

DATASHEET : FTIR-OEM

FTIR-OEM

IR source, interferometer & detector modules
for modular and OEM applications



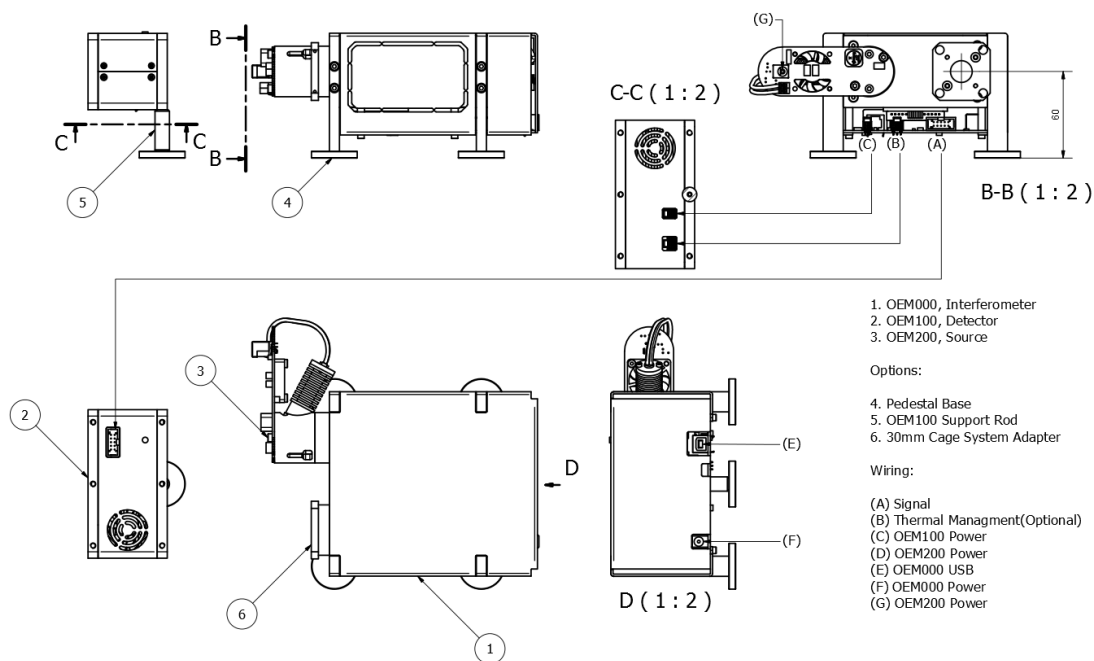
The ARCOptix FTIR OEM modules have been developed for system integrators and people looking for a custom FTIR measurement system. The modular solution consist of essentially of 3 elements:

- Interferometer module (FTIR-OEM000)
- Detector module (FTIR-OEM100)
- Light source module (FTIR-OEM200)

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■ OEM system layout

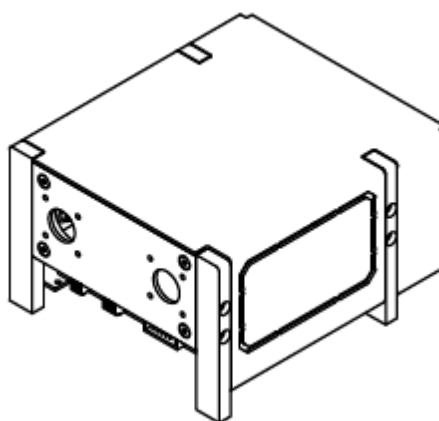
The FTIR-OEM modules are meant for integration in advanced measurement configurations, where a sampling system (such as a short pass or a White multi-pass gas cell for example) is included in the optical path of FTIR system between the interferometer and the detector. A simple example where the sampling accessory would simply be a short-path gas cell is shown in the scheme below. 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.



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■ Interferometer module: FTIR-OEM000

The Arcoptix FTIR-OEM000 is a compact and rugged interferometer module based on a permanently aligned, double-retro-reflector interferometer design. The swinging arm of the interferometer rotates on wear-free flexure system, driven contactless by a magnetic actuator. The system uses as an internal reference a state-of-the-art solid-state laser, kept at constant temperature to keep the wavelength scale perfectly constant.



General specifications

Interferometer type	Permanently aligned, double-retro-reflector design
Interferometer mirror diameter	12.7mm
Reference laser	Temperature-stabilized solid-state, 850nm
A/D Converter	24 bits
Resolution	4cm ⁻¹ (unapodized)
Wavenumber repeatability	<10 PPM
Scan frequency	1 spectra / second
Purge connectors	Purge connectors installed for 4mm tubing
Software interface	Windows 7/10 software and API for controlling the instrument via custom software included
Operating temperature	10 °C to 40 °C
Storage temperature	-20°C to 60 °C
Dimensions	165mm x 145mm x82mm
Weight	1200gr

Beam-splitter material

The interferometer module is available either with a Calcium Fluoride (CaF₂) beamsplitter, or with a Zinc Selenide (ZnSe) beam-splitter.

Beam-splitter material	CaF ₂	ZnSe
Spectral Range [cm ⁻¹]	11'000 – 1'100	5'000 - 650
Spectral Range [μm]	0.9-8.5	2.0-16.0

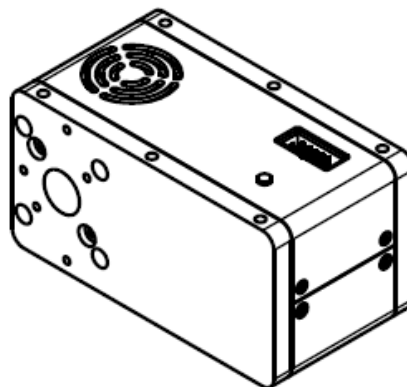
Ordering Information

FTIR-OEM000-CAF2-USB	Interferometer module with CaF ₂ beamsplitter and USB electronics
FTIR-OEM000-ZNSE-USB	Interferometer module with ZnSe beamsplitter and USB electronics

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▪ Detector module: FTIR-OEM100

The FTIR-OEM100 is an infrared detector module designed to operate in conjunction with the FTIR-OEM000 interferometer module. The detector module has internal optics to focus a collimated beam onto the detector active element. The 2-stage cooling of the MCT detector is driven by a PTEC 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	built-in TEC controller, 2 or 4 stages
Amplifier	Transimpedance amplifier, 4 gain levels selectable via I2C bus.
Preamplifier bandwidth	0-60kHz
Power supply	12V / 3-6W
Dimensions	93mm x 75mm x 66mm
Weight	250g

Detector spectral ranges & sensitivity

Detectors with different spectral ranges are available. When choosing, please consider that shorter cut-off detectors offer a better sensitivity. Note that detectors with different spectral ranges or with more cooling stages are available on request.

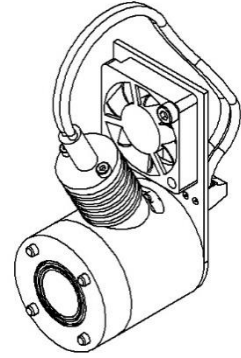
Product code	FTIR-OEM100-060-2TE	FTIR-OEM100-090-4TE	FTIR-OEM100-120-4TE
Detector range [μm]	2-6	1.5-9	2-12
Detector range [cm⁻¹]	5000-1700	5000-1100	5000-830
Peak D* [cm Hz^{1/2}W⁻¹]	>1.0x10 ¹¹	>8x10 ⁹	>2.5x10 ⁹

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IR source module FTIR-OEM200

The FTIR-OEM200 is an infrared light source module designed for the FTIR-OEM000 interferometer module. The system includes an IR source element in a housing with collimating mirror, and a line power supply.

Two different versions are available, one with low-power (LP) for applications where power consumption or heat generation are critical, and a High-Power (HP) version for application requiring maximal output power.



WARNING!

These parts get very hot during operation.

Specifications

Model	FTIR-OEM200-MIR-LP	FTIR-OEM200-MIR-HP
IR emitter type	Metallic glower, 1.5W	Ceramic glower, 20W
Spectral range	2-25 microns	1 -25 microns
Temperature	~1150K	~1400K
IR emitter glower lifetime	>30'000 hrs	>10'000 hrs
Collimating optics	Off-axis gold-coated parabola, EFL=18mm	Off-axis gold-coated parabola, EFL=18mm
Collimated beam diameter	12.7mm	12.7mm
Divergence (half angle)	~30mrad	~30mrad
Cooling	Forced air	Forced air
Power supply	12V / 0.5A	12V / 5A
Weight	200g	220g