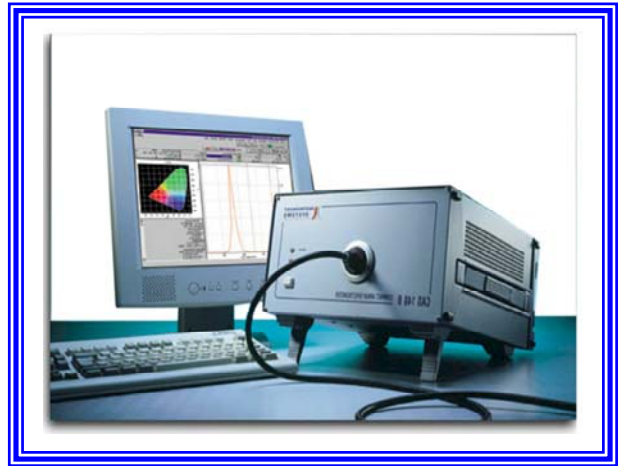


Technical Comparison: OL 770 vs. Instrument Systems CAS 140B-151



OL 770-LED

vs.



IS CAS 140B-151

Although the Optronic Laboratories' OL 770-LED and the Instrument Systems' CAS 140B-151 use similar spectrograph and CCD configurations, and hence are similar in many respects such as wavelength range, resolution and chromaticity repeatability, there are several clear advantages of the OL 770-LED, including the following:

- **Price:**
The OL 770-LED costs much less and gives higher performance than the CAS 140B-151.
- **Speed:**
In simple comparisons under the same conditions, the OL 770-LED consistently out-performed the CAS 140B-151 in terms of maximum number of results per second.
- **Easier to use:**
Built-in calibration and intelligent software makes the OL 770-LED easy to use for untrained personnel. Measurements and reports can be made with a simple mouse click.
- **Higher accuracy:**
The OL 770-LED gives unsurpassed accuracy for most applications. The CAS 140B-151 accessories give significant systematic errors.
- **Higher reliability:**
The OL 770-LED has much smaller uncertainties than the CAS 140B-151 for all measurements, giving greater confidence in results.
- **Better technical support:**
To save you time and money, Optronic Laboratories' staff of application experts and scientists can help with any question you may have.

Technical Comparison: OL 770 vs. Instrument Systems CAS 140B-151

Price:

This is frequently the single most important issue to many customers. Depending on the system configuration and accessories, the CAS 140B-151 can be up to 3 times more expensive than a comparable the OL 770-LED system! When comparing system prices, it is important to make sure that all the Instrument Systems options that are standard in the OL 770-LED and OL 770-LED/G systems are included in the comparison price.

Accuracy of Measurement:

Both systems offer spheres for total flux measurements and CIE Publication 127 compatible baffle tubes for averaged LED intensity measurements. However, the Instrument Systems' sphere uses an inferior design that yields a poor angular response. The OL IS-670-LED Integrating Sphere uses a superior design with a nearly perfect cosine response for higher accuracy measurements (see our Application Note A9 entitled "Improving Integrating Sphere Designs for Near-perfect Cosine Response" for more details). The Instrument Systems' baffle tube uses a diffuser that results in less accurate intensity measurements. The OL 15AB LED Receptor incorporates a small sphere for higher accuracy results. Please refer to Application Note A16 entitled "Eliminating Measurement Errors of LEDs" for further discussion on this important issue of measurement accuracy.

Accuracy and Ease of Calibration:

Instrument Systems calibrates their CAS 140B-151 in a manner that does not allow for self-absorption of user's LEDs or holders. It is almost impossible for independent labs to perform these calibrations in the same way, so the user has little choice but to send the system back to Instrument Systems for calibration. In contrast, the OL 770-LED and OL 770-LED/G systems come complete with their own internal calibration lamp. Calibrations that include self-absorptions of the LED and holder can be performed at any time by the user and without special dark room facilities. The software guides the user through this very simple process. (See Application Note A16 "Eliminating Measurement Errors of LEDs" for further discussion on the importance of self-absorption correction during calibration.)

Speed:

The OL 770-LED can take 25 spectra per second. Actual tests on a CAS 140B-151 show that fast acquisitions, even at the lowest integration time, could not be obtained. Instrument Systems does not specify how many spectra per second they can be achieved.

Sensitivity:

The OL 770-LED has about 100 times greater total luminous flux sensitivity with a 585 nm LED than the CAS 140B-151 (using the Instrument Systems definition of sensitivity). The sensitivities of the averaged LED intensity measurements are about the same, but Instrument Systems uses a diffuser and Optronic Laboratories uses an integrating sphere. An integrating sphere is essential for correct measurement according to the CIE Publication 127 requirements.

Software:

The OL 770-LED software is very powerful and easy to use. It allows very technical users to set different conditions of measurement, yet inexperienced users can make measurements with a single mouse click as soon as the program is started. Automatic routines ensure they get the best results every time. Results can be automatically downloaded to Excel spreadsheets or Word documents, so reports can be generated the way the user wants to see them with a single mouse-click. The value monitor also provides easy pass/fail testing and can even be linked to external hardware for totally automatic processing and sorting.

Goniometer Option:

The OL 700-30 Goniometer uses a 316 mm radius of rotation that follows the recommendations in CIE Publication 127 for Condition A measurements and is ideally suited to LEDs. The Instrument Systems goniometer has variable distance, allowing non-ideal conditions for measurement. The OL 700-30 goniometer can scan from -90° to +90° in just a few seconds. The scan time for the Instrument Systems goniometer is not known.



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