Instrument Systems
KONICA MINOLTA Group

# CAS 140D IR

## The new reference array spectrometer for IR measurements

### Key features at a glance

- Highly accurate infrared (IR) measurements
- High-performance InGaAs sensor with greatly improved optical bench design
- High signal sensitivity
- Low stray light
- Fast electronics


The new CAS 140D IR guarantees proven high measurement accuracy and reliability. It also promises significantly better performance for wavelengths in the infrared range than its predecessor CAS 140CT IR. Thanks to a new design of the optical architecture, throughput has been increased by up to 70 %. The stray light proportion has again been significantly reduced.
In addition, the electronic platform of the CAS 140D IR enables faster processing of measurements: the minimum possible integration time has been reduced from 10 ms to 1 ms, the total scanning time for a measurement from 16 ms to 9 ms. The advantages for the user lie in higher productivity due to shorter measuring times, accompanied by greater precision and repeatability. Like all Instrument Systems spectrometers, the infrared models feature calibration traceable to PTB or NIST. With a trigger box, various different CAS models can be combined to a MultiCAS system and complex spectral measurements run parallel over an extremely wide wavelength range. In the right combination with 2D imaging colorimeters, IR cameras, integrating spheres or goniometer systems they precisely and reliably perform individual customer tasks for wavelength ranges from UV to IR.

## \\ TECHNICAL SPECIFICATIONS

| Model | CAS 140D 171 |
|---|---|
| Wavelength range | 780 – 1700 nm |
| Detector | InGaAs |
| Pixel number | 512 |
| Spectral resolution | 9 nm |
| Datapoint interval | 2.1 nm |
| Wavelength accuracy | ±0.5 nm |
| Integration time | 1 ms - 3 s |
| Shortest duration SOT to EOT [1)] | 9 ms |
| Sensor dynamic range | 9000 : 1 |
| Non-Linearity | ±1 % |
| Cooling | TEC @ -10 °C |

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## \\ TECHNICAL SPECIFICATIONS

| Model | CAS 140D 171 |
|---|---|
| **Stray light** | |
| Broadband for Illuminant A [2] | 0.80 % |
| For LED [3] | 0.03 % |
| With Laser [3] | 0.015 % |
| **Sensitivity** | |
| Irradiance [4] | 1 x $10^{-6}$ – 1.5 x $10^{3}$ W/m²nm |
| Radiant flux [5] | 5 x $10^{-6}$ – 4 x $10^{3}$ W |
| **Spectrophotometry** | |
| Baseline noise [6] | ± 0.05 % |
| Transmission measuring accuracy [7] | ± 0.2 % T |
| Baseline drift [8] | 0.1 counts/h |
| **Spectrograph** | |
| Focal length, grating | Approx. 120 mm f/3.5 / plane ruled grating |
| Slit | 100 µm, 50 µm |
| Filter wheel / Shutter | Max. 7 slots for density filters OD 0.5 to OD 3.5; position monitoring with encoder |
| **Electrical data** | |
| AD converter | 24 Bit resolution, Chip 16 Bit |
| PC interface | USB 2.0 |
| Triggering | 1 TTL input with ascending slope; 2 software-controlled TTL outputs;<br>1 TTL output with flash pulse |
| **Other** | |
| Dimensions (H, W, D) | 144 x 341 x 359 mm³ |
| Power supply | Wide-range input 100 – 240 VAC 50/60 Hz |
| Power consumption | Max. 70 VA |
| Ambient temperature | 15 – 35 °C; relative humidity 0 – 70 % max., non-condensing |
| Weight | Approx. 9 kg |
| Valid standards | In conformity with EN 60721-4-7 Class 7M2, EN 60721-4-7 Class 2M2,<br>EN 61326:2004-05 and EN 61010-2002-08 |

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[1] With USB interface.
[2] Measured with long pass filter FELH1100 at 900 nm, relative to peak intensity of unweighted spectral data.
[3] Measured 150 nm left of peak wavelength, relative to peak intensity of unweighted spectral data.
[4] Measured with optical probe EOP-120 at 1200 nm and signal/noise ratio of 10:1, without averaging
[5] Measured with integrating sphere ISP 150L. Applies to a signal-to-noise ratio of 10:1.
[6] With shortest integration time, without averaging and with 50 % modulation. This value improves with appropriate averaging
[7] Applies to optimum spectral range; with 10 % transmission and immediately after recording an averaged baseline.
[8] Typical value. Applies for 1 hour warm-up.

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