

Luminescence Imaging System

Helios Daylight Electroluminescence (EL) and Photoluminescence (PL) Imaging System

Datasheet



Key Applications

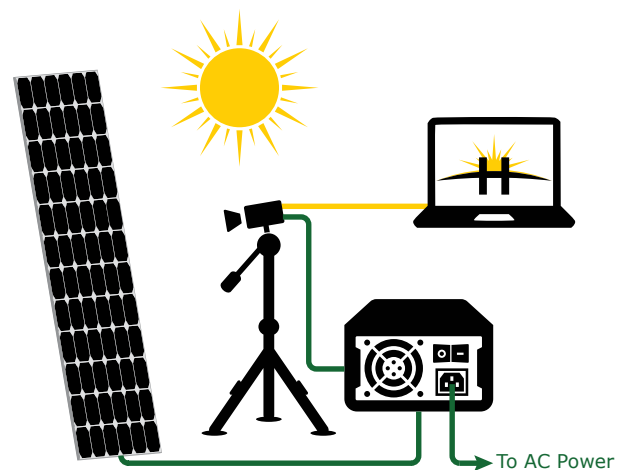
- Quality validation
- Durability, failure analyses
- Research and development
- Installation process validation
- Shipping/handling inspection
- Mounting system evaluation
- Damage evaluation

The Helios luminescence imaging system is the complete solution for acquiring emission images of silicon-based photovoltaic (PV) modules and cells. The system is designed to enable electroluminescence imaging both indoors and outdoors under all ambient lighting conditions. Additionally, the system enables photoluminescence imaging under direct irradiance conditions, typically outdoors. The ease-of-use of Helios facilitates efficient and reliable image acquisitions for cost-effective evaluations. Helios is designed for maximum portability for field-use applications such as inspections of installed PV modules. The system is flight-ready, permitting trouble-free transport to wherever its need arises.

The turn-key Helios system incorporates user friendly software that utilizes the latest hardware-accelerated algorithms to afford fast image processing on a supplied notebook PC, an intelligent DC power supply, and a cooled InGaAs camera for ultimate sensitivity to silicon emissions. Simple field connections between the system's components are made in seconds. Selection between EL and PL modes is simply made by a flip of a switch on the power supply. Camera resolution, working distance, and input AC voltage are selectable upon system configuration.

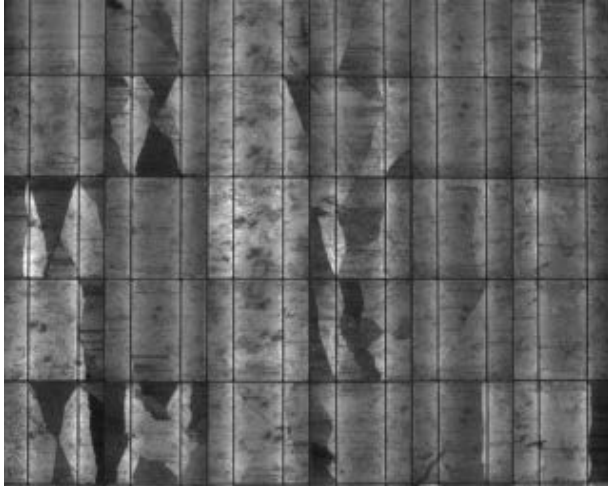
Image acquisition times are greatly reduced by sophisticated image processing algorithms that minimize imaging noise. Because luminescence imaging depends on ambient conditions, EL image

acquisition time increases with incident irradiance while PL image acquisition time decreases with incident irradiance. In the case of EL, incident irradiance represents imaging noise while in the case of PL, incident irradiance is proportional to imaging signal. The Helios system is designed to maximize imaging performance in each case given the associated measurement characteristics. The software also improves usability by means of automatic camera exposure control, including a histogram-weighted setting that maximizes image quality under the majority of conditions. Image acquisition is simply: *point, focus, and shoot*.

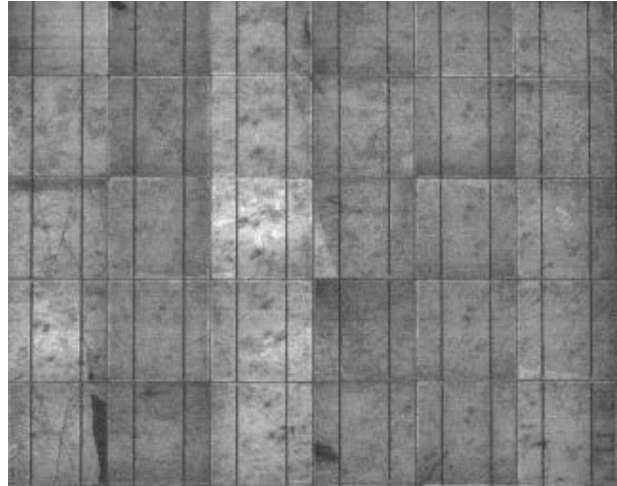


Helios connection diagram: yellow line is serial data and green lines are power connections

Helios Luminescence Imaging System



Helios EL image acquired at approximately 400 W/m² incident irradiance (320x256 resolution)



Helios PL image acquired at approximately 400 W/m² incident irradiance (320x256 resolution)

Specifications

Effective Average Luminescence Imaging Dynamic Range	> 56 dB
Image Resolution	
Standard	320 × 256 pixels
Optional	640 × 512 pixels
Camera Working Distance	Configure on order
DC Power Supply	
Dimensions {H × W × D}, Flight-Ready	16 cm × 57 cm × 61 cm (6.3 in × 22.5 in × 24.1 in)
Weight	18.5 kg (40.8 lbs)
Maximum Voltage Output	100 V
Maximum Current Output	10 A
Input Requirements	1 kW, 100/120/220/240 VAC, 50/60 Hz (Configure on order)
Output Connectors	MC4
System Warranty	One year parts and labor on defects in materials or workmanship

Due to continuous product development, specifications are subject to change without notice.