GiGa Concept Inc

Photonics solutions
For innovative photonics

2013 Catalog

www.gigaconcept.com

光技術をサポートする
株式会社オプトサイエンス
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PRODUCTS CATALOG 2013

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GiGa Concept Inc

AnyWave Fiberbench Modal Explorer

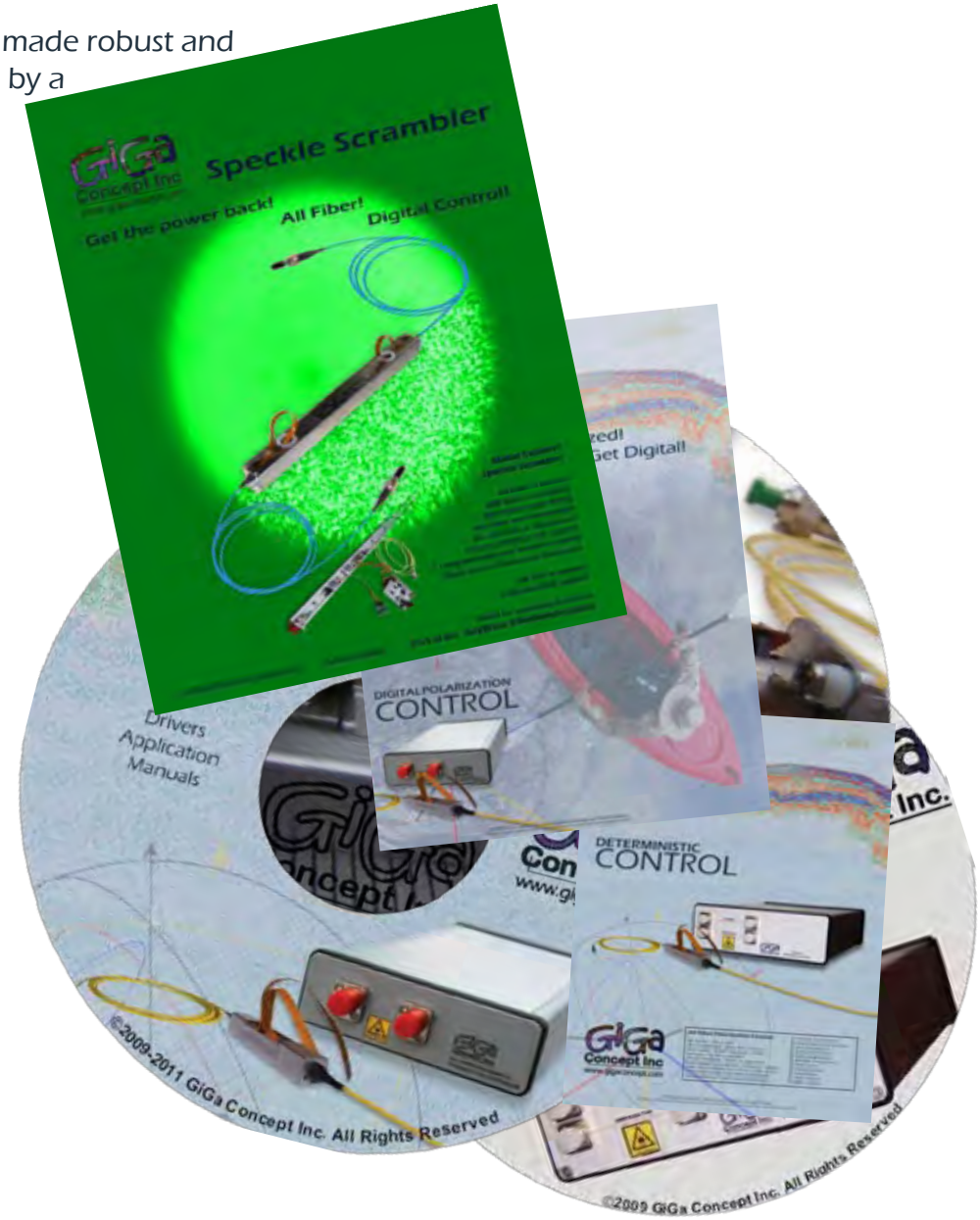
We are proud to present our 2013 catalog

Over the past years we introduced our polarization control technology and saw it used many previously unforeseen applications.
Often we are asked if this or that feature is available or possible, it is what we like about science.
Technically possible, development is often too involved for a single customer to try in an application.

Our answer, the AnyWave Fiberbench!

Engineers and scientists need technology to be a tool, this is the founding idea behind the AnyWave Fiberbench and its first implementation using our Modal Explorer patent pending technology.
We offer these technologies in a simple, fun and flexible form factor and innovative ecosystem.

Proprietary technologies we offer are made robust and simple to use, are also complemented by a royalty free, open source array of hardware and software forming an open ecosystem you can adapt to your needs and projects.
Parts, bits and piece are reused and kept compatible.



Evolution and change do not mean starting from scratch!

Our Modal Explorer is the first technology implemented using the AnyWave Fiberbench, resulting in all new products for multimode laser scrambling and high resolution polarization control, using many common parts.

We are continuously developing, seeking needs and ideas, looking for partners in our ecosystem.

Your ideas are welcome!

Eric Girard & Vincent Gagné
Associates and developers

GiGa Concept Inc

AnyWave Fiberbench
Modal Explorer

Speckle Scrambler

Get the power back!

All Fiber!

Digital Control!

Modal Explorer
Speckle Scrambler

All fiber - Low loss
MM Mode scrambling
MM Active mode filling
Any fiber and wavelength
No diffusion or divergence
Choices of USB or TTL control
C Programmable and flexible scripting
Open source firmware & electronics

SM SOP scrambler
Extensive R&D support

Watch for upcoming functions

US Patent 8,373,852

Part of our AnyWave Fiberbench system

AnyWave Fiberbench
Modal Explorer

ALL FIBER SPECKLE SCRAMBLER

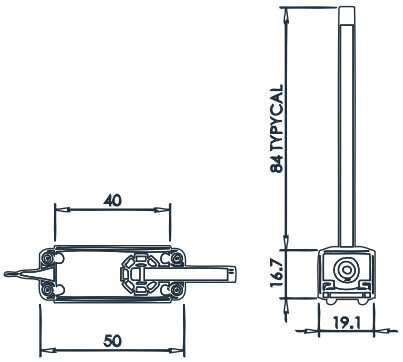
Extensive fiber choices available
Fiber length: Minimum depending on fiber diameter, no maximum
Permissible laser power: Same as fiber
Insertion loss: >0.2 dB

Mechanical scrambling amplitude: 1.125° to 360°
Mechanical scrambling speed: 0 to >200rad/s

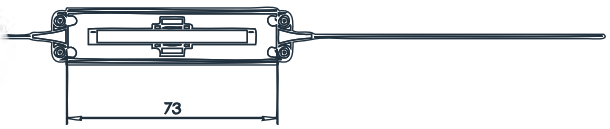
Computer Control or Stand Alone Operation, fully customizable

Available as:
OEM Module
Open Source Reference Design
Compact Instrument with USB Interface

GIG-6102-125



SINGLE MOTOR
ANY FIBER



DOUBLE MOTOR
125µm FIBER

DOUBLE MOTOR
220µm FIBER

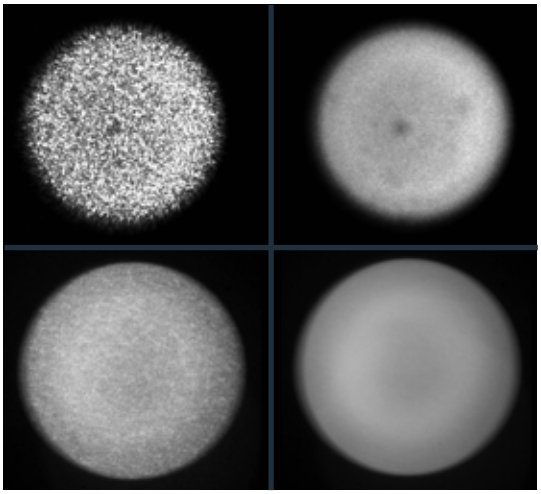
GIG-6101

GIG-6102-220

OFF scrambling ON

532 nm
4 W

660 nm
1.8 W



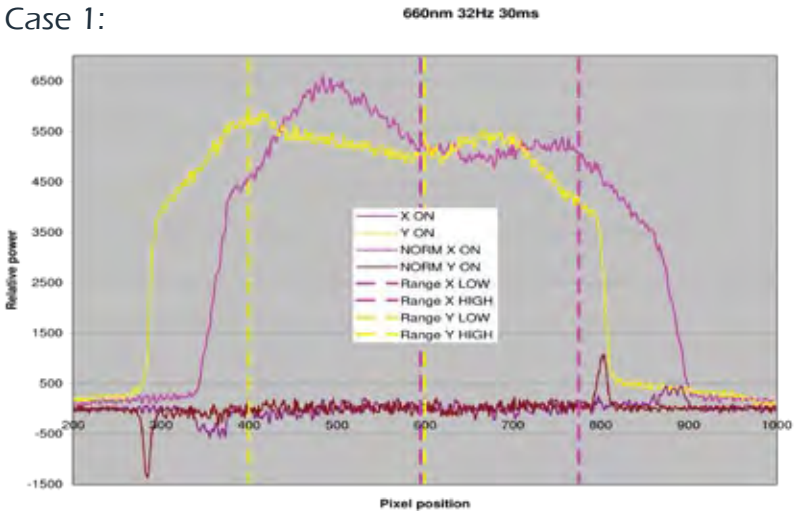
Customer application results using 200/220 fiber
30 ms integration time

US Patent 8,373,852
www.gigaconcept.com

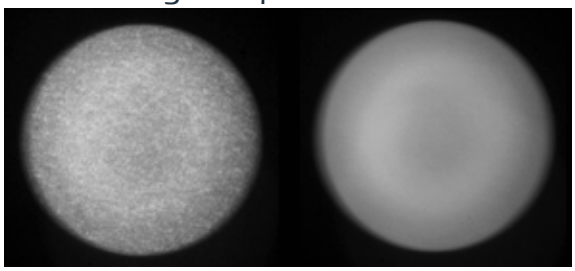
ALL FIBER SPECKLE SCRAMBLER

Performance examples:

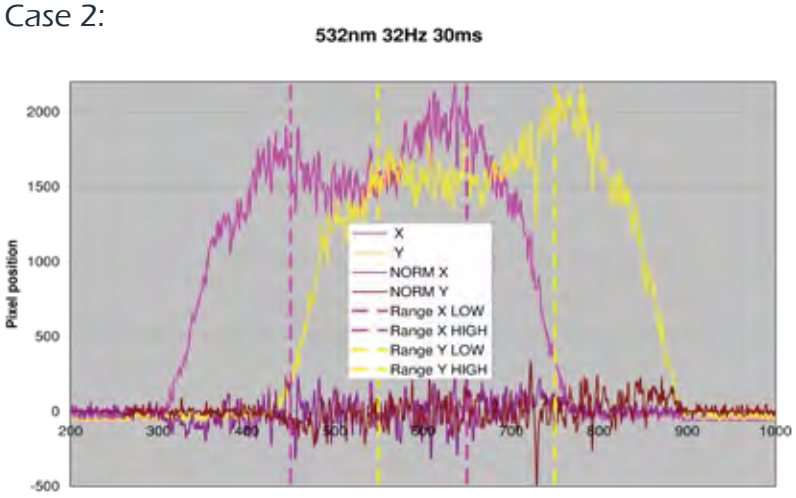
Case 1:



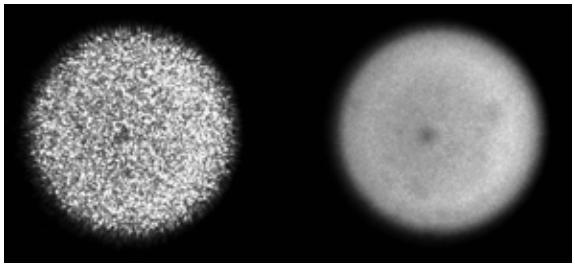
660nm laser in 200µm core fiber
30ms integration, 32ms@2π rad
2 motor counter-rotation
Scrambling OFF speckle noise: 8.25%
Scrambling ON speckle noise: 1.4%

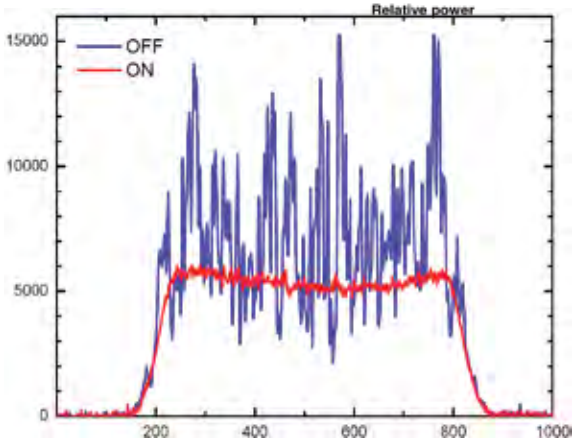


Case 2:

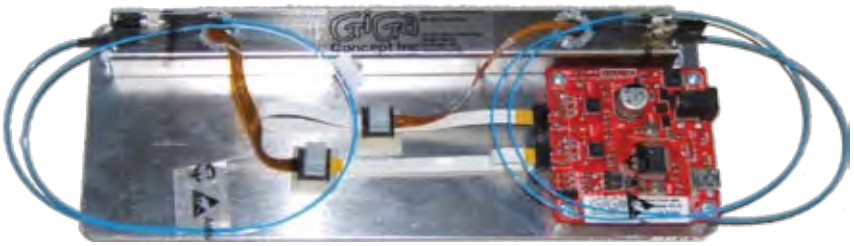


532nm laser in 200µm core fiber
30ms integration, 32ms@2π rad
2 motor counter-rotation
Scrambling OFF speckle noise: 90%
Scrambling ON speckle noise: 6%





The speckle noise is calculated from the normalized standard deviation over the average power for the given range



GIG-6102-225µm with USB controller used in tests

GiGa Concept Inc

AnyWave Fiberbench
Modal Explorer

Polarization Controller

Loose the paddles

Get motorized!

Get Digital!

Modal Explorer
Polarization Controller

All fiber - Low loss
Any Wavelength

Open source firmware
Open source electronics
Choices of motorization
Choices of USB, TTL control
Stand alone operation
Extensive R&D support

Watch for upcoming functions

US Patent 8,373,852

Part of our AnyWave Fiberbench system

ALL FIBER POLARIZATION SCRAMBLER and CONTROLLER

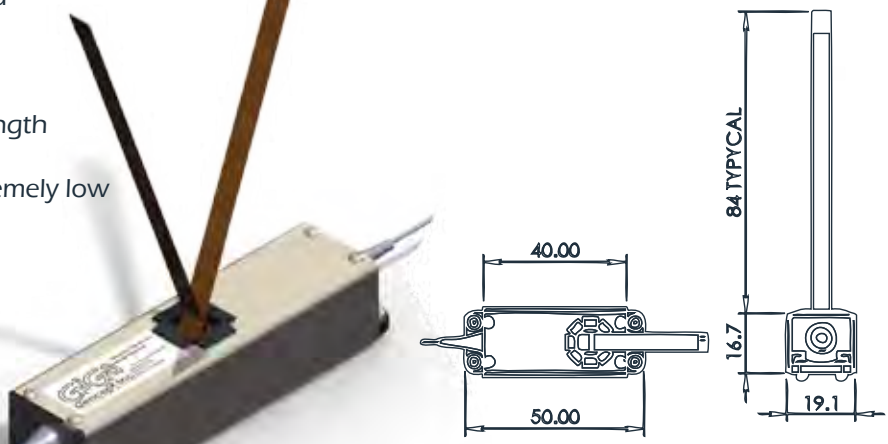
18° resolution, 1.125° resolution with 1/16 microstepping
Fiber type: Operating wavelength from 400nm to 2µm
SM1300-1550, SM800 stocked
Fiber length: Minimum depending on fiber diameter and configuration
No maximum, 1m pigtails standard
Multiple modules daisy chained on a single fiber
Permissible laser power: Same as fiber
Insertion loss: <0.2dB
Activation Loss: Depending on inter-motor fiber length
PMD: <3fs
PDL: Depending on configuration <0.02dB to extremely low

Scrambling amplitude: 1.125° to 360°
Mechanical scrambling speed: 0 to >200rad/s

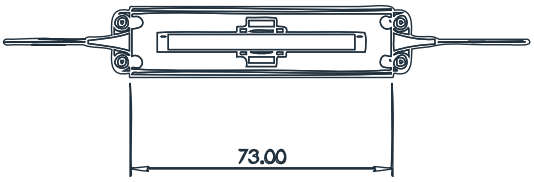
Fully customizable
Open Source firmware and electronics
OEM, evaluation kit or instrument versions

Field replaceable fiber with optionnal tooling

US Patent 8,373,852



SINGLE MOTOR
125µm FIBER



DOUBLE MOTOR
125µm FIBER

MODEL GIG-2102

MODEL GIG-2101

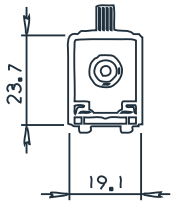
ALL FIBER POLARIZATION CONTROLLER and SCRAMBLER HIGH RESOLUTION

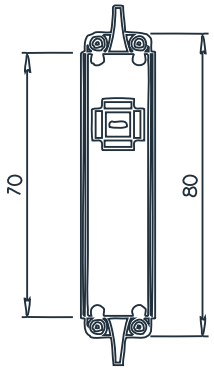
All fiber, low loss
0.1125° resolution, stepper motor operation
Wide operating wavelength range: 400 nm to 1550 nm and beyond SM fibers available
Multiple modules can be daisy chained on a single fiber

Insertion loss: <0.2dB
PMD: <3fs
PDL: Depending on configuration <0.02dB to extremely low
Adjustable element retardance
Any number or retardance elements per fiber
Fully customizable

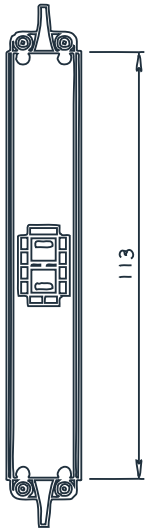
Available as:
OEM Module
Open Source Reference Design
Compact Instrument
USB Interface

Applications:
Industrial OCT
Medical OCT
Laser control
Lefebvre Loops replacement
T&M





SINGLE MOTOR
ANY FIBER



DOUBLE MOTOR
125um FIBER

GIG-2201

GIG-2202

GIG-4202

USB Reference Design

US Patent 8,373,852

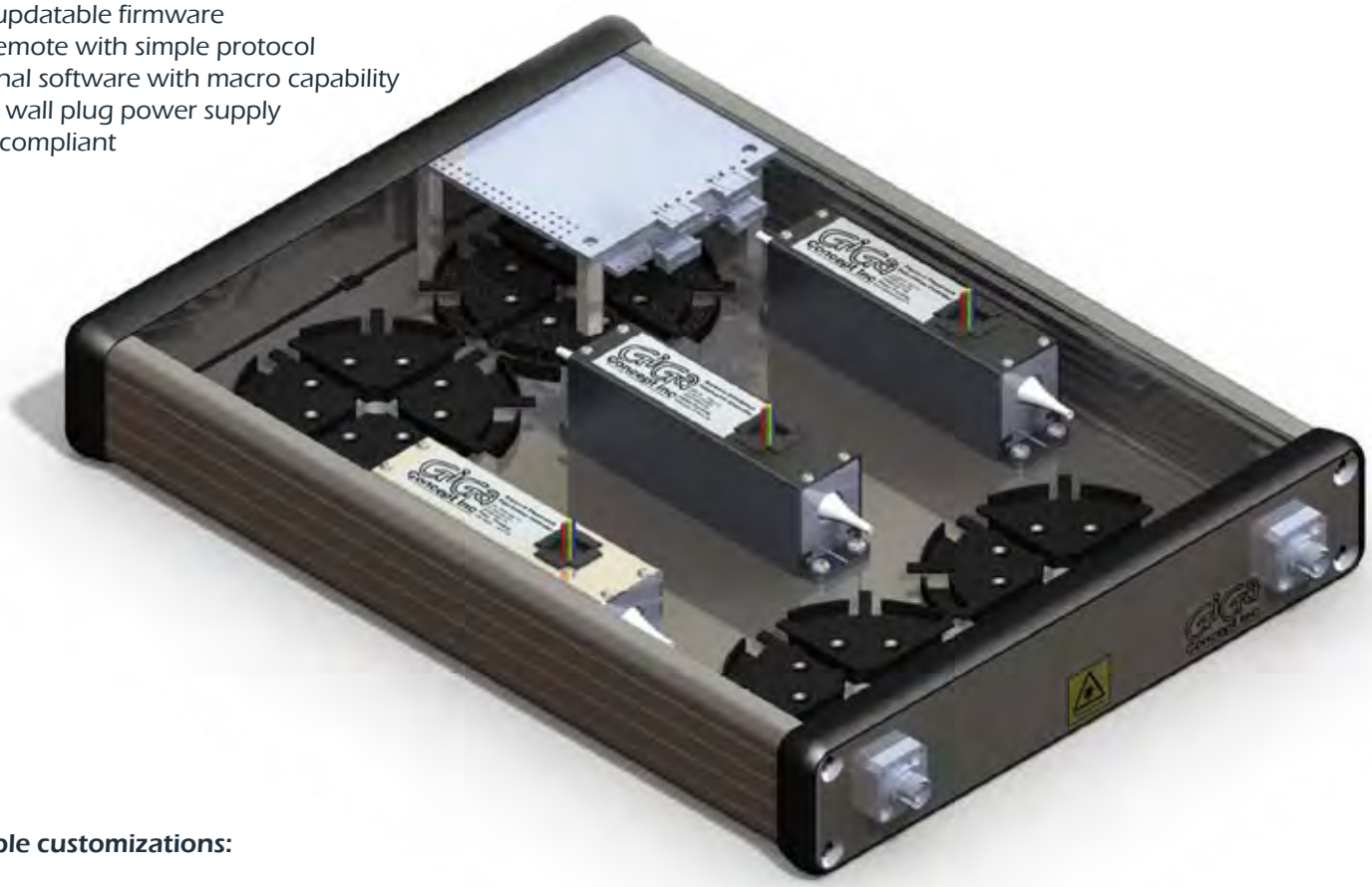
HIGH RESOLUTION INSTRUMENT
ALL FIBER POLARIZATION SCRAMBLER and CONTROLLER

Optical specifications:

All fiber Spliceless Optical signal path
Polyimide coated SM fiber
Available wavelengths 400nm to 1610nm
Low Insertion loss: Typ. <0.2dB, 0.5dB Max.
Activation loss: Depending on inter-motor fiber length <0.05dB to <<0.0001dB is possible
PMD: <3fs
FC/APC connectors or custom

Electrical specifications:

Integrated microcomputer control
Field updatable firmware
USB remote with simple protocol
Terminal software with macro capability
9VDC wall plug power supply
RoHS compliant



MODEL GIG-4203

Possible customizations:

Fiber: User defined operating wavelength
Connectors: User defined
Compensation fiber: equal length patch cord
Custom software functions

US Patent 8,373,852

GiGa Concept Inc

AnyWave Fiberbench Modal Explorer OEM

Loose the paddles

Get motorized!

Get Digital!

DIGITAL POLARIZATION CONTROL

OEM MODULE
ALL FIBERPOLARIZATION SCRAMBLER and CONTROLLER

MODEL GIG-2002
US Patent 8,373,852

All fiber Spliceless Optical signal path
Polyimide coated SM fiber
Fiber path length 155 mm or more, 1 m standard (approx. 0.5 m pigtails)
Available wavelengths 400nm to 1610nm
Low Insertion loss: Typ. <0.2 dB, 0.5 dB Max.
Activation loss: <0.05 dB
PMD: <3 fs

Low fiber stress compliant to 25 years fiber lifespan
Optical path integrity is preserved in case of electrical or mechanical failure
Open loop control choice of 18 °/step to 1.125 ° per 1/16 step (Evaluation kit)
+/-90 ° Retardance per element

Rotation speed: <0.14 ms/1/16 step, better than 3600 °/s
<1000 °/s in continuous scrambling use
Static or Dynamic control

3 V bipolar stepper motors
RoHS compliant

Options:

Use 2 modules for complete Poincare sphere coverage for any polarization input
Fiber termination FC/APC, bare (polyimide coated) or other
Multimode fiber

USB Controlled evaluation kit, reference design and desktop instruments available

Applications:

Optical Coherence Tomography OCT, PS-OCT
Raman Spectroscopy
Fiber Laser gain control
PMD Analysis

Pre Qualification tests passed per Telcordia GR-1221-CORE, FOTP-28 by an independent ASQ Certified Laboratory

ALL FIBER POLARIZATION SCRAMBLER and CONTROLLER INSTRUMENT

Optical specifications:

All fiber Spliceless Optical signal path
Polyimide coated SM fiber
Available wavelengths 400 nm to 1610 nm
Low Insertion loss: Typ. <0.2 dB, 0.5 dB Max.
Activation loss: <0.05 dB
PMD: <3 fs
FC/APC connectors or custom

Electrical specifications:

Integrated microcomputer control
Field updatable firmware
USB remote with simple protocol
Terminal software with macro capability
9 VDC wall plug power supply
RoHS compliant

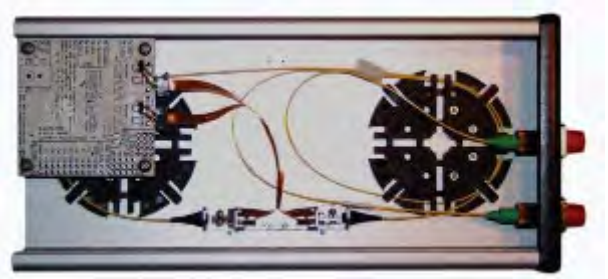
Mechanical specifications:

Dimensions: 226 mm x 105 mm x 33 mm
Weight: 400 g

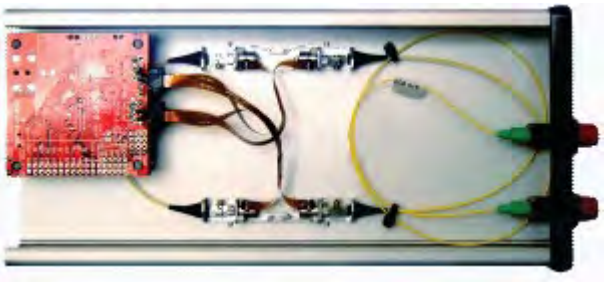
Possible customizations:

Fiber: User defined operating wavelength
Connectors: User defined
Compensation fiber: equal length patch cord
Custom software functions

US Patent 8,373,852



MODEL GIG-4002



MODEL GIG-4004

PNEUMATIC FIBER CLAMP

Fiber diameters: 155 µm, 250 µm, 400 µm, 600 µm, 1 mm, 3 mm or custom
Fiber coating types: Acrylate, Polyimide, TFE
FIber interface: Quartz or Steel Groove
Guiding: Single or dual guide pins, adjustable for fiber <600 µm
Kinematic groove insert, interchangeable
Smooth and stable adjustments

Pneumatic Interface: 10-32 port at top rear or custom
Operating pressure: <3 psi (0.2 Bar) to100 psi (6.9 Bar)
Media: Clean Air

Performances:

Normal force to fiber:
GIG-1112 100 psi (6.9 bar): 10 Lbs (46 N)
GIG-1136 100psi (6.9 bar): 21 Lbs (93 N)
GIG-1150 100 psi (6.9 bar): 61 Lbs (270 N)

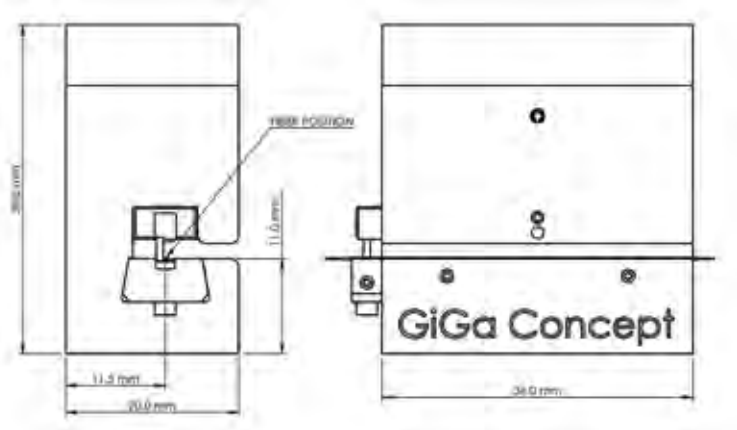
MODEL GIG-1112

Application example:
Manufacturing:
Suitable for automation and manual fiber handling and processing
FBG manufacturing, fiber positionning

R&D:
User adjustable closing time and force to protect even the most fragile specialized fibers.

Proof test:
GIG-1036 can be used to apply tensions to fibers in excess of
Up to 1.5 Kgf tension to polyimide buffered fibers
Up to1 Kgf tension to acrylate buffered fibers (due to acrylate robustness)

MODEL GIG-1150



MODEL GIG-1136

Engineered Soultions

Innovative Photonics for Photonics Innovation

Our products are developed to suit customer needs, custom is standard.

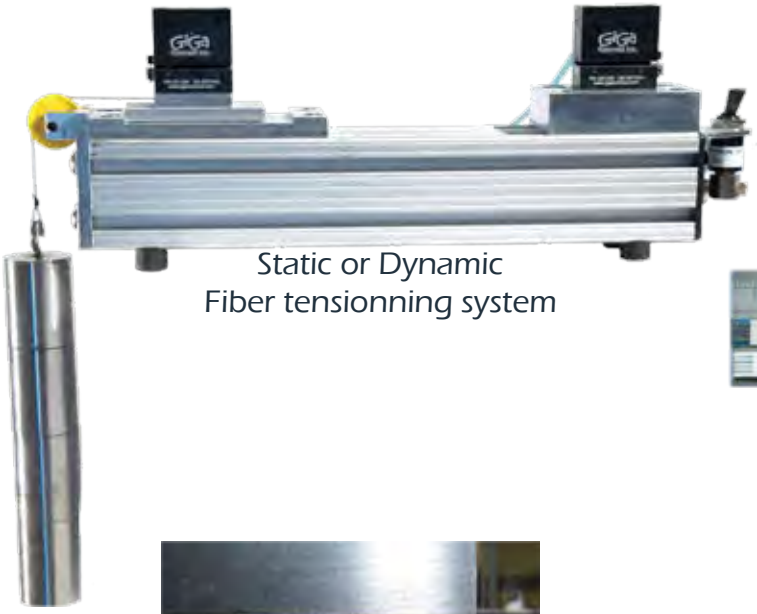
Some of our technologies are the result of intimate collaboration with customers resulting in IP Development, Patent application and Licencing.

We also perform studies and elaborate designs to suit a market segment, these are offered as pre-engineered products and solutions.

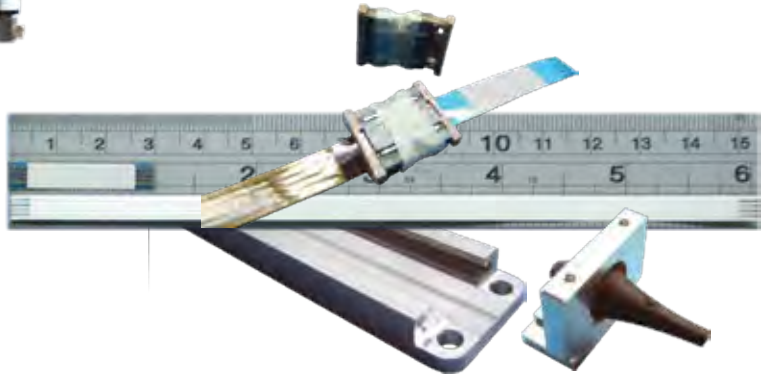
We help small and large corporations with innovative solutions and performing products.

What is our solution for you?

Fiber annealing micro-oven
15mm to 150mm length
up to 650°C

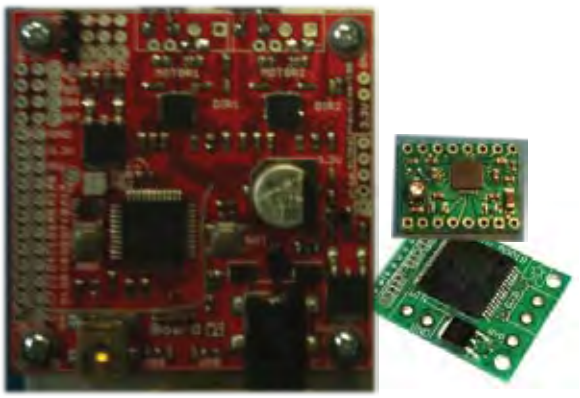


Static or Dynamic
Fiber tensionning system



Flexible and low cost platform
AnyWave Fiberbench
Modal Explorer

Clamp height motorization
with piezo actuator



USB motor controller custom firmware
and hardware for stepper motors
and servo motors