

Key Features & Benefits

- High-quality, fast free-space coupling to a fiber without wasting your time and money with conventional fiber-positioning assemblies
- Customized system parameters including wavelength and fiber type
- Single compact module with x-y-z, two angular and one rotational coarse alignments of a fiber tip
- 2-D imaging of the input beam focal spot with a single photo-detector by fast steering of the fiber tip with INFOCO Rx piezo-actuators
- Automatic fast locking of the received beam focal spot centroid to the fiber tip in the presence of vibrations, acoustic noise, thermal deformations, atmospheric turbulence, etc., using Optonicus' proprietary control unit INFOCO CU

Applications

- Free-space laser communications
- Smart optical sensing
- Confocal scanning microscopy
- Active imaging
- Laser tracking
- Remote sensing
- Adaptive optics
- Education

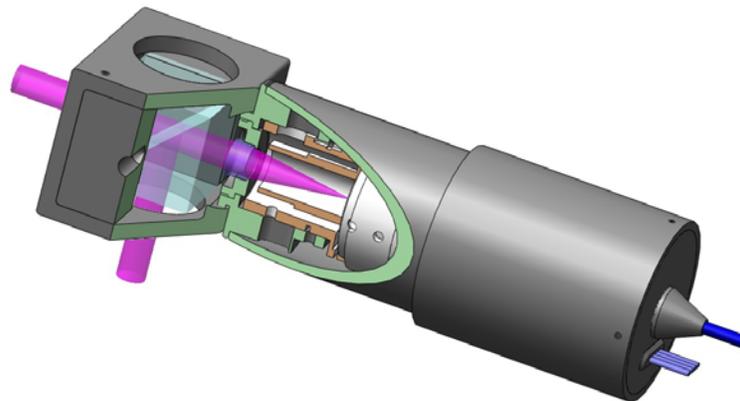
INFOCO Rx

Intelligent Fiber-Optics Collimator Receiver & Free-Space Fiber Coupler

High-precision focal spot intensity profiling and centroid sensing, optimal free-space fiber coupling adaptive to an angle of optical wave arrival and much more – all in a single compact module

The INFOCO Rx is a smart optical fiber-collimator receiver/sensor with integrated piezo-actuators providing high-precision and high-speed fiber-tip position control. This compact receiving module possesses unique capabilities for adaptive free-space coupling of input light into a fiber. The INFOCO Rx can be used as:

- A sensor that can perform fast evaluation (imaging) of a focal spot 2-D intensity profile with a single photo-detector.
- An intelligent pinhole (power-in-the-bucket sensor) that can provide high-speed and high-precision measurements of a focal spot centroid and a light power coupled into a fiber with a customer-specified core diameter.
- A sensor that can measure deviations in input optical wave angle of arrival and focal spot degradation caused by input wave phase aberrations. In this capacity, the INFOCO Rx can be a key component of any adaptive optics system.
- A free-space fiber coupler that automatically provides optimal fiber coupling efficiency.
- An adaptive free-space optical communication receiver that is resilient to jitter and random deviations of the receiving light arrival angles.



INFOCO Rx Technical Specifications

Optical

- Coupling of receiving light to a single-mode (PM or non-PM) or multi-mode fiber with FC/APC or FC/UPC output connector or fiber pigtail.
- Wavelength: 1.06 μm or 1.55 μm for standard product and from 0.5 μm to 2.0 μm for customer specified modules.
- The INFOCO Rx module is available either without (INFOCO Rx-00) or with a collimating lens. Clear aperture diameter of the collimating lens: 5.5 mm (INFOCO Rx-05); 8.0 mm (INFOCO Rx-08), 25 mm (INFOCO Rx-25), or customer specified.
- Operational range for input wave arrival angle compensation/measurements (mrad):

Model	Arrival angle frequency bandwidth (kHz)			
	< 0.5	0.5–1.0	1.0–2.5	2.5–5.0
INFOCO Rx-05	> ± 3.0	> ± 2.0	> ± 1.5	> ± 0.50
INFOCO Rx-08	> ± 2.0	> ± 1.5	> ± 1.0	> ± 0.35
INFOCO Rx-25	> ± 0.5	> ± 0.35	> ± 0.3	> ± 0.10

Mechanical

Model	Length w/o cables	Diameter	Weight	Interface / Adapter			
				2" holder	SM1 thread	1/2" post	C-mount
INFOCO Rx-00	110mm (4 1/2")	45mm (1 3/4")	200g	✓	✓	✓	optional
INFOCO Rx-05	110 mm (4 1/2")	45 mm (1 3/4")	250 g	✓	✓	✓	optional
INFOCO Rx-08	110 mm (4 1/2")	45 mm (1 3/4")	250 g	✓	✓	✓	optional
INFOCO Rx-25	210 mm (8 1/2")	51 mm (2")	500 g	✓	–	✓	–

Electrical

- Maximum control input voltages: ± 70 V
- Tip/tilt control bandwidth: DC–5.0 kHz
- Control voltage input connector: DB9M