

COLOR MEASUREMENT AND CONTROL

CALIBRATION OF COLOR INSTRUMENT



Like with any piece of equipment or machinery, due to prolong usage there will be dirt, dust and stain that can affect an instrument performance and accuracy. Color measurement is a complex science which requires the combination of mathematics and technology to obtain precise and accurate readings. Therefore, periodical preventive maintenance by inspection and calibration are important to color instruments to ensure that they continue to work correctly with a predictably high degree of accuracy.

Misconception

A popular misconception is that daily calibration, performed by a user is the same as factory calibration. The two calibrations are not the same and it is important to understand the difference. A new instrument has its optics and sensors calibrated at the factory to a traceable set of calibration standards with known values. This is what gives Konica Minolta excellent inter-instrument agreement, meaning two of the same units will read nearly identically.

Daily calibration is meant to prepare the unit for use. The environmental condition where the instrument is located plays an important role in its measurement performance. Temperature and humidity are factors which affect system performance. As temperature and humidity fluctuates throughout each day, measurement readings will be affected. Daily calibration with the standard white tile brings the instrument back to proper operating conditions and will provide consistent measurements day to day.

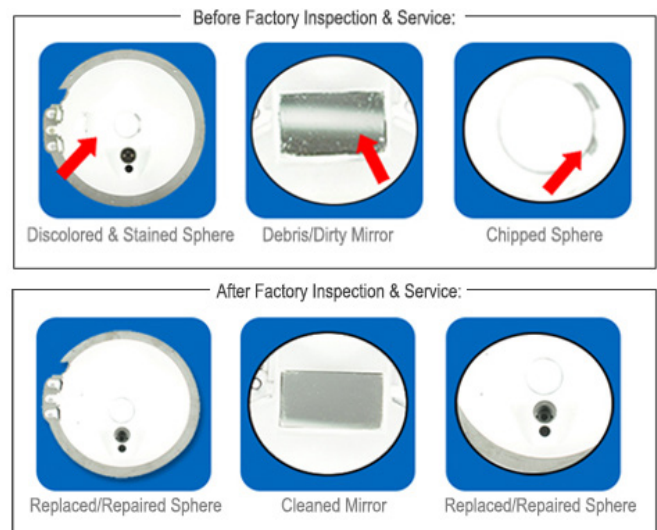
What is Factory Calibration?

Factory calibration is the process of adjusting the accuracy of the color measurement instrument in comparison to a master reference instrument and standards which meet national or international traceable standards, eliminating or minimizing factors that cause inaccurate measurement. It is the only

way to maintain consistency and making sure the instrument is able to achieve accurate and precise results.

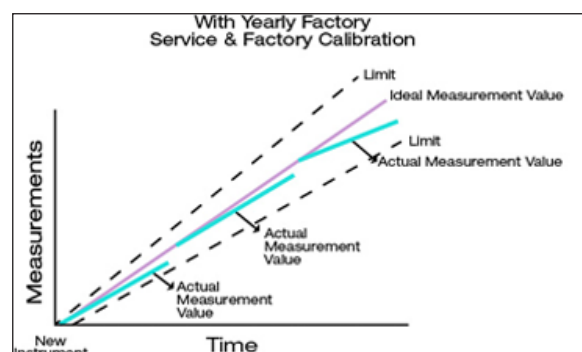
Why Factory Inspection is Critical?

Usage of instruments without factory inspection could cause problems as shown below. These issues will cause an instrument to give improper measurement data and if left unattended, will cause instrument failure. Along with an overall physical inspection of a unit, Konica Minolta Sensing also ensures that all sensors, detectors and system optics are all in good working condition.



Why Factory Inspection and Calibration is Recommended?

Factory inspection and calibration protects your equipment investment and also reduces waste and reject of your product. Inconsistency in measurement values translates directly to inconsistency in production and can cost a company in lost revenue.



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A brief overview of factory calibration:

- Factory calibration is performed by a trained and certified Konica Minolta Sensing service personnel in a calibration laboratory located in Asia or Japan.
- Ensures the instrument meets all of the product specifications as specified in the factory.
- Assess the instrument overall ability to read color throughout the entire spectrum both for accuracy and precision.
- Evaluate and if needed adjust or repair the instrument optics, lamps, apertures, etc...
- Recalibrate and establish new calibration data to the white calibration tile used for daily calibration.
- Issues new traceable calibration certificate for both the instrument and white calibration tile. All calibration certificates are traceable to in-house standard or international standard.

Some additional factors

- Quality system such as ISO 9001/9002 mandates that instruments are inspected and/or calibrated at a regular interval.
- Solid management practices mandate that instruments be inspected to prevent failure which could stop a production line.
- 6 sigma quality policy mandates that instruments must be inspected twice a year with pre and post data.

The risks and cost of error measurement are much higher than the cost of calibration. There is a misconception that it is not necessary to send a rarely used instrument for calibration. But, that's not the case. There are lots of factors that can affect the accuracy of the readings, be it dirt, dust, stain or even accidentally mishandling of instrument, the sensor, detector and systems optics might loosen resulting in inaccurate reading. To ensure optimal operation, factory calibration at regular intervals is the best option.

In Konica Minolta Sensing, we help to ensure our customer's color measurement instruments are well maintained. Our service personnel are trained and certified.

To watch a video of the calibration process for Spectrophotometer CM-3600A, click [here](#). If you would like to know more about our calibration services or have any questions about a specific product or service, contact us at +65 6895 8685 or drop us an email at ssg@konicaminolta.sg. Our service technician and application advisors would be glad to answer any of your enquiries.

