



XAAR 1003 AMp

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Precise fluid control
Unrivalled reliability
Extreme versatility

Small drop deposition on an industrial scale

Xaar's Advanced Manufacturing printheads are designed to allow our partners to develop customised manufacturing solutions based on a proven high performance industrial inkjet platform. The Xaar 1003 AMp is the first introduction to this range of market-leading piezoelectric drop-on-demand printheads for Advanced Manufacturing applications.

The Xaar 1003 AMp is perfect for very small drop fluid deposition on an industrial scale and is capable of consistently jetting droplets as small as 1 pL for the production of fine features, patterns and coatings. The combination of highly accurate, very small drops and unrivalled reliability enables the industrialisation of advanced manufacturing processes in sectors such as display, PCB, semiconductors and photovoltaics.

Many applications require tight regulation of coating thicknesses, precise patterns and management of substrate surface characteristics. The Xaar 1003 AMp combines highly accurate drop placement, consistent drop volume and high frequency jetting with variable drop size capability to deliver the precise fluid control essential for these processes.

This versatile printhead can jet a range of functional fluids, is fully scalable from small to large arrays, and is designed for optimum performance with Xaar's systems components. Altogether this enables fast process optimisation and reduced time-to-market.

The Xaar 1003 AMp incorporates the unbeatable combination of Xaar's TF Technology and Hybrid Side-Shooter architecture. This unique arrangement ensures that the printhead delivers unrivalled reliability even in the most challenging of industrial applications.

The Xaar 1003 family is the latest range of printheads from Xaar, demonstrating Xaar's continued commitment to ensure its customers remain at the leading edge of inkjet performance. Xaar is a world-leader in the development and manufacture of industrial inkjet technologies with over 25 years' experience in this field. The company has state-of-the-art manufacturing facilities in the UK and exports its printheads to manufacturers around the world.

Xaar 1003 AMp

Approved inks

Xaar actively partners with a wide range of fluid manufacturers to develop high-quality solutions for its printheads.

The Xaar 1003 AMp is designed to be compatible with a range of solvent, oil and UV curable inks and fluids.



Precise fluid control

The Xaar 1003 AMp is designed for applications where tight control of fluid deposition is required. It can repeatedly jet fluid volumes tuned to a sub-drop range of between 1 and 3 pL with an extremely high degree of accuracy:

- 1000 Optimised Geometry nozzles ensure precise jetting and consistent drop volume across the printhead, even with fluids with a high solids content and/or high viscosity
- TF Technology ensures even distribution of temperature across the printhead for consistent drop formation and uniform, repeatable fluid deposition
- XaarDOT is used to optimise drop size, drop formation and fluid performance to achieve the ideal combination of quality and speed for each specific application
- Greyscale operation allows the jetting of variable drop volumes within a single pattern to control coating thickness and can be used to counter optical effects such as banding and 'Mura'.

Unrivalled reliability

The Xaar 1003 AMp printhead is designed to deliver maximum production uptime with minimum operator intervention which ensures high production output and a fast return on investment.

- TF Technology (fluid recirculation) ensures continuous fluid flow at a high rate directly past the back of the nozzle during drop ejection. This means that fluids are in constant motion keeping particles evenly distributed in suspension and the nozzles primed, which radically improves reliability even in the most challenging of industrial applications
- TF Technology ensures that the printhead is self-priming; therefore maintenance cycles are short and start-up is instantaneous
- The Xaar 1003 AMp recovers quickly from mechanical shock so that production interruptions and operator intervention are minimised.

Extreme versatility

The design of the Xaar 1003 AMp enables the use of a wide range of fluids and configuration options. This is complemented by Xaar's systems components which are optimised for the Xaar 1003 product family and ensure simple and rapid integration:

- The Xaar 1003 AMp can jet fluids with a broad viscosity range and TF Technology keeps the fluid in constant motion. This prevents sedimentation and nozzle blocking which is particularly important when using fluids with a high solids content, including metallic particulates
- The Xaar 1003 AMp is fully scalable to enable simple integration of multiple printheads into larger jetting arrays
- Xaar's systems components, including the Xaar Print Manager (XPM) and the Xaar Midas Ink Supply System, are designed to optimise the performance of the Xaar 1003 AMp; they are also easy to configure and integrate, reducing time-to-market.

Physical attributes	Xaar 1003 AMp	Physical attributes	Xaar 1003 AMp
Active nozzles	1000	Printhead weight (dry)	144 g
Print swathe width	70.5 mm	Fluid base	Solvent, UV, Oil
Number of rows	2	Subdrop volume*	1-3 pL
Nozzle pitch (interleaved)	70.5 µm	Number of grey levels*	Up to 8
Drop velocity*	7 m/s	Typical firing frequency*	6 to 12 kHz
Nozzle density (nozzles per inch)	360 npi	Dimensions (WxDxH)	125x30x60 mm
Print addressability (x,y)	360x720 dpi		

*Dependent on ink used and system integration



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