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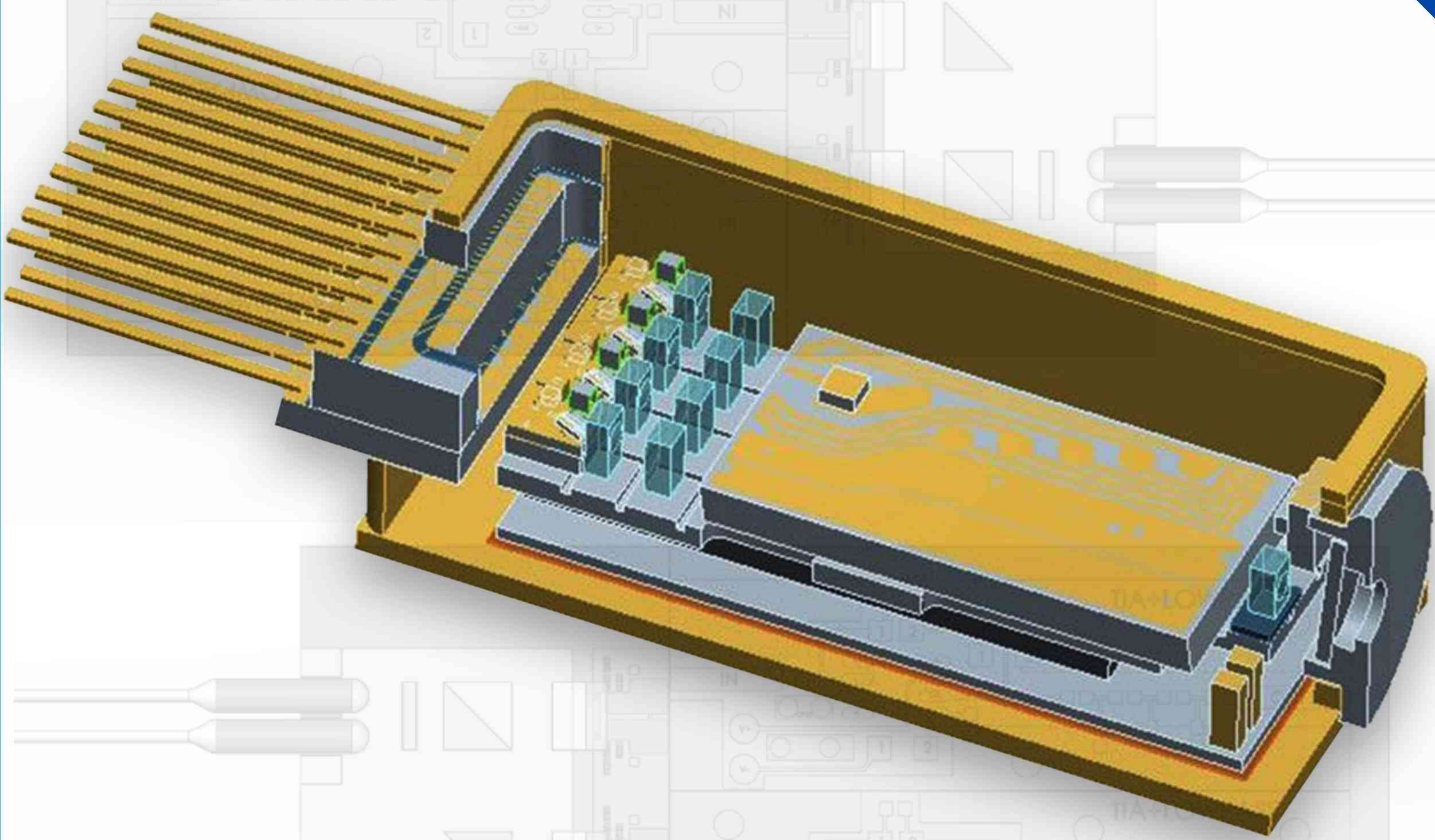
Analog Optical Transmission
Digital Optical Transmission
Free-space Optical Transmission



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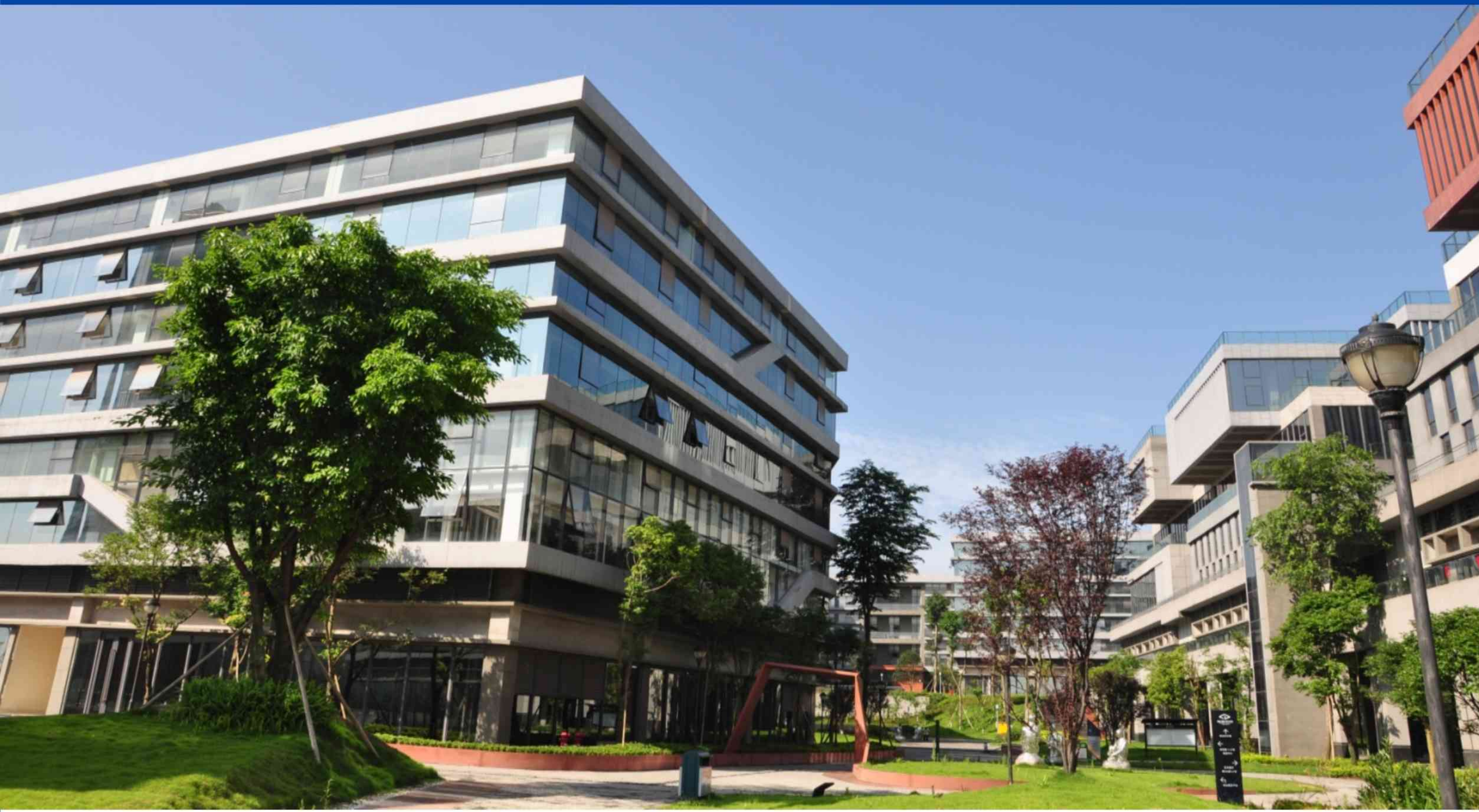
Deliver Mission-proven Solutions for Broadband Electronic Systems and Advanced Optical Communications

COMPANY PROFILE



2011
Founding Time

30+
Patents

1000+
Customers

As a nationally recognized Little Giant high-tech enterprise, Wiseworld specializes in cutting-edge photoelectric transmission technologies, including optical couplers, solid-state relays SSR, and microwave photonic components and devices. With a strategic R&D investment exceeding $15 million, we deliver mission-proven solutions for broadband electronic systems and advanced optical communications.

With over 20years experience in the optical transmission products, we has full-spectrum capabilities from R&D to mass production with production capability over 500,000 pcs/year. We are capable of high-precision optoelectronic integration like L/S/C/X/Ku/Ka bands, high-grade packaging such as gas-sealed with high-reliability and advanced microwave photonic systems up to 40GHz. Our products are deployed across rigid platforms including airborne systems, missile guidance, ground vehicles and naval electronics for domestic research institutes who requires high standard quality performance in a wide temperature range with super compact sizes.

Wiseworld will consistently delivers mission-critical reliability to help our customers achieve their objectives and produce superior high-grade products plus best valued prices.

CONTENTS

PRODUCT CATALOG

Five Core Strengths

01 Ultra-wide Frequency Band:

The operating frequency of optoelectronic devices is much higher than that of microwave devices, which can support ultra-wide frequency band signals from direct current to terahertz (THz) level, meeting the needs of large-capacity and high-speed information transmission.

02 Low-loss Transmission and Long Range Transmission:

When microwave signals are transmitted through optical fibers, the loss is much lower than that of traditional coaxial cables or waveguides, making it particularly suitable for long-distance transmission (such as intercontinental communication and long-distance radar signal transmission).

03 Anti-electromagnetic Interference:

Light waves transmitted in optical fibers are not affected by electromagnetic interference (EMI) or radio frequency interference (RFI), with high stability, making them suitable for complex electromagnetic environments (such as military and industrial scenarios).

04 High Integration with Compact Size:

It can be combined with photonic integrated circuits (PICs) to realize the miniaturized integration of functions such as optical control modulation, filtering, and amplification of microwave signals, reducing the system volume and power consumption.

05 Flexible Signal Processing:

Photonic technology can realize complex processing of microwave signals, such as instantaneous frequency measurement, phase modulation, and pulse compression, with a processing speed faster than that of pure electronic methods.

A Analog Optical Transmission

A01 Transmitter

18GHz Direct-Modulated Laser

The module is a directly modulated DFB laser, which can be used in broadband analog signal transmission. Its 3dB bandwidth could reach 18GHz. Optical isolator, TEC, thermistor, laser diode chip, and monitor photodiode are internally installed in this laser module. It is used 7PIN butterfly package. The wavelength of DWDM/CWDM can be chosen. Input P-1 ≥18dBm, operating temperature range is from -55°C-70°C, strong environmental adaptability. It can be customized according to customer requirements.

Application

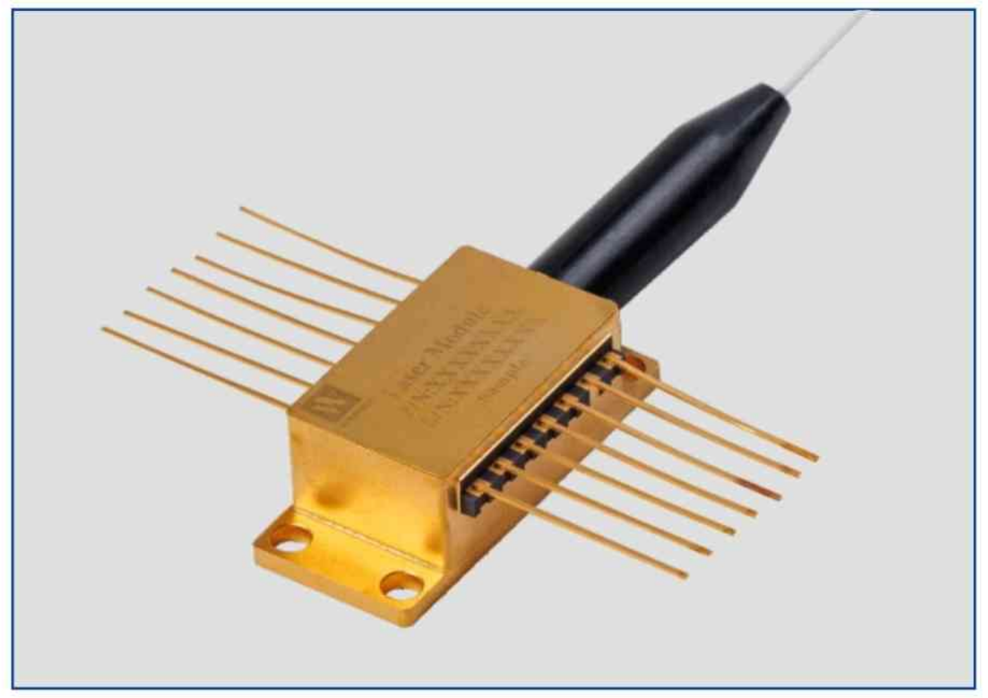
Optical communication
RF transmission link
Microwave photonic transmission system
RF optical delay line

Features

3dB bandwidth up to 18GHz
Input P-1 ≥18dBm
DWDM/CWDM wave length optional
7PIN butterfly package
Operating temperature -55°C-70°C
Meeting the requirements of high P-1 and reliability

High-power DFB CW Laser

The module is a high-power CW outward-modulated DFB laser with an output power of up to 60mw, 14-pin butterfly package, ITU standard wavelength options. The RIN is lower than -155dB/Hz2/3, and the operating temperature range is -55~70°C. The laser has the characteristics of good spectral purity, narrow line width, high side mode rejection ratio, high reliability and strong environmental adaptability. Meeting the requirements of high reliability.



Application

Fiber optical sensing
Fiber optical communication
Microwave photon transmission system

Features

Output power of up to 60mw
14-pin butterfly package
ITU standard wavelength options
RIN is lower than -155dB/Hz2/3
Operating temperature range is -55~70°C
Meeting the requirements of high reliability

Thin-film LiNbO3 Intensity Modulator

This product is thin film LiNbO3 intensity modulator which is encapsulated with high-precision coupling process technology. The frequency up to 50GHz, Vpi is less than 3V. Compared to traditional lithium niobate (LiNbO) crystal modulators, this product has the advantages of wide frequency band, low Vpi, small size, light weight, small bending radius of optical fiber. Meeting the requirements of miniaturization and high reliability.

Application

Microwave optical transmission link
High speed optical fiber communication system
Optical delay line
Other analog optical transmission

Features

Frequency up to 50GHz
Vpi < 3V, insertion loss < 5dB
Hermetically package
Compact small size
Operating temperature -40 - 70°C
Meeting the requirements of miniaturization and high reliability

Dual-channel Thin-film LiNbO3 Intensity Modulator Module

The photonic integrated design of the product integrates two thin film LiNbO3 intensity modulators, low noise microwave amplifiers and control circuits to achieve photoelectric conversion of two RF signals at the same time. Frequency up to 50GHz, Vpi is less than 3V, insertion loss is less than 5dB, hermetically package, small size, operating temperature is -40 - 70°C. Through RS485 signal control, components can read addresses, modify addresses and read status. The product has the advantages of wide frequency band, high integration, small size, light weight, no need for external circuit, wide operating temperature range, small bending radius of optical fiber, and strong adaptability to the environment. Meeting the requirements of miniaturization and high reliability. It can be customized according to customer requirements.

Application

Microwave optical transmission link
High speed optical fiber communication system
Optical delay line
Other analog optical transmission

Features

Integrated two thin film LiNbO3 intensity modulators
LNA and control circuits
Frequency up to 50GHz
Vpi < 3V, insertion loss < 5dB
Hermetically package
Compact small size
Operating temperature -40 - 70°C
Rs485 signal control
No need for external circuit
Meeting the requirements of miniaturization and high reliability

Multi-channel Direct Modulation Optical Transmitter

This product integrates multiple sets of DFB laser chip, microwave amplifier chip and drive circuit, in a sealed package. Number of channels 2, 4, 8 optional, working bandwidth covers 30MHz - 18GHz, can choose DWDM/CWDM wavelength. The input P - 1 is ≥18dBm, the operating temperature range is - 55 °C to 70 °C, and the volume and weight are only one - third of that of an independent optical transmitter with the same function. Optional microwave amplification is added to reduce the link noise factor. It has the characteristics of wide frequency band, high integration, small size, light weight, no external circuit, wide operating temperature range, small bending radius of optical fiber, and strong environmental adaptability. It is suitable for array application scenarios and meets the requirements of miniaturization, high P - 1, and high reliability. Can be customized according to customer requirements.

Picture for Reference Only

Application

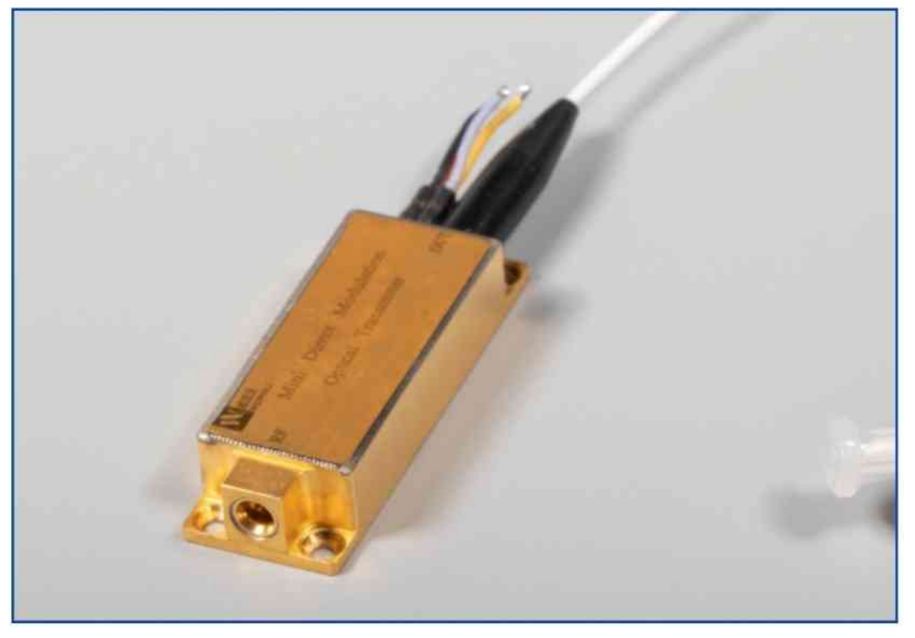
Satellite communications
Radar system analog signal optical transmission
Electronic reconnaissance system signal distributed optical transmission

Features

Integrates multiple sets of DFB laser chip
Microwave amplifier chip and drive circuit
Sealed package
Channels 2, 4, 8 optional
Bandwidth 30MHz - 18GHz, Input P - 1≥18dBm
Operating temperature - 55°C ~ 70°C
No need for external circuit
Meet the requirements of array application, miniaturization, high P - 1 and high reliability

Mini Direct Modulation Optical Transmitter

This product integrates direct-modulated DFB laser chip, microwave amplifier chip and driving circuit, hermetic package. The working bandwidth covers 30MHz - 18GHz, the wavelength of DWDM/CWDM can be chosen. Input P - 1≥18dBm, operating temperature range is from - 55°C-70°C, a volume of only one - third of the separate optical transmitter with the same function. Increase optional microwave amplification to reduce link noise factor. It has the characteristics of wide frequency band, high integration, small size, light weight, no need for external circuit, wide operating temperature range, small bending radius of optical fiber, and strong environmental adaptability. Meet the requirements of miniaturization, high P - 1 and high reliability. Can be customized according to customer requirements.



Application

Satellite communication
Radar system analog signal optical transmission
Electronic reconnaissance system signal distributed optical transmission

Features

Integrates direct-modulated DFB laser chip
Microwave amplifier chip and driving circuit
Hermetic package
Bandwidth 30MHz - 18GHz
Input P - 1≥18dBm
DWDM/CWDM wave Length optional
Operating temperature - 55°C-70°C
No need for external circuit
Meeting the requirements of miniaturization, high P - 1 and high reliability

A01 Optical Transmitter

Mini External Modulation Optical Transmitter Module

The photonic integrated design of the product integrates a 40mw DFB laser, a thin film LiNbO3 intensity modulator, a low-noise microwave amplifier to achieve photoelectric conversion of RF signals and is suitable for external modulation links for small-size microwave photon transmission. ITU standard channel is optional, the module insertion loss is less than 5dB, the noise factor of the photoelectric link without microwave amplification is less than 32dB (with high-speed photoelectric detector), the bending radius of the optical fiber is less than 10mm, hermetic package, the operating temperature is -55°C ~ 70°C. Increase optional microwave amplification to reduce link noise factor. It has the characteristics of wide frequency band, high integration, small size, light weight, wide operating temperature range, small bending radius of optical fiber, and strong environmental adaptability. It can be customized according to customer requirements.

Application

Satellite communications
Radar system analog signal optical transmission
Electronic reconnaissance system signal distributed
Scientific research

Features

Integrated a 40mw DFB laser
Thin film LiNbO3 intensity modulator
Insertion loss < 5dB, noise factor < 32 dB
Operating temperature -55°C ~ 70°C
Hermetic package
Meeting the requirements of miniaturization and high reliability

Broadband Pulse Signal Amplifier

Broadband pulse amplifier is different from traditional RF amplifier, which is designed for electrical pulse signal with sharp rise time, long pulse width, and without distortion. It is composed of low distortion RF chips, impedance matching circuits, DC-DC power conversion chips and high-speed PCB circuits. Low and high Pulse Repetition Frequency signals from 5 Hz to 2 GHz are covered and the pulse width with short rise and is from 50ps to 100 ns. Pulse rise time is lower than 50ps and Pulse output amplitude is up to 4V. It has Wide Operating temperature range from -40°C to 70°C and is widely used in RF photonics, free space optical communication, LiDAR, fiber laser system, test and instrument.

Application

RF photonics
Waveform free space optical communication
LiDAR, fiber laser system

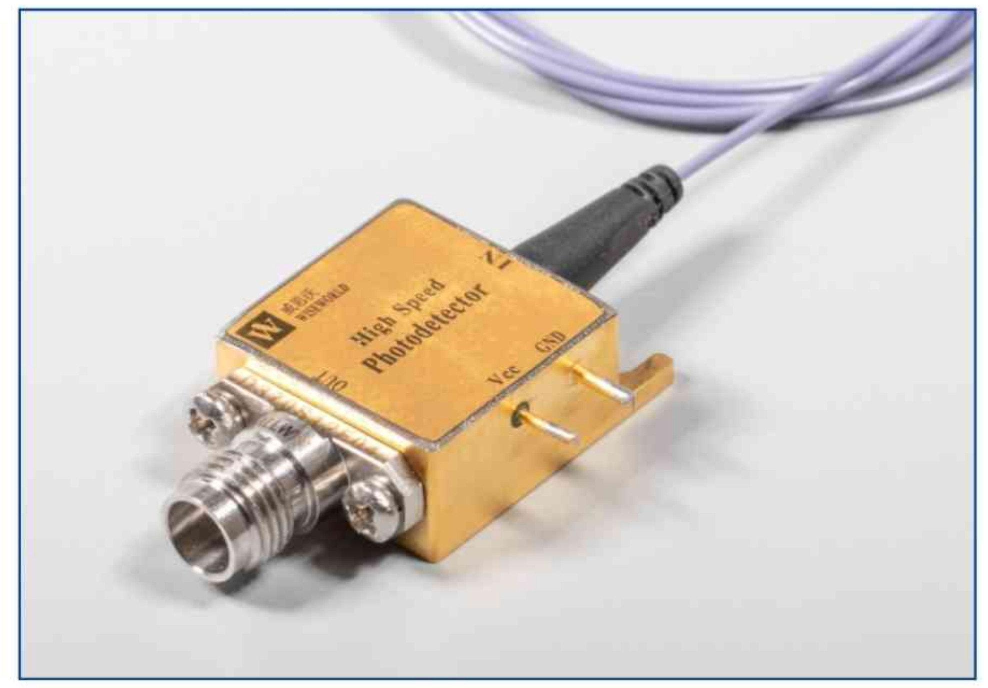
Features

Special design for pulse
Pulse width from 50ps to 100ns
Wide temperature range

A02 Receiver

High-speed Photo-detector

The product is InGaAs photodetector, frequency 18GHz and 35GHz optional, responsiveness greater than 0.8A/W, 3dB bandwidth greater than 18GHz, with 50 ohm RF output matching, operating temperature -55~70°C, fiber bending radius 10 mm (optional).1310nm and 1550nm band has a good response, mainly designed for high-speed analog optical transmission system. It has the characteristics of wide frequency range, wide operating temperature range and small bending radius of fiber. Meeting the requirements of high reliability.



Application

Microwave optical transmission link
High speed optical fiber communication system
High speed test measurement
Other analog optical transmission

Features

InGaAs photodetector
Frequency 18GHz and 35GHz optional, 3dB bandwidth >18GHz
Operating temperature -55~70°C
Fiber bending radius 10 mm (optional)
Meeting the requirements of high reliability

Arrayed Photoelectric Conversion Module

The product is multi-channel optical signal input, multi-channel RF signal output, frequency up to 18GHz and 35GHz optional, 3dB bandwidth greater than 18GHz, channel number 4, 8 optional, mainly for the microwave photon system and analog signal optical transmission link miniaturization, lightweight design. Through photonic hybrid integrated design, integrated InGaAs photodetector, microwave amplification, digital control attenuation, etc., matching 50 ohms RF output, good response to 1310nm and 1550nm wavelength, fiber bending radius 10mm (optional). Hermetically package, small size, the operating temperature can reach -55~60°C. The external drive control circuit is required when using, and the user can also control the digital attenuation through the external circuit according to the application needs, adjust the amplitude consistency between the channels, and meet the requirements of the output amplitude consistency between the multi-channel, with small size, light weight, wide frequency range, good channel consistency, wide operating temperature range, and small fiber bending radius. Meet the requirements of array applications, miniaturization and high reliability. Can be customized according to customer requirements.

Picture for Reference Only

Application

RRU
Tracking, Telemetry, Control
Radar electronic countermeasures

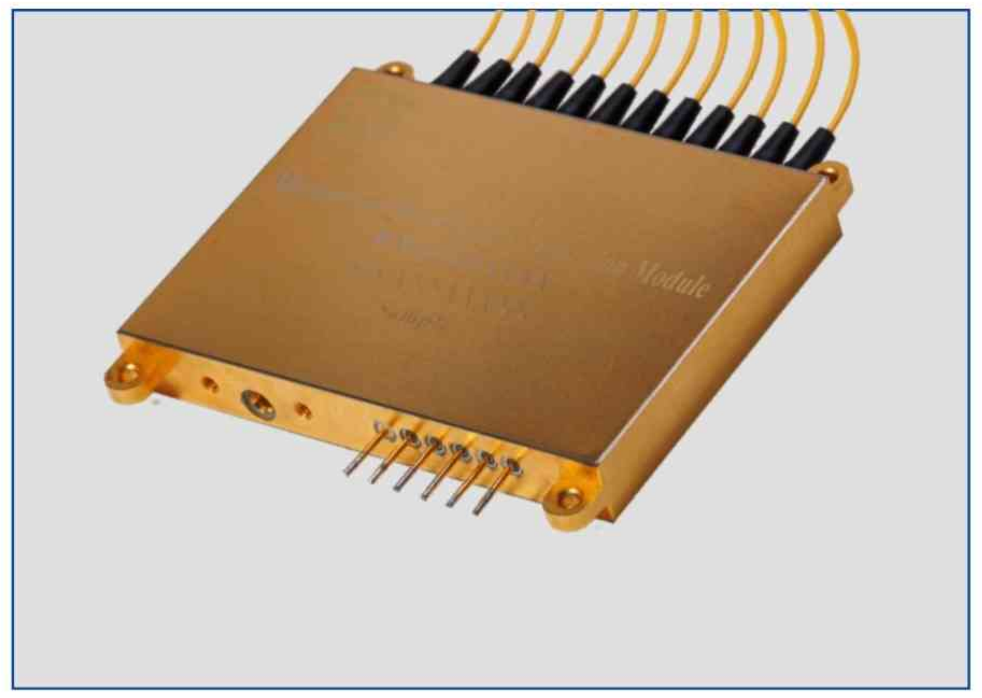
Features

Hybrid integration multiple sets of photodetector LNA, attenuation
Channels 4, 8 optional
Frequency 18GHz and 35GHz optional
3dB bandwidth >18GHz
Operating temperature -55°C-60°C
Meet the requirements of array applications, miniaturization and high reliability

A02 Receiver

Multi-channel Photoelectric Conversion Module

The product is optical signal reuse along the way input, multi-channel RF signal output, frequency up to 18GHz and 35GHz optional, 3dB bandwidth greater than 18GHz, number of channels 4, 8 optional, mainly designed for the miniaturization and lightweight of microwave photonic systems and analog signal optical transmission links. Through photonic hybrid integration design, integrated InGaAs photodetector, microwave amplification, switch, digital control attenuation, phase shift, drive control circuit, etc., matched with 50 ohm RF output, has a good response to 1310nm and 1550nm wavelength, fiber bending radius 10 mm (optional). Hermetically package, small size, operating temperature can reach -55~60°C. The module amplifies the RF signal before output, and selects the output channel through the switch. The user can also control the digital attenuation and phase shift through the RS485 signal according to the application needs, and adjust the amplitude and phase consistency between the channels to meet the requirements of the output amplitude and phase consistency between the multi-channel, and it has the characteristics of small size, light weight, wide frequency range, good channel consistency, wide operating temperature range, small bending radius of optical fiber, and no need for external circuits. Meet the requirements of array application, miniaturization and high reliability. Can be customized according to customer requirements.



Application

Microwave photonic system
Fiber optical communication system
RF fiber optical delay line
Other analog optical transmission link

Features

Hybrid integration multiple sets of photodetector LNA, switch, attenuation, phase shift, drive control circuit
Channels 4, 8 optional
Frequency 18GHz and 35GHz optional
Operating temperature -55°C~60°C
No need for external circuit
Meet the requirements of array application, miniaturization and high reliability

TIA High Speed Photoreceiver

High speed photoreceiver is composed of III - V InGaAs chip, linear TIA chip, high speed PCB and DC - DC power chip in a hermetic package, which can receive small optical signal and output high frequency electrical signal. Electrical bandwidth is up to 20GHz. Optical wavelength is from 1260nm to 1600nm and Wide Operating temperature range is from -40°C to 70°C. Especially, O/E conversion gain is up to 1500V/W. It is widely used in RF photonics, free space optical communication, radar system, test and instrument.

Application

RF photonics
Test and instrument
Optical sensing

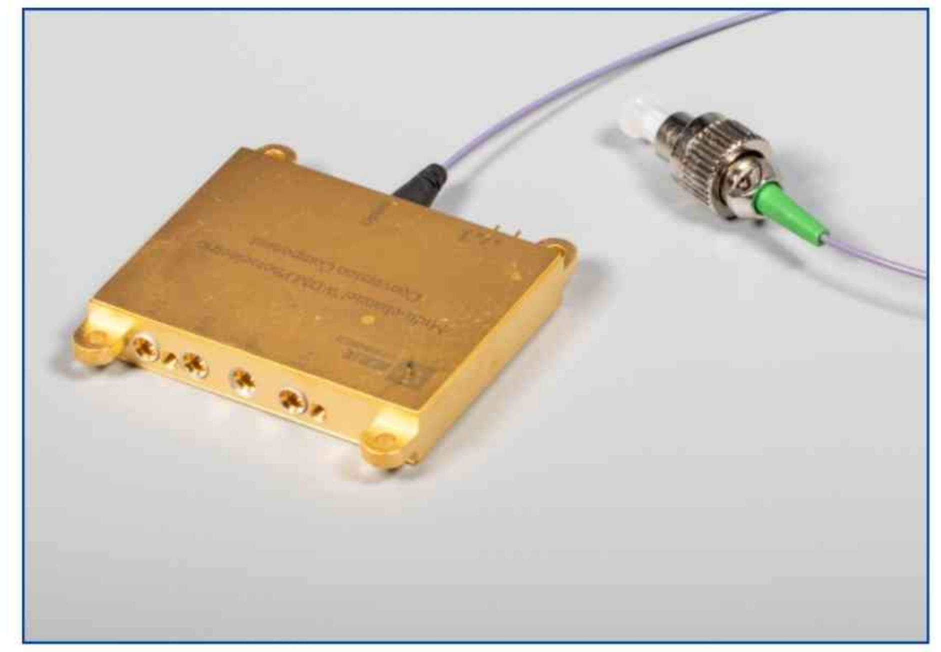
Features

Large bandwidth
High gain up to 1500V/W

A02 Receiver

Multi-channel WDM Photoelectric Conversion Module

The product is optical signal reuse along the way, multi-channel RF signal output, frequency up to 18GHz and 35GHz optional, 3dB bandwidth greater than 18GHz, number of channels 4, 8 optional, mainly designed for the miniaturization and lightweight of microwave photonic systems and analog signal optical transmission links. Through photonic hybrid integration design, integrated InGaAs photodetector, LNA, WDM, digital control attenuation, drive control circuit, etc., matched with 50 ohm RF output, has a good response to 1310nm and 1550nm wavelength, fiber bending radius 10 mm (optional). Hermetically package, small size, operating temperature can reach -55~60°C. The user can also control the digital attenuation through the RS485 signal according to the application needs, and adjust the amplitude between the channels to meet the requirements of the output amplitude between the multi-channel, and it has the characteristics of small size, light weight, wide frequency range, good channel consistency, wide operating temperature range, small bending radius of optical fiber, and no need for external circuits. Meet the requirements of array application, miniaturization and high reliability. Can be customized according to customer requirements.



Application

Satellite communication
Radar system analog signal optical transmission
Electronic reconnaissance system signal distributed optical transmission

Features

Hybrid integration multiple sets of InGaAs photodetector LNA, WDM, attenuation, drive control circuit
Channels 4, 8 optional
Frequency 18GHz and 35GHz optional
Operating temperature -55°C~60°C
No need for external circuit
Meet the requirements of array application, miniaturization and high reliability

Single-channel Mini Optical Receiver

The product is a single-channel InGaAs photodetector, the frequency can be up to 18GHz and 35GHz optional, 3dB bandwidth is greater than 18GHz, mainly used for microwave photonic system and analog signal optical transmission link miniaturization, lightweight design. Through photonic hybrid integrated design, integrated InGaAs photodetector, LNA, matching 50 ohm RF output, good response to 1310nm and 1550nm wavelength, fiber bending radius 10mm (optional). Hermetically package, the operating temperature can reach -55~70°C, no external circuit requirements. It has the characteristics of small size, light weight, wide frequency range, wide operating temperature range and small bending radius of optical fiber. Meet the requirements of miniaturization and high reliability. Can be customized according to customer requirements.

Application

Satellite communication
Radar system analog signal optical transmission
Electronic reconnaissance system signal distributed optical transmission

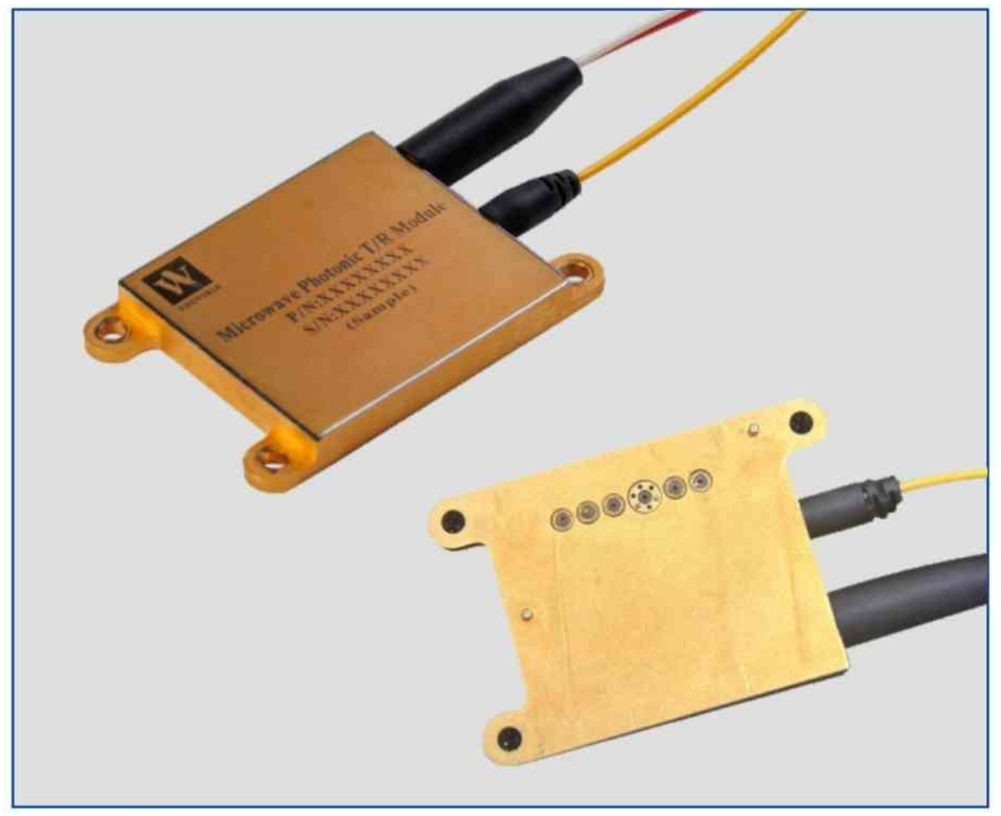
Features

Single-channel InGaAs photodetector
Frequency up to 18GHz and 35GHz optional
3dB bandwidth > 18GHz
Integrated InGaAs photodetector and LNA
Hermetically package
Compact size only 1/2 of the same receiver
Operating temperature -55~70°C
No external circuit requirements
Meet the requirements of miniaturization and high reliability

A03 Transceiver

Microwave Photonic T/R Module

The product uses photonic integrated design, integrating thin-film LiNbO3 intensity modulator, InGaAs photo-detector, low noise microwave amplifier and control circuit, which can achieve photoelectric and electro-optical bidirectional conversion of RF signals. Electro-optic and photoelectric time-sharing work, through RS485 signal control, to achieve electro-optic/photoelectric channel switching and attenuation control. The frequency is up to 40 GHz, 3dB bandwidth over 20GHz, small size. The product has the advantages of wide frequency range, high integration, small size, light weight, no external circuit requirements, wide operating temperature range, small bending radius of optical fiber, and strong environmental adaptability. Meeting the requirements of miniaturization and high reliability. It can be customized according to customer requirements.



Application

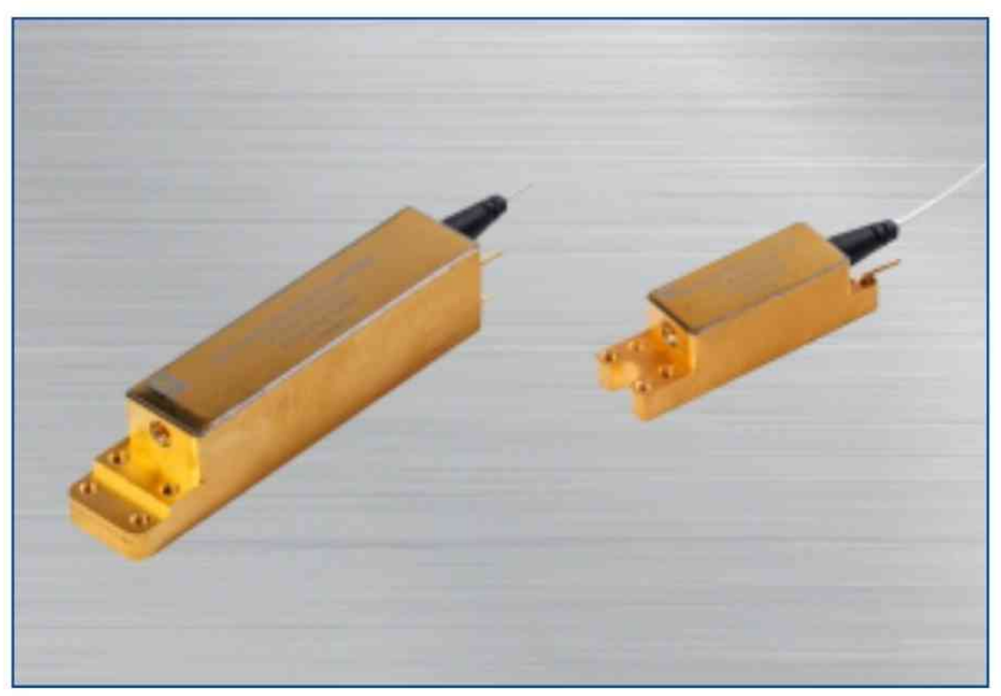
Microwave optical transmission links
High speed optical fiber communication system
Other analog optical transmission

Features

Integrated thin-film LiNbO3 intensity modulator
Photodetector, microwave amplifier and controls circuit
Frequency up to 40 Ghz
3dB Bandwidth over 20GHz
Compact small size
Operating temperature -50°C~70°C
No external circuit requirement
Meeting the requirements of miniaturization and high reliability

Mini Direct Modulated Optical Transceiver Link

Photonic integrated design is adopted in this link, including a direct modulation transmitter component and a receiver component. Low noise microwave amplifier and drive circuit are integrated, RF signal amplification and optical transmission, the dimensions is 1/5 of traditional separate links. The bandwidth is 50MHz - 18GHz, wavelength is DWDM/CWDM optional, operating temperature is -50~70°C. It has the advantage of wide frequency band, high integration, small size, light weight, no external circuit required, wide operating temperature range, small bending radius of fiber, strongly adaptability to the environment and so on. It can be customized according to customer requirements.



Application

Microwave optical transmission link
High speed optical fiber communication system
RF optical delay line
Other analog optical transmission

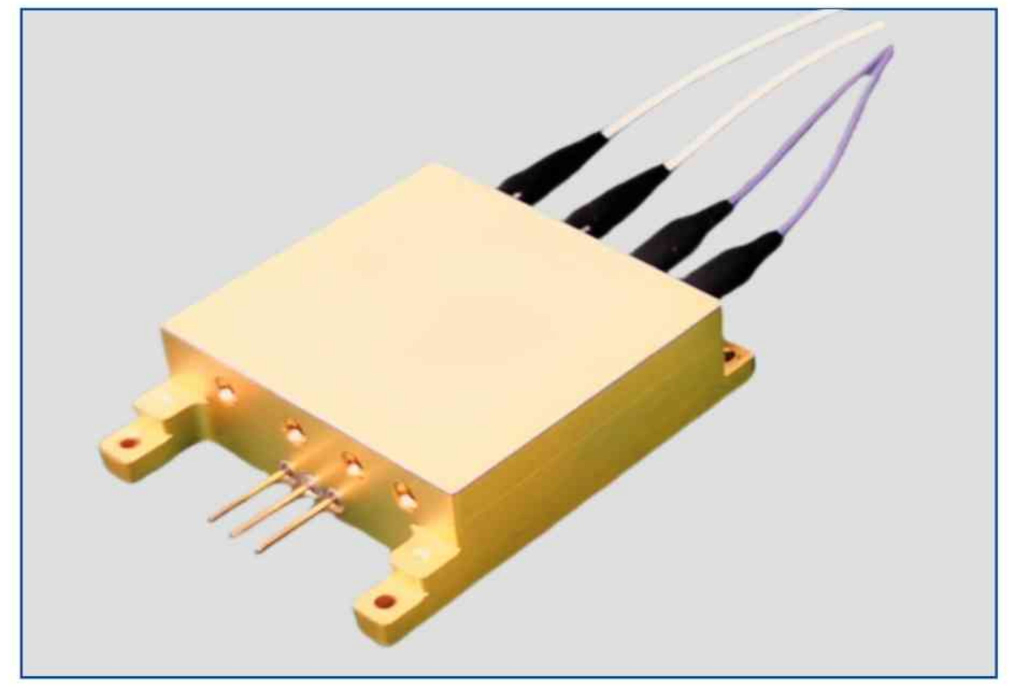
Features

Bandwidth 50MHz - 18GHz
Integrated microwave amplifier
Compact size only 1/5 of similar link
DWDM/CWDM optional
Operating temperature -50°C - 70°C
No external circuit requirement
Meeting the requirements of miniaturization and high reliability

A03 Transceiver

Four Channels Optical Transceiver

The device integrates two channel optical emission, two channel optical reception, microwave circuit and drive circuit, which can realize bidirectional conversion of photoelectric signal at the same time. The frequency is up to 20 GHz, the size is as small as <55mm×43.5mm×13mm, operating temperature -50~70°C. The product has the characteristics of small size, light weight, no need for external circuit, wide temperature range, small bending radius of optical fiber, strong environmental adaptability, etc., to meet the requirements of miniaturization and high reliability. Meeting the requirements of miniaturization and high reliability. It can be customized according to customer requirements.



Application

Microwave optical transmission links
Fiber optical communication system
Other analog optical transmission

Features

Bidirectional optoelectric conversion of four RF signals
Integrated microwave circuit and drive circuit
Frequency up to 20 Ghz
Compact size <55mm×43.5mm×13mm
Operating temperature -50~70°C
No external circuit requirement
Meeting the requirements of miniaturization and high reliability

A04 Delay Line

Portable Radio Altimeter

Based on optical microwave wireless transmission technology, portable radio altimeter can achieve large dynamic delay of C-band microwave signal, and is used in field target simulator to simulate the target echo signal with height from 1m to 22000m, simulate altimeter accuracy □1‰. The device mainly realizes the functions of analog switching and target height query by processing microwave signal, photoelectric conversion and optical signal delay processing. Color LCD touch screen, easy to operate, light weight, high simulate altimeter accuracy, support AC/DC power supply. Meet mobile application scenarios.

Application

Radar field target simulator
Radio altimeters for other electronic devices

Features

C-band
Simulate height 1 - 22000m
Simulate altimeter accuracy □1‰
Color LCD touch screen
Support AC/DC power supply
Meet the mobile application scenario

A04 Delay Line

C-band Optical Delay Line

This product consists of an optical transmitter, an optical receiver, an optical switch array, a delay optical fiber, and a microwave amplifier component, It is used for delay processing of C-band pulse modulation signals. The flatness in the working band is controlled within 0.5dB, the output power stability is better than 0.1dB, the delay time is adjustable in 16us (step 2us), and the delay accuracy is better than Ins.

Application

Satellite communication calibration system
Radar signal simulator system
Electronic reconnaissance system signal cache system
Broadband signal data cache

Features

C-band
Delay time 16us (2us steps adjustable)
Flatness<0.5dB
Output power stability<0.1dB
Used for radar target simulation, satellite communication calibration, broadband signal data cache

Ku-band Optical Delay Line

This product consists of an optical transmitter, an optical receiver, an optical switch array, a delay fiber, and a microwave amplifier component, It is used for delay processing of Ku-band pulse modulation signals. The flatness in the working band is controlled within ±1dB, the output power stability is better than 0.5dB, the delay time is adjustable within 400ns, the delay accuracy is better than Ins, and the minimum delay time is less than 15ns. it can be customized according to customer requirements.

Application

Satellite communication calibration system
Radar signal simulator system
Electronic reconnaissance system signal cache system
Broadband signal data cache

Features

Ku-band
Delay time 400ns(adjustable)
Flatness<±1dB
Output power stability<0.5dB
Delay accuracy< Ins
Used for radar target simulation, satellite communication calibration, broadband signal data cache

A04 Delay Line

Ka-band Self-closed Loop Optical Delay Device

The Ka-band self-closed loop optical delay device is based on fiber delay technology, which can achieve 105us/210us delay of Ka-band (28-39GHz) microwave signals, and is used for field target simulators to simulate 21km/42km target echo signals, delay accuracy<10ns, delay temperature drift <2ns.This product mainly achieves signal delay through RF signal processing, electro-optical/photoelectric conversion, and optical signal delay processing, At the same time. the device has functions such as adjustable delay and adjustable attenuation. It is high reliability and it can be customized to meet special requirement.

Application

Satellite communication calibration system
Radar signal simulator system
Electronic reconnaissance system signal cache system
Broadband signal data cache

Features

Ka-band(28~39GHz) microwave signals
105us/210us delay
Simulate 21km/42km target echo signals
Delay accuracy<10ns
Delay temperature drift<2ns
Adjustable delay and attenuation

B Digital Optical Transmission

Digital Signal Optical Transceiver

This device is a dedicated optical transmission terminal engineered for digital signals (e.g., Ethernet data, serial port data, digital video/audio signals). It integrates signal transmitting and receiving functions in a single unit, enabling direct, high-efficiency transmission of digital signals over optical fiber. It is widely applied in scenarios such as enterprise network interconnection, smart city infrastructure, and industrial Ethernet communication. It can be customized according to customer's requirement.

Application

Radar Antenna
Vehicle-mounted Communication System
Communication Cabin Interconnection System
Satellite Long-Term Monitoring Station
Ground Test, Launch & Control System

Features

Flexible and multiple format digital signal transmission like RS232/RS422/RS485, voice or video signal, sync pulse, network signal and monitoring signal;
Multiplexing Technology to reach high speed transmission

Analog and Digital Signal Optical Transceiver

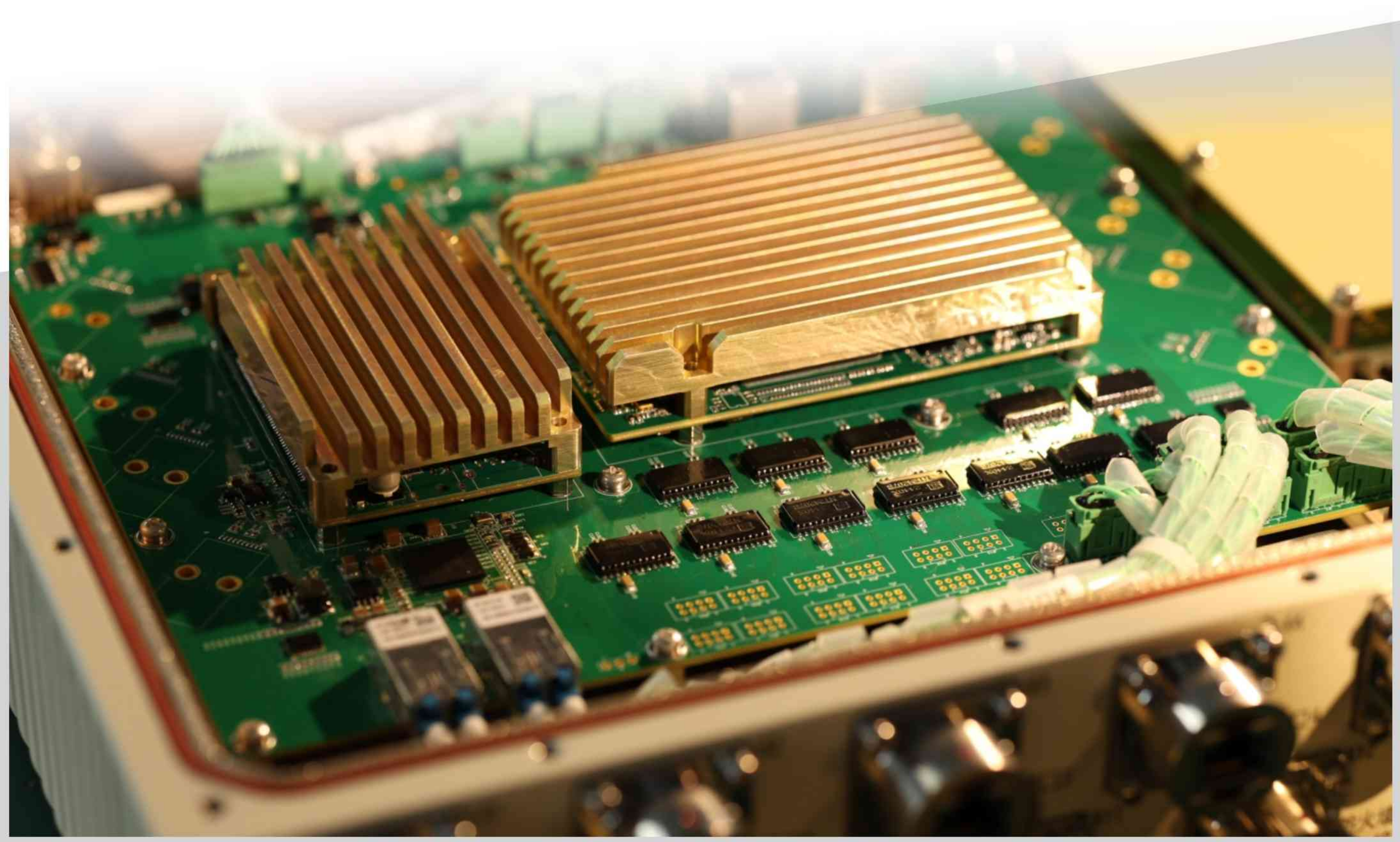
The device can realize E/O and O/E conversion of S, L, C, X, Ku, Ka frequency band RF digital signal, the number of channels can be configured, and the transmission distance is more than 50KM. It is composed of an optical transmitter and an optical receiver, which are arranged in two stations respectively to achieve long-distance, trunkless and stable transmission of broadband RF signals. Local touch screen operation and display, with full status query and display function, dual power monitoring and backup function, 19-inch chassis, operating temperature -50~70°C.No external circuit is required, gain is adjustable, output amplitude is stable, bandwidth is large, loss is low, anti-interference ability is strong. The device can also add multiple RF signal frequency including S, L, C, X, Ku, Ka and digitalEthernet signals, RS422/485 data, telephone, video and other transmission functions to achieve long-distance optical transmission of multiple data signals. When placing an order, both transmitter and receiver should be ordered. Meet the requirements of miniaturization and high reliability. Can be customized according to customer requirements.

Application

Ground communication
Radar system analog signal optical transmission
Other RF signals, control signals and data signals long-distances transmission

Features

Includes an optical transmitter and receiver
S, L, C, X, Ku, Ka frequency
Transmission distance >50KM
Ethernet signals
RS422/485 data, telephone, video, touch screen operation and display
Operating temperature -50~70°C
Meeting the requirements of miniaturization and high reliability



Drone Fiber Graph Transmission Link

Equipment composition

Optical fiber graph transmission link mainly includes on-board optical fiber transmission module and off-boardoptical fiber transmission module.

The product is an optical fiber transmission link based on the optical fiber guided UAV platform. The optical fiber is used as a secure and high broadband connection between the UAV and the ground control terminal, which can transmit feedback video and control signals in real time, avoid traditional RF interference or GPS countermeasures, and enable the operator to control the UAV safely and reliably remotely. In order to avoid the other side, the use of various anti-UAV electronic interference, especially RF interference, can effectively overcome the shortcomings of drones that rely on GPS and RF signal control are easy to be interfered. The module realizes the signal transmission of a single fiber through signal processing, electro - optical conversion and photoelectric conversion, and adopts universal interface and simple installation mode, which is convenient and fast to load in various types of FPV UAVs. The flight distance can support 1KM, 3KM, 5KM, 10KM, with the function of transmitting serial digital signal, PAL video signal, compatible with VR glasses and display. It has the characteristics of low price, small size, light weight, stable transmission, real - time transmission, clear image and simple operation. Meet the requirements of complex electromagnetic environment signal transmission and low cost, can be used for the modification of existing models, support function customization.

Application

Air-to-ground communication
High speed optical fiber communication system
Military reconnaissance and surveillance
Agricultural monitoring and plant protection, tunnel inspection

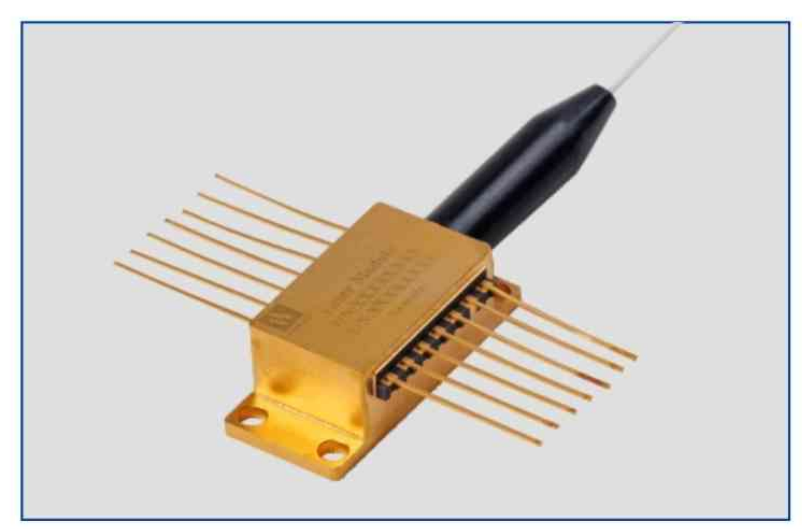
Features

Support transmission serial digital signal, PAL video signal, compatible with VR glasses and display;
Supports 3KM, 5KM, 10KM, 15KM, 20KM
Long distance, high quality signal real-time transmission function
Strong anti-interference ability
Fiber tension is not easy to break

C01 Transmitter

Narrow Linewidth Laser

Narrow linewidth semiconductor laser is based on external cavity technology and mainly composed of gain chips, ALN substrate, etalon, lens, MPD, TEC, mirror, optical isolator and PM fiber in a hermetic package. DWDM Wavelength in C+L band can be customized. Operating temperature range is from -40°C to 70°C. Optical output power is more than 10mW and the optical Lorentz linewidth is less than 2kHz. Optical wavelength no-hopping tuning range is up to ±50pm. Relative intensity noise is below -150dBc/Hz. It is widely used in free space optical communication, optical sensing, LiDAR, test and instrument, RF photonics.



Application

Optical sensing
Free space optical communication
RF photonics
LiDAR

Features

Narrow line width (<2kHz)
Low RIN (< -150dBc/Hz)
Optical wavelength customized

C01 Transmitter

TFLN IQ Modulator

TFLN optical IQ modulator is based on thin film lithium technology and the size of which is much smaller than that of traditional bulk material lithium niobate modulator. It is consists of a dual parallel Mach - Zehnder (MZ) interferometer modulators embedded in a main MZ super structure. This IQ modulator features high bandwidth up to 40 GHz and low drive voltage to support 2Vpi drive requirement. The modulator, which is Hermetically Sealed, works at C - band wavelength and has low chirp and skew between I and Q channels. Since its low driver voltage, which is the best choice for Green and low - power applications such as satellite links. It is also used in digital optical communication, FSO communication, optical coding, FMCW LiDAR in Autonomous Driving.

Application

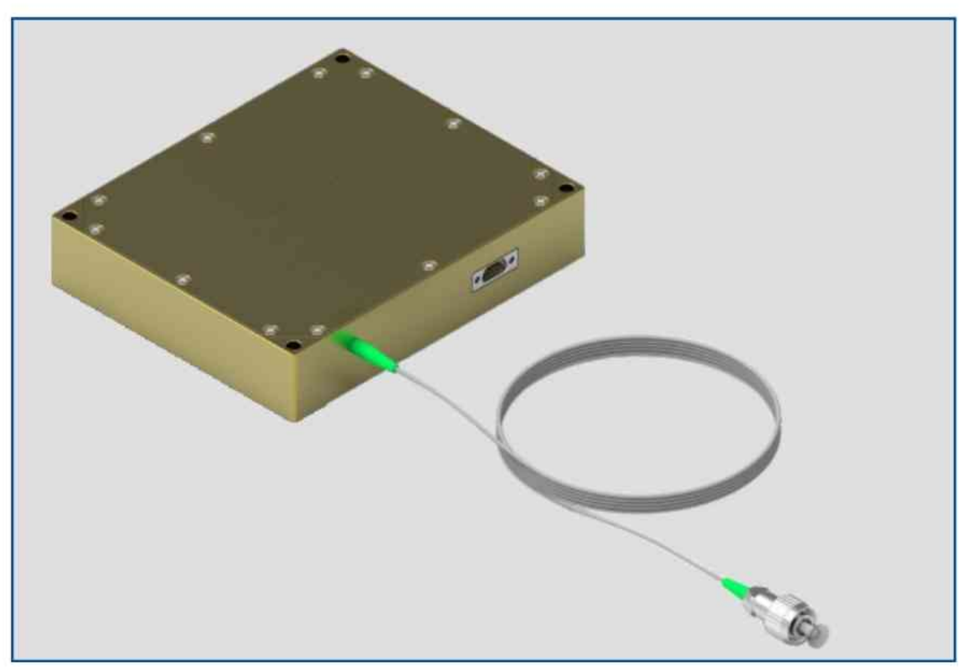
Satellite links
Digital optical communication
FSO communication
Optical coding
LiDAR

Features

Small size
Low chirp and skew
High bandwidth

Narrow Linewidth Laser Module

The W3002-CHXX-20mW narrow linewidth laser is a laser component with special optical characteristics designed by our company. It adopts a metal sealed shielding design, has the characteristics of ultra-narrow linewidth, low noise, and high frequency stability, and can produce a laser beam with a very small optical linewidth (<10K), which is much smaller than the spectral linewidth of a conventional laser. It also supports online upgrade function, I2C and UART communication modes, and can set wavelength tuning parameters and optical power parameters through the host computer, and can also monitor the operating temperature, tuning wavelength, optical power and other status information of the laser component.



Application

Optical communication
Spectral analysis
LiDAR
Optical sensing
Quantum computing & communication, optical clocks and cold atomic physics

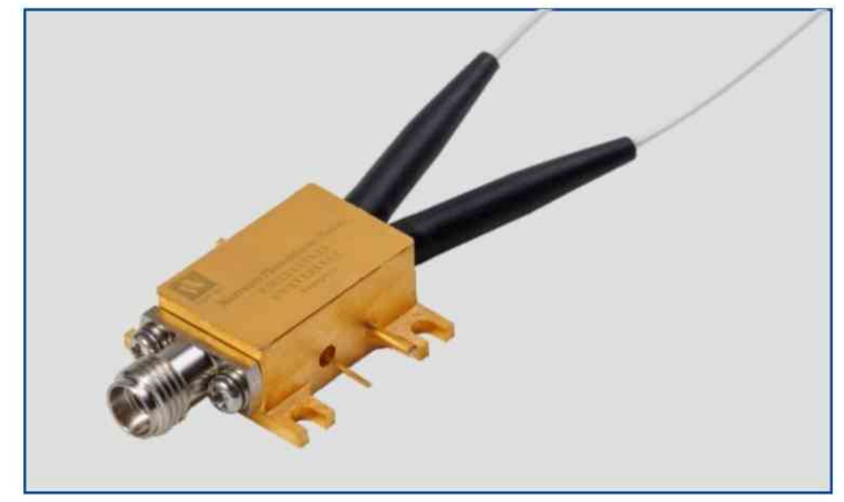
Features

Metal sealed shielding design (size 75mm×90mm×18mm)
Laser linewidth <10K
Relative intensity noise <150 dBc/Hz@10kHz
Side mode suppression ratio <60 dB
Tuning range ±0.05 nm (center wavelength as the zero point)
Tuning resolution <3 MHZ
-40~70°C temperature operating range, no mode hopping in the full temperature range
Support online upgrade, parameter control, status monitoring functions

C02 Receiver

Broadband InGaAs Balanced Photodetector

This product is composed of a pair of InGaAs chips with push-pull design, 50Ω impedance matching circuit, linear low noise amplifier (optional), ceramic substrate, single mode fiber and DC-DC power chip in a hermetic package. It is capable of handling more than 10mW optical power, high common mode rejection ratio (CMRR) and low polarization dependent Loss (PDL). Different electrical bandwidth such as 6GHz, 12GHz, 15GHz and 18GHz can be selected. Normalized optical wavelength is from 1260nm to 1600nm, which can also be customized. Wide Operating temperature range is from -40°C to 70°C. It is widely used in free space optical communication, Laser wind radar, RF photonics, test and instrument.



Application

Free space optical communication
Laser wind radar
Analog RF Links

Features

C and L band wavelength
SMA or SMPM RF output
Convenient for system connection
High integration

Optical Mixer

2×4 90° optical mixer is based on free space optics technology, which translates the incident signal and LO signal into in-phase (0°and 180°) and quadrature (90° and 270°) phase channels. 0°and 180° optical signals are connected to the first balanced PD and 90° and 270° optical signals are connected to the second PD. Optical wavelength is from 1260nm to 1600nm and Wide Operating temperature range is from -40°C to 70°C. It is widely used in RF photonics, free space optical communication, LiDAR, test and instrument.

Application

RF photonics
Free space optical communication
LiDAR and Optical coherence tomography (OCT)

Features

High temperature stability
Small compact size

Optical Coherent Receiver

Optical Coherent Receiver is composed of a 2×4 90° optical hybrid, two balanced photodetectors and linear trans-impedance amplifiers (TIAs) with differential outputs. Optical 90° hybrid translates the incident signal and LO signal into in-phase (I) and quadrature (Q) phase channels., which are converted to electrical signals by pairs of BPDs with integrated TIAs. Optical wavelength in C+L band and the operating temperature range is from -40°C to 70°C. Electrical 3dB bandwidth is more than 6GHz. RF output is SMA or SMPM, which is convenient for system connection. With high integration, the size and weight are greatly reduced compared with traditional discrete components. It is widely used in free space optical communication, RF photonics, LiDAR, test and instrument.

Application

RF photonics
Free space optical communication
LiDAR and Optical coherence tomography (OCT)

Features

C and L band wavelength
SMA or SMPM RF output
Convenient for system connection