Dedicated, Assay-Specific Scanner

High Content Screening (HCS) integrates fluorescence imaging with multiplexed assays and image analysis. However, instrumentation for HCS is often less integrated than the approach itself. In many cases a conventional, inverted microscope must play host to third-party accessories for enhanced illumination, motion control and data acquisition. Key target analyses are often complicated, like multi-parametric characterization of cellular responses to therapeutic interventions; or highly parallel genotyping of prenatal diagnostics, to name a few.

The TARGA high-throughput imaging system seamlessly combines the key components necessary for best data quality and speed: a high-performance solid-state Light Engine, precision motion control, a sCMOS camera and a dedicated computer. TARGA is a highly integrated platform for efficient, fast data collection and analysis. The TARGA is specifically designed and optimized for assay-specific requirements. The tool can readily be tailored to dedicated assays via key component selection including:

- Excitation light sources
- Optics: filters, dichroics, objectives
- Large format, high speed camera
- Robotic automation for sample introduction
- Software control and analysis

HCS demands robustness. Consistent HCS assay performance over days, weeks and months of operation requires light sources that are stable, reliable and maintenance-free. To meet these requirements, TARGA incorporates Lumencor's best-in-class solid-state illumination technology. Discrete, electronically controlled light sources allow inter-channel balancing of fluorescence signals and rapid wavelength switching. The intrinsic stability of the solid-state excitation sources can be further enhanced by feedback-controlled light delivery metering when precise quantitation is required. The light dosage can be known, monitored and stable.

TARGA's operation is controlled by an onboard server with ethernet connectivity to a client. Assays can be run autonomously, with local data storage via the onboard computer, or under client supervision, with ethernet data transfer to remote storage. Multiple TARGAs at one or several locations can be calibrated for inter-instrument performance, networked, and coordinated from any client, enabling a distributed and scalable approach to high-throughput analysis. TARGA's integration at both instrument level and as a networked appliance offers a new approach to the increasingly large-scale screens required to gain systematic insights into biological processes.

For more information on the TARGA Imager please contact us at info@lumencor.com. To receive a purchase quotation for a TARGA Imager, please submit our online quotation request form.
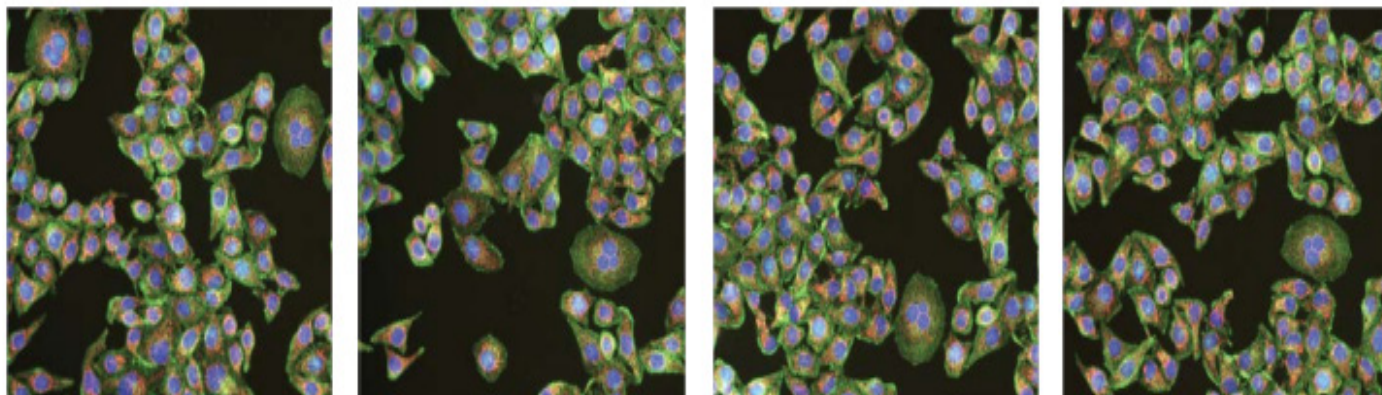
Features and Operating Characteristics:

Features	Details
Detector	Multicolor fluorescence, moving sample stage with stationary objective Bright field, dark field, birefringence and transmissive detection
Sample Configuration*	96-, 384-, 1536-well microplate or four 75 mm x 25 mm microscope slides
Sample Exchange	Front loading, compatible with robotic automation
Stage Motion (XY)*	Resolution 88 nm [2]
Stage Motion (Z)	Resolution 5 nm
Dimensions (W x L x H)	20 in x 23 in x 16 in (51 cm x 59 cm x 40 cm) [3]
Weight	<100 lbs (<45 kg)
Analysis Software	Customized image analysis, numerous open source platform options
SDK	API FOR Java/C++/MATLAB/Python available; Micromanager compatible
Power Supply Requirements	24 V DC/5 A DC
Warranty	24 months
High-resolution Objective*	Various magnification and NA objectives, details upon request
Fluorescence Detection*	Quad-band dichroic + 4 single band emitters in fast filter wheel [4]
Camera	Major makes and model options, Large sensor compatible

These specifications can be customized according to unique, assay-specific requirements.
[1] Optional metered, feedback-controlled light delivery.
[2] Optional XY positioning hardware providing increased resolution and repeatability can be installed.
[3] Multiple scanners may be rack mounted in a vertical stack.
[4] 50 ms filter interchange.