Press Release

Enabling optical fingerprint sensors with IR wavelength at 1380 nm

IR emitters at 1380 nm enable under-display fingerprint applications without burn-in phenomena but require high-resolution test equipment for precise spectral and power characterization.

Munich, June 2021 – *Instrument Systems has developed a modular high-end IR test solution that meets the requirements of optical under-display fingerprint sensors with wavelengths above 1100 nm. As the IR radiation at 1380 nm is verified to avoid burn-in phenomena, the requested test equipment needs to be a high-end solution: high-resolution and calibrated for precise measurement of radiometric quantities, pulse measurement in the µs range and with temperature control.*

IR radiation is ideally suitable for sensors and the transmission of data. Typical applications are 3D sensing in consumer electronics (e.g. time-of-flight), automotive engineering (e.g. LiDAR) and fingerprint sensors. Especially for smartphones, under-display fingerprint scanning is the most widely used technology to unlock a device comfortably and safely. The light output used for this application was previously positioned at a wavelength of around 940 nm. Unfortunately, at this specific wavelength burn-in phenomena occur in OLED displays. A solution for this disadvantage is to use infrared (IR) radiation at 1380 nm. As the application stays the same for the user, the shift from lower to higher wavelengths in the NIR requires other high-resolution and calibrated test equipment for the precise measurement of radiometric quantities, pulse measurement in the µs range and temperature control.

Instrument Systems has developed a modular high-end IR test solution to meet the requirements of optical under-display fingerprint sensors with wavelengths above 1100 nm. The core of this system is a high-end spectroradiometer of the CAS 140CT IR series, optimized for wavelength measurement in the near-infrared range (model IR1). With the cooled InGaAs line sensor, model IR1 covers a wavelength range from 780 nm to 1650 nm and features thermoelectric cooling of the sensors down to a temperature of -10°C. This ensures low noise and excellent long-term stability. The high-gain option enables the sensitivity range to be significantly extended to include low power applications. A high-resolution model with a wavelength range from 1300 to 1440 nm additionally enables detailed investigation of narrow-band radiation sources with an optical resolution <1 nm. Combined with integrating spheres with highly reflective PTFE coating, a calibrated and fast photodiode, and LED-based calibration standards, Instrument Systems offers highly flexible system solutions with a calibration traceable to national standards such as PTB or NIST.

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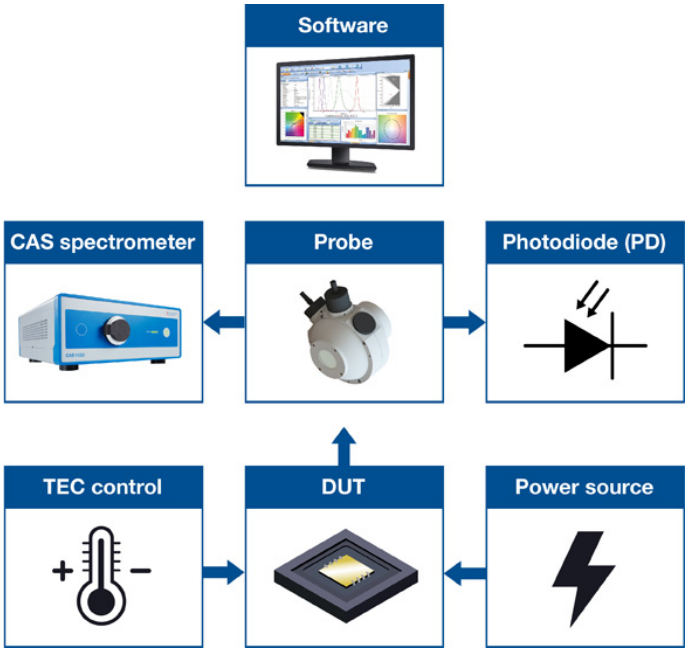
Figure:
The IR test systems from Instrument Systems can be configured for all possible IR emitters, for measuring both narrowband sources such as laser diodes/VCSELs, as well as IR-LEDs and other broader-band emitters.



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Company portrait of Instrument Systems GmbH
Instrument Systems GmbH, founded in Munich in 1986, develops, manufactures and markets all-in-one solutions for light measurement applications. Its core products are array spectrometers and imaging colorimeters. The company's main fields of activity are LED/SSL and display metrology, spectral radiometry and photometry, as well as laser/VCSEL characterization where today Instrument Systems is one of the world's leading manufacturers. The Optronik line of products for the automotive industry and traffic technology is developed and marketed at its Berlin facility. Instrument Systems has been a wholly-owned subsidiary of the Konica Minolta Group since 2012.

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