



MICROSTAR® READER

The Power to Know. The Power to Act.

The microStar's mobility expands your potential range of applications and flexibility. You now can easily MONITOR for radiation exposures to patients or employees, make quick MEASUREMENTS, and MINIMIZE the dose to all.

Landauer has once again changed the shape of radiation dosimetry with the introduction of our new microStar portable reader.

MicroStar

The microStar Reader offers you new choices to measure clinical radiation doses such as patient monitoring, to measure ionizing radiation to protect employees, or to monitor your work environment.

MicroStar InLight® System

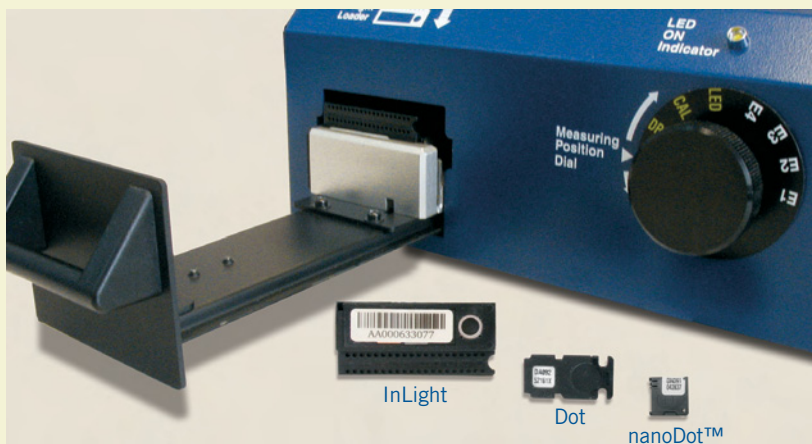
The microStar System provides read out for single-point Dot measurements and InLight Systems dosimeters. MicroStar is the smallest InLight reader available. Easy to setup, requires no nitrogen gas, and dosimeter preparation is eliminated. The read out process is three easy steps, and reader maintenance is simple.

MicroStar Software

MicroStar software is a menu-driven program with task oriented tab menus for easy navigation. It provides the ability to read out dosimeters, import data files, associate identification information to a dosimeter, and export data to formatted reports. Included are quality control and reader performance procedures and reporting to ensure the accuracy of dosimetry measurements.

Read out onsite, in the clinical lab, or in the field

Designed for portability, the microStar reader can be used anywhere to perform immediate and accurate radiation dose assessments.



Report

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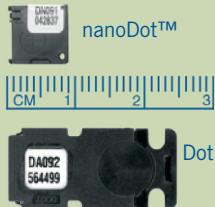
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Single point measurements for skin entrance dose:



Dose equivalent for whole body measurements and special environmental dose option:



InLight® Whole Body Basic



InLight Whole Body



InLight Environmental

Landauer makes radiation measurement onsite simple and easy with third generation, state-of-the-art, aluminum oxide ($Al_2O_3:C$) with optically stimulated luminescence (OSL) technology. Flexible handling options with the use of a single OSL element or multi-element OSL slide are available for the desired dosimetry application.

Software Features

Multiple dosimeter configurations available	<ul style="list-style-type: none"> • Dot dosimeter • New nanoDot dosimeter • Whole body dosimeter • Environmental dosimeter
Multiple calibrations stored	<ul style="list-style-type: none"> • Establish a variety of radiation environments for accurate analysis • User defined calibration expirations • Flexibility to incorporate correction factors based on clinical environment
Non-linear calibrations	<ul style="list-style-type: none"> • Designed to account for non-linear response of Al_2O_3 at “high” doses > 300 cGy
Transparent dose calculations	<ul style="list-style-type: none"> • Allows the user to “see” how the dose is computed from the measurement
Variety of measurement units available	<ul style="list-style-type: none"> • mrem, mrad, or cGy
Customizable Report	<ul style="list-style-type: none"> • Exposure data download to XLS, PDF, XML, CSV

Hardware Features

Portable	<ul style="list-style-type: none"> • Small and lightweight • Immediate results anywhere, anytime • Use for clinical dose measurements, emergency response, area monitoring or any radiation assessment application
Easy 1, 2, 3 read out process <ul style="list-style-type: none"> • Place dosimeter in drawer and close • Turn knob • Read dose from display 	<ul style="list-style-type: none"> • Speedy throughput • Easy access to data • Works with laptop software
Reanalysis	<ul style="list-style-type: none"> • Non-destructive read out • Allows for dose verifications • Allows for intermittent analysis while maintaining total dose accumulations
No dosimeter preparation	<ul style="list-style-type: none"> • Dosimeters ready-to-go • No annealing required • Bar code sensitivities for accurate dose results • Bar code serial numbers for chain of custody
Less complicated equipment <ul style="list-style-type: none"> • No heating parameters to maintain • No nitrogen gas • Lower power requirements 	<ul style="list-style-type: none"> • Low maintenance • Simple cleaning and repairs • No heating • Heat induced artifacts eliminated • Thermal quenching eliminated

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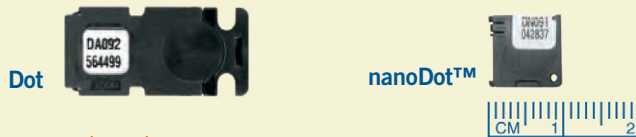


MICROSTAR® DOSIMETER

The Power of the Dot

The Dot offers complete reanalysis, has no dosimeter preparation, and the sensitivity is built in the 2D bar code for accurate dose results.

The microStar and the Dot are two recent examples of how Landauer combines our tradition of service, technical innovation, leadership, and integrity to help you work more easily, efficiently and confidently.



The Power to Control Risk

The newest innovation for single point radiation measurement is now available for diagnostic radiology, therapy or any radiation monitoring application for skin entrance dose assessment. The microStar dosimetry system uses Optically Stimulated Luminescence (OSL) and Al₂O₃—aluminum oxide—as the detector material. Due to the energy response of the Al₂O₃, the photon output varies with the energy for a given dose. Therefore, it is imperative for the reader to be properly calibrated to a set of reference conditions from which additional conversion factors can be applied as necessary. In the case of the microStar Reader, this is achieved by correlating the photon output from a known exposure to the corresponding dose.

Landauer provides a set of calibration dosimeters for 80 kVp (44 keV average) on a PMMA phantom at normal incidence. By properly calibrating the reader and using the factors below, accurate dosimetry measurements can be performed.

Calibration Set	Mammography (~32 kVp)	Computed Tomography (~120 kVp)	Cs-137 (662 keV)
80 kVp*	1.39	1.12	3.04

*=The 80 kVp technique is known as RQR6 with a HVL of 2.9 mm of Al

The steps are summarized for the user's convenience:

- 1) Calibrate the reader using the 80 kVp set provided.
- 2) Verify the calibration using the QC dosimeters provided.
- 3) Determine the energy at which the exposure is to be performed and select the corresponding conversion factor from the table.
- 4) Uses not covered (e.g., therapy dose applications) require a radiation environment specific set of calibration dosimeters to be created.



Example of patient dose application.

Read out in the lab or in the field

Convenient, accurate dose assessments with the portable microStar reader.



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MICROSTAR® DOSIMETER

The Power of the Dot

InLight® nanoDot™ dosimeters are for use in single point radiation assessment applications, and are engineered to be read out by the smallest InLight reader available—microStar.

The microStar System provides the ability to read out nanoDot dosimeters, import data, export data into customizable reports, and assign identification information to a nanoDot. MicroStar's custom software enables multiple calibrations to be stored to establish a variety of radiation environments for accurate analysis.

Operational Advantages

Complete Reanalysis Capabilities

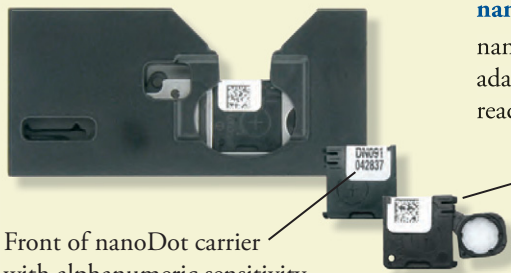
- Nondestructive read out allows for dose verification and intermittent analysis for total dose accumulation
- Dosimeter archiving made possible
- No fade (8-10 minute stabilization after exposure before read out)

Dosimeter Preparation Eliminated

- No annealing
- Dosimeter sensitivities provided (detector calibration factor used in dose calculation)
- Engraved 2D bar code contains dosimeter sensitivity and serial number for chain of custody



Loading an adapter with a dot carrier into a microStar Reader is easy!



Front of nanoDot carrier with alphanumeric sensitivity code and serial number (DN091=0.91 sensitivity). Either the front or back of the carrier can face towards the radiation source during exposure.

nanoDot

nanoDot carriers slide in and out of the adapter (2D bar code facing front) for read out in a microStar reader.

Back of open nanoDot carrier with 2D bar code that includes sensitivity code and serial number.



Each nanoDot is shipped enclosed in a plastic packet that protects against contamination.

Dosimeter Specifications

LLD	10 mrad
Reporting Dose	10 mrad to 1500 rad (cGy) <ul style="list-style-type: none"> • Linear response up to 300 rad (cGy) • Software supported non-linear calibration up to 1500 rad (cGy)
Energy Range	5 keV up to 20+ MeV
Accuracy	+/- 5% with standard nanoDot +/- 2% with screened nanoDot
Minimal dose rate dependence	
No temperature dependence	

Dosimeter Features

No angular or energy dependence <ul style="list-style-type: none"> • Ideal for challenging clinical conditions 	<ul style="list-style-type: none"> • Curved surface dose (eye, breast) • In and out of field measurements (eye, breast, gonad, pacemakers) • Ideal for surface dose and electron measurements
Radiotherapy Applications	One calibration accurately measures dose regardless of varying surface angles, energy and dose rate changes within your procedure
Radiotranslucent	

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