

Flexia & BGA Inspection Systems

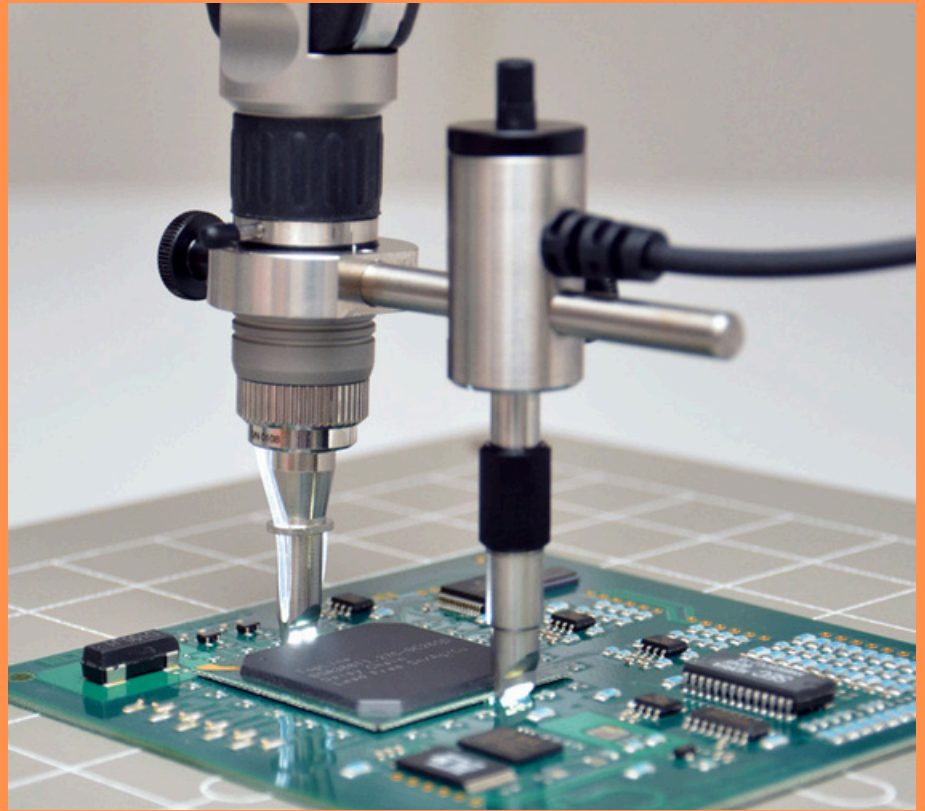
State of the art optical inspection system with 5.0 MP digital camera and tiny high resolution side-viewing optical probes for fast and crisp inspection of solder joints of BGA, mBGA, CSP and Flip-Chip SMDs.



Exchange the BGA Lens with the 1-100x Varifocal Lens and convert your system to a high resolution Video Microscope for top-side Inspection of assembled PCBs, solders, pads, scores, components, etc.

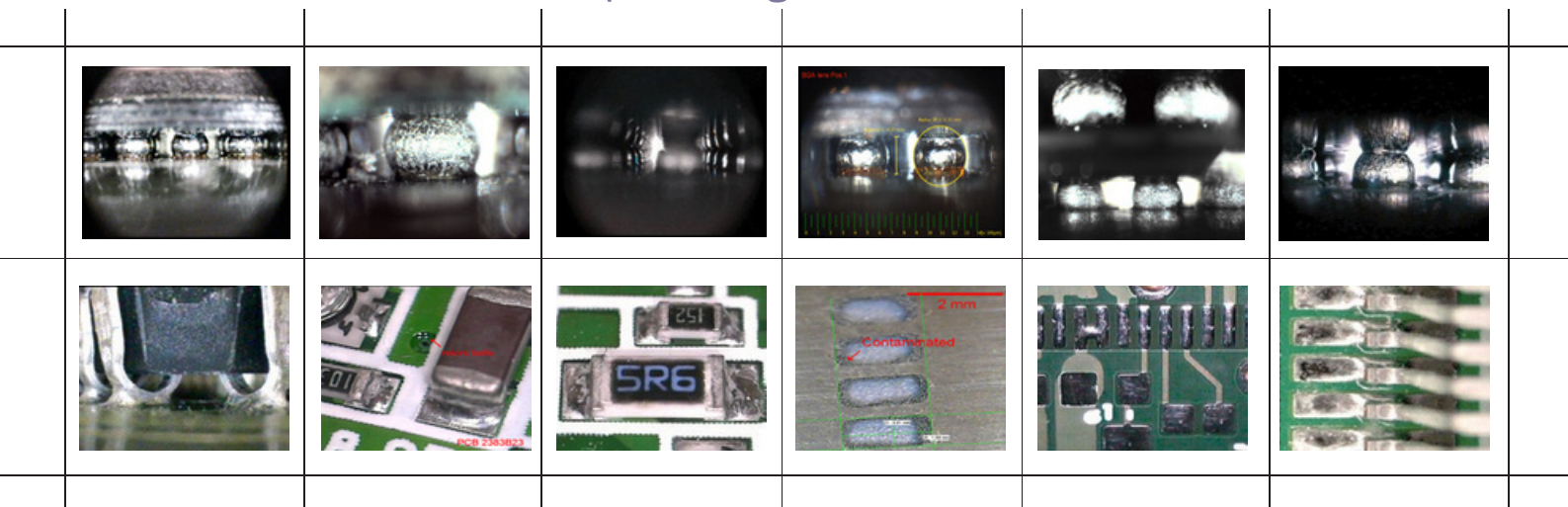


Besides visual Inspection and Quality Control of BGA components, benefit from Digital Image Capture, Non-contact Geometrical Measurements, documentation and Data Management using powerful "Optilia OptiPix" Software.



ESD protected

Empowering Your Vision!



Modular Optical System

Flexia BGA Inspection Systems are modular and configurable. Standard BGA system contains Flexia Definition 5.0 MP camera microscope with software, side viewing BGA lens with small size optical probe, built-in front and background LED illumination with electronic dimmer, 1-100x varifocal top inspection lens and specially designed focusing stand.



Optical Inspection and X-ray

Flexia BGA can be used as a cost effective alternative to, or in combination with conventional x-ray inspection systems. Unlike traditional x-ray systems, however, Flexia BGA allows the operator to confirm solder ball shape, bridging, excess flux, micro cracking, surface defects, abnormalities, cleanliness and other soldering defects on BGA components.

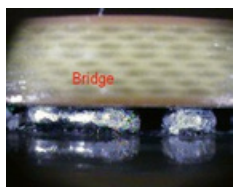
View	X-ray Inspection	Optical Inspection
Placement	✓	✓
Bridging	✓	✓
Show voids	✓	—
Cold solder joints	**	✓
Reflow problems		✓
Excess flux	—	✓
Contamination	—	✓
Ball shape	—	✓

✓ = Yes * = Possible with training

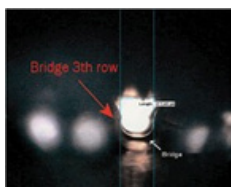
comparison of X-ray and Optical Inspection capabilities

Flexia BGA creates sharp pictures of solder balls underneath BGA, uBGA, CSP and Flip-Chip packages up to 10 rows with down to 0.04 mm stand-off. Magnification of the lenses can be changed from approximately 5x (~ 50 mm working distance) to 350x (~ 0.3 mm working distance).

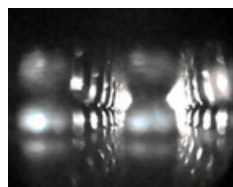
Sample pictures taken by Flexia BGA inspection system:



Bridge



Short



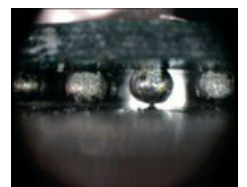
Inner rows



Good



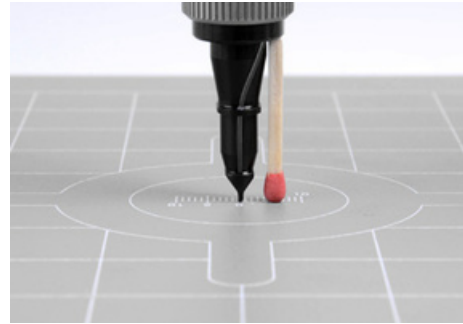
Fiber



Open

Tinest BGA Probe for High Density PCBs

Ultra Small Size BGA probe with 0.4x3.4mm footprint needs only 0.8mm free space around the component to produce a bright image of the solder bumps underneath BGA uBGA or CSP packages.



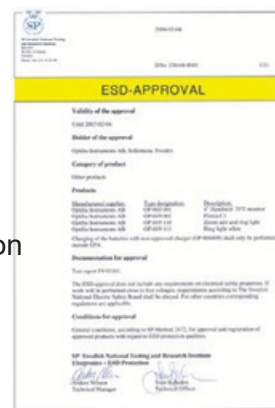
Versatile Inspection System

In addition to the side viewing BGA lenses, Flexia BGA contains, 100x fixed focal length objective with RingLight and a 1-100x high quality varifocal Lens for surface inspection of assembled PCBs, components, connectors and for reparation or rework.



ESD-protection

Flexia video and digital microscopes are designed to comply with the requirements of electronics manufacturer regarding flexibility, image quality, time and cost effectiveness. Flexia is ESD-protected and EPA approved according to EN and IEC standards.

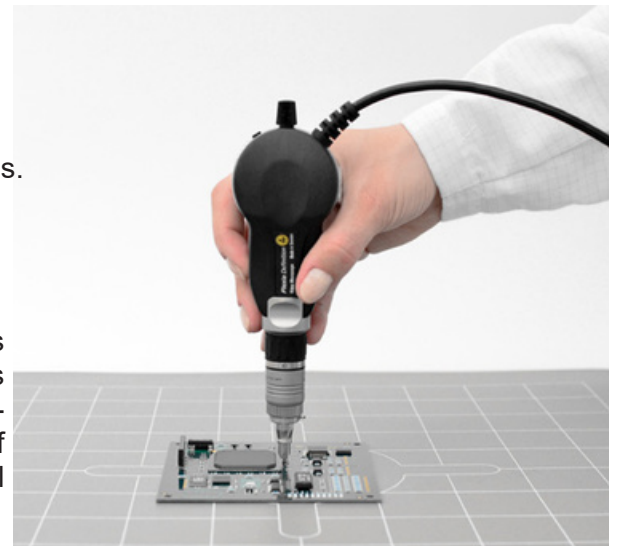


Ultra Bright, Durable LED Illumination

All Optilia BGA lenses incorporate integral high-intensity and long-life LEDs with electronic shutter control, delivering optimum white illumination via the probes' integral light guides.

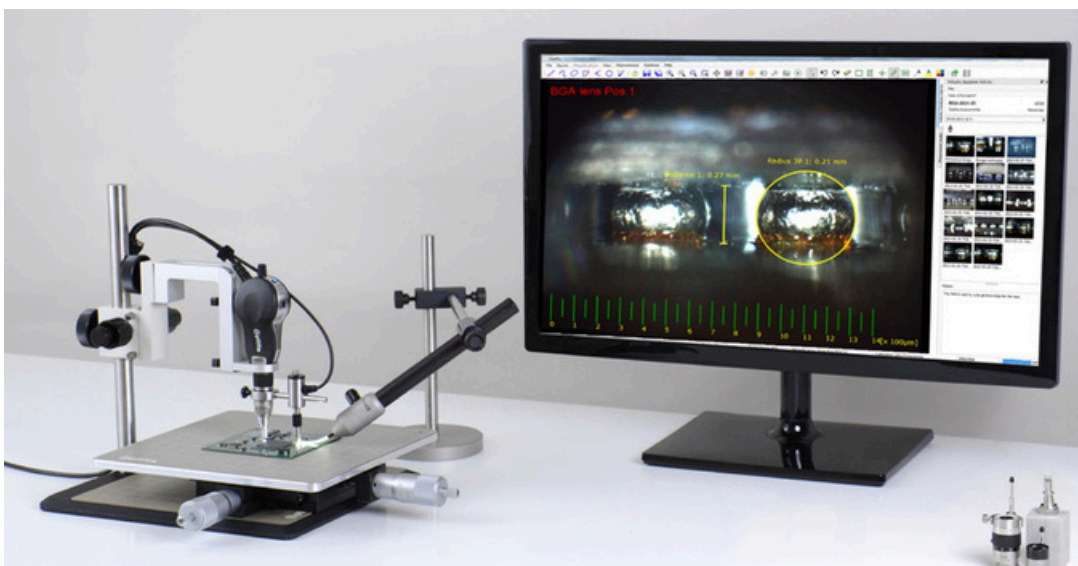
Mobile and Stationary Configurable

Flexia BGA is compact, modular and ergonomically designed. The equipment weights only 200 gram including its BGA lens and the built-in LED illumination. Optilia BGA microscopes can be operated mobile in one-hand or be mounted on Standard size or XL size XYZ-system stands. A wide range of extra accessories are available to meet your specific optical inspection requirements and needs.



Comparison table for Optilia BGA Inspection Systems Configurations

Products Item number	Hand held system	Extensive system	XL system
	OP-019 185	OP-019 156	OP-019 256
Flexia Definition 5.0MP Digital HM, with 100x lens ESD-protected	X	X	X
Side Viewing BGA lens with Ultra Small Size 90° optical probe		X	X
Side Viewing BGA lens with Small Size 90° optical probe		X	X
Side Viewing BGA lens with Standard Low Aperture 90° optical probe	X		
MicroPrism White LED Background Illumination with dimmer, Attachable		X	X
Brush Light, White LED Front Illumination with Dimmer, 2xAA battery tube		X	X
DC-adapter for Brush Light Front Illumination		X	X
Stand for Brush Light Front Illumination		X	X
1-100x varifocal lens with built-in LED ringlight		X	X
RingLight White LED for 100x Objective Lens		X	X
Optipix Full with Data Base, including Calibration micrometer scale for BGA		X	X
Optipix Lite, image view, capture and basic on-screen measurement software	X		
Extra large Rack&Pinon Boom Stand, Coarse/fine movement, ESD-protected			X
Focusing Stand, Coarse/fine movement, ESD-protected		X	
Precision XY-Translation Board, 25mm travel with Quick feed micrometer screws		X	X
PCB Holder, ESD-Protected			X
Aluminum Transport Case, 450x350x250 for BGA systems		X	X



Tiniest probe
Most flexible
Best picture

Extensive system

Specification of BGA optical Probes:

BGA Optical Probes	Low Aperture	Small Size	Ultra Small Size
Magnification* Focusing range	~ 280x – 5x	~ 350x – 25x	~ 350x – 25x
Field of View	~ 0.5 – 100 mm	~ 0.3 – 40 mm	~ 0.2 – 40 mm
Required free Working Area**	~ 1.2 – 50 mm	~ 1.0 – 20 mm	~ 1.0 – 20 mm
Thickness of optical probe	~ 1.2 - 2.2 mm	~ 1.0 - 1.5 mm	~ 0.6 - 0.8 mm
Width of optical probe	2.2 mm	1.5 mm	0.8 mm
Foot print of optical probe	7.1 mm	6.0 mm	3.4 mm
Weight	0.8x7.1 mm 10 gr	0.8x6.0 mm 10 gr	0.4x3.4 mm 10 gr

* Attached to Flexia Definition HM ** Minimum required free area depends on surrounding component height

Digital Video Microscope	
Image Sensor Storage	Colour 5.0 mega pixel 2592(H) x1944 (V) USB2.0 interface
environment Operating environment	-10° to +60° C, Max 98% RH, non-condensing 0° to +45° C, Max 95% RH, non-condensing

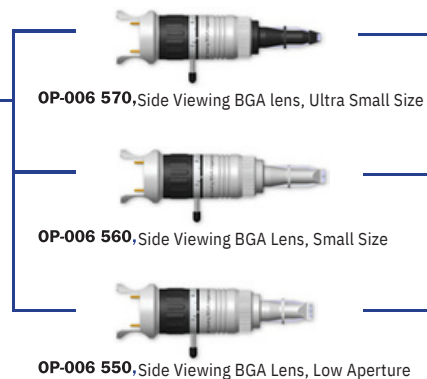
BGA lens matrix:

Video Microscopes



OP-019 197, Flexia Definition Digital 5Mp camera, HM
OP-019 191, Flexia Definition Digital 5.0Mpcamera
OP-019 152, Flexia Definition Analogue PAL, HM
OP-019 001, Flexia Definition Analogue PAL

BGA lenses



Optical Probes



* Items can also be ordered as spare parts

For detailed specification of the Flexia Definition cameras and BGA lenses please refer to product data sheets.

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Systems	Item numbers
Optilia Digital BGA Inspection System, XL, ESD-Protected	OP-019 256
Optilia Digital BGA Inspection System, Exstensive, ESD-Protected	OP-019 156
Optilia Digital BGA Inspection System, hand held, ESD-Protected	OP-019 185
Accessories	
Side Viewing BGA lens with Ultra Small Size 90° probe	OP-006 570
Side Viewing BGA lens with Small Size 90° probe	OP-006 560
Side Viewing BGA lens with Standard Low Aperture 90° probe	OP-006 550
Ultra Small Size 90° Probe for BGA lens (spare part)	OP-006 571
Small Size 90° Probe for BGA lens (spare part)	OP-006 561
Low Aperture 90° Probe for BGA lens (spare part)	OP-006 551
BGA Background Illuminator, Attachable	OP-006 420
Brush Light, White LED, with DC-adapter	OP-006 180
DC-adapter for Brush-Light (spare part)	OP-006 280
Brush Light fibers with adapter (64 fibers)	OP-006 418
Optipix Full, image view, capture and measurement software	OP-006 119
Optipix Full, with Database image capture & measurement software	OP-006 121
USB Image capture foot-switch for OptiPix	OP-006 369
Extra large Rack&Pinion Boom Stand, Coarse/fine movement	OP-006 200
Stand for Brush Light	OP-006 135
PCB Holder, ESD-Protected	OP-006 202
Precision XY-board, 25x25mm travel with Quick feed micrometers	OP-006 109
Aluminum Transport Case for BGA, 450x350x250 with Foam inlet	OP-006 193