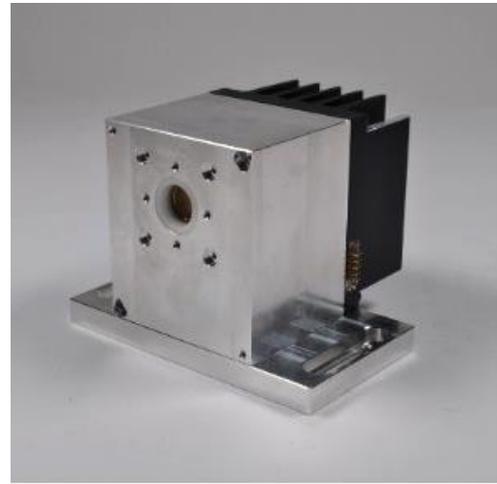


DATASHEET : FTIR-OEM

FTIR-OEM

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



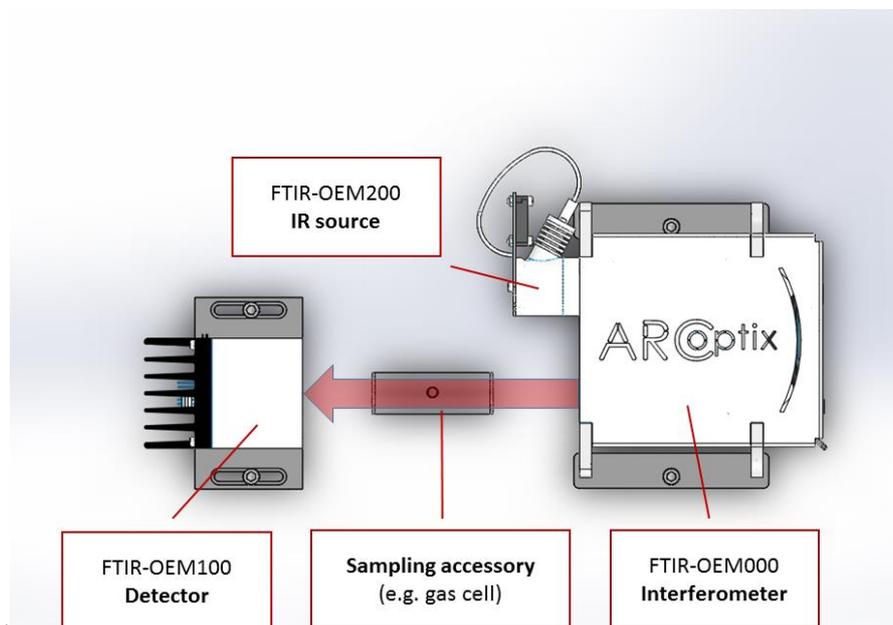
The ARCOptix FTIR OEM modules have been developed for system integrators and people looking for a custom FTIR measurement system. The modular solution consist of essentially of 3 elements:

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

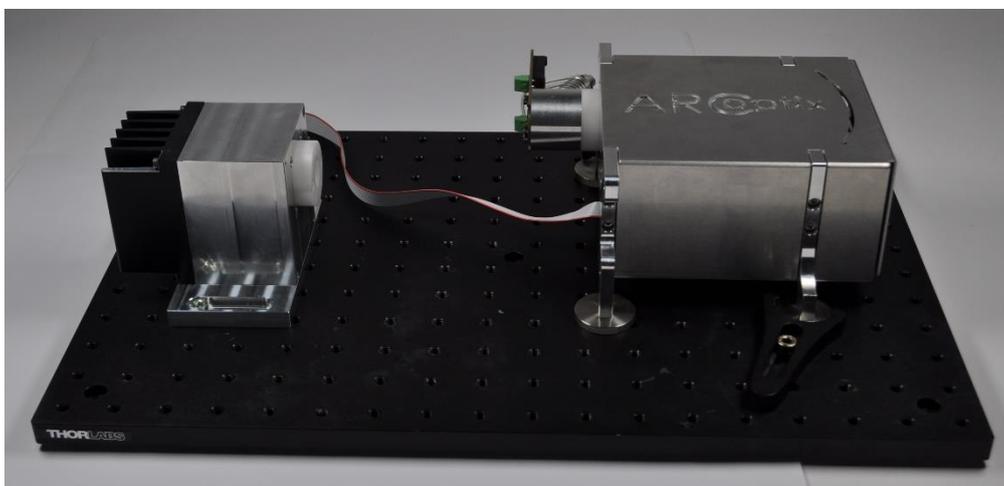
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▪ OEM system layout

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.



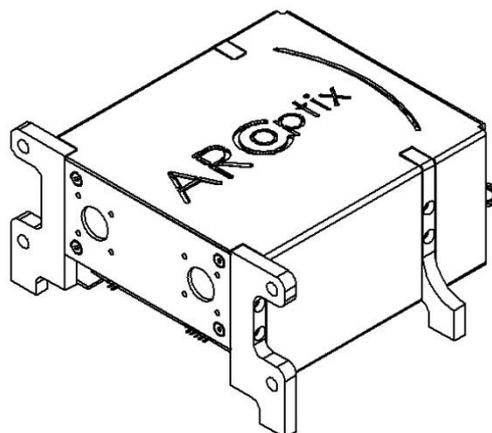
The modules are easily fixed on a breadboard for prototyping. Appropriate accessories for fixing the modules on a standard 25mm pitch M6 breadboards are available as an option.



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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 XP/Vista/7/8 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	900gr

Beam-splitter material

The interferometer module is available either with a Calcium Fluoride (CaF₂) beamsplitter, or with a Zinc Selenide (ZnSe) beam-splitter. The difference between these 2 types of beam-splitter material is the usable wavelength range:

Beam-splitter material	CaF ₂	ZnSe
Spectral Range [cm ⁻¹]	11'000 – 1'100	5'000 - 750
Spectral Range [μm]	0.9-8.5	2.0-14.0

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Acquisition electronics

The standard version of the interferometer module has an electronic board with USB connection. Alternatively, Arcoptix also offers an interferometer module with an Ethernet RJ-28 connection and a DSP processor. The voltage supply of the 2 types of electronic board versions is also different.

A particular advantage of the Ethernet-DSP version is the availability of **3 input channels** for NIR/IR detectors. The additional inputs can either be used to measure several samples at the same time, or used as an internal reference to avoid even the smallest measurement drift.

Electronic Board	USB	Ethernet-DSP
Comm. interface	USB-B	RJ-45
Comm. Protocol	USB 2.0	TCP-IP
Acquisition channels	1	Up to 3
Power supply	7.5-12V / 2W	7.5-12V / 4W

Ordering Information

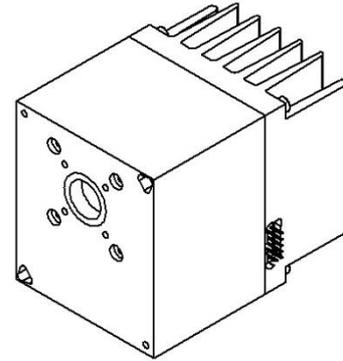
When ordering, please specify which beam-splitter material and electronic board you would like and the type of acquisition electronics.

FTIR-OEM000-CAF2-USB	Interferometer module with CaF2 beamsplitter and USB electronics
FTIR-OEM000-CAF2-ETH	Interferometer module with CaF2 beamsplitter and Ethernet-DSP electronics
FTIR-OEM000-ZNSE-USB	Interferometer module with ZnSe beamsplitter and USB electronics
FTIR-OEM000-ZNSE-ETH	Interferometer module with ZnSe beamsplitter and Ethernet-DSP 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
Focusing optics	Off-axis parabola, f=17mm
Input aperture diameter (optical)	12.7mm
FOV (half angle)	28 mrad
Cooling	2-stage TEC, with built-in TEC controller
Amplifier	Transimpedance amplifier, 4 gain levels selectable via I2C bus.
Preamplifier bandwidth	0-20kHz
Power supply	7.5-12V / 5W
Dimensions	93mm x 75mm x 66mm
Weight	500g

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.

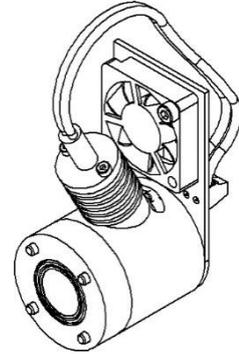
Product code	FTIR-OEM100-20-060-2TE	FTIR-OEM100-20-090-2TE	FTIR-OEM100-20-120-2TE
Detector range [µm]	2.0-5.5	1.0-8.5	2.0-12
Detector range [cm-1]	5000-1800	5000-1100	5000-830
Peak D* [cm Hz^{1/2}W⁻¹]	>1.0x10 ¹¹	>2.5x10 ⁹	>1.5x10 ⁹

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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, 1.1W	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=17mm	Off-axis gold-coated parabola, EFL=17mm
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