

specification | display applications



cronus
spectrometer & colorimeter





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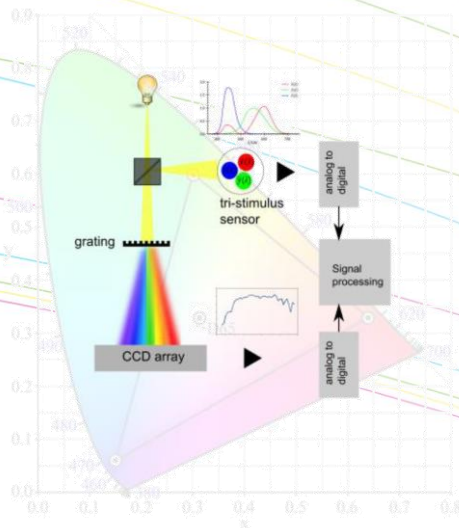
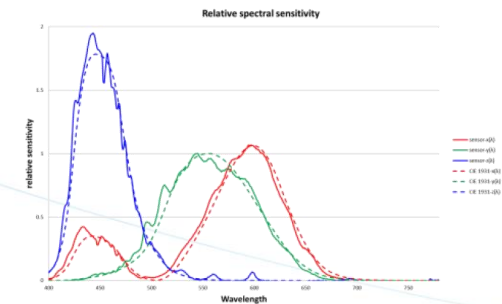
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1 Cronus: the first spectro- and colorimeter in one

The Cronus is world's first spectro-colorimeter combining a high end VIS spectrometer with a high speed XYZ colorimeter. This allows the user to vary between the high-speed colour and flicker measurements of the colorimeter and the high accuracy and detailed colour information of the spectrometer.

The Cronus is tailored for display applications where the combination of speed and accuracy is needed in for example flicker measurements. The Cronus is available in a Fixed Optics and Fiber Optics version. Just as our other products it is developed with an industrial use in mind combining ease of use, minimal calibration needs, high-speed measurement capabilities with a compact and robust design. The Cronus offers laboratory results with a workforce attitude.



2 Highlights

- Spectral range 380-780nm
- Spectral output or colour values output are both possible
- Luminance range of 0.05 cdm² to 6000 cd/m²
- High speed flicker measurements: 50.000 samples/second
- Auto-range function
- Mechanical shutter
- Excellent linearity
- Dark current compensated
- USBTMC compliant, SCPI command set, high speed device
- Numerous interfaces, ideal for system integration
- All spectral and flicker calculations are done inside



3 Cronus general specifications

| Spectral measurement system | | | |
|--|--|--------|-------|
| Spectral range | 380-780nm | | |
| Optical resolution (FWHM) | 2.3nm | | |
| Integration time | 2.5ms – 20s | | |
| Stray light | <0.03% | | |
| Non - Linearity | <1% | | |
| Colorimeter measurement system | | | |
| Photo detector | Silicon photo diode using XYZ interference filters | | |
| Spectral response | Approximates CIE 1931 colour matching functions | | |
| Integration time | 1ms – 7s | | |
| Flicker measurement speed | Luminance up to 50.000 samples per second | | |
| System configurations | | | |
| Working distance versus spot size 20mm | 50mm | 100mm | 150mm |
| | 22mm | 24.5mm | 27mm |
| Acceptance angle | +/- 2.1 degrees | | |
| Interfaces | High speed USB, RS232, Ethernet, Trigger connections | | |
| Weight | 1200 gram | | |
| Size (HxWxD) | 137 x 88 x 74mm (without lens system) | | |
| Shutter lifetime | >1000000 | | |
| Shutter speed | 70ms-120ms (close or open time, depending on temperature and lifetime) | | |
| Operating temperature | 10-35°C | | |
| Power consumption | 1750mW (USB powered) | | |



4 Cronus 20mm specifications

| Measurement parameters spectral part | | | |
|--|---|------------------|-----------------------|
| Luminance range | 0.05 – 6000 cd/m² | | |
| Wavelength accuracy | +/- 0.5nm | | |
| Luminance accuracy (meas. at std. ill. A) | +/- 4% | | |
| Colour accuracy <i>xy</i> (meas. at std. ill. A) | +/- 0.002 | | |
| Repeatability ^{1 2 3} | | | |
| Luminance level | Luminance (2 sigma) | Colour (2 sigma) | Measurement time (ms) |
| 250cd/m² | < 0.3% | +/- 0.0005 | 50 |
| 10cd/m² | < 0.5% | +/- 0.0005 | 1000 |
| 1cd/m² | < 3% | +/- 0.002 | 2000 |
| 0.25cd/m² | < 3% | +/- 0.002 | 5000 |
| Measurement parameters colorimeter part | | | |
| Luminance range | 0.05 – 6000 cd/m² | | |
| Wavelength accuracy | +/- 0.5nm | | |
| Luminance accuracy. ⁴ (meas. at std. ill. A) | +/- 0.5% | | |
| Colour accuracy <i>xy</i> ⁴ (meas. at std. ill. A) | +/- 0.0005 | | |
| Flicker accuracy (Jeita) | +/- 3% Flicker frequency 30Hz AC/DC 10% sine wave at 10cd/m² or higher | | |
| Flicker accuracy (Contrast) | +/- 3dB Flicker frequency 30Hz AC/DC 10% sine wave at 10cd/m² or higher | | |
| Repeatability ^{1 2 3} | | | |
| Luminance level | Luminance (2 sigma) | Colour (2 sigma) | Measurement time (ms) |
| 250cd/m² | < 0.2% | +/- 0.0005 | 17 |
| 10cd/m² | < 0.2% | +/- 0.0005 | 150 |
| 1cd/m² | < 1% | +/- 0.002 | 500 |
| 0.25cd/m² | < 3% | +/- 0.005 | 500 |

¹ Speed and repeatability are directly related to each other, a lower repeatability can increase speed and vice versa.

² Data is without the auto-range function, auto-range will add additional time.

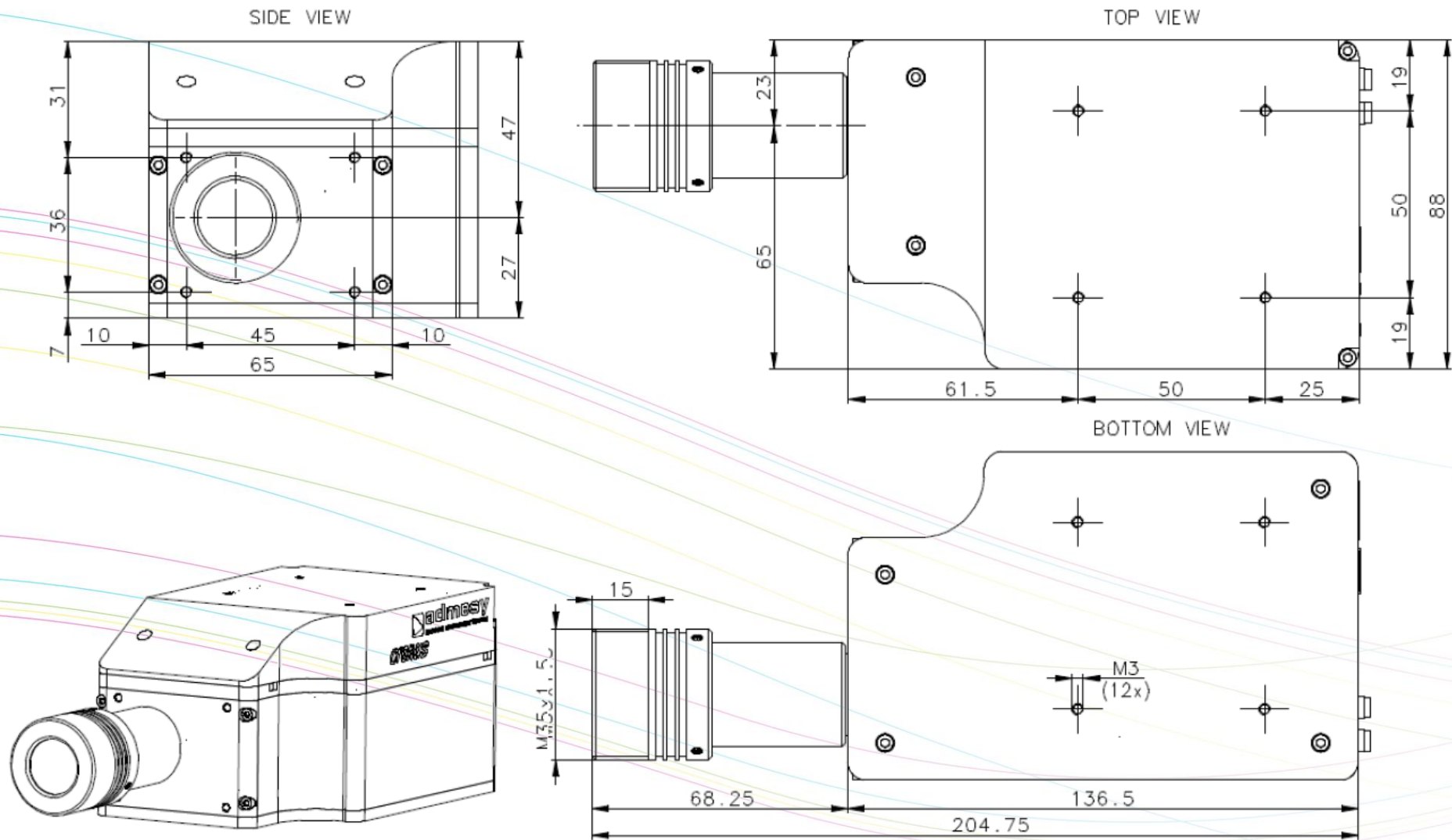
³ Measurements are performed on a LED backlight LCD screen.

⁴ Compared with spectral part of the Cronus and after calibration.

Note: Specification is subject to change without notification. No legal rights can be derived from this specification.



5 Cronus 20mm dimensions





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