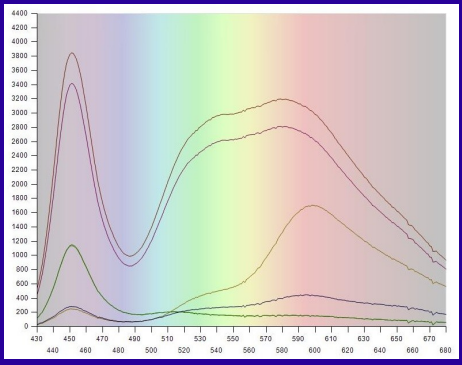
MAJANTYS
Knowledge by color science

Master4Light

Thermal, Electrical and Optical Characterization of Light Sources



Designed for the LED applications, Master4Light integrates both a current source generator and a spectrophotometer as a single turn key solution. It accurately controls the LED current and voltage while measuring its optical parameters.

The solution offers a single Windows software graphical user interface for monitoring all the LED variables.

The current signal may be continuous or pulsed, with various amplitude and frequencies. In addition, two thermocouple inputs enable to probe in real-time the temperature of the light source under evaluation.

The software gives a quick and intuitive access to the corresponding color parameters such as the color coordinates, the dominant wavelength, the correlated temperature and the color rendering index.

Master4Light is suited for research, diagnostic and quality control in laboratory as well as industrial environment.

Contents	
Current Source	Stabilized current source 1 channel, adjustable from 0 to 2 with 1 mA step Vf and If monitoring
Sensor	Aberration corrected type IV concave holographic grating spectrophotometer Spectral range 360—830 nm Resolution 1024 pixels
Measurements	Spectrum and chromaticity x,y CCT, IRC and luminous flux Temperature (probe x2)
Performances	Ajustable measurement time 10 msec. to 1 sec.
Interface	USB 2.0
Options	Absolute calibration of intensity
Applications	Sample benchmarking analysis Incoming inspection and quality control

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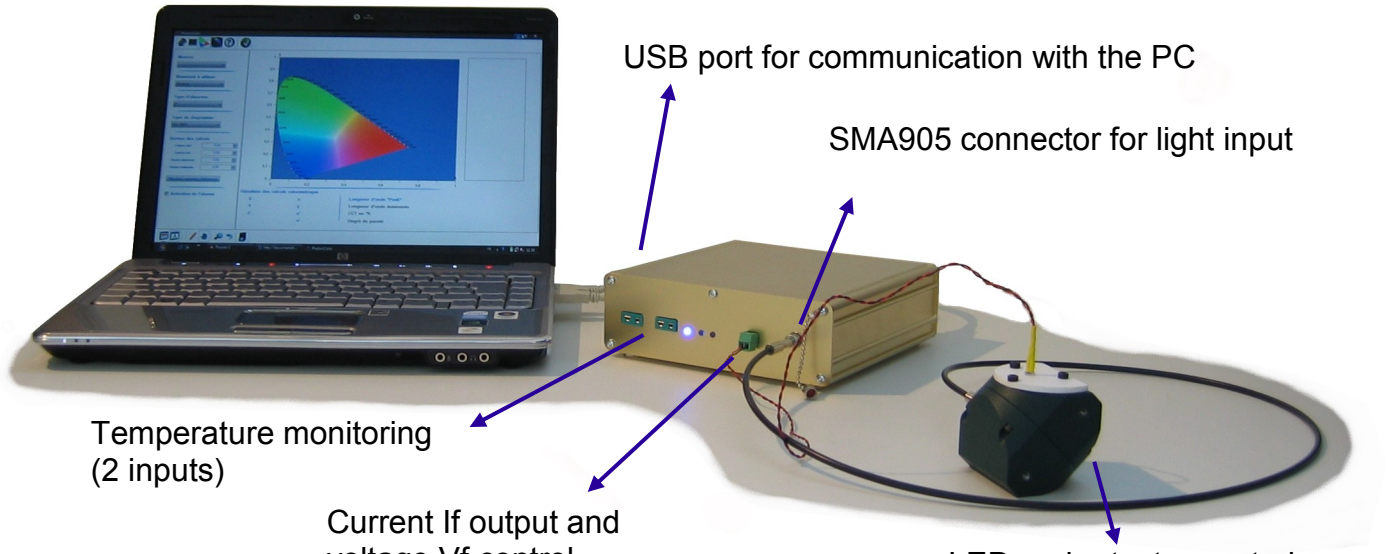

- Master4Light is directly connected to the PC through a USB interface. From a Windows Software GUI, the user controls both the current source generator and the spectrophotometer parameters.
- The spectrophotometer input is a SMA 905 connector type so as any integrating sphere may be connected depending on the control requirements..
- The current source is designed for accurately driving the LED between 1 mA and 2A. Continuous or dimming (pulsed) modes are available.
- Master4Light comes as a stand alone, turn key device (top picture). Our engineering team may also supply the solution – including the sphere - integrated into a ruggedized suitcase. Only a PC and a power adapter 12 VDC need to be connected to start with (right picture).

Master4Light may be integrated into a ruggedized suitcase. The current source generator, the spectrophotometer and the integrated sphere are set below the white top.

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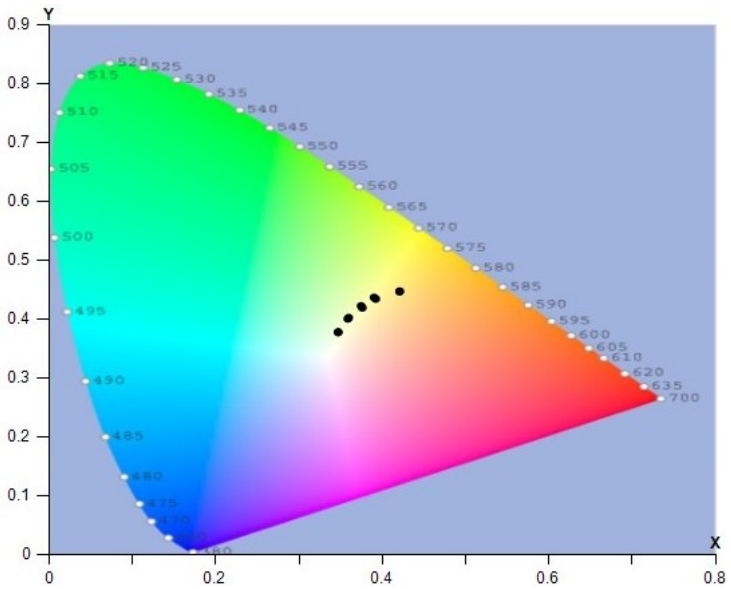
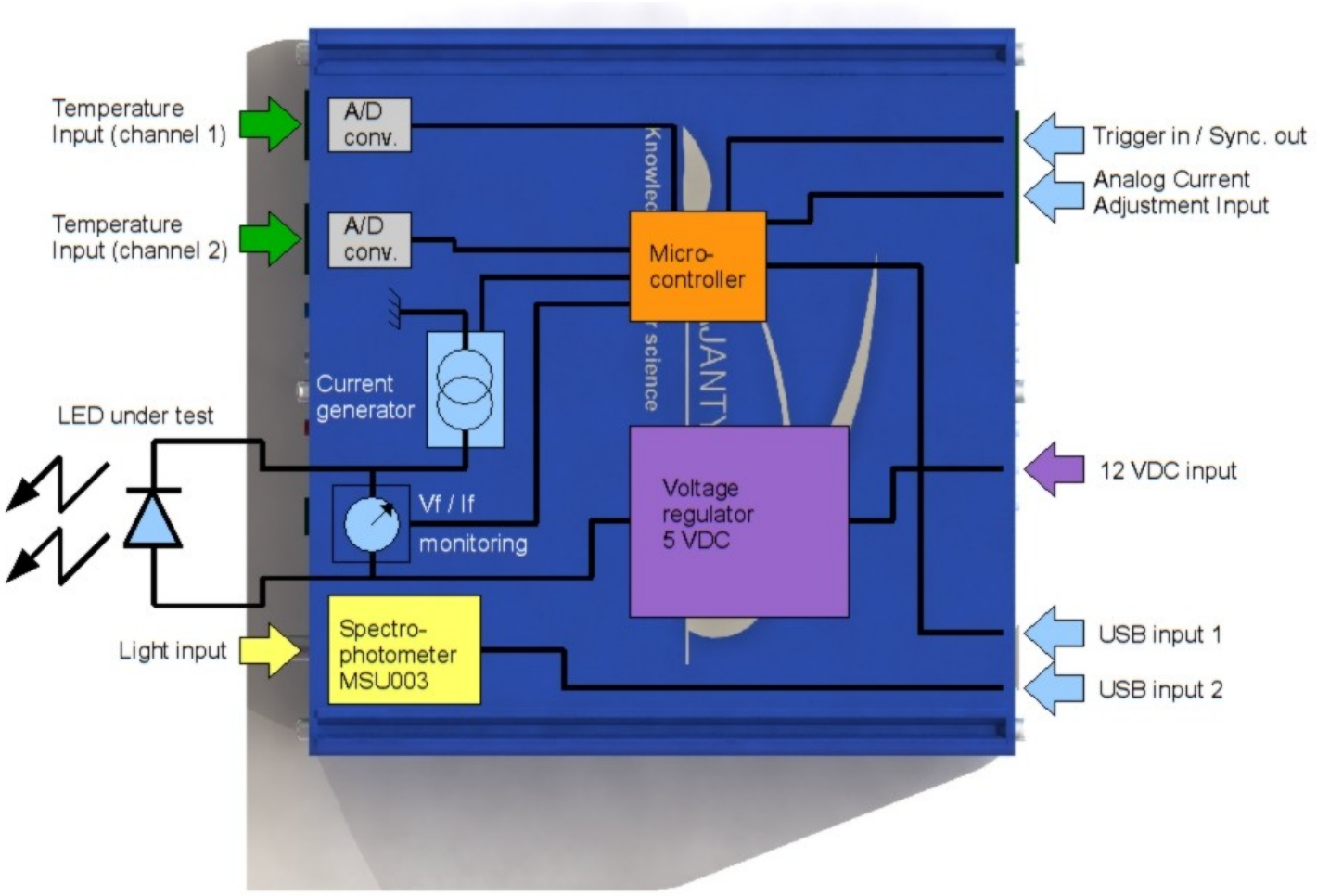
- Master4Light enables to accurately controls the LED current and voltage while measuring its optical parameters.
- Thus the user may characterize its LEDs according to its own application parameters, which are usually different from the manufacturer specifications.
- One application consists of measuring the white color of a RGBW LED by changing the current level of each RGBW LED independently. One notices the white shift by adjusting the current for each color channel (see right picture).





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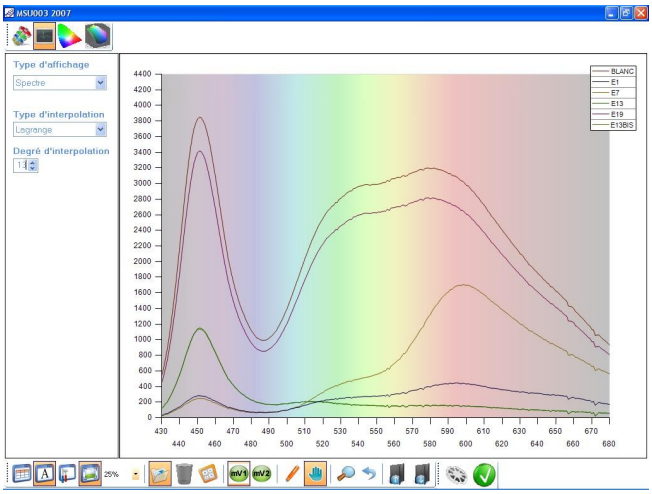
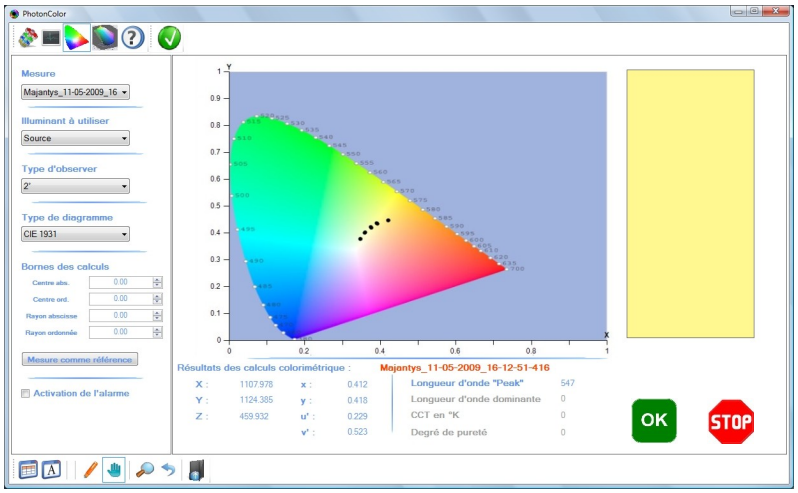
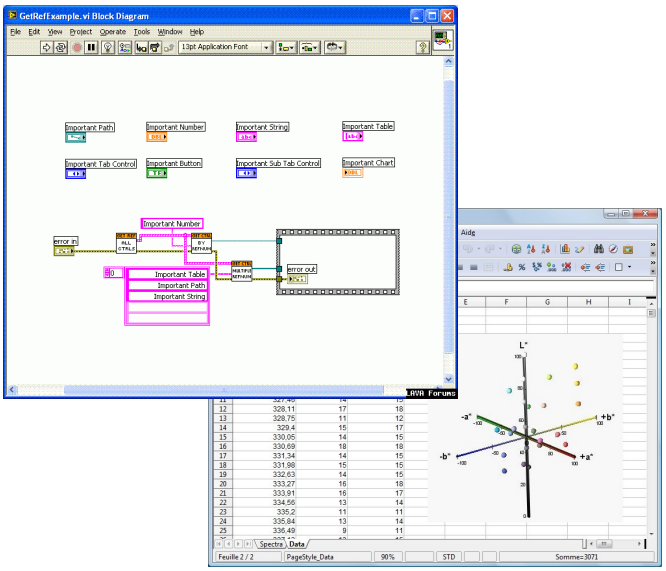




Software Description	
Current source	Current parameters settings
	Forward current and voltage real time monitoring
Spectrophotometer	Measurement settings
	Spectrum displayed (visible range)
	Color parameters computed Diagram CIE 1931 / UCS 1976 CCT and IRC
	Alarm messages / toolbox

Software Management	
Tools	Fully documented DLL provinding spectral and colorimetric coordinates data
Possibilities	Customized software interface
	Customer can develop is own dedicated Software
	Automatic synchonization with the production process
	Support database storage (long term)



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Current Source Operating Modes	
Single Pulse	Independent adjustable output pulse channel synchronized to an internal or external trigger
PWM / Dimming	Independent current pulse generator synchronized with the spectrophotometer measurements
Continuous Wave	Independent DC current output channel
Output	
Current Connector	1 channel, 2-pin female terminal, clamp or screw type
Output Power Max.	8 W
Output Current Range	1 mA to 2 A (Continous and PWM)
Current Resolution	1 mA, full range
Current Accuracy	To be defined
Current Ripple Max.	To be defined
Pulse Frequency Max.	500 Hz
Pulse width Resolution	1 ms
Pulse width Accuracy	To be defined
Pulse Width Min.	1 ms
Pulse Rising/Falling Time	To be defined
Input	
Temperature Monitoring Input	Thermocouple, type K
Temperature Connector	2 channels, 2-pin female terminal, clamp or screw type
Current Level Command	0 to 10 V analog input or using manual potentiometer
Trigger In	3.3 V CMOS level or digital through USB
Sync. Out	3.3 V CMOS level
Power supply	12 VDC / 2 A external adapter
Light Input	SMA 905 connector for optical fiber

Internal Functions	
Forward Current and Voltage	Independent, real-time monitoring channel
Spectral Analysis	Embedded spectrophotometer (1), 360-830 nm range, 5-10 nm resolution
Color Analysis	Diagram CIE 1931 / UCS 1976 Color temperature Index Rendering Color Color comparison / difference
Light Dynamic Range	71 dB

(1) See MSU003 OEM product datasheet for details

Environment	
Operating Temperature Range	10 to 50 °C, 70% relative humidity up to 35°C, for indoor use only
Cooling	Ambient air, no fans
Mechanical Properties	
Dimensions	170 x 170 x 55 mm
Weight	0.8 kg
Computer Interface and Software	
USB 2.0 interface, 2 ports	Windows software graphical user interface
XP or Vista operating system	.NET controls available

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