

DATASHEET : FTIR-OEM011

FTIR-OEM011

Interferometers with integrated IR source
& detector modules for modular and OEM applications



The ARCOptix FTIR OEM011 modules have been developed for system integrators and customers looking for a custom FTIR measurement system. The modular solution consists of essentially of 2 elements:

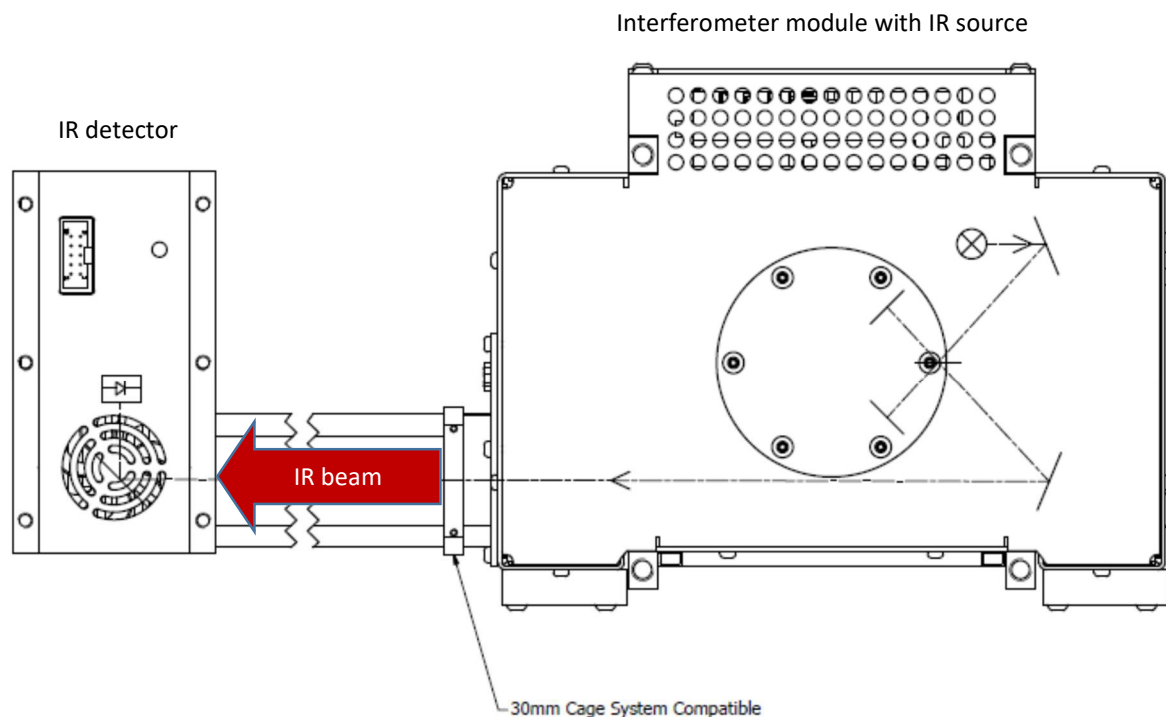
- Interferometer module with integrated IR source
- Independent detector module

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▪ OEM system layout

The FTIR-OEM modules are meant for integration in advanced measurement configurations, where a sampling system (such as a short pass or a White multi-pass gas cell for example) is included in the optical path of FTIR system between the interferometer and the detector. The modules are easily fixed on a breadboard for prototyping (appropriate accessories for fixing the modules on a standard 25mm pitch M6 breadboards are available as an option).

A schematic illustration of the beam path is given below. The IR beam exiting the interferometer module is collimated with a diameter of 12.7mm and a divergence of approx. 28mrad (half angle). The detector module includes an off-axis parabola that focuses the light onto the IR detector. Your sampling system is to be placed between interferometer module and the IR detector module. The system can accommodate 30mm cage system rods for rapid prototyping.



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▪ Interferometer module: FTIR-OEM011

The Arcoptix FTIR-OEM010 is a compact and rugged interferometer module based on a permanently aligned, double-retro-reflector interferometer design. The balanced swinging arm of the interferometer rotates on wear-free flexure system, driven contactless by a magnetic actuator. The system uses a solid-state laser as internal reference, kept at constant temperature to keep the wavelength scale constant. The FTIR-OEM010 includes an internal high-brightness IR source glowing at approx. 1550K.



General specifications

Interferometer type	Permanently aligned, double-retro-reflector design
Interferometer mirror diameter	12.7mm
Beamsplitter material	ZnSe (Spectral range 2-16 μ m / 5000-650 cm^{-1}) or CaF ₂ (Spectral range 0.9-8.5 μ m / 11'000-1200 cm^{-1})
Reference laser	Temperature-stabilized solid-state, 850nm
A/D Converter	24 bits
Resolution	Resolution can be set by software to 8, 4 or 2 cm^{-1} (Not standard 1 and 0.5 cm^{-1})
Wavenumber repeatability	<10 PPM
Scan frequency	8-2 spectra / second (depends of resolution)
Absorbants	User- replaceable molecular sieves
Infrared source	Integrated SiC emitter (20W), T~1550 K, user replaceable
Software interface	Windows 7/10 software and API for controlling the instrument via custom software included
Operating ambient temperature	5 °C to 40 °C
Storage temperature	-20°C to 60 °C
Dimensions	165mm x 145mm x 82mm
Weight	2.1kg
Power consumption	30W (without detector)

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Detector module:

The detector module has internal optics to focus a collimated beam onto the detector active element. The 4-stage cooling of the MCT detector is driven by a TEC controller and 4 different gain levels can be adjusted on the detector amplifier. Detectors with spectral ranges up to 12 microns are available.



General specifications

Detector type	Photovoltaic MCT (Mercury-Cadmium-Telluride)
Detector active size	1mm x 1mm
Focusing optics	Off-axis parabola, f=18mm
Input aperture diameter (optical)	12.7mm
FOV (half angle)	28 mrad
Cooling	TE-cooled, 4 stages
Amplifier	Transimpedance amplifier, 4 gain levels selectable via I2C bus.
Preamplifier bandwidth	0-60kHz
Power supply	12V / 10W
Dimensions	93mm x 75mm x 66mm
Weight	0.4kg

Detector spectral ranges & sensitivity

Detectors with different spectral ranges are available. When choosing, please consider that shorter cut-off detectors offer a better sensitivity (Peak D*). Note that detectors with different spectral ranges or a different number of cooling stages are available on request.

Product code	FTIR-OEM011-060-2TE	FTIR-OEM011-090-4TE	FTIR-OEM011-120-4TE
Detector range [μm]	2-6	1.5-9	2-12
Detector range [cm-1]	5000-1700	5000-1100	5000-830
SNR (full dynamic 4cm-1, 1 min scan)	60'000	40'000	40'000
Peak D* [cm Hz^{1/2}W⁻¹]	>1.0x10 ¹¹	>8x10 ⁹	>2.5x10 ⁹