Flicker-iP
Flicker Test Accessory

Quickly upgrade your illumia®Plus2 System for flicker analysis

Why flicker analysis is needed

The health effects of flicker are divided into visible and invisible flicker. In the visible domain, frequencies in the range ~3 to 70 Hz represent a risk of seizure in those with photosensitive epilepsy. In the invisible domain, at higher frequencies, migraines, headaches, eye strain and non-specific malaise may result. Some SSL systems, particularly those paired with dimming controls, demonstrate significant photometric flicker. Now Labsphere makes it easy to measure flicker metrics on its illumiaPlus2 Systems with Integral® software.

Fast integration

The Flicker-iP integrates with Labsphere's illumiaPlus2 Integrating Sphere Spectroradiometers. The sensor head mounts on the 0.5 inch sphere port frame next to the spectral flux measurement port and then plugs into the USB port of the photometry module. Using Labsphere's Integral hardware set feature, connect to the Flicker-iP and you are ready to measure your device. All measurements of lamps, luminaires and fixtures are done when operated in the illumiaPlus2 integrating sphere.

Features and reporting:

- Selectable Sampling Rate
- Selectable Scan Duration (Measurement Period)
- Selectable Recording Intervals
- Lamp Light Output Periodic Frequency
- Percent Flicker
- Flicker Index
- Stroboscopic Visibility Measure (SVM)
- Short Term Flicker (P_{st})
- ASSIST Flicker Perception Metric (M_p)
- Digital Exportable of RAW Data*
- Fraction of Rated Light Output Integrated over Measurement Period
- Percent Amplitude Modulation at Selected Frequencies
- Precision Cosine Receiver
- Robust Carry and Storage Case

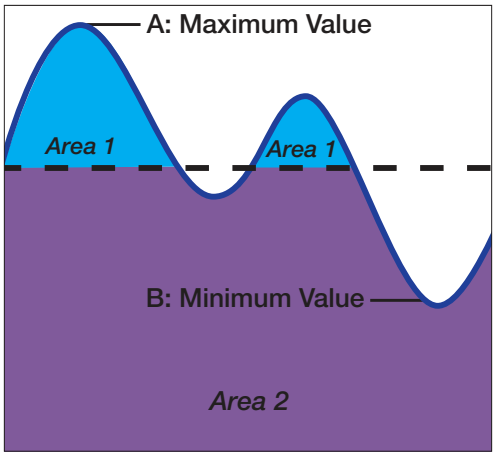
*excluding P_{st}

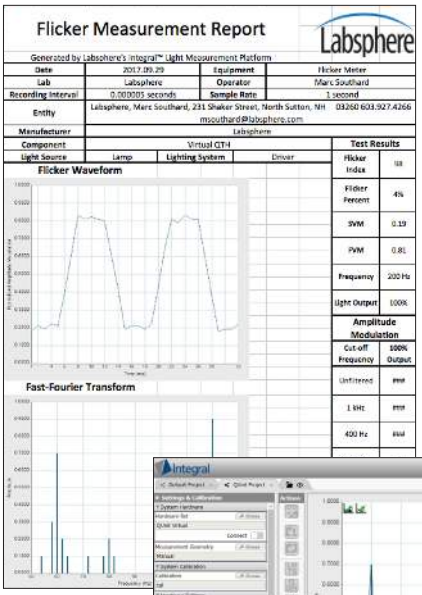
Ordering Information

Model Name: Flicker-iP Order Number: AA-01510-000
Includes: flicker sensor, condition electronics, mounting accessories,
Integral software, sensor head preamp, cabling, storage case,
calibration certificate, instructions for hardware and software installation
and operators manual

Specifications

Sensor:	Broadband silicon photodiode diode filtered for V_λ response
Photometric Range:	380 nm to 780 nm
Input Optic:	Diffuser window
Cosine Response:	< 9%
Sampling Rate Range:	Low: 10 Hz
	High: 5000 Hz
Data Recording Rate:	5 kHz with internal sample rate of 20 kHz
Recording Interval:	0.1 to 0.0002 sec
Equipment Measurement Period Range:	12 seconds
Measurement Time Range:	120 ms to 12 s
Percent Flicker Range:	0 -100%
Flicker Index:	Reported
Lamp Light Output Periodic Frequency Range:	0-2500 Hz
Stroboscopic Visibility Measure: (SVM)	Reported
ASSIST Flicker Perception Metric: (M_p)	Reported
Fraction of Rated Light Output Integrated	
Over Measurement Period Amplitude:	100%, 20% and minimum fraction of light output
Modulation Unfiltered:	At 1000 Hz, 400 Hz, 200 Hz, 90 Hz and 40 Hz cut off frequencies
Software:	Integral
Interface:	USB 2.0
Computer Requirement:	Integral Cube, PC or laptop with Windows 7 or newer
Cable Length: (from sensor to USB)	80 in (20.4 cm) + 2 m extension
Dimensions: (sensor head)	1.5 in diameter x 1.1 in (3.81 x 2.74 cm)
Weight:	0.40 lbs (0.18 g)
Mounting:	Mounts on Labsphere's 0.5 inch integrating sphere port frame
	8-32 mounting boss for benchtop use





Flicker Metrics

Three metrics for the evaluation of flicker:

- Percent flicker
  - 0-100% scale
  - Accounts for average, peak to peak amplitude

$$\text{Percent Flicker} = 100\% \times \frac{A - B}{A + B}$$

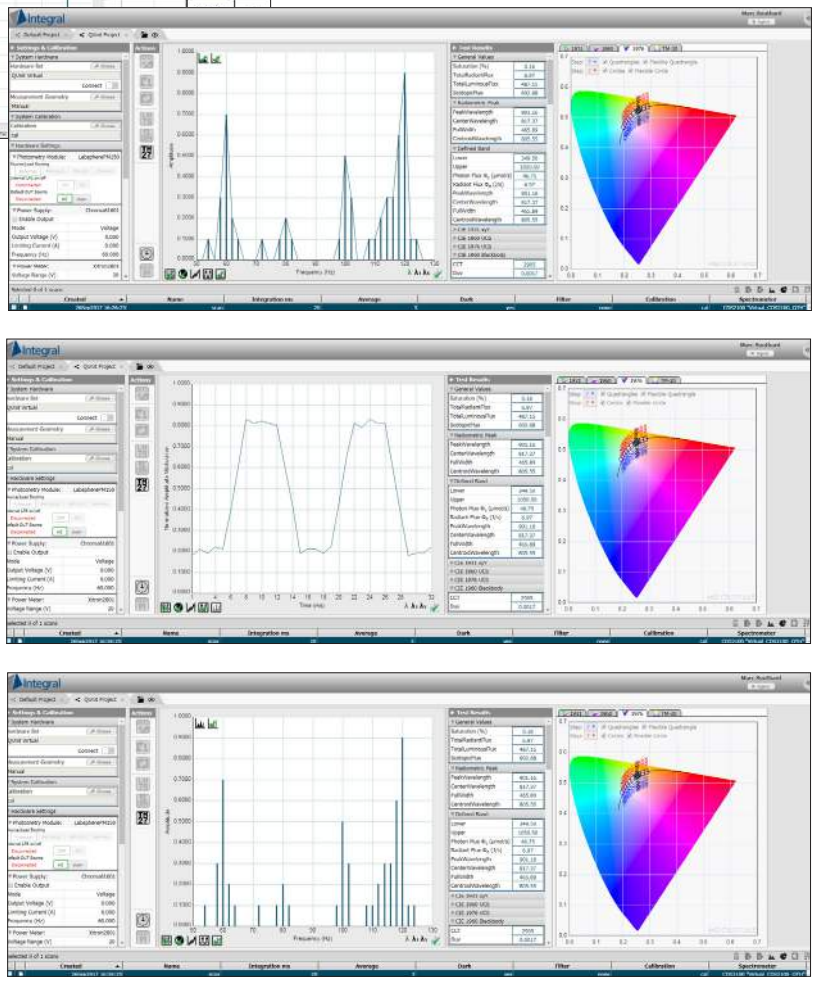
- Flicker Index
  - 0 – 1.0 scale
  - Accounts for average, peak to peak amplitude, shape duty cycle

$$\text{Flicker Index} = \frac{\text{Area 1}}{\text{Area 1} + \text{Area 2}}$$

- Flicker frequency
  - 1/periods of cycles

Reference

- NEMA 77-2017



Sample Screen Shots