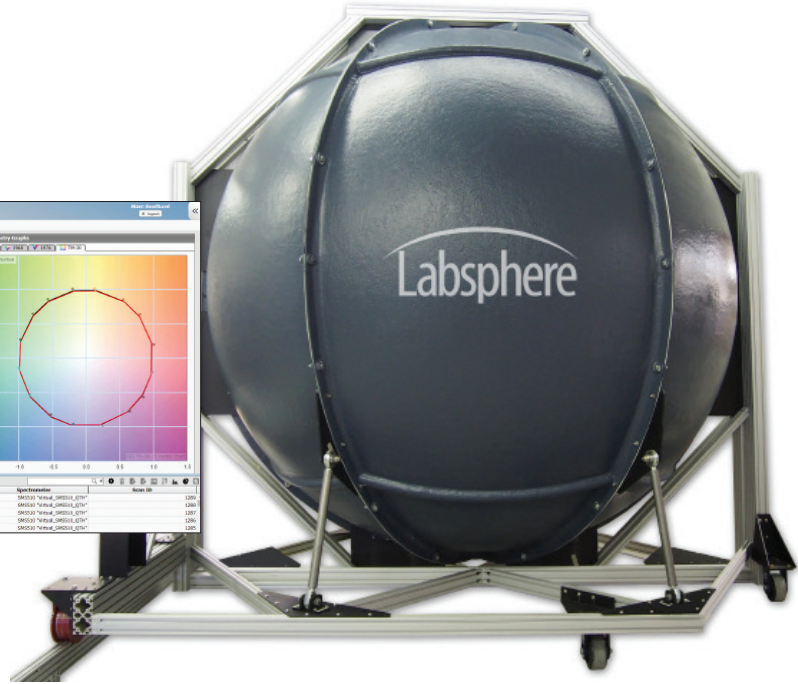
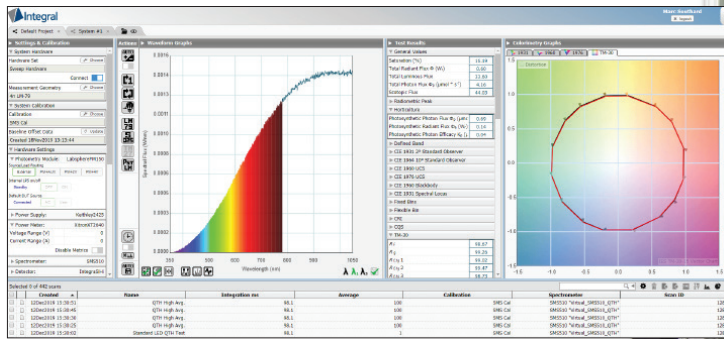


# illumia<sup>®</sup>Plus2 Integrating Sphere Spectroradiometers

Flexible, modular solutions with centralized data management



Build a system that meets your needs. Labsphere illumiaPlus2 integrating sphere spectroradiometers offer flexibility to meet your most demanding requirements and grow with your business. A choice of integrating sphere sizes ranging from 25 cm to 3 m, spectrometer options, and application-specific modules help you maximize throughput and productivity while maintaining high absolute accuracy and repeatability.

Integral<sup>®</sup> Software drives it all with operation from any device, any platform, any location and in any language.

## Improve productivity:

- Add-on electronic modules increase functionality and simplify compliance with IES LM-79-19, IES LM-78 and equivalent measurement guidelines
- Automated calibration routines ensure ease-of-use and improved efficiency
- Automated IES LM-79-19 stabilization routine
- Improved integrating sphere design allowing lamp “hot swap” to achieve greater efficiency and shorter measurement time
- Generate reports using Excel templates: data where you want it, how you want it, formatted for language and style

## Find the illumiaPlus2 system that best fits your application

### illumiaPlus2 800

#### Measure:

- Packaged LEDs
- Clustered LEDs
- Miniature Lamps
- Entertainment Lighting
- Automotive Lighting
- LED Troffers
- LED Luminaires

#### Key Features:

- Wide spectral range
- Fast CMOS array detector
- Compact size
- Ideal for QC and manufacturing applications
- High sensitivity

### illumiaPlus2 2600

#### Measure:

- Indoor Lighting
- Outdoor Lighting
- Roadway Lighting
- Lamp and Luminaires
- LEDs
- Entertainment Lighting
- Automotive Lighting
- Troffers
- Luminaires
- CFLs
- Fluorescent Lamps
- OLEDs
- Low Power LEDs

#### Key Features:

- Fast, low noise; TE cooled back – thinned CCD array detector
- Shutter for dark measurements in real time
- Hardware triggering capability
- Exceptional stability at long exposure time
- High dynamic range

### illumiaPlus2 3020/3030

#### Measure:

- Packaged LEDs
- Clustered LEDs
- Miniature Lamps
- Entertainment Lighting
- Automotive Lighting
- LED Troffers
- LED Luminaires
- CFLs
- Fluorescent Lamps
- OLEDs
- Low Power LEDs
- HID Lamps
- LED Devices in High Speed
- Production Environment

#### Key Features:

- Exceptional measurement sensitivity
- Inbuilt filter wheel with ND filters provides excellent dynamic range
- Low stray light
- High speed
- Easily synchronized with other devices

## Every illumiaPlus2 system features these standard products

### Programmable DC Power Supplies

Designed to accurately provide DC current to reference lamp, auxiliary lamp, and DCV devices under test. The current output is selected, set and controlled using Integral Software included with the power supply.

- Programmable regulated DC current
- Programmable regulated DC voltage
- Controlled current ramp up
- Lamp operation timer
- Easy on/off operation
- Front panel or remote control
- Current, voltage readback

### ICM-500 Control Module

The illumiaPlus2 Control Module is the routing module that ties Labsphere's powerful Integral Software to the illumiaPlus2 total spectral flux measurement hardware. When the ICM-500 is controlled by Integral, this user friendly, turn key system automatically routes power and metering.

- Main hub for power supplies and power meters
- Routes DC voltage to  $2\pi$  and  $4\pi$  reference locations
- Routes power to absorption correction lamp
- Routes DC or AC power to devices under test
- USB inputs

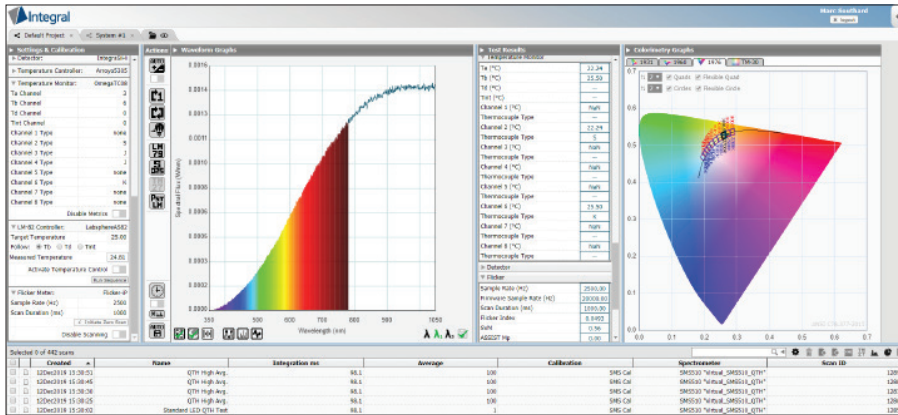
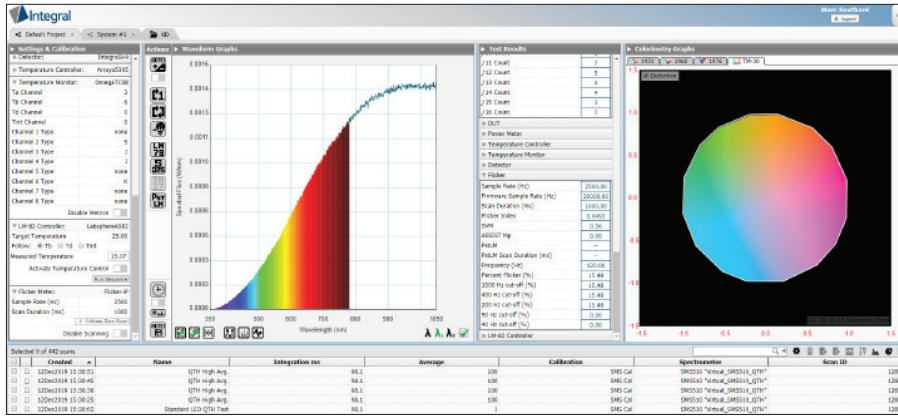
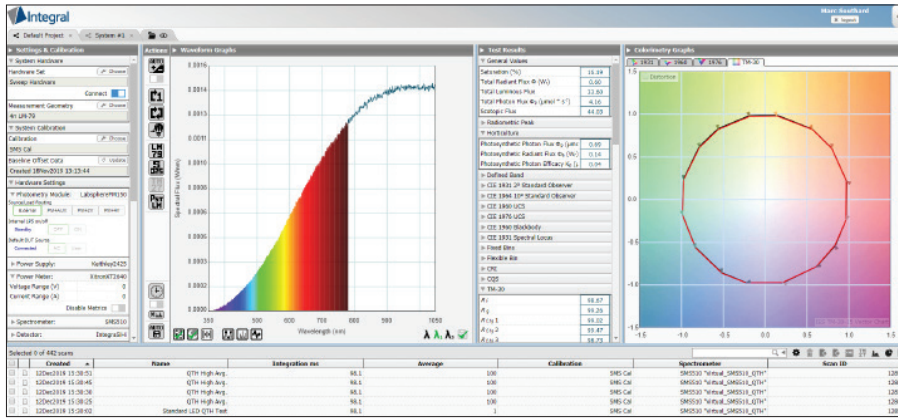


### Calibrated Spectral and Luminous Flux Standards

Each standard has been carefully screened, seasoned, and calibrated at our manufacturing facility under the guidelines recommended by the NVLAP accredited ISO 17025 practices for the highest degree of confidence.



# Integral Light Measurement Software



Supported Devices		
<b>Spectrometer</b>	<b>Power Supply</b>	<b>Power Meter</b>
CDS1100	Agilent6811B	QINQZ48775C1
CDS1200	Agilent6812B	TETP2201
CDS2400	AgilentE3632A	Xiltron2801
CDS2600	AgilentE3633A	YonogawaWT210
CDS3000	AgilentE3634A	YonogawaWT3000
CDS3010	AgilentN5751A	YonogawaWT310
CDS3020	AmetekVX	
CDS3030	Ametek_1501X	<b>Temperature Controller</b>
CDS500	Chroma1601	Arroyo5300
CDS610	Chroma1602	Arroyo5305
QEPGeneric	Chroma1603	Arroyo585
SMS500	Chroma1604	LandTEC
SMS500ULS	Chroma1605	
SMS510	Keithley2400	<b>Temperature Monitor</b>
	Keithley2410	OmegaT08
	Keithley2420	
	Keithley2425	<b>Flicker Meter</b>
	Keithley2430	Flicker-P
	Keithley2440	GentechIntegratingFK38inGaAs
<b>Photometry Module</b>		
LabSpherePM100		
LabSpherePM150		
<b>LM-82 Controller</b>		
CSZ_CP	LabSphereLPS	
LabSphereAS2	MoniaM8811	
LabSphereATC82	ParvaAPS9000	
	Quattech31015	
	TDKLambda_GEN100_7_5	
	TDKLambda_GEN150_10	
	TDKLambda_GEN40_19	
	TDKLambda_ZSeries	
	Keithley6514	
		<b>Detector</b>
		IntegrinGAAsExtended
		IntegrinGAAsStandard
		IntegraSiH
		IntegraSiLO
		Keithley6485
		Keithley6514

## List of Integral Supported Devices

- HTML5-enabled web browser based light measurement software
- Operation from any device, any platform, any location and in any language
- Instantly switch between English, Mandarin Chinese, Japanese, Korean, and French
- Large assortment of test hardware configurations are supported (spectrometer, AC and DC power supplies, temperature controls and monitors)
- Powerful, easy-to-use Application Programming Interface (API) supports LabVIEW, .NET, C, and VBA
- One user can control many test stations and multiple users can access the same test station from anywhere
- Meets LM-79-19 and LM-78 integrating sphere spectrometer recommended measurement methods
- Automated calibration routines
- Built-in report generator with the ability to create custom reports
- All Industry standard color calculations including:
  - x, y, u, v, u', v', CCT, CRI (1-15 and general), CQS, luminous flux (lumens), scotopic lumens, Duv, dominant wavelength, peak wavelength, FWHM, Centroid, Purity, ANSI SSL 2015 binning, TM-30-18 fidelity and gamut data, distortion and vector graphics, and horticulture

# illumiaPlus2 - 800 Ordering Information

System:	illumiaPlus2 with 25 cm sphere	illumiaPlus2 with 50 cm sphere	illumiaPlus2 with 100 cm sphere	illumiaPlus2 with 165 cm sphere	illumiaPlus2 with 195 cm sphere
<b>illumiaPlus2 800</b>					
2 $\pi$ version:	—	AA-40022-050	AA-40022-100	AA-40022-165	AA-40022-195
4 $\pi$ version:	AA-40024-025	AA-40024-050	AA-40024-100	AA-40024-165	AA-40024-195
Above Systems Include:					
Sphere:	LMS-025	LMS-050	LMS-100	LMS-165	LMS-195
Control Module:	ICM-500	ICM-500	ICM-500	ICM-500	ICM-500
DC Power Supply:	LPS-175-27	LPS-175-27	LPS-525-42	LPS-525-42	LPS-525-42
Spectrally-Calibrated Lamp: (2 $\pi$ and 4 $\pi$ are not interchangeable)					
2 $\pi$	2PI-1-INT-650	2PI-1-INT-650	2PI-1-INT-1400	2PI-1-INT-1400	2PI-1-INT-1400
4 $\pi$	SCL-650	SCL-650	SCL-1400	SCL-1400	SCL-1400
Aux Lamp:	AUX-650	AUX-650	AUX-1400	AUX-1400	AUX-1400
Lamp Socket Assembly:					
	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$
Software:	Integral	Integral	Integral	Integral	Integral

All systems include Retouch 6080 and Tool Kit

## Typical Performance Specifications (lumens)

Spectral Flux Measurements: 350 nm - 1000 nm

Exposure Time Range: 40  $\mu$ s – 5 sec (Actual exposure time depends on sphere size and source type)

	min	max	min	max	min	max	min	max	min	max
Tungsten Filament:	0.039	1880	0.154	7500	0.616	16300	1.39	41000	2.46	57000
Cool White LED:	0.001	1770	0.003	7100	0.013	14500	0.030	37000	0.054	52000
Warm White LED:	0.001	1100	0.005	4500	0.020	13800	0.045	34000	0.080	47000
Blue LED:	0.025	77	0.099	300	0.398	1200	0.895	2700	1.59	3800
Red LED:	0.009	195	0.037	800	0.148	1100	0.334	3500	0.594	5000
Upper Range:	Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C	

## illumiaPlus2 - 2600 Ordering Information

System:	illumiaPlus2 with 25 cm sphere	illumiaPlus2 with 50 cm sphere	illumiaPlus2 with 100 cm sphere	illumiaPlus2 with 165 cm sphere	illumiaPlus2 with 195 cm sphere
<b>illumiaPlus2 2600</b>					
2 $\pi$ version:	—	AA-40072-050	AA-40072-100	AA-40072-165	AA-40072-195
4 $\pi$ version:	AA-40074-025	AA-40074-050	AA-40074-100	AA-40074-165	AA-40074-195
Above Systems Include:					
Sphere:	LMS-025	LMS-050	LMS-100	LMS-165	LMS-195
Control Module:	ICM-500	ICM-500	ICM-500	ICM-500	ICM-500
DC Power Supply:	LPS-175-27	LPS-175-27	LPS-525-42	LPS-525-42	LPS-525-42
Spectrally-Calibrated Lamp: (2 $\pi$ and 4 $\pi$ are not interchangeable)					
2 $\pi$	2PI-1-INT-650	2PI-1-INT-650	2PI-1-INT-1400	2PI-1-INT-1400	2PI-1-INT-1400
4 $\pi$	SCL-650	SCL-650	SCL-1400	SCL-1400	SCL-1400
Aux Lamp:	AUX-650	AUX-650	AUX-1400	AUX-1400	AUX-1400
Lamp Socket Assembly:					
	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$
Software:	Integral	Integral	Integral	Integral	Integral

All systems include Retouch 6080 and Tool Kit

## Typical Performance Specifications (lumens)

Spectral Flux Measurements: 350 nm - 1050 nm

Exposure Time Range: 8 ms - 900 sec (Actual exposure time depends on sphere size and source type)

	min	max	min	max	min	max	min	max	min	max
Tungsten Filament:	0.007	3400	0.031	13800	0.12	22000	0.33	89000	0.47	124000
Cool White LED:	0.003	1900	0.012	7600	0.04	30000	0.13	114000	0.18	160000
Warm White LED:	0.002	1300	0.009	5300	0.03	25000	0.09	98500	0.14	138000
Blue LED:	0.001	140	0.002	600	0.01	1800	0.02	6000	0.04	8300
Red LED:	0.002	330	0.007	1300	0.03	1900	0.07	7600	0.11	11000
Upper Range:	Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C	

## illumiaPlus2 - 3020/3030 Ordering Information

System:	illumiaPlus2 with 50 cm sphere	illumiaPlus2 with 100 cm sphere	illumiaPlus2 with 165 cm sphere	illumiaPlus2 with 195 cm sphere
<b>illumiaPlus2 3020:</b>				
2 $\pi$ version:	AA-40082-050	AA-40082-100	AA-40082-165	AA-40082-195
4 $\pi$ version:	AA-40084-050	AA-40084-100	AA-40084-165	AA-40084-195
<b>illumiaPlus2 3030:</b>				
2 $\pi$ version:	AA-40092-050	AA-40092-100	AA-40092-165	AA-40092-195
4 $\pi$ version:	AA-40094-050	AA-40094-100	AA-40094-165	AA-40094-195
Above Systems Include:				
Sphere:	LMS-050	LMS-100	LMS-165	LMS-195
Control Module:	ICM-500	ICM-500	ICM-500	ICM-500
DC Power Supply:	LPS-175-27	LPS-175-27	LPS-175-27	LPS-175-27
Spectrally-Calibrated Lamp: (2 $\pi$ and 4 $\pi$ are not interchangeable)				
2 $\pi$ :	2PI-1-INT-040	2PI-1-INT-040	2PI-1-INT-650	2PI-1-INT-650
4 $\pi$ :	SCL-040	SCL-040	SCL-650	SCL-650
Aux Lamp:	AUX-040	AUX-040	AUX-650	AUX-650
Lamp Socket Assembly:	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$	2 $\pi$ /4 $\pi$
Software:	Integral	Integral	Integral	Integral

All systems include Retouch 6080 and Tool Kit

## Typical Performance Specifications (lumens)

Spectral Flux Measurements: 350 nm - 830 nm (3020 systems) 350 nm - 1050 nm (3030 systems)

Exposure Time Range: 5 ms - 20 sec (Actual exposure time depends on sphere size and source type)

	min	max	min	max	min	max	min	max
Tungsten Filament:	0.025	19000	0.100	76000	0.26	210000	0.37	291000
Cool White LED:	0.007	20800	0.013	83000	0.03	227000	0.05	317000
Warm White LED:	0.004	20000	0.009	79000	0.02	215000	0.03	300000
Blue LED:	0.010	1100	0.018	4541	0.05	12300	0.07	17000
Red LED:	0.008	1600	0.015	6245	0.04	17000	0.05	24000
Upper Range:	Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C	



# illumiaPlus2 - 3 Meter Light Measurement Systems Ordering Information

System:	illumiaPlus2 600-300	illumiaPlus2 610-300	illumiaPlus2 2600-300	illumiaPlus2 3020-300	illumiaPlus2 3030-300
<b>4π version:</b>	AA-40024-300	AA-40034-300	AA-40074-300	AA-40084-300	AA-40094-300
Sphere:	LMS-300	LMS-300	LMS-300	LMS-300	LMS-300
Control Module:	ICM-500	ICM-500	ICM-500	ICM-500	ICM-500
Power Supply:	LPS-525-42	LPS-525-42	LPS-525-42	LPS-525-42	LPS-525-42
Spectrometer:	CDS-800	CDS-800	CDS-2600	CDS-3020	CDS-3030
Spectrally-Calibrated Lamp: 4π:	SCL-1400	SCL-1400	SCL-1400	SCL-1400	SCL-1400
Aux Lamp:	AUX-1400	AUX-1400	AUX-1400	AUX-1400	AUX-1400
Lamp Socket Assembly:	4π	4π	4π	4π	4π
Software:	Integral LM	Integral LM	Integral LM	Integral LM	Integral LM

All systems include Retouch 6080 and Tool Kit

Sphere Weight:	1020 lbs (462 kg)
Sphere Max Height:	140 inches (3.6 cm)
Sphere Foot Print Open/Closed:	150 in W x 201 L

## Typical Performance Specifications (lumens)

	illumiaPlus2 800-300		illumiaPlus2 2600-300		illumiaPlus2 3020-300 & 3030-300	
	min	max	min	max	min	max
Tungsten Filament:	5.54	128250	1.06	279000	0.83	654750
Cool White LED:	0.12	117000	0.41	360000	0.11	713250
Warm White LED:	0.18	105750	0.32	310500	0.07	675000
Blue LED:	3.58	8550	0.09	18675	0.16	38250
Red LED:	1.34	11250	0.25	24750	0.11	54000
Upper Range:	Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C		Ambient temp can not exceed 100°C	

# Integrating Sphere Specifications

Model Number:	LMS-025	LMS-050	LMS-100	LMS-165	LMS-195
Order Number:	AA-30000-025	AA-30000-050	AA-30000-100	AA-30000-165	AA-30000-195
Sphere Size:	25 cm	50 cm	100 cm	165 cm	195 cm
Required Footprint:					
closed	45.9 cm x 30.2 cm x 39.1 cm	74.1 cm x 50.4 cm x 74.0 cm	128.0 cm x 98.1 cm x 166.7 cm	185 cm x 165 cm x 200 cm	213.2 cm x 187 cm x 226 cm
open	64.2 cm x 46.8 cm x 39.1 cm	103.7 cm x 89.9 cm x 74.0 cm	174.4 cm x 165.9 cm x 166.7 cm	269.3 cm x 271.8 cm x 200 cm	310 cm x 307.4 cm x 226 cm
Sphere Weight:	4 Kg	20 Kg	92 Kg	300 Kg	347 Kg
Sphere Color:	Labsphere Blue	Labsphere Blue	Labsphere Blue	Labsphere Blue	Labsphere Blue
Sphere Open Style:	Clam Shell	Clam Shell	Clam Shell	Clam Shell	Clam Shell
Sphere Assembly:	Spun Aluminum	Spun Aluminum	Spun Aluminum	Spun Aluminum	Spun Aluminum
Frame Style:	Extruded Aluminum	Extruded Aluminum	Extruded Aluminum	Extruded Aluminum	Extruded Aluminum
Sphere Coating:	Spectrafect®	Spectrafect	Spectrafect	Spectrafect	Spectrafect
Spectrafect Coating Reflectance:	> 97% (nominal)	> 97% (nominal)	> 97% (nominal)	> 97% (nominal)	> 97% (nominal)
Total Number of Ports:	6	6	6	6	6
SMA Adapter:	Included	Included	Included	Included	Included
Cosine Corrector:	Included	Included	Included	Included	Included
External DUT 2 $\pi$ Port Size:	5.08 cm	15 cm	33 cm	53 cm	63 cm
Detector Port Dimension:	1.25 cm	1.25 cm	1.25 cm	1.25 cm	1.25 cm
Detector Port Quantity:	1	2	2	2	2
Port Frame Reducer:	n/a	15 - 2.5 cm 15 cm - 2.5 cm	33 cm - 15 cm; 15 cm - 2.5 cm	53 cm - 15 cm; 15 cm - 2.5 cm	63 cm - 15 cm;
Temperature Probe Port:	2.5 cm	2.5 cm	2.5 cm	2.5 cm	2.5 cm
Max Recommended Lamp Size: (LM-79) 4 $\pi$ geometry	2.5 cm	<7 cm dia, 33 cm long	<14 cm dia, 67 cm long	<23 cm dia, 110 cm long	<27 cm dia, 130 cm long
Max Port or DUT Area: (2 $\pi$ )	5.08 cm dia.; 20 cm <sup>2</sup>	15 cm dia.; 71 cm <sup>2</sup>	33 cm dia.; 337 cm <sup>2</sup>	53 cm dia.; 879 cm <sup>2</sup>	63 cm dia.; 1246 cm <sup>2</sup>
Max Recommended Linear DUT Dimension: (2/3 sphere diameter)	15 cm	33 cm	66 cm	110 cm	130 cm
Max Recommended Internal DUT Surface Area: (2% Rule, LM-79)	39 cm	157 cm	628 cm	1711 cm	2389 cm
Maximum Sphere Coating Temp:	100°C	100°C	100°C	100°C	100°C



## Upgrade Modules Ordering Information

**Model Number:** IL-AC1

**Order Number:** AS-40000-002

Includes:

- Chroma 61603 Programmable Instrument Grade AC Power Source
- Cabling for ICM-500 connections

**Model Number:** IL-PM1

**Order Number:** AS-40000-001

Includes:

- XITRON 2640 Precision Multi-Channel Power Analyzer
- Cabling for ICM-500 and AC power source connections

## Optional Accessories Ordering Information

### illumiaPlus2 - 800 and 2600

	25 cm sphere	50 cm sphere	100 cm sphere	165 cm sphere	195 cm sphere
4 $\pi$ Kit (To perform 4 $\pi$ measurement geometry with 2 $\pi$ systems. Includes lamp post, baffle, junction box, SCL calibrated in the 4 $\pi$ geometry)					
Order Number:	Included	AA-30001-050	AA-30001-100	AA-30001-165	AA-30001-195
4 $\pi$ Kit (To perform 4 $\pi$ measurement geometry with 2 $\pi$ systems. Includes lamp post, baffle, junction box, does not include calibration lamp)					
Order Number:	Included	AA-30006-050	AA-30006-100	AA-30006-165	AA-30006-195
Ambient Temperature Probe and Monitor					
Model Number:	TPM-100TC-08	TPM-200TC-08	TPM-400TC-08	TPM-400TC-08	TPM-400TC-08
Order Number:	AS-03003-100	AS-03003-200	AS-03003-400	AS-03003-400	AS-03003-400
Forward Flux Standard					
Model Number:	FFS-100-400	FFS-100-400	FFS-100-1000	FFS-100-1000	FFS-100-1000
Order Number:	AS-02768-100	AS-02768-100	AS-02768-200	AS-02768-200	AS-02768-200

### illumiaPlus2 - 3020/3030

	50 cm sphere	100 cm sphere	165 cm sphere	195 cm sphere
4 $\pi$ Kit (To perform 4 $\pi$ measurement geometry with 2 $\pi$ systems. Includes lamp post, baffle, junction box, SCL calibrated in the 4 $\pi$ geometry)				
Order Number:	AA-30005-050	AA-30005-100	AA-30005-165	AA-30005-195
4 $\pi$ Kit (To perform 4 $\pi$ measurement geometry with 2 $\pi$ systems. Includes lamp post, baffle, junction box, does not include calibration lamp)				
Order Number:	AA-30006-050	AA-30006-100	AA-30006-165	AA-30006-195
Ambient Temperature Probe and Monitor				
Model Number:	TPM-200TC-08	TPM-400TC-08	TPM-400TC-08	TPM-400TC-08
Order Number:	AS-03003-200	AS-03003-400	AS-03003-400	AS-03003-400
Forward Flux Standard				
Model Number:	FFS-100-400	FFS-100-1000	FFS-100-1000	FFS-100-1000
Order Number:	AS-02768-100	AS-02768-200	AS-02768-200	AS-02768-200

## illumiaPlus to illumiaPlus2 Upgrade Kit Ordering Information

<b>Model Number:</b>	<b>ICM-500-175</b>	<b>ICM-500-350</b>	<b>ICM-500-525</b>
<b>Order Number:</b>	<b>AS-40000-175</b>	<b>AS-40000-350</b>	<b>AS-40000-525</b>
	<i>Includes ICM-500, LPS-175 27 DC Power Supply, jumper cable and documentation for systems using 2PI-INT-050, 2PI-INT-650, SCL-040, SCL-650, AUX-040, AUX-650 and FFS-100-400 lamps</i>	<i>Includes ICM-500, LPS-350 28 DC Power Supply, jumper cable and documentation for systems using AUX-75, FFS-100-1000, and AUX-100 lamps</i>	<i>Includes ICM-500, LPS-525 42 DC Power Supply, jumper cable and documentation for systems using 2PI-INT-1400, AUX-1400, ISC-1400, and SCL-1400 lamps</i>
<b>Model Number:</b>	<b>Integral LM-User ASM</b>		
<b>Order Number:</b>	<b>AS-81021-000</b>		
	<i>Integral Major Module Software Upgrade to existing illumia and/or Integral installation. Single user, single Integral License and 1 year support and maintenance</i>		

