



北京锐欧飞光电科技有限公司
Beijing Profesa Optoelectronics Co., Ltd.

Professional and advanced
manufacturer of photoelectric products



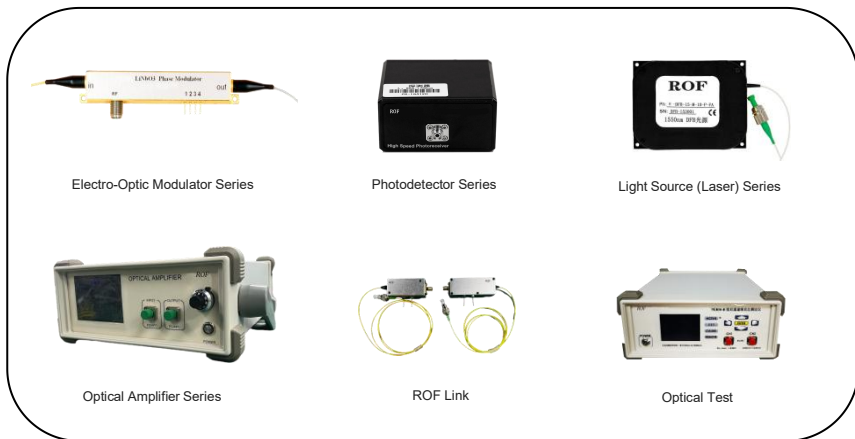
Focus

Quality



Service

Beijing Rofea Optoelectronics Co., Ltd.



Beijing Rofea Optoelectronics Co., Ltd. located in China's "Silicon Valley" - Beijing Zhongguancun, is a high-tech enterprise dedicated to serving domestic and foreign research institutions, research institutes, universities and enterprise scientific research personnel. Our company is mainly engaged in the independent research and development, design, manufacturing, sales of optoelectronic products, and provides innovative solutions and professional, personalized services for scientific researchers and industrial engineers. After years of independent innovation, it has formed a rich and perfect series of photoelectric products, which are widely used in municipal, military, transportation, electric power, finance, education, medical and other industries.

Great advantages in the industry, such as customization, variety, specifications, high efficiency, excellent service. And in 2016 won the Beijing high-tech enterprise certification, has many patent certificates, strong strength, products sold at home and abroad markets, with its stable, superior performance to win the praise of users at home and abroad!

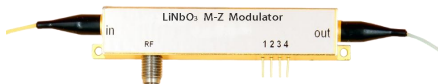
We are looking forward to cooperation with you!



A Electro-Optic Modulator Series

Electro-optic modulator is the key device to modulate continuous laser signal using data, radio frequency and clock signals. Different structures of modulator have different functions. Through the optical modulator, not only can the intensity of light wave be changed, but also the phase and polarization state of light wave can be modulated. The most commonly used electro-optic modulators are Mach-Zehnder intensity modulators and phase modulators.

Intensity Modulator



Feature:

- Low insertion loss
- Low half-voltage
- High stability

Modulator type

- Wavelength: 850nm、1064nm、1310nm、1550nm
- Bandwidth : 10GHz、20GHz、40GHz
- Other: High ER Intensity Modulator、
Cascading MZ Modulator、
Dual-parallel MZ Modulator

Application:

- ROF systems
- Quantum key distribution
- Laser sensing systems
- Side-band modulation

The LiNbO₃ intensity modulator is widely used in high-speed optical communication system, laser sensing and ROF systems because of well electro-optic performance. The R-AM series based on MZ push-pull structure and X-cut design, has stable physical and chemical characteristics, which can be applied both in laboratory experiments and industrial systems.

Phase Modulator



Feature:

- High endurance light power
- Low half-wave voltage~2.5V
- Low insertion loss

Modulator type

Wavelength: 780nm、850nm、1064nm、1310nm、1550nm

Bandwidth : 300Mhz、10GHz、20GHz、40GHz

Other: Low-Vrt Phase Modulator、
Dual-polarization Phase Modulator、
Cascading Phase Modulator

Application:

ROF systems

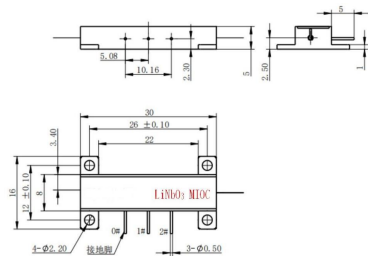
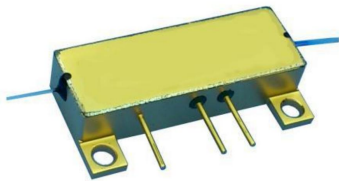
Quantum key distribution

Laser sensing systems

Side-band modulation

The LiNbO3 phase modulator is widely used in high-speed optical communication system, laser sensing and ROF systems because of well electro-optic effect. The R-PM series based on Ti-diffused and APE technology, has stable physical and chemical characteristics, which can meet requirement of the most applications in laboratory experiments and industrial systems.

Y-Waveguide Modulators



Feature:

X-cut, low insertion loss

APE waveguide, high polarization extinction ratio

Push-pull electrode, low half-wave voltage

Well long-term stability and small package size

Application:

- Fiber optical gyroscope (FOG)

- Fiber Optic Current Sensor (FOCS)

- Hydrophones and other optical fiber sensing fields

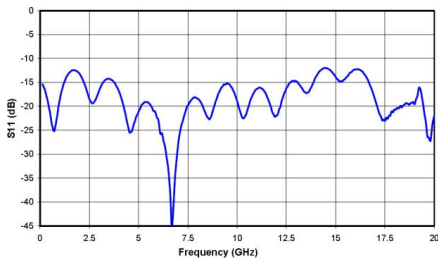
The R-MIOC Series Y-Waveguide Modulator is a LiNbO3 multifunctional integrated optical circuit (LiNbO3 MIOC) based on microelectronic technology, which can achieve polarizer and analyzer, beam splitting and combining, phase modulation and other function. The waveguides and electrodes are fabricated on LiNbO3 chip, the output and input fibers are precisely coupled with the waveguides, then the whole chip is encapsulated in a gold-plated Kovar housing to obtain well performance and high reliability.

Electro-Optical Intensity Modulator



Feature:

- Low insertion loss
- High operating bandwidth
- Adjustable gain and offset operating point
- AC 220V
- Easy to use, optional light source



Application:

- High speed external modulation system
- Teaching and experimental demonstration system
- Optical signal generator
- Optical RZ, NRZ system

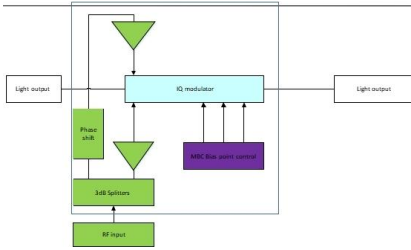
The Rof-AMBox Electro-optical intensity modulator is a highly integrated product owned by Rofea with independent intellectual property rights. The instrument integrates electro-optical intensity modulator, microwave amplifier and its driving circuit into one, which not only facilitates the use of users, but also greatly improves the reliability of MZ intensity modulator, and can provide customized services according to user requirements.

Suppression Carrier Single Side-band Modulator



Application:

- Optical fiber sensing system
- Microwave photonics
- Teaching and experimental demonstration system
- Suppress Carrier Single Sideband Modulation to Achieve Wavelength adjustable

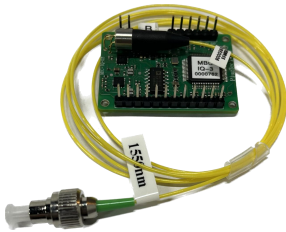


Feature:

- Low insertion loss
- High operating bandwidth
- AC220V

The ROF-ModBox-SSB-1550 Suppression Carrier Single Sideband Modulation Unit is a highly integrated product of Rofea photoelectric with independent intellectual property rights. The product integrates Mach-Zehnder double parallel modulator, bias controller, RF driver And other necessary components into a unit, which doesn't only facilitate the user, but also greatly improves the reliability of the MZ intensity modulator. What's more, it can be customized according to user's requirements.

Bias Point Controller



Modulator type

- Q+/Q- Controller
- Null & Peak Controller
- Arbitrary Point Controller
- IQ Modulation Controller
- DPIQ Modulation Controller



Application:

- LiNbO3 and other MZ modulators
- Digital NRZ, RZ
- Pulse applications
- Brillouin scattering system and other optical sensors

Feature:

- Bias voltage control on Peak/Null/Q+/Q-
- Bias voltage control on arbitrary point
- Ultra precise control: 50dB maximum extinction ratio on Null mode;

$\pm 0.5^\circ$ accuracy on Q+ and Q- modes

- Low dither amplitude:

0.1% V_{π} at NULL mode and PEAK mode

2% V_{π} at Q+ mode and Q- mode

- High stability: with fully digital implementation
- Low profile: 40mm(W) × 30mm(D) × 10mm(H)
- Easy to use: Manual operation with mini jumper;

Flexible OEM operations through MCU UART2

- Two different modes to provide bias voltage: a. Automatic bias control
- User defined bias voltage

Rofea' modulator bias controller is specially designed for Mach- Zehnder modulators to ensure a stable operation state in various operating environments. Based on its fully digitized signal processing method, the controller can provide ultra stable performance. The controller injects a low frequency, low amplitude dither signal together with bias voltage into the modulator. It keeps reading the output from the modulator and determines the condition of the bias voltage and the related error. A new bias voltage will be applied afterwards according to the previous measurement. In this way, the modulator is ensured to work under proper bias voltage.

RF Amplifier



Feature:

12.5Gbps RZ

Output amplitude adjustable

High signal to noise ratio

Modulator type

Working rate : 10---10Gbps
20---20Gbps
40---40Gbps

Application:

10GOptical transmission system
Microwave photonics
OC-192 SONET/SDH system

The R-RF-10-RZ amplifier is a desktop amplifier explicitly designed for RZ code transmission in high-speed optical fiber communication systems. It amplifies tiny high-speed signal levels to a higher level that can drive the modulator and then going Lithium niobate (LiNbO3) electro-optical modulator to work. It has a better gain flatness in the broadband range.

B Photodetector Series

Rofea independently developed photodetector integrated photodiode and low noise amplifier circuit, while providing a variety of products, for scientific research users Provide quality product customization service, technical support and convenient after-sales service. The current product line includes: analog signal photodetector with amplification, gain adjustable photodetector, high speed photodetector, snow market detector (APD), balance detector, etc.

High Speed Photodetector Module



Feature:

Spectral range: 320-1000nm、850-1650nm、950-1650nm、1100-1650nm、1480-1620nm
3dBbandwidth: 200MHz-50GHz
Optical fiber coupling output2.5Gbps

Modulator type

3dBbandwidht:
200MHz、1GHz、10GHz、
20GHz、50GHz

Application:

High-speed optical pulse detection
High -speed optical communication
Microwave link
Brillouin optical fiber sensing system

The ROF high-speed light detection module uses high-performance 200MHz-50GHz PIN detector, single-mode / multi-mode fiber coupling input, SMA connector output, having high gain, high sensitivity, DC / AC coupling output, gain flat and other Features, mainly being used in high-speed optical fiber transmission system, ROF and optical fiber sensing systems and other fields.

Photodetector With Amplification Module



Application:

Weak signal detection
Heterodyne detection

Feature:

Spectral range : 320-1000、850-1650nm
3dB bandwidth: 500KHz-40GHz
Low noise
High gain
Optical fiber space coupling input optional

Modulator type

3dBbandwidt:

500KHz、10MHz、
200MHz、500MHz、
1GHz、10GHz、20GHz、
40GHz

ROF With Amplification series photodetector integrates high-speed PIN detector and low noise amplifier, fiber or free space coupling, SMA connector output, with high gain, high sensitivity, gain flat and other characteristics, mainly used for analog optical signal reception and fiber optic sensing systems.

Balanced Photodetector Module



Feature:

Spectral range: 320-1000、850-1650nm、
400-1000nm、800-1700nm、1480-1620nm
3dB bandwidth: 80MHz-40GHz
Low noise
High gain
DC 15Vpower supply



Modulator type

3dBbandwid:

80MHz、200MHz、
350MHz、1-6GHz、
10GHz、40GHz

Application:

Heterodyne detection
Optical delay measurement
Optical fiber sensing system
(OCT)

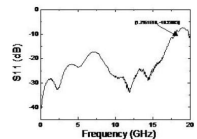
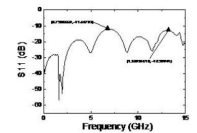
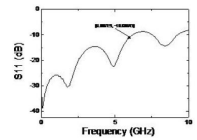
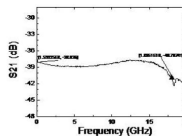
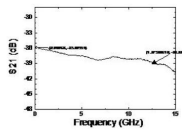
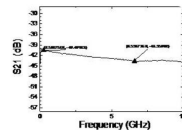
ROF -BPR series of balanced light detection module integrates two matching photodiode and an ultra-low noise transimpedance amplifier, effectively reducing the laser noise and common mode noise, improving the system's noise ratio, having a variety of spectral response optional, Low noise, high gain, easy to use and so on, Mainly being used for spectroscopy, heterodyne detection, optical delay measurement, optical coherence tomography and other fields.

C Light Source (Laser) Series

Rofea provides stable and reliable laser modules for optical fiber communication, optical fiber sensing, fiber optic gyro and quantum communication users. Drive circuit and temperature control circuit integrated in one, for scientific research units users to provide side. The main products include DEB laser light source, broadband light source, pulse light source, etc.

Analog broadband direct light transmission module

Characteristic curve:



Feature:

- Excellent RF response flatness
- Wide dynamic range
- Entire transparent work applicable signal coding communication standard network protocols
- Wavelength options: 1550nm DWDM
- Integrate automatic power control and automatic temperature circuit
- No built-in drive RF amplifier, providing more flexibility

Application:

- Remote antenna
- Long-distance analog optical fiber communication
- Military three wave communication
- Tracking telemetry and control
- Delay lines
- Phased array

The ROF -DML -XX series of analog broadband direct-tuning transmitters use a highly linear microwave direct-coupled DFB laser (DML), a fully transparent operating mode without RF drive amplifiers and integrated automatic power control (APC) and automatic temperature control (ATC) circuit to ensures that the laser can transmit up to 18 GHz of microwave RF signals with long distances, high bandwidth and flat response, providing excellent linear optical fiber communication for a variety of analog broadband microwave applications. Due to the avoidance of expensive coaxial cable or waveguide, the transmission distance limit is canceled, which greatly improves the signal quality and reliability of microwave communication, being widely used in remote wireless, timing and reference signal distribution, telemetry and delay lines and other communication field.

DFB Lasers



Feature:

- ITU wavelength and high output power is optional
- Line width options: <10MHz, <1MHz, <200KHz
- Built-in optical isolator
- Multiple operating modes are available
- Module package、desktop package

Parameters

Parameter	Symbol	Min	Typ	Max	Unit
Operating wavelength	λ	852/1064/1310/1550/1653/2000			nm
Output optical power	P _o	-	13	16	dBm
3dB spectral width	Δλ*	0.2	2	10	MHz
SMSR	SMSR	30	45		dB
Relative noise intensity	RIN		-160	-150	dB/Hz
	PSS			±0.005	dB/5min
Power stability**	PLS			±0.01	dB/8h
Output isolation	ISO	30	35		dB
Specification		Desktop		Module	
Dimensions L x W x H		320×220×90 mm		90×70×18 mm	
Power requirements		AC 220V ± 10% 30W		DC +5V GND	
Output optical fiber		SMF/PMF			
Operating mode		CW, internal modulation ,external signal modulation			
Optical connector		FC/PC , FC/APC or user specified			

Application:

Laser distance measurement
Seed light source
Optical fiber communication
Optical sensing system

D Optical Amplifier Series

optical amplifier is a device which receives some input signal light and generates an output signal with higher optical power. Typically, inputs and outputs are laser beams (very rarely other types of light beams), either propagating as Gaussian beams in free space or in a fiber. The amplification occurs in a so-called gain medium, which has to be “pumped” (i.e., provided with energy) from an external source. Most optical amplifiers are either optically or electrically pumped.

Optical Amplifier (EDFA&YDFA)



Feature:

Low noise
ACC, AGC, APC Option
SM and PM fiber Option
Automatic shut off pump protection
Remote control
Desktop, module package are optional

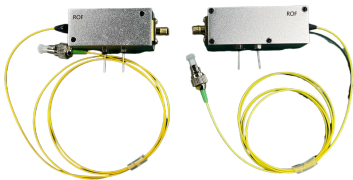
Application:

- LAn amplifier can boost the (average) power of a laser output to higher levels (→ master oscillator power amplifier = MOPA).
- It can generate extremely high peak powers, particularly in ultrashort pulses, if the stored energy is extracted within a short time.
- It can amplify weak signals before photodetection, and thus reduce the detection noise, unless the added amplifier noise is large.
- In long fiber-optic links for optical fiber communications, the optical power level has to be raised between long sections of fiber before the information is lost in the noise.

E ROF Link

Rofea specializes in RF transmission field, the latest launch of a series of RF optical fiber transmission products. The RF fiber transmission module directly modulates the analog RF signal to the optical transceiver, transmits it through the optical fiber to the receiving end, and then converts it into an RF signal after photoelectric conversion. The products cover L, S, X, Ku and other frequency bands, using compact metal casting shell, good electromagnetic interference resistance, wide working band, good flatness in the band, mainly used in microwave delay line multimotion antenna, repeater station, satellite ground station and other fields.

Mini Analog Wideband Transceiver Module



Feature:

- 1 Bandwidth response 0.6GHz to 6GHz
- Tight cast metal case
- High SFDR
- flat frequency response
- 1.3 and/or 1.5 μ m with isolated FP/DFB2.5Gbps RZ
- Output amplitude adjustable
- High signal to noise ratio

Modulator type

Modulation bandwidth:

01---0.5~1200MHz

02---50-3000MHz

03---0.6~6GHz

Application:

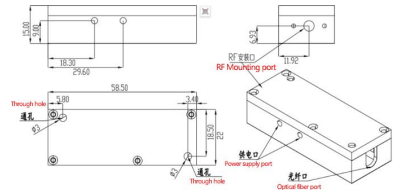
WiMAX / 4G LTE

5G communication

Shipborne radio frequency distribution
satellite earth station

The Mini analog wideband transceiver module is a low-cost, high-performance analog wideband transceiver with a very wide dynamic range, designed specifically for optical fiber RF applications. A pair of transceivers will create two-way RF to optical and optical to RF conversion and transmission links that can provide high spurious free dynamic range (SFDR), operating at frequencies from 0.6GHz to 6GHz. The standard optical connector is FC/APC for low back reflection applications, and the RF interface is via a 50 ohm SMA connector. The receiver uses high performance InGaAs photodiode, the transmitter uses linear optical isolation FP/DFB laser, and the optical fiber uses 9/125 μm single-mode fiber with working wavelength of 1.3 or 1.5 μm .

Microwave Optical Fiber Transmission Module



Application:

- Remote antenna
- Long distance analog fiber communication
- Tracking, telemetry and control
- Delay lines

Feature:

- Operating frequency 1-6GHz
- DWDM wavelength is available for wavelength ,multiplexed
- Excellent RF response flatness
- Wide dynamic range
- Entire transparent work
- Can be customized according to customer requirements

1-6G microwave optical fiber transmission module is composed of transmitter module and receiver module, and the working principle as shown below. The transmitter uses a high linear linear direct-mode DFB laser (DML) and integrates automatic power control (APC) and automatic temperature control (ATC) circuit, so that the laser can have efficient and stable output. The receiver integrates a high linear PIN detection and low noise broadband amplifiers. Microwave signal modulates laser to produce intensity modulated optical signal directly to achieve electro-optical conversion, after single-mode fiber transmission, the receiver completes photoelectric conversion, and then the signal is amplified and output by the amplifier.

F Optical Test

Polarization-maintaining fiber devices such as polarization-maintaining laser, polarization-maintaining fiber, polarization-maintaining collimator, y-waveguide modulator, polarization-maintaining fiber, etc. are widely used in the fields of interferometer, gyroscope, fiber sensing, etc. The testing of the devices is an important step in the production process. After years of research and development, Rofea Optoelectronics has accumulated a complete range of test solutions, including test light source, laser driver, optical power meter, extinction ratio tester and other equipment. According to customer needs, Rofea Optoelectronics provides single/double channel for station and multi-channel integrated test system for long-term stability test, which greatly improves production efficiency.

Desktop Optical Power Meter



Feature:

High resolution, with more than 6 effective digits

Desktop interface, easy to operate

Application:

Laboratory optical device testing

Highly stable light source performance test and strict inspection

Advanced measurement of optical measurement technology

The desktop optical power meter is specially designed for the quality inspection of laboratories and companies. Two types of products are available: ROF-OPM-1X high-stability optical power meter and ROF-OPM-2X high-sensitivity optical power meter, both Independent visual power test, digital zero adjustments, digital calibration, manual or automatic range selection, equipped with USB (RS232) interface, upper computer software can automatically perform data testing, recording, and analysis, and can quickly form an automatic test system to measure the power range Wide, high test accuracy, high-cost performance, and good reliability.

LDDR Laser Diode Driver



Feature:

- Output high stable driving current
- Precise temperature control
- Safe start and multiple protection
- Easy to use values

Application:

- Semiconductor laser driver for laboratory
- Automatic detection and data recording for large-scale production

The laser diode driver is mainly used for the stable driving and driving adjustment of semiconductor lasers, the detection, sorting, aging test, performance evaluation, quality control, and other links in the R & D or production process of semiconductor lasers. It has a stable output current, precise temperature control, comprehensive safety protection, intuitive and straightforward operation, low cost, etc.

Polarization Extinction Ratio Meter



Feature:

- Long life, low noise
- low electromagnetic interference
- Small measurement error

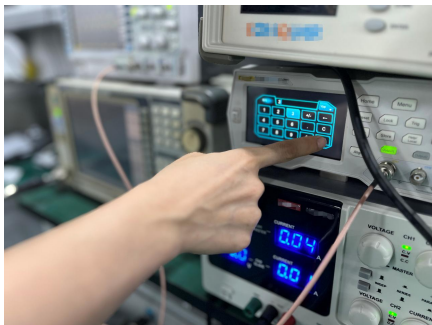
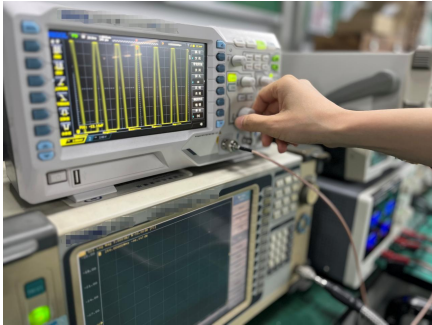
Application:

Single-ended optical device PER parameter test

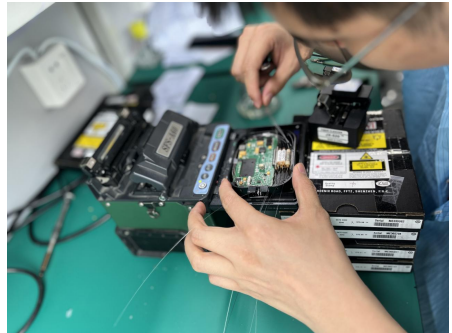
dual output PER parameter test device

(Y waveguide, coupler, beam splitter, etc)

Single/Dual channel extinction ratio tester can independently test polarization extinction ratio, optical power test, digital zeroing, digital calibration, manual or automatic range selection, equipped with USB(RS232) interface, upper computer software can automatically test, record and analyze data, and can easily form an automatic test system. Widely used in optical communication equipment, optical fiber, optical passive devices and optical active devices testing, wide power range, high test accuracy, cost-effective, good reliability.



Advanced



Professional