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At XITRON Technologies, calibration is more than just the comparison of an instrument's actual measurement performance to a standard of known accuracy.

XITRON's standard calibration procedure includes adjusting the instrument's measurement capability to improve measurement accuracy. XITRON follows defined standards for calibration such as ISO Guide 17025.

The most basic requirement of calibration is proof of traceability. Traceability is defined as an unbroken chain of comparisons, all having stated uncertainties between your measurement and some national or internationally accepted standard.

The benefits of purchasing calibrated instruments, and maintaining them by performing periodic maintenance include:

- Assurance of accurate measurements
- Ability to trace measurements back to a known and accepted standard
- Acceptance of measurements among countries
- Increases in production yields
- Meeting requirements of quality programs such as ISO 9001:2000

Improving Measurement Accuracy

The accuracy of electronic components used in all instruments drifts over time. The effects of time in service, as well as environmental conditions, add to this drift. At some point, this drift could cause the instrument's uncertainty to exceed its specifications; meaning the manufacturer can no longer guarantee measurement results. When this happens, you



YOU CAN INITIATE AN INTERNAL CALIBRATION AT ANY TIME TO ENSURE PEAK MEASUREMENT PERFORMANCE.

should return the instrument for calibration.

XITRON Technologies supplies full product specifications, providing you with a better uncertainty profile over defined temperature variations and the calibration intervals of your measurement device.

Recommended Calibration Intervals

XITRON Technologies recommends regular calibration of your hardware to ensure the best measurement accuracy possible. Check the documentation of your product for recommended calibration intervals. If this is not suitable, please contact our internal sales department for more details on our program offerings.

Internal vs. External vs. System Calibration

Internal, or self-calibration, is a method whereby an instrument uses onboard signal references instead of external standards to adjust measurement accuracy. During internal calibration, the instrument measures and compares itself against its onboard references, and adjusts its measurement capabilities to account for changes in accuracy due to drift or environmental effects such as temperature. We recommend

that this is done as part of an ongoing maintenance program, or whenever the instrument is in an environment that has changed by more than 5°C from the temperature at which it was last calibrated.

Internal, or self-calibration, does not replace external calibration. You must still perform external calibration to quantify the internal references, so that they can be used during self-calibration. Internal calibration and external calibration work together to ensure the measurement accuracy of instruments. XITRON Technologies' measurement products contain highly stable signal references to maintain traceability and facilitate internal calibration.

External Calibration

When an instrument's time in service reaches its specified calibration interval, we recommend that you return it to the manufacturer for calibration service. We compare the instrument's measurements to external known standards, and make adjustments to the measurement circuitry. We not only ensure that measurements are within specified tolerances, but we also optimize the measurements to the center of their limits. In general, we include:

- Evaluation of the instrument's capabilities to determine operation within specifications.
- Adjustment of measurements to maximize length of peak performance.
- Optional updates to the latest firmware and/or hardware version.
- Issuance of a calibration certificate, stating the instrument's compliance to specifications when compared to a standard.

Routine performance of external calibration ensures your measurement accuracy.

System Calibration

The goal of full system calibration is to quantify and compensate for the total measurement error in your system.

Cable losses and sensor offsets may induce measurement error. By applying known inputs to your system, and reviewing the resultant measurement, we can adjust or apply compensation factors to cover the measurement range of the system.

This can be done with customer-supplied sensors, or those provided by XITRON Technologies. Please contact our engineering staff or sales support staff to see how we can help you in your system integration.

By using our facility for your calibration needs, you will keep your XITRON instrument at optimum performance. We go



**XITRON
TECHNOLOGIES
OFFERS FULL
SYSTEM
CERTIFICATION.**

above and beyond a standard calibration. Instruments are updated with any firmware or

hardware changes by our technical staff to ensure your equipment is at the latest production level, maximize the life span of your instrument, and guarantee optimal performance for many years to come.

Calibration Certificates

Calibration certificates are documented proof that your specific measurement hardware meets its published specifications. At a minimum, a calibration certificate should identify the measurement device calibrated, and provide proof of traceability, environmental conditions (temperature and humidity), date of calibration, and show that the calibration conforms to a quality standard.

Standard Calibration Service

XITRON Technologies provides a Standard Calibration certificate with all new measurement products. This certificate states the product is calibrated, meets XITRON Technologies' ISO 9001:2000 quality requirements, and is traceable to internationally accepted standards. A copy of your certificate is provided at the time of shipment, and a copy is held on file should you ever require a duplicate replacement.

Certification with Data

If your quality requirements state that you need more than a standard calibration certificate, we can provide a certificate stating the recorded as-left data. You can request a calibration certificate that includes pre- and post-calibration data at the time of purchase.

Calibration Cycles – 90 day, 6 month, or 1 year

You can return your products to XITRON for either a standard

calibration, or one with pre- and post-calibration data provided, whenever your quality requirements demand it. We can tailor a program that meets your specific needs. When coupled with one of our extended warranty plans, you can eliminate maintenance concerns in the care of your equipment.

Technical Support

XITRON Technologies has internal staff, as well as authorized representatives worldwide, who can support your technical needs. In cases where our representative's staff is local to your region, you also have access to engineers who speak your language and can further serve



your equipment needs. XITRON Technologies prides itself on delivering industry-leading technical support through our applications engineers and internal technical support staff. If you have not already done so, please give us a try.

EXTENDED WARRANTY SERVICE

XITRON Technologies provides complete repair services for our products. We offer extended warranty plans and annual service agreements to help you meet project life-cycle requirements. Express repair and advance replacement services are also available.

XITRON provides support to meet your needs around the globe; offering services and service levels tailored for individual customer requirements.

XITRON Technologies' Extended Warranty service plans provide ultimate equipment protection at an economical price. Comprehensive agreements provide routine calibration at regular intervals, and repair service as needed.

EXTENDED WARRANTY SERVICE PROVIDES YOU WITH

- Fixed maintenance costs allowing accurate yearly budgeting
- Prioritized service yielding shorter repair cycles
- Reduced parts inventory
- Lower maintenance training costs
- Less demand on your internal technical personnel

Extended Warranty – Gold and GoldPlus

This is an extension to your initial 2-year product warranty, but it also includes calibration service. Whenever your product needs repair or service, simply send it back to XITRON Technologies for all of your service requirements. These plans include:

- 2-3 week service turn-around
- Repair, calibration, and performance testing
- All parts and labor are included
- An annual standard calibration certificate
- One month equipment rentals available
- Pre- and post-calibration data is included with the GoldPlus plan

Extended Warranty – Platinum and PlatinumPlus

For those needing the ultimate in scheduled calibration and periodic repair service, there is no better maintenance program for your equipment than our Platinum plans. They add to the Gold plans the following:

- 1-2 week priority turn-around for most services
- Loaner instruments at no additional charge
- Cost of shipping is included (standard 2-day)
- Pre- and post-calibration data is included with the PlatinumPlus plan

Benefits of Service Programs

XITRON Technologies' extended warranty service plans should not be viewed as an added cost to the instruments at time of purchase. These comprehensive plans save you time and money. With available express turn-around service and/or rental replacement units, your product development or production line need not miss a beat. This may also minimize the need for spare instruments at your facility, saving you the expense of rarely used equipment.

A scheduled maintenance program, including annual calibration, can maximize both reliability and performance of your equipment. In addition, these plans offer the comfort of knowing that any unexpected repairs are covered at no additional cost. See below for an example of your potential cost savings.

EXAMPLE 1

Assuming you owned a 2503AH-3CH high performance power analyzer, and the initial two-year warranty has expired, your annual ownership costs could be as follows:

2503AH-3CH annual costs – no warranty

Annual standard calibration	\$ 325.00
One additional non-warranty repair (fixed price repair including calibration)	\$ 1195.00
Total annual ownership costs	\$ 1,520.00

Extended Warranty – Gold Program

Gold Extended Warranty costs	\$ 1314.50
Total annual ownership costs	\$ 1314.50
Annual Savings	\$ 205.50

EXAMPLE 2

Assuming you owned a 2000M DC/Temperature Calibrator, and the initial two-year warranty has expired, your annual ownership costs could be as follows:

2000M annual costs – no warranty

Annual pre- and post-data calibration	\$ 385.00
One additional non-warranty repair (fixed price repair including calibration)	\$ 500.00
One month rental during repair	\$ 500.00
Equipment shipping (overnight)	\$ 70.00
Total annual ownership costs	\$ 1455.00

Extended Warranty – PlatinumPlus

PlatinumPlus Extended Warranty costs	\$ 1050.00
Total annual ownership costs	\$ 1050.00
Annual Savings	\$ 405.00

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TODAY FOR A COMPLETE
SERVICE PLAN, DETAILS
AND PRICING.**