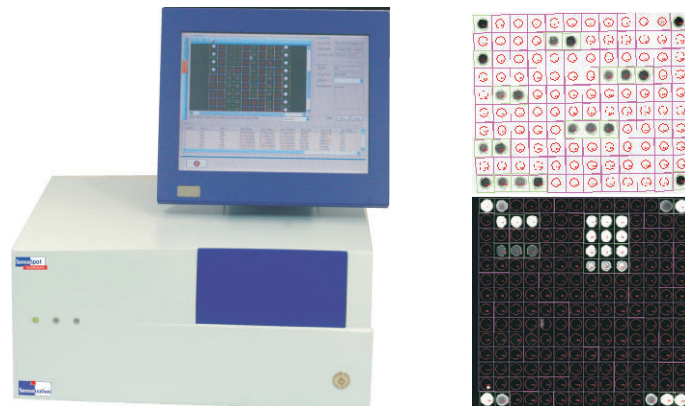


ArrayReader Software Package For SensoSpot® Fluorescence and SensoSpot® Colorimetry Array Readers

Powerful Microarray Analysis

Sensovation's Array Readers **SensoSpot® Fluorescence** and **SensoSpot® Colorimetry** are instruments designed to acquire high quality images from colorimetric or fluorescent microarrays. Both instruments have an "on-board" PC, loaded with Sensovation's intelligent ArrayReader Software. Array Reader Software is a powerful instrument control and array analysis software for all microarray operations - from method development to result presentation. The ArrayReader software package is specifically designed for **SensoSpot® Fluorescence** and **SensoSpot® Colorimetry** and offers the following unique features and benefits:



*Sensovation's Array Readers come standard with a powerful instrument control and array analysis software package: ArrayReader Software. Two microarray images are shown above. Upper: colorimetric image acquired by **SensoSpot® Colorimetry**. Lower: Fluorescent image acquired by **SensoSpot® Fluorescence**.*

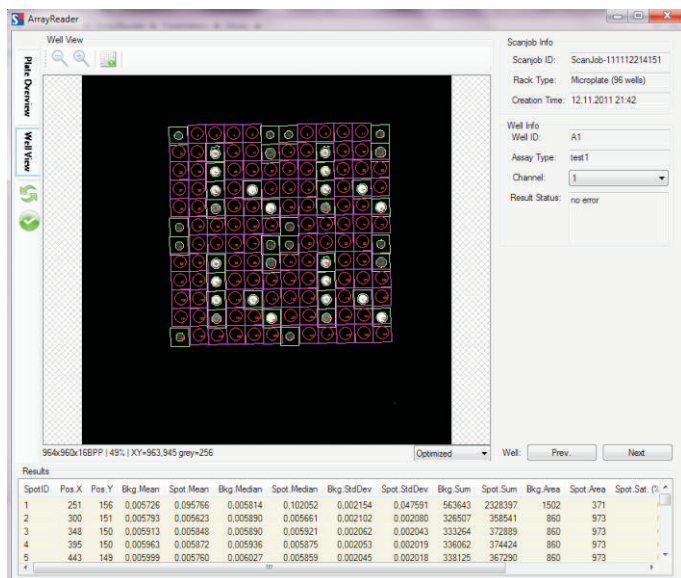
- Full instrument control
 - ⇒ Easy set-up, easy operation.
- Image acquisition, display and storage
 - ⇒ Visualization of results and documentation.
- Teach-in of sample carrier formats
 - ⇒ Highest format flexibility (microplates, slides, biochips...).
- Flexible teach-in of array formats and array analysis parameters
 - ⇒ Successful analysis of any microarray.
- Intelligent spot detection with manifold spot analysis options
 - ⇒ Meaningful and relevant results.
- Real-time array analysis during measurement
 - ⇒ Fast measurement, high throughput.
- Comprehensive presentation of all relevant spot values together with statistical parameters
 - ⇒ Allows for elaborate spot / assay validation.
- Manual re-analysis after image acquisition
 - ⇒ Post-run compensation of array defects.
- Automatic export to an Excel template workbook
 - ⇒ Flexible and simple result interpretation during assay development.

In ArrayReader Software a revolutionary new concept for routine Microarray analysis is realized. Based on a reference pattern of positive spots, the software instantly localizes the microarray, performs gridding and calculates spot intensities and a number of important other parameters and statistics. The microarrays are analyzed in real-time, right during measurement providing instant results and high sample throughput. Intelligent, spot-finding algorithms assure that each spot is found and analyzed based on spot shape and spot size.

ArrayReader Software calculates and delivers raw data, including spot mean intensity or background mean intensity. In addition a number of statistical information is calculated for flexible, customer-defined spot verification and calculation of a final diagnostic answer. For documentation purposes and easy re-analysis a high resolution 16-Bit TIF image is stored with each microarray data set.

The measurement data are stored in an Excel compatible spreadsheet or can be automatically exported to Excel spreadsheets. This is an especially useful and flexible feature for assay development: certain calculations on the raw data from the Imaging Reader can be predefined in an Excel workbook. ArrayReader Software then will paste all measurement data into this workbook, where the final interpretation will be performed – giving a diagnostic answer.

Data Sheet



Screenshot from ArrayReader Software, result window. The microarray was labeled with Cy5 and has a matrix of 12 x 12 spots with 150µm spot size and 220µm spot distance measured in the red channel. The analysis was done using the spot shape "circle" with automatic spot tracking. Below the microarray image, result data are listed, including mean intensity and background mean intensity as well as statistical information useful for spot and assay validation. These measurement data represent the basis for calculation of the final diagnostic answer in an assay.

Result:		Marker 1 OK: TRUE
Positive controls present: Present	Final Conclusion:	Marker 1 threshold: above threshold
Positive controls valid: valid	Assay Valid: VALID	Marker 1 valid: valid
Negative Control ok: TRUE	Marker 1: POSITIVE	Marker 2 OK: TRUE
Negative Control Valid: Valid	Marker 2: NEGATIVE	Marker 2 threshold: above threshold
		Marker 2 valid: not valid

Result from an Excel workbook created by the EXCEL-export functionality of ArrayReader Software. Automatic calculations are performed on the raw data delivered by SensoSpot® Fluorescence and SensoSpot® Colorimetry. This interpretation allows to present a final diagnostic answer.

Specifications

Instrument Control

x-, y-, z positioning, reference target positioning (C), illumination channel selection (F), integration time selection (F).

Image acquisition, display and storage

16 Bit Tiff images.

Contrast settings: Full range, optimized, User defined.

Sample Carrier Definition and Array Analysis Parameters

Sample carrier formats: flexible definition of measurement positions within the area of a SBS microplate (125mm x 85mm).

Array formats: Low density microarrays with up to 2500 spots, minimum diameter 30µm.

Reference pattern: Reference pattern consisting of 3 (minimum) positive spots, with automatic pattern detection and automatic gridding.

Array analysis parameters: reference pattern detection sensitivity (1-10), spot tracking (Y/N).

Spot analysis options: spot shape (circle, outline, rectangular), spot analysis diameter, background analysis diameter, dust threshold, spot threshold, autoadjust spot diameter.

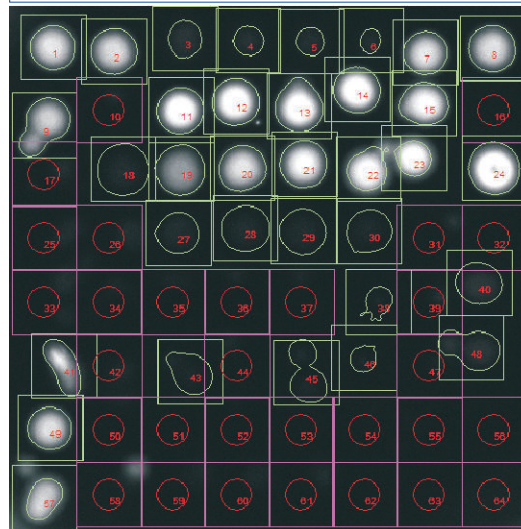
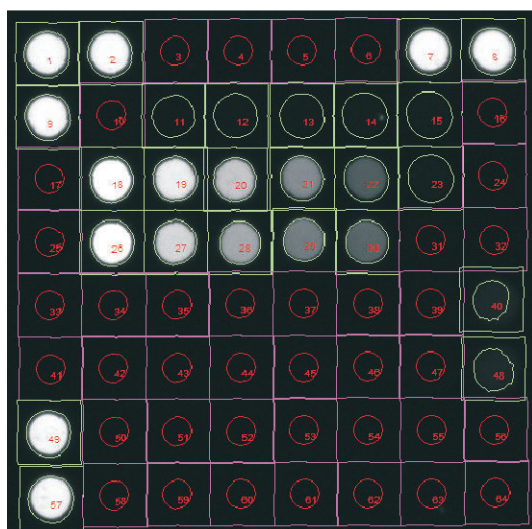
Array analysis

In real-time, right during measurement. Manual post-run analysis.

Output

Output Data: Spot ID, x-position, y-position, Bkg. Mean, Spot Mean, Spot Median, Bkg. StdDev, Spot StdDev, Bkg. Sum, Spot Sum, Bkg.Area, Spot Area, Spot Sat. (%), Found, Pos.Nom.X, Pos.Nom.Y, Spot Diameter.

Result Data format: csv, xml with excel style sheet. Automatic export to an EXCEL template workbook.



Two fluorescent images acquired with SensoSpot® Fluorescence and analyzed with Array Reader Software, illustrating the powerful spot-finding algorithms of ArrayReader Software. Left: Perfectly spotted microarray analyzed with ArrayReader Software "spot outline" functionality. Right: In contrast to above, the spots of the microarray are unshaped due to a spotter problem. Despite this, ArrayReader Software still finds and tracks the spots, giving equally useable data in both cases.