Arden PHOTONICS

OPTICAL FIBER MEASUREMENT SPECIALISTS

Ideal for Specialty Fibers

- PM Fibers
- Active Fibers
- Multi-core Fibers
- Hollow-core Fibers- NANF & DNANF

FGC-GS

Fiber Glass Geometry Measurement System

To meet the evolving demands of the photonics industry, Arden has redesigned the flagship FGC-GS Fiber Geometry Measurement System, making it around 25% smaller than previous models, offering higher accuracy and enhanced usability in a significantly smaller footprint.

Engineered for specialty fiber manufacturers and laboratories, the FGC-GS measures most fibers up to 800 µm including Single Mode Fiber, Polarisation-Maintaining Fiber (PANDA), Active Fiber, Multi-core Fiber and Hollow Core Fiber (both NANF and DNANF). Tools to further enhance our industry leading measurement speed include one-click dual-wavelength illumination. Absolute accuracy is guaranteed through Arden's golden-fiber calibration artefact, fully traceable to the National Physical Laboratory (NPL) in the United Kingdom.

The system's innovative software architecture supports fiber characterisation via standardised plugins - ideal for characterisation consistency in a production environment - as well as comprehensive manual tools that allow new and emerging designs to be characterised.

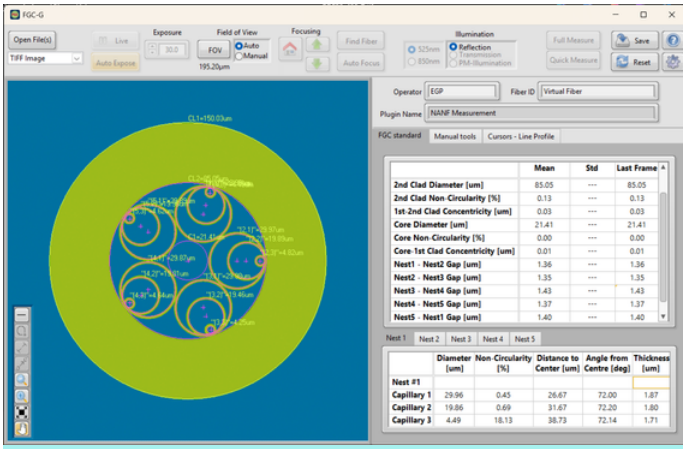
This "smaller but mightier" FGC combines excellent repeatability with the flexibility required for modern fiber development and production.

- Plug-in architecture to rapidly standardise testing of tomorrow's fibers
- Enhanced manual analysis tools for quick assessment of new fiber designs
- User calibration with NPL-traceable artefact
- Measure fibers up to 800 µm

Arden Photonics Ltd
Royston House, 267 Cranmore Boulevard,
Shirley, Solihull, B90 4QT, UK
+44 (0) 121 733 7721

FGC-GS
Fiber Geometry System

Key Features and Technologies

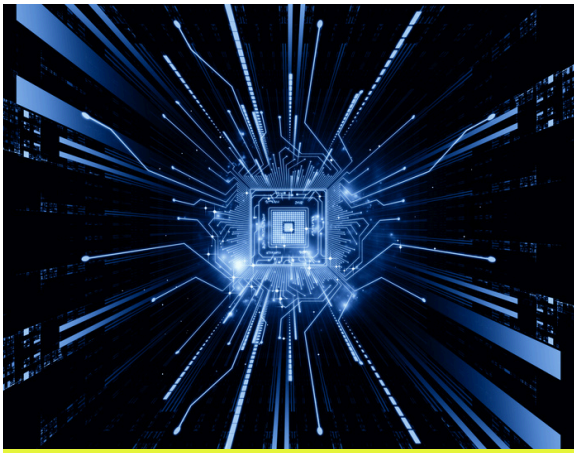


Software Plug-in Architecture

The FGC's innovative software plug-in architecture enables dedicated measurement for specific fiber types, optimising quality control and production routine. Currently, available plug-ins include: PM fibers, Single mode/Multi mode fibers, Active fibers, Multi-core fibers, and NANF fibers. We can customise plug-ins to rapidly standardise testing of tomorrow's fibers.

User calibration with NPL-traceable artefact

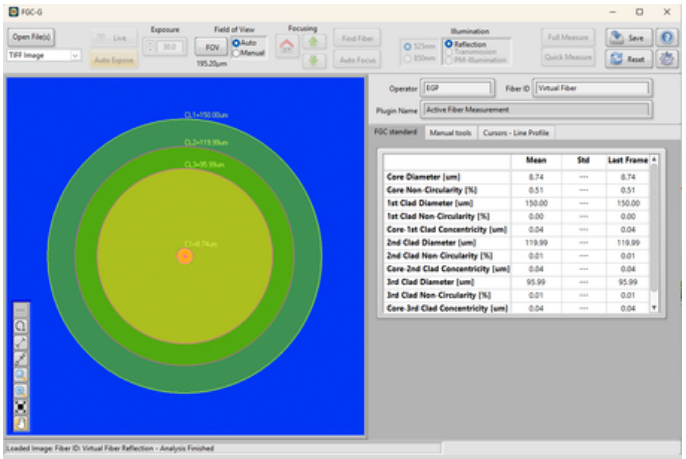
To maintain absolute calibration, users can perform in-house calibration using the FGC-FCD125 golden-fiber artefact, which is traceable to the National Physical Laboratory (NPL) in the United Kingdom, significantly reducing downtime and the need for on-site servicing.



Enhanced Optical System & Algorithm

The FGC's software and hardware have been redesigned for better measurement performance in a smaller footprint.

The "smaller but mightier" FGC features industry leading speed of measurement and one-click, dual-wavelength illumination.



Improved Manual Analysis Tool & Reporting

Improved manual analysis tools enable quick assessment of new fiber designs without setting up automated routines. All measurement data is easily stored for production feedback and quality assurance.

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FGC-GS
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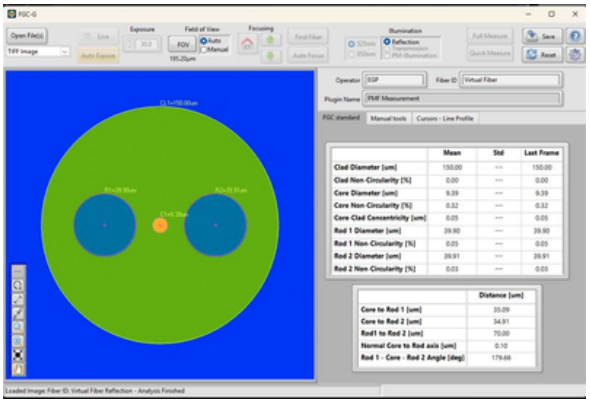
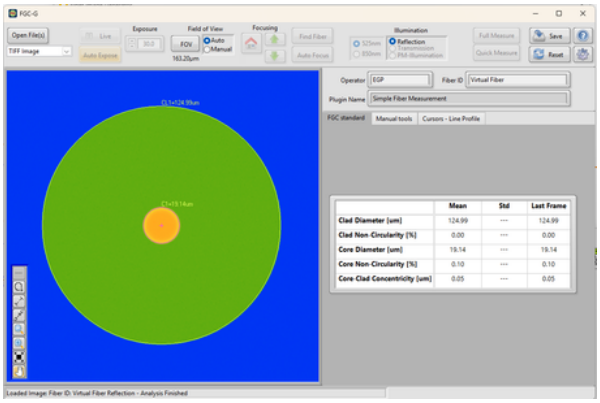
Optional Software Plug-ins (Available from FGC 6.0 software onwards)

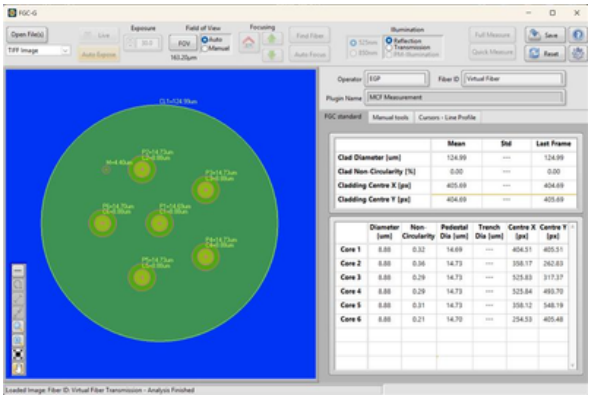
The optional plug-ins extend the functionalities of FGC-GS. Five optional plug-ins are currently available for measuring the geometry of key features of specialty fibers with cladding diameter 80 - 800 µm.



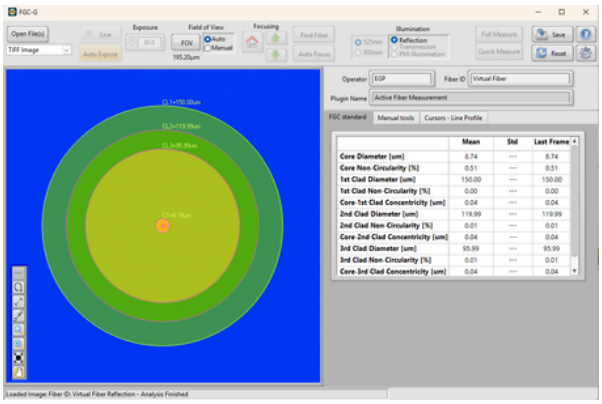
FGC-SPI01: Software plug-in for Panda-style PM Fibers (measuring stress rods, the diameters and non-circularity of cladding and core, core to rod distance)



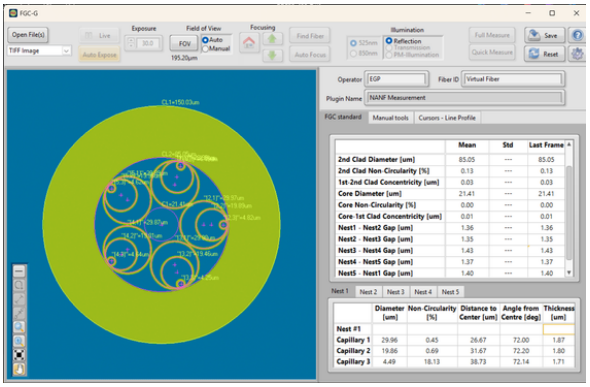
FGC-SPI02: Software plug-in for Single Mode Fibers and Multimode Fibers (measuring cladding and core diameters and their non-circularity)



FGC-SPI03: Software plug-in for Multi Core Fibers (measuring the diameter and non-circularity of cladding, core, pedestal and trench)



FGC-SPI04: Software plug-in for Active Fibers (measuring cladding diameters, non-circularity, core to cladding concentricity)



FGC-SPI05: Software plug-in for Nested Antiresonant Nodeless Fiber (NANF) (measuring the inner and outer claddings' diameter and non-circularity, tube's diameter and non-circularity, distance between lobes, and central core diameters)

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FGC-GS
Fiber Geometry System

Technical Specification

Optical	FGC-GS	FGC-GS-D
Field of View	900 µm	
Fiber Illumination - Reflection	Darkfield illumination, 525 nm LED	Darkfield illumination, 525 & 850 nm Dual
Fiber Illumination - Transmission	High NA LED source, 525 nm	High NA LED source, 525 nm & 850 nm Dual

Repeatability*	Singlemode	Multimode	20/400**
Core Diameter	< 0.05 µm	< 0.08 µm	< 0.1 µm
Cladding Diameter	< 0.05 µm	< 0.05 µm	< 0.15 µm
Core Non-Circularity	< 1.0%	< 0.5%	< 0.5%
Cladding Non-Circularity	< 0.1%	< 0.1%	< 0.1%
Core-To-Cladding Concentricity	< 0.06 µm	< 0.05 µm	< 0.15 µm

Measurement Capability	
Measurement Time	< 10 seconds (excluding fiber prep)
Fiber Diameter	up to 800 µm
Special Fibers	Dual clad, Non-circular, Octagonal, PM, Capillary, Multicore, etc.

Physical	
Weight	11kg (with carry case 33kg)
Size of FGC unit	0.3 x 0.45 x 0.15 m
Total Footprint (incl. fiber handling bench)	0.7 x 0.45 x 0.15 m
Operating Temp	10 - 30°C
Computer Requirements	All FGC systems are supplied with a computer running up-to-date Windows OS
Data Interface	1 x USB 3.0 (USB B to USB A: 1m cable supplied)

* Repeatability is measured on the FGC-GS using a single 125 µm fiber without removing it from the unit at 22°C, the repeatability specifications are only applicable to OM1, OM2 and singlemode fibers.
** Repeatability is measured on the FGC-GS using a single 20/400 µm fiber without removing it from the unit at 22°C.
*** May be fitted with dual wavelengths or other customised wavelengths

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FGC-GS
Fiber Geometry System

Ordering Information

Part number	Description
FGC-GS	FGC-GS Fiber Glass Geometry System for measurement of optical fibers with diameters up to 800µm. Including single wavelength optical unit and the following accessories: FGC-FHB - Fiber handling bench, FG-H-400 - Pair of Arden holders with 400 µm V-groove, FG-FTK-400 - Fiber samples, FGC-CK – cable kit, FGC-SFT - software package, APL-PC - desktop computer, FGC-CC - shipping case, FGC-ILL-525 – 525 nm illumination system
FGC-GS-D	FGC-GS-D Fiber Glass Geometry System for measurement of optical fibers with diameters up to 800µm. Including dual wavelength optical unit and the following accessories: FGC-FHB - Fiber handling bench, FG-H-400 - Pair of Arden holders with 400 µm V-groove, FG-FTK-400 - Fiber samples, FGC-CK – cable kit, FGC-SFT - software package, APL-PC - desktop computer, FGC-CC - shipping case, FGC-ILL-525 – 525 nm illumination system, FGC-ILL-850 – 850 nm illumination system

Holders	Description
FGC-FCD125	Fiber cladding diameter measurement artefact placed in a retractable holder, and supplied with carry case. Allows the use of a single measured and maintained fiber cleave for calibration and verification of FGC performance. Fiber diameter and circularity is measured by NPL and supplied with a measurement certificate
FG-FTK-400	FGC fiber samples, 400 µm diameter, for checking FGC alignment and calibration
FG-H-080	Pair of Arden FGC fiber holders with 80 µm V-groove, suitable for 80 µm diameter coated fiber
FG-H-125	Pair of Arden FGC fiber holders with 125 µm V-groove, suitable for 125 µm diameter coated fiber
FG-H-200	Pair of Arden FGC fiber holders with 200 µm V-groove, suitable for 200 µm diameter coated fiber
FG-H-250	Pair of Arden FGC fiber holders with 250 µm V-groove, suitable for 250 µm diameter coated fiber
FG-H-400	Pair of Arden FGC fiber holders with 400 µm V-groove, suitable for 400 µm diameter coated fiber
FG-H-500	Pair of Arden FGC fiber holders with 500 µm V-groove, suitable for 500 µm diameter coated fiber
FG-H-600	Pair of Arden FGC fiber holders with 600 µm V-groove, suitable for 600 µm diameter coated fiber
FG-H-800	Pair of Arden FGC fiber holders with 800 µm V-groove, suitable for 800 µm diameter coated fiber

Software Plug-ins	Description
FGC-SPI01	FGC Software Plugin for measurement of geometry of Panda-style PM Fibers
FGC-SPI02	FGC Software Plugin for measurement of geometry of Single Mode Fibers and Multimode FIbers
FGC-SPI03	FGC Software Plugin for measurement of geometry of Multi Core Fibers
FGC-SPI04	FGC Software Plugin for measurement of geometry of Active Fibers
FGC-SPI05	FGC Software Plugin for measurement of geometry of Nested Antiresonant Nodeless Fiber (NANF)

Other Accessories	Description
FGC-GUEW3	FGC-Glass geometry system, extended warranty covering parts and labour for 3 years from purchase, return to base.
FGC-GUEW5	FGC-Glass geometry system, extended warranty covering parts and labour for 5 years from purchase, return to base.
FGC-PMI-850	PM illuminator, 850 nm, for measuring dimensions of 125 and 80 µm diameter PANDA fibers.
FGC-PMI-525	PM illuminator, 525 nm, for measuring dimensions of 125 and 80 µm diameter PANDA fibers.

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