FIBERPRO

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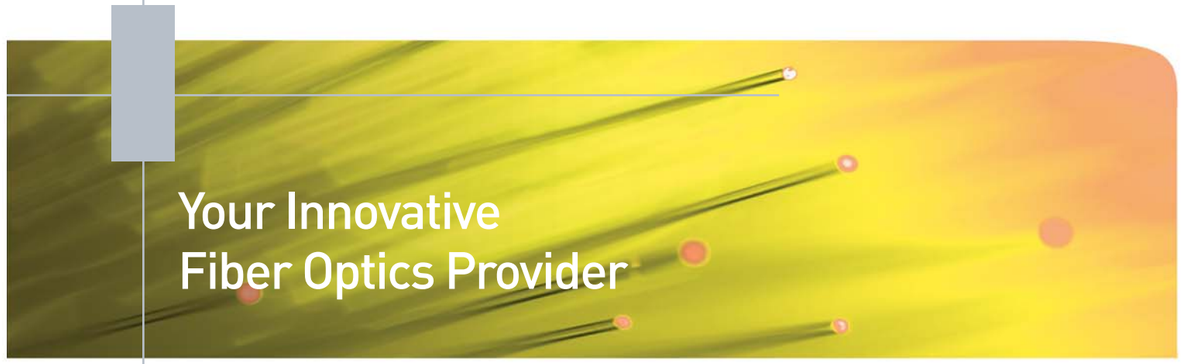

Opto-Mechanical Automation System

Optical Fiber Communication

Optical Metrology

Optical Fiber Sensing System

Fiber Optic Gyroscope

www.fiberpro.com

FIBERPRO

FIBERPRO is a company to prevail quality test & measurement services through its products and knowledge.

"Creating New Value with New Technology"
is the idea of our people thinking and guideline of our people behaving. People in FIBERPRO believe that the value creation comes from innovative technology.

By providing the innovative standard way of quality measurement, FIBERPRO can keep customers creative and innovative, which is nothing but the value creation.
We act with the hope that we could be remembered as one of top test & measurement companies, and would like to be a good part of them.

FIBERPRO also understands the responsibility as a global company, and will pursue its role as a good neighbor and nice member of human society

FIBERPRO

Company History

2015. 12.	Developed Distributed Temperature Sensing System
2015. 12.	Developed Audio Fiber Tracer (FT3000)
2015. 08.	Developed Inertial Measurement Unit (IMU)
2015. 06.	Developed Polarizing Y-branch Phase Modulator
2014. 12.	Succeed on development of Fiber Optic Gyroscope for space application
2014. 04.	Developed Gyro Compass
2013. 12.	Developed LD, PD Auto Producing Laser Welder
2013. 12.	Developed PON(Passive Passive Optical Network) OTDR
2013. 12.	Developed Multi-channel Power meter
2012. 09.	Developed Silicon Photonics wafer system
2012. 05.	Developed VOA/AWG Chip Characteristics measurement system
2012. 12.	Developed Optical Wafer Thickness MicroGauge
2012. 12.	Developed VCSEL FBG Interrogator
2011. 07.	China Subsidiary established「赛博普路光电(武汉) 有限公司」
2011. 02.	Established Gwangju Office
2010. 09.	Developed 100kHz High Speed FBG Sensing Interrogator
2009. 12.	Developed Portable Audio Fiber Tracer
2008. 12.	Developed Multichannel Linear Birefringence Analyzer
2007. 09.	Developed Auto Alignment / Bonding & Test System for Thermal/Athermal AWG
2007. 05.	Developed Auto Alignment / Bonding & test System for VOA & 2x2 switch
2005. 11.	Developed Acoustic Fiber Cable Identifier
2004. 03.	Commercial technology development of Fiber Bragg Grating Interrogation System for Safety Diagnosis
2001. 03.	Developed the word's fastest PDL meter
2001. 02.	Developed Lightwave Polarization Controller
2000. 05.	Developed Multi Channel Polarization Controller
1998. 02.	Developed Lightwave Equalizer™(EDFA) gain equalization
1996. 12.	Developed the word's first In-line Polarization Controller
1996. 10.	Developed the word's first Polarization Scrambler
1995. 06.	Developed Tunable Directional Coupler & Polarization Controller

FIBERPRO is

One of the leading manufacturers of fiber optic products
and a specialist for custom-made applications.

NEW
Products


❶


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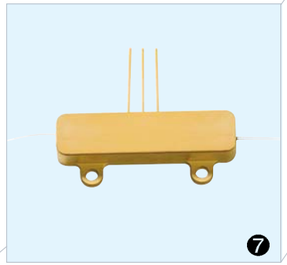
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CONTENTS

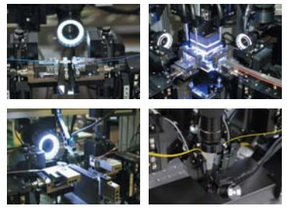
Auto Alignment System

Auto Alignment System
IFA-600

- Automatic alignment with excellent repeatability based on optimized alignment algorithm and precision stage control
- Automatic gap control and angle alignment using precision displacement sensor
- Quick input port alignment with multimode fiber
- Fast initial alignment based on vision processing and 2D scanning algorithm
- Convenient graphic user interface and versatile function for data management
- Remote controllable via user software
- Compact mechanical design

Application

- Photonic Integrated Circuit (SiP devices)
- Integrated Optical Circuit (LiNbO3 chip)
- VOA (Variable Optical Attenuator)
- AWG (Arrayed Waveguide Gratings)
- PLC Splitter
- Collimator
- Other optical devices



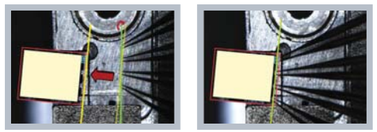
Opto-Mechanical Automation System

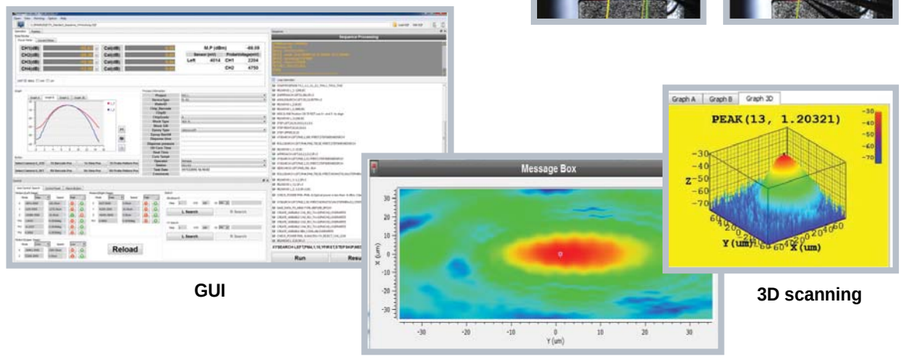
Optical Components Manufacturing

http://www.fiberpro.com

Vision Processing

- Automatic angle alignment
- Pattern recognition for probe positioning
- Edge detection and barcode reading





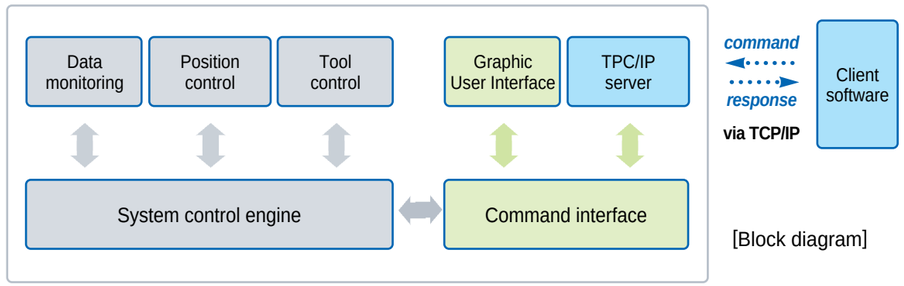
GUI

3D scanning

2D scanning

Graphic User Interface

- Capable of alignment/epoxy bonding of optic device based on vision processing and optic feedback
- User programmable sequence
- Support remote control of client's software via TCP/IP communication

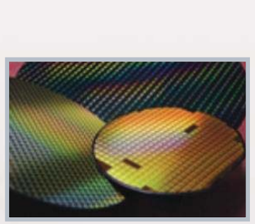


[Block diagram]

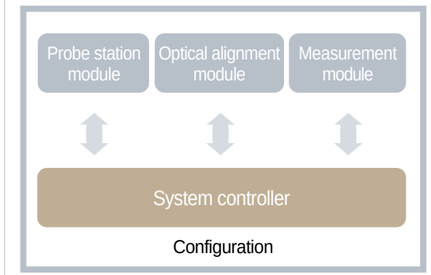
Silicon Photonics Wafer Test System

Silicon Photonics Wafer Test System : IFA-640

- Wafer level tester up to 12 inch wafer
- Automatic input/output coupling (wafer level vertical coupling)
- Coupling fiber array blocks and/or optical fiber
- Convenient Graphic User Interface (GUI) for user programmable
- Versatile alignment functions using image processing and contact sensor
- Highly customized system design



Semiconductor Wafer



Configuration

Laser Welding System

Laser Welding System IFA-700

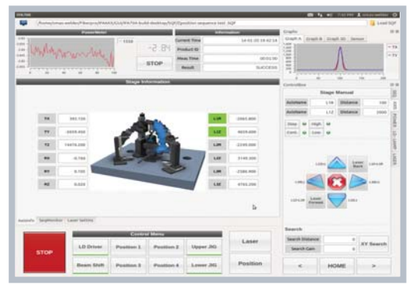
- Automatic alignment for TOSA/ROSA/Pigtail/BiDi
- Camera for monitoring process
- 12 automatic motor controlled stages & 3 manual stages
- 3 point laser welding process
- Automatic end-face alignment
- Highly customized sequence program

TOSA, ROSA

Pigtail

BiDi

Butterfly



Measuring Instruments

Passive Component Analyzer : CA3000

- All-state method : High accuracy, Excellent repeatability
- Fast measurement speed (0.01 sec./point)
- PDL/IL measurement
- Easy operation
  - Not sensitive to fiber lead movement
  - No frequent calibration process

ER2200 : Singel Channel PER Meter

ER3000 : Dual Channel PER Meter

Polarization Extinction Ratio Meter
ER2200 / ER3000

High accuracy Polarization Extinction Ratio meter

- Wide dynamic range for PER measurement : up to 50dB
- Wide wavelength range : 1260 ~ 1640nm
- Minimum PER holding function
- Relative power monitoring function
- GPIB/RS232/USB 2.0 remote interface
- Channel: One or Two Channels (Optional)

Multichannel Optical Power Meter : PM2000

- Wavelength Range : 1270 ~ 1630nm
- Power Dynamic Range : +5dBm ~ -80dBm
- Resolution : 0.01 dB
- 16 channels of precision optical power measurement
- Independent power measurement at each channel
- Fast measurement (20 kHz) with high resolution
- Varieties of interfaces (GPIB, TCP/IP, RS232)

PDL Meter : PL2000

The most accurate and fastest Polarization Dependent Loss meter in the market

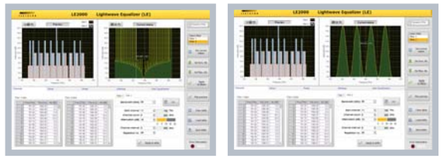
- The fastest measurement speed (0.1sec.Typ.)
- All-states method - No calibration
- PDL/IL/Optical Power measurement

Lightwave Equalizer

Lightwave Equalizer : LE2000

Programmable Optical Filters

- Direct and instantaneous filter control
- Accurate tuning of center frequency, phase and attenuation level
- Multiple center frequencies can be set directly over entire band
- Programmable using supplied GUI
- Reliable all-LC design with no moving parts

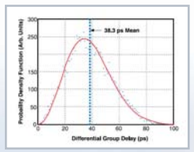


PMD Emulator

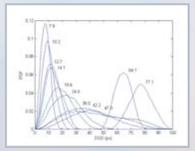
PMD Emulator Solution : PE4200

Programmable Polarization Mode Dispersion emulator solution

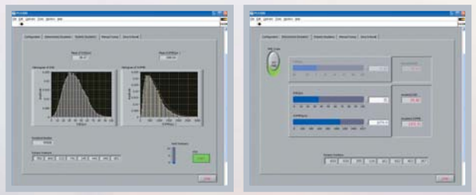
- All fiber configuration : Low loss
  (IL : ~1.0 dB typ. PDL : ~0.1 dB typ.)
- Customized DGD configuration and PMD range
- All order PMD emulation : 1st (DGD), 2nd (SOPMD) and Higher order PMD
- Variable mean DGD : Tunable statistics.
- Powerful GUI : Deterministic statistic emulation, Virtual (trial) DGD mode, Manual tuning.



Maxwellian distribution of probability density function of PMD.



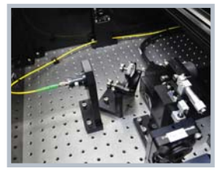
Several output DGD distributions simulated with various average DGD.



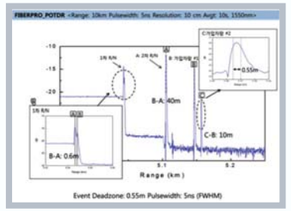
Windows of GUI. PE4200

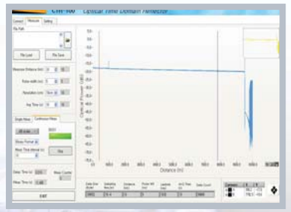
Custom-made Products

Polarization Crosstalk Analyzer
PA2000



PON-OTDR : TR3000





Acoustic Fiber Cable Identifier™

Acoustic Fiber Cable Identifier™
CI4000

- Patented Audio-Fiber Technology
- No damage on fiber cable
  (Does not need bending or freezing of fiber cable)
- Non-invasive and safe method
- Dynamic range : 25 dB [1]

1) About 100km assuming the cable loss is 0.25dB/km

Audio Fiber Tracer

Audio Fiber Tracer
CFT-810

- Output power selection (-25dBm ~ -4dBm)
- Optical power meter function
- Visual Fault Locator function
- Fiber tracing & fiber cable identification
- Audio-Visual detection of target fiber/cable
- Dynamic range : 9 dB*(One pass loss)* [2]
- Battery operation

Audio Fiber Tracer
FT3000

- Fiber tracing & fiber cable identification
- Audio-Visual detection of target fiber/cable
- Information of tapping position to be provided
- Visual Fault Locator function
- Dynamic range : 13 dB*(One pass loss)* [3]
- Battery operation

2) About 36km assuming the cable loss is 0.25dB/km

3) About 50km assuming the cable loss is 0.25dB/km

Polarization Scrambler

Polarization Scrambler
PS3000 series

The best polarization scrambling tool for optical communication and sensor

- High speed scrambling (~ 1MHz)
- All single mode fiber configuration : Low loss, Low PMD
- Wide operating wavelength range up to 350nm (depending on model)

Polarization Scrambler Module
PS3300 / PS3400

The best polarization scrambling tool for optical communication and sensor

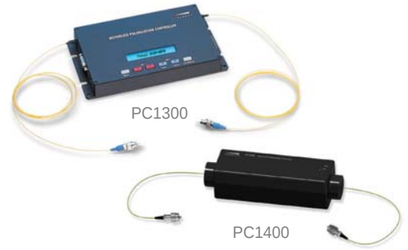
- High speed scrambling (~ 1MHz)
- All single mode fiber configuration : Low loss, Low PMD

Polarization Controllers

Lightwave Polarization Controller
PC1600 series

- All fiber configuration
- 2 or 4 channels
- Automatic full range scan
- GPIB/RS232

Polarization Controllers



Motorized Polarization Controller
PC1300 / PC1400

- All fiber configuration
- Single channel
- Automatic full range scan
- Analog voltage control (PC1300) USB (PC1400)

Multi Channel Polarization Controller PC1200 series

- All fiber configuration
- Multichannel control (max. 8 channels)
- Wide wavelength range (1400 ~ 1650nm)

In-Line Polarization Controller
PC1100 series

- Super compact size
- No squeeze on fiber
- Low loss

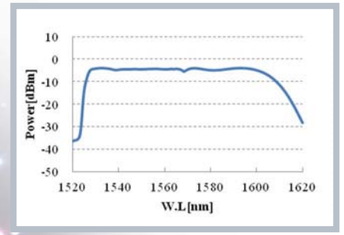
Polarization Controller
PC1000 series

- Smooth control of polarization
- Various wavelength range

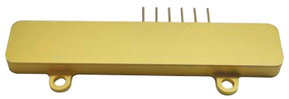
Light Source Series

Broadband ASE Source
CLS-561

- High output power
- Stable spectral output power
- Wide wavelength range (C, L and C+ L band)
- Isolated output / Flattened output
- RS232 remote interface
- Easy operation with compact size



Polarization Switch



Polarization Switch
SW1000

- High speed
- Low insertion loss
- Compact size

Variable Coupler

Tunable Directional Coupler
TC1410

- All fiber configuration
- Low excess loss
- Smooth & easy control of coupling ratio

Polarization Maintaining Splitter

PM Splitter : FPS

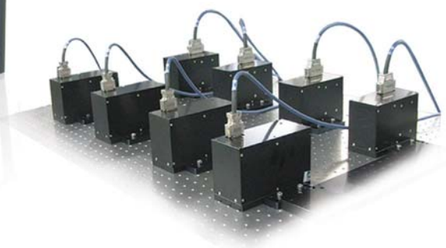
- Low crosstalk
- Low insertion loss
- Higher polarization extinction ratio than fiber coupler
- Accurate coupling ratio
- Small package size (40 x 4 x 4mm : Stainless Steel)
- Operating temperature : -40℃ ~ +85℃
- Type of PM fiber : Optional (PANDA, Bow-tie)

VGA Extender

VGA Extender : VE1000

- Extends VGA, Audio and Serial Data up to 1km over two singlemode optical fibers.
- Maintains high resolution of 1,600 x 1,200, 24 bits colors
- Complies with DDC2B up to 100kHz of clock speed

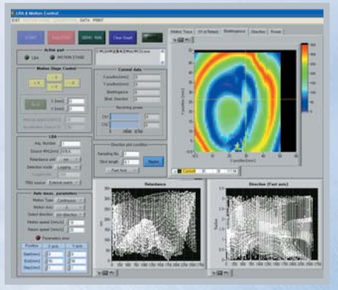
Birefringence Analyzer



Multichannel Birefringence Analyzer : BA5100

The ultimate on-line measurement solution

- Simultaneous measurement of birefringence magnitude and angle
- High speed measurement (150Hz)
- High sensitivity in low-level birefringence measurement
- Modular design for moving head
- Versatile use -- i.e. glass, semiconductor, wave plates visible, infrared materials



Optical Metrology

Flat Panel Solution

http://www.fiberpro.com

Thickness Monitoring System

TM5300-6

TM5300-12

Optical Wafer Thickness MicroGauge

TM5300-6 / TM5300-12

- Portable & Compact size
- High speed measurement (500Hz for Warp / 1kHz for Thickness)
- High accuracy & repeatability
- Up to 12 ″ wafer measurement
- Thickness / Warp / Bow / LTV / TTV / Stress measurement
- Si Wafer / Sa Wafer / Glass Wafer / SiO2 / GaAS material manufacturing Process
- No calibration needed
- User-friendly operating program

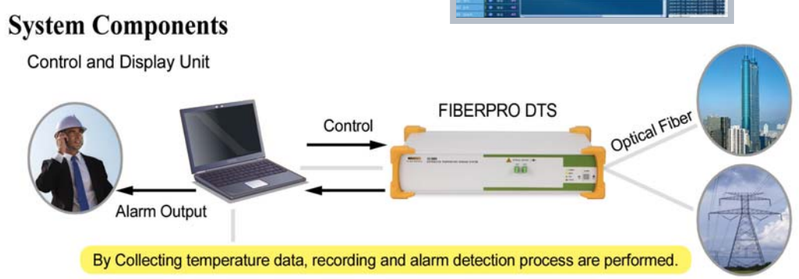
Optical Thickness Measurement System : TM5000

- Portable & Compact Size
- Applicable to Silicon, Sapphire, Glass, SiO2 and etc.
- LCD display function (Optional)
- Thickness range : 50~2,000um
- High accuracy & repeatability
- Dual channel measurement system
- User friendly operating program
- Available for OEM business & system integration

Distributed Temperature Sensing System

Distributed Temperature Sensing System : TS3000

- Distance range : 5km
- Measurement time : 10 ~ 600s
- Accuracy : < ±2 ℃ (p to p)
- Sensing temperature range : -200 ~ 700 ℃
- Channel : 1, 2, 4, 8, 13, 16, 24
- GUI customizing is availble



Bare fiber type FBG / Packaged FBG

Single type FBG
FBG Array

Minimized FBG Strain Sensor
FS1000

- Temperature sensor
- Displacement sensor
- Pressure sensor
- FBG Accelerometer

FBG Interrogation Systems

FBG Sensing Interrogator : FI3000

High speed real time monitoring system

- High accuracy & resolution
- Fast measurement speed : 400Hz(up to 1kHz)
- Wide wavelength range : 1510 ~ 1595nm(85nm)
- Scalability for multi-sensing points
- OEM versions availables
- Low power consumption

Versatile FBG Sensing System
FI3100

- Compact size & Affordable price
- FBG Spectrum monitoring
- High accuracy & High repeatability
- Channel : Up to 4ch
- Higher measurement speed available upon request
- Customized modular available
- Measurement speed : 10Hz

High Speed FBG Interrogation System
FI3200

- Ultra fast measurement speed : 100KHz
- Automatic trigger (event) capturing
- FBG spectrum monitoring
- High measurement frequency selection
- Compact one package solution

Inertial Measurement Unit (IMU)

Inertial Measurement Unit (IMU) : FI 200

Key Features

- 3 axis Fiber Optic Gyroscope / 3 axis Accelerometers
- Excellent Bias Repeatability : < 0.5 °/hr
- Low Angle Random Walk : 0.02 °/√hr
- Low Power Consumption : ~5W
- Operating Voltage : +5V
- Wide Angle Rate Range : 1,000 °/sec
- Lightweight Package : 850g

Applications

- Unmanned vehicle control
- Camera / Radar stabilization
- Flight control / Guidance systems
- Antenna stabilization
- Motion compensation
- Borehole / Pipeline measurement systems
- Attitude and Heading Reference System (AHRS)

Polarizing Y-branch Phase Modulator

Polarizing Y-branch Phase Modulator

Key Features

- Excellent intensity modulation : 0.05%
- High PER (polarization extinction ratio) : ≥60 dB
- Low Insertion Loss : ≤4.0 dB
- High Return Loss : ≥60 dB
- Low V_π : ≤5.0 V

Applications

- Fiber Optic Gyroscope
- Sagnac Interferometer based sensors

Polarization Maintaining Splitter

PM Splitter : FPS

- Low crosstalk
- Low insertion loss
- Higher polarization extinction ratio than fiber coupler
- Accurate coupling ratio
- Small package size (40 x 4 x 4mm : Stainless Steel)
- Operating temperature : -40℃ ~ +85℃
- Type of PM fiber : Optional (PANDA, Bow-tie)