



- Integrating Sphere for measuring LEDs and other light sources
- Measuring Luminous Flux (lm), Illuminance (lx) and Luminous Intensity (cd)
- High speed measurement (25000 luminance measurements per second, 10000 colour measurements per second).
- Measure colour point and luminance in various colour spaces (XYZ, Yxy, Yuv, Dominant wavelength etc...).
- Trigger in and output for in line applications. General Purpose I/O for control.
- Measure via a PC (also embedded) or stand alone mode.
- Windows, Linux and MAC OSX compatible for integration.
- SCPI command interface for easy integration in other applications.
- Directly supported in Labview / Labwindows / Visual Studio via VISA library. Other programming languages that support VISA can be used.
- USBTMC standard compliant.



# Brontes-IS

## specification

### Interfaces

USB 2.0	USBTMC compliant, SCPI command set, Full speed device
RS232	For PC and embedded purposes, using the same command set as USB.
I/O	4 lines 3.3V general purpose I/O
Trigger input/output	3.3V compliant , Absolute maximum rating 5.8V.

### Power ratings

	Min voltage	Typical voltage	Max voltage	Consumption
USB powered	4.75V	5.00V	5.25V	Typical 50mA
DC-adapter powered	8.50V	9.00V	15.00V	Typical 50mA
GPIO powered	8.00V	9.00V	15.00V	Typical 50mA

### Mechanical dimensions

Height, Width, depth	94.1x60x65.5 mm
Mounting	¼ BSW (fits ¼ UNC) mount on top, 4xM4 threat holes on top, 4xM4 threat holes on back side.
Sphere Dimension	Ø38.2 mm with an input port of Ø9.6 mm
Sphere Material	Spectralon

### Measurement system



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Photo detector	Silicon Photo diode using XYZ interference filter
Spectral response	Approximates CIE 1931 colour matching functions (see spectral response graph on last page)
Colour measurement	XYZ, Yxy, Yuv, correlated colour temperature, dominant wavelength.
Measurement speed	Luminance at 25,000 samples/second , Colour measurement at 10,000 points/second (at 16bit for X, Y, Z).

### Colorimeter specification

Parameter	Range	Accuracy	Repeatability
Resolution	16bit for X, Y and Z	>60dB without averaging for X, Y, Z	
Chromaticity : x,y	Approximates CIE1931 colour matching functions	$\pm 0.001$ absolute at equal energy point (x,y = 0.333)	x,y : $\pm 0.001$ for Y > 2 cd/m <sup>2</sup> * x,y : $\pm 0.0002$ for Y > 10 cd/m <sup>2</sup> *
			* averaging 5 samples, approximately 0.5ms.
Dominant wavelength	380-780nm	CIE1931 table at 2nm interval. Result interpolated within 2nm for floating point accuracy.	$\pm 0.1$ nm
Speed	Luminance : Max 25kHz Colour : Max 10kHz		
Operating Temperature	0-50 °C (measurement) – temperature compensation build in. Temperature measurement readout available.		

The Brontes Integrating Sphere accepts light energy through a 9.6 mm input port and measures the spectral properties of LEDs and other light sources.

With the Brontes Integrating Sphere you're able to measure high speed in line:

- Luminous Flux (lm)
- Luminous Intensity (cd)
- colour coordinates (x,y)
- Dominant wavelength

The Brontes-IS consists of a Ø38.2 mm Spectralon sphere.

The interior of the Brontes-IS is made of Spectralon, a material that provides a highly lambertian reflecting surface.

