



Optical Fiber Measurement Specialists



FGC Array

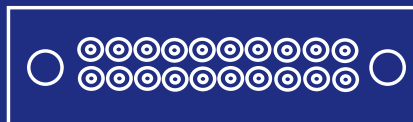
Fiber Geometry Measurement System

The FGC Array system provides precise, automatic and high-speed characterisation of Fiber Array Units (FAUs) and MT ferrules in just one minute*, making it a versatile solution for R&D, laboratories and production environments. It accommodates arrays up to 22 mm wide and 0.8 mm tall, delivering precise data on critical parameters such as fiber core positioning, core-to-core pitch, and PM stress rod angles.

Measure various types of Fiber Array Units and MT Ferrules



1D Fiber Array Unit

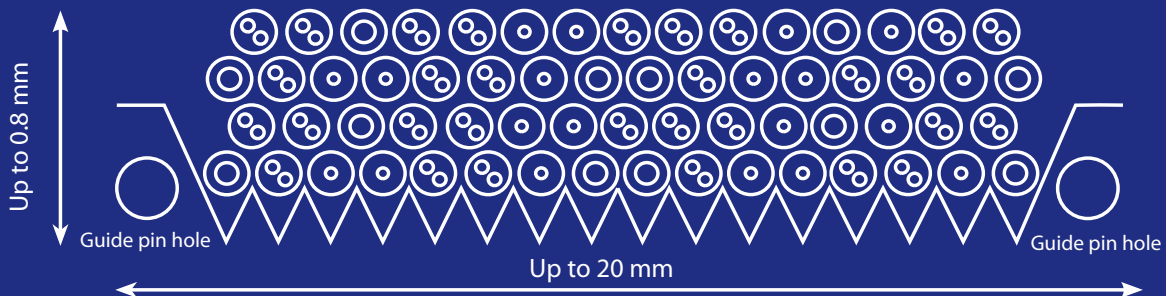


2D MT Ferrule Assemblies



2D Fiber Array Unit

Characterise Complex Fiber Array Units



* Measuring an FAU with 8 single mode fibers

** The above diagrams are intended for illustrative purpose only.



Single Mode Fiber



Polarising-Maintaining Fiber



Multi Mode Fiber

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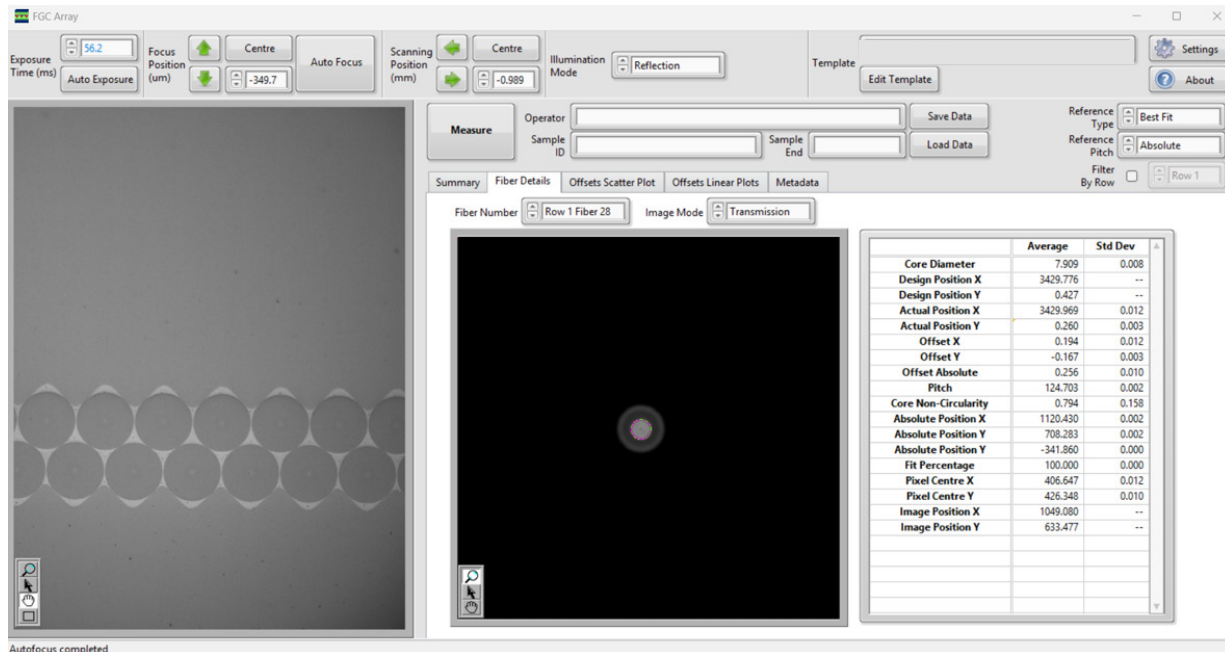


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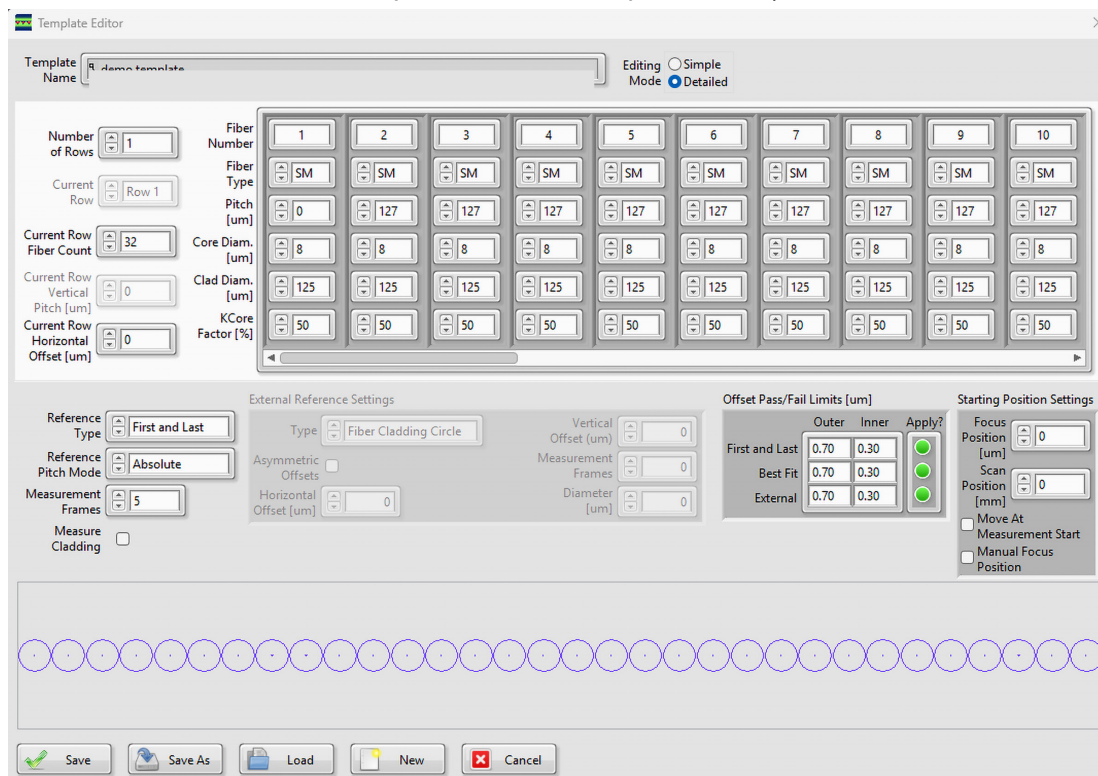
Fiber Geometry System

Versatile Measurement Capabilities

The FGC Array provides precise data on critical parameters such as fiber core positioning, core-to-core pitch, and PM stress rod angles of each fiber in the Fiber Array Units (FAUs).



Customisable Measurement Template - Ideal for complex 2D Array Units



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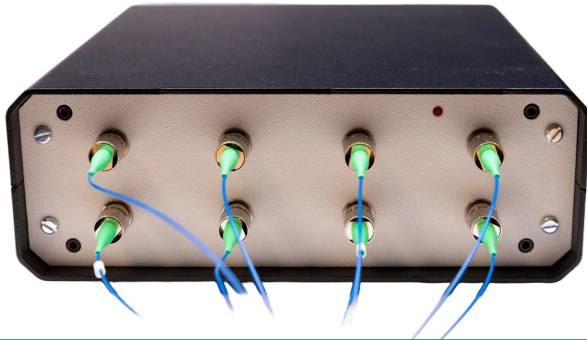
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FGC Array

Fiber Geometry System

Key Features and Technologies



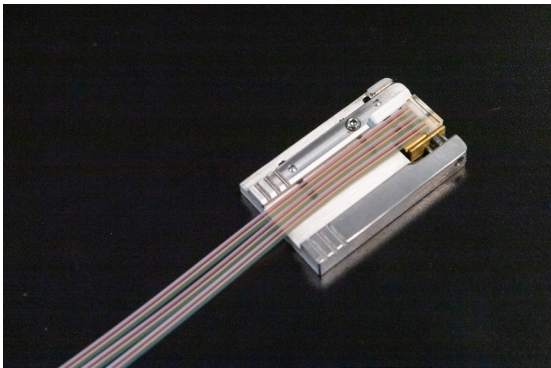
Core Illumination Technology

The core of each fiber in the array is illuminated to enhance the core-to-core measurement accuracy and repeatability. The system supports FAU pigtailed with bare fiber, ribbon fiber, or MTP, FC and FC/APC connectors. Up to six illumination units can be linked to an FGC-Array system.



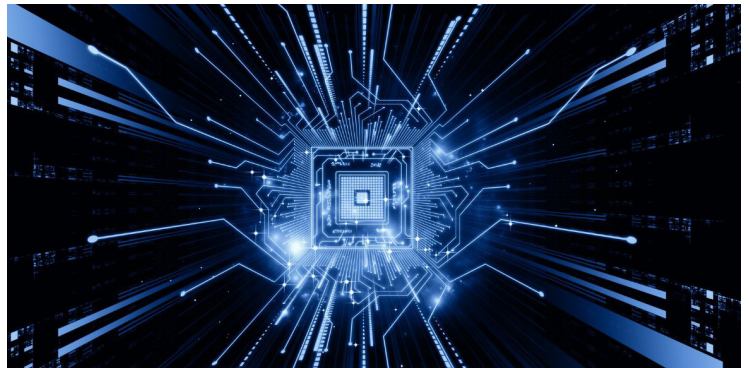
Fully Automated Translation Stage

The precision linear stage delivers repeatability down to $0.05 \mu\text{m}^*$ for core X & Y position, ensuring consistent and repeatable results are generated using the newly-designed software and mounting system.



Advanced Fiber Array Unit Mounting

A newly designed tiltable 32 mm mount and adjustable-width array holder provides a versatile mounting solution for fiber arrays ranging from 2.5 mm to 22 mm, with tilt angles from -8° to $+8^\circ$.



Enhanced Optical System & Algorithm

Refined imaging quality is achieved using an infinity-corrected objective and a high-resolution CMOS camera for sharper, more evenly illuminated images. Proprietary distortion correction algorithms ensure highly accurate imaging and measurement results, setting new benchmarks for precision.

* Repeatability (1 σ) is measured on the FGC-Array using an 28 fiber array (127 μm nominal pitch), when re-inserting the sample.

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FGC Array

Fiber Geometry System

Technical Specification

Measurement Capabilities - V-Groove Array

Array Block Width	Up to 22 mm as standard
Scan Range	Up to 20 mm (core to core pitch can be measured within this range)
End face vertical angle	-8° to +8° tilt angle
Fiber Types	Single or multi row - singlemode, multimode, PM
Core pitch	Any arbitrary sequence, missing/non-illuminated cores are permissible
Standard Parameters	X-Y positions of cores, PM stress rod angle*
Measurement Time	30 second setup/analysis, plus 5 seconds per core
Reference Line	First to last core, Fiber cladding reference points, Best Fit

* An external PM illuminator and compatible FAU holder are used

Measurement Capabilities - MT Ferrule Assemblies

Guide Pin Hole OD	0.5 / 0.7 mm
Guide Pin Hole Pitch	4.6 / 5.3 mm
Measurement Range	Core position can be measured in this range: Vertical – up to 0.8 mm
End face vertical angle	-8 to +8° tilt angle
Ferrule Types	Single or multi row - singlemode, multimode
Standard Parameters	X-Y positions of cores
Measurement Time	30 second setup/analysis, plus 5 seconds per core
Reference Line	First to last core, Guide pin hole reference points, Best Fit

Fiber Illumination

Measurement Wavelength	630 nm
Reflection	Internal light source
Transmission	External module only – FC, MTP, Ribbon, and FAU holder options
Polarisation-Maintaining Fiber	External module only – optional extra PANDA style PM only, illuminates fiber arrays up to 9 mm width (not compatible with standard adjustable holder). Bow-tie style fibers can be imaged and core centroid determined, but not the angle of the fast/slow axes

Technical Specification

Accuracy & Repeatability

Stage translation accuracy (1 σ)*	0.05 μ m + 0.008 * L (L is the horizontal distance between points in mm)
Core X & Y positions (1 σ)**	0.05 μ m

* Accuracy (1 σ) is measured on the FGC-Array of the X-Axis translation stage only, at a stage temperature of 26 $\pm$ 2°C.

** Repeatability (1 σ) is measured on the FGC-Array using an 28 fiber array (127 μ m nominal pitch), when re-inserting the sample.

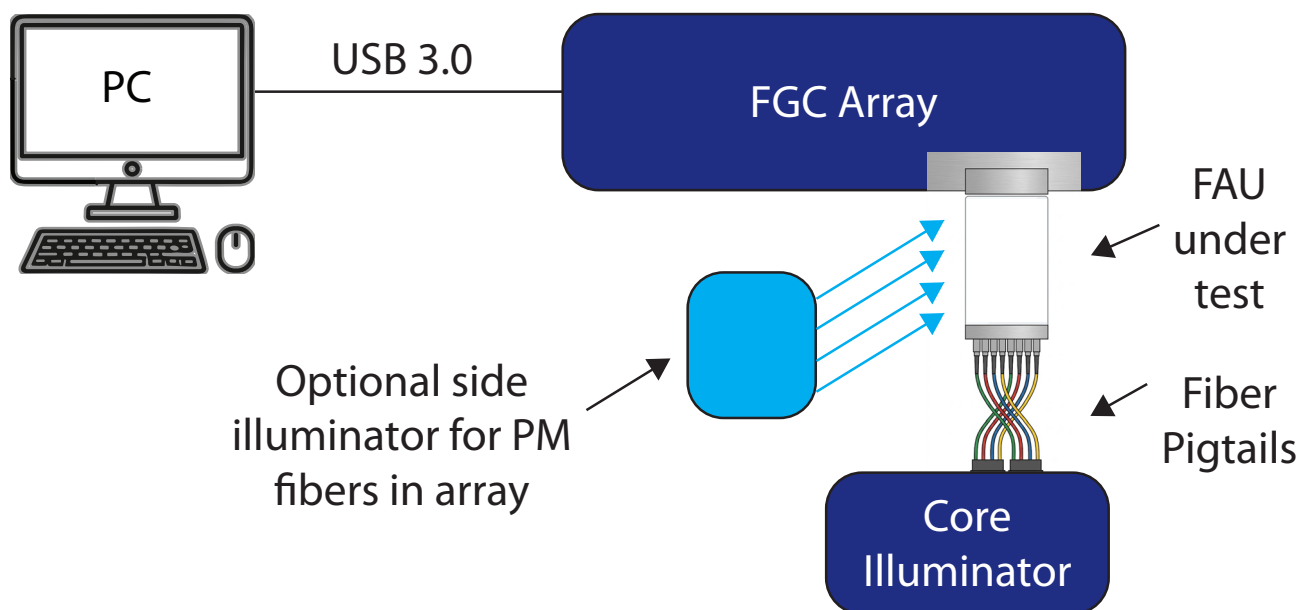
Optical

Field of view	1100 μ m (V) x 800 μ m (H)
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Physical

Weight	23 kg
Size	0.46 x 0.46 x 0.2 m
Operating temperature	10 – 30°C
Performance specification validated at	21 $\pm$ 2 °C
Power supply	24 V (external power supply supplied)
Power consumption	120 W
Data interface	1 X USB 3.0 (USB B to USB A: 1m cable supplied)
Computer requirements	All FGC Array systems are supplied with a computer running up-to-date Windows operating system.

Schematic of Measurement Setup





FGC Array

Fiber Geometry System

Technical Specification

Main Unit	Description
FGC Array	FGC Array measurement system for measurement of optical fiber V-groove arrays. Including FGC Array optical unit and following accessories: FGA-CK – cable kit, FGA-SFT – software package, FGA-CC – shipping case, FGA-CCA – accessories shipping case, APL-PC – desktop computer

Illuminators	Description
FGA-PMI-630	PM illuminator for arrays for FG-H-VAPM Holder (not compatible with other holder types) with 630nm LEDs
FGA-PMI-455	PM illuminator for arrays for FG-H-VAPM Holder (not compatible with other holder types) with 455 nm LEDs
FGA-EXT-FC	External illuminator for 8 x FC connectors. Works with both FC/PC and FC/APC
FGA-EXT-MTP	External illuminator for 6 x MTP/MPO connectors. Works with both straight and angled connectors
FGA-EXT-BF	External illuminator for Fujikura style holder, for bare fibers and ribbons
FGA-EXT-Array	External illuminator for 32 mm wide Arden holders

Other Accessories	Description
FG-H-VA	FGC Array adjustable width array holder for 2.5 – 22 mm
FG-H-VAPM	FGC Array adjustable width array holder for 2.5 to 9 mm, PM Illuminator compatible
FG-H-VAMT	FGC Array holder for MT ferrules, with backlit guide holes
FGA-ART	FGC Array measurement verification artefact, mounted chrome on glass
FGA-CC	FGC Array optical unit flight case
FGA-CCA	FGC Array accessories carry case

Services	Description
FGA-UCS2	FGC Array on-site commissioning and training. Travel and subsistence will be charged separately
FGA-UEW3	FGC Array extended warranty covering parts and labour for 3 years from purchase, return to base.
FGA-UEW5	FGC Array extended warranty covering parts and labour for 5 years from purchase, return to base.

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APD0284 V1.0
Issued 9 July 2026

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