Xaar 50X Series

The Xaar 50X Series

Gain competitive advantange with the Xaar 50X series

Reach higher levels of performance in Wide-Format Graphics (WFG) and industrial printing with the Xaar 50X printheads. Delivering exceptional print quality, excellent reliability and high production up-time, whether producing banners, POS materials, packaging, or printing directly onto shaped objects, these premium and versatile printheads provide the industrial performance needed across a wide range of applications.

The unique PrecisionPlus architecture of the Xaar 50X series builds on Xaar's proven Hybrid Side Shooter architecture, optimising actuator performance to deliver more uniform drop formation, improved velocity stability across the print swathe, and exceptional print quality for stunning graphics and longer throw distances.

Print service providers will appreciate the even, flat tints and sharp text achievable with the Xaar 50X series, while OEMs benefit from a remarkably uniform print swathe that allows printheads to be mounted together easily for trouble-free integration, fast time-to-market and short servicing times. In addition, the greyscale capability within the Xaar 502 GS150 variant offers Coding & Marking printers and manufacturers key technology advantages, delivering unparalleled print quality and resolution.

Exceptional print quality

The Xaar 50X series delivers exceptional print quality through the revolutionary PrecisionPlus architecture, providing smooth tints and graduations, excellent edge definition, and outstanding consistency for text, graphics and bar codes.

Key benefits include:

- Revolutionary PrecisionPlus architecture for smooth tints, graduations and excellent edge definition.
- Enhanced actuator performance delivering exceptionally uniform drop formation and even density across the swathe.
- 500 individually lasered nozzles providing outstanding drop placement accuracy and consistent print quality.

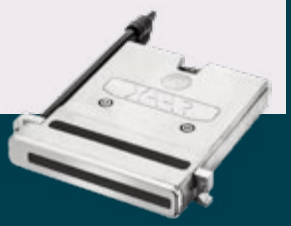
Flexible drop capability:

- Fine drops as small as 8pL
- Larger drops up to 75pL
- Up to 6 grey levels for enhanced resolution, subtle graphics and productivity gains

Versatility for OEMs and integrators: ideal for text, graphics, bar codes, shaped products and packaging (supports varied throw distances and jetting angles).

Xaar 50X highlights

- Ultra High Viscosity Technology for jetting fluids up to 100cp
- Unbeatable print colour uniformity with AcuChp Technology
- TF Technology fluid recirculation enabling reliable jetting of highly pigment inks
- Exceptional print quality with PrecisionPlus Technology



Industrial reliability

The Xaar 50X series is engineered to deliver exceptional industrial reliability and robustness, ensuring maximum production up-time even in harsh, demanding environments.

Key reliability features include:

- Designed for harsh industrial environments, delivering consistent high production up-time.
- Optional market-proven TF Technology recirculates fluid to keep nozzles clear of particles and air bubbles, preventing sedimentation and improving reliability, even with heavily pigmented inks (including Pulsed recirculation for GS150).
- Internal temperature management and industrial construction support a wide range of ink viscosities and varying ambient temperatures for reliable year-round performance.
- Robust metal body and recessed nozzle plate protect against damage from media crashes, cartons, cases or other mechanical impact.
- Maintenance-friendly nozzle plate surround (GS150) allows OEMs to retain established cleaning routines while still protecting the nozzle plate.
- Multiple fluid-handling modes (GS150) enable cost-effective implementation of recirculation while improving uptime, reducing air bubbles and extending maintenance intervals.

Flexible and easy integration

The Xaar 50X series provides versatile ink-supply options and straightforward integration, enabling faster manufacturing, reduced servicing time and minimal ink waste. Its internal architecture supports quick priming, automatic nozzle recovery and consistent uptime. Compatibility with vacuum-controlled systems, gravity-fed supplies (GS150) and TF Technology gives OEMs the flexibility to choose the best setup for their application. Simple, accurate mounting systems and industry-standard fittings ensure clean, secure installation with minimal adjustment.

Key features:

- Multiple ink-supply options: vacuum-controlled, gravity-fed (GS150), and TF Technology in Pulsed or High-Flow modes.
- Quick priming, automatic nozzle priming and self-recovery for higher uptime and reduced ink waste.
- TF Technology improves reliability by removing air bubbles and particles; Pulsed mode offers cost-effective recirculation.
- Industry-standard fittings and integrated filtration for clean, secure ink-system connections.

Unrivalled printing capability with Xaar technology

TF TECHNOLOGY

Xaar's TF Technology together with the unique Hybrid Side Shooter printhead architecture enables fluids to flow directly past the back of the nozzle during drop ejection at very high flow rates.

- Nozzles are continuously primed, the printhead stays operational and the nozzles keep firing
- Sedimentation and nozzle blocking are prevented, particularly in heavily pigmented inks
- Any air bubbles and unwanted particles in the ink are carried away
- Reliability is improved, even in the harshest industrial environment
- Jetting is significantly more reliable compared to alternative printhead designs (where convoluted ink flow paths means recirculation is close to, but not at, the back of the nozzle)
- Startup after periods of idle time is trouble free.

High Laydown TECHNOLOGY

Xaar's High Laydown Technology enables a range of new applications, thanks to its ability to deposit large quantities of fluid in each pass.

For packaging, labels and commercial print, it is capable of printing very high levels of UV inks or high build varnish in a single pass for tactile embellishments. In addition, the technology satisfies dimension specifications for printing Braille and complies with European standards for tactile warning triangles on labels, without the complexity of screen printing.

High Laydown Technology delivers unprecedented ink discharge rates for gloss and adhesive effects on ceramic tiles, so that effects can be printed at high line speeds.

For additive manufacturing applications, High Laydown Technology offers increased printing productivity which significantly accelerates build rate for parts and the ability to print a broader range of fluids including higher viscosity materials; this ultimately results in tougher 3D printed parts than those printed with standard inkjet technology.

Ultra High Viscosity TECHNOLOGY

Typically, inkjet is well known for being limited to jetting fluids of around 10 to 25 cP. Xaar technology, however, is capable of jetting much higher viscosities up to 100 cP (Ultra High Viscosity combined with Xaar's High Laydown Technology).

Ultra High Viscosity jetting opens up a range of new inkjet possibilities:

- Higher particle loading and particle sizes for increased colour gamut, opacity and special effects (for graphics, ceramic tile and glass printing)
- Ability to print higher molecular weight photopolymers leading to increased toughness and flexibility for printed materials (useful in Advanced Manufacturing and 3D printing)
- Reduced spreading for better edge definition on non-porous substrates (useful for example in glass printing applications)
- Printing a wider range of functional fluids (such as paint, adhesives and solder masks).

XAAR 50X Series

Approved Inks

Xaar actively partners with a wide range of ink manufacturers to develop high-quality UV, oil and solvent based ink solutions.

Applications

Graphics on canvas
Vinyl
Paper
Foam board
Rigid laminate
Textiles
Outdoor and indoor signage
Point-of-sale displays



	Xaar 501 O	Xaar 501 OR	Xaar 501 U	Xaar 501 UR
Features				
TF Technology	X	✓	X	✓
Ultra High Viscosity Technology	X	✓	✓	✓
High Laydown Technology	✓	✓	✓	✓
AcuChp Technology	✓	✓	✓	✓
SureFlow Self cleaning mode	X	✓	X	✓
Nozzle guard type	WFG	WFG	WFG	WFG
In-line filter	✓	✓	✓	X
Jetting compatibility				
Maximum viscosity at jetting temperature (cP)	up to 100	up to 100	up to 100	up to 100
Printhead max operating temperature (°C)	40	40	40	40
Fluid compatibility				
Oil-based	✓	✓	X	X
UV	X	X	✓	✓
Aqueous, Conductive	X	X	X	X
Performance				
Active Nozzle	500	500	500	500
Swathe width (mm)	70.5	70.5	70.5	70.5
Number of fluid paths	1	1	1	1
Nozzle density (nozzles per inch)	180	180	180	180
Grey levels (up to)	6	6	6	6
Nozzle pitch (µm)	141.1	141.1	141.1	141.1
Drop sizes (pl)	8 or 40	8 or 40	8 or 40	8 or 40
Maximum frequency up to (kHz)	8	8	8	8
Physical				
Printhead dimensions (mm)	104 x 17 x 113	104 x 17 x 100	104 x 17 x 113	104 x 17 x 100
Printhead weight (Dry) (g)	208	205	208	205

	Xaar 502 S180	Xaar 502 S360	Xaar 502 O	Xaar 502 OR
Features				
TF Technology	X	X	X	✓
Ultra High Viscosity Technology	X	X	X	✓
High Laydown Technology	✓	✓	✓	✓
AcuChp Technology	✓	✓	✓	✓
SureFlow Self cleaning mode	X	X	X	✓
Nozzle guard type	WFG	WFG	C&M	C&M
In-line filter	✓	✓	X	X
Jetting compatibility				
Maximum viscosity at jetting temperature (cP)	up to 100	up to 100	up to 100	up to 100
Printhead max operating temperature (°C)	40	40	40	40
Fluid compatibility				
Oil-based	✓	✓	X	X
Solvent based	X	X	✓	✓
Performance				
Active Nozzle	500	500	500	500
Swathe width (mm)	70.5	70.5	70.5	70.5
Number of fluid paths	1	1	1	1
Nozzle density (nozzles per inch)	180	180	180	180
Grey levels (up to)	6	4	6	6
Nozzle pitch (µm)	141.1	141.1	141.1	141.1
Nozzle guard	WFG	WFG	C&M	C&M
Drop sizes (pl)	15 to 70	15 to 40	15 to 75	15 to 75
Maximum frequency up to (kHz)	7	9.5	7.2	7.2
Physical				
Printhead dimensions (mm)	104 x 17 x 113	104 x 17 x 100	104 x 17 x 113	104 x 17 x 100
Printhead weight (Dry) (g)	208	208	208	205

XAAR

Head Office / Europe
+ 44 1223 423 663
info@xaar.com

Asia
+86 755 23309293
info@xaar.com

Learn more at
www.xaar.com

Issue 1 April 2026 English