to verify that meets the factory specifications, which are tighter than the published specifications. If the PQube 3 meets all factory specifications, the calibration station creates a NIST-trace Calibration Certificate and automatically posts it on Powerside's web site.