

## Q-Class Configurability

It all starts with a high tolerance machined carbon body and flexprint to which is added either a silicon or metal nozzle plate with the appropriate size orifice and arrangement. Choice of nozzle plate material determines the degree of drop placement accuracy, durability, corrosion resistance, ink formulation latitude, range of fluids accommodated and stand-off distance. Metal nozzle plates are constructed of durable field proven materials and are the most forgiving relative to ink jetting characteristics while silicon is ideal for the aggressive inks and fluids typically used in materials deposition applications due to its robust chemical resistance resulting in best-in-class jetting accuracy with higher stand-off distances.

## Selectable Electronics

Selectable electronics bring VersaDrop to life. Electronic circuit boards affixed to the Q-Class printhead are designed for either multi-pulse binary or both multi-pulse binary and grayscale operation.

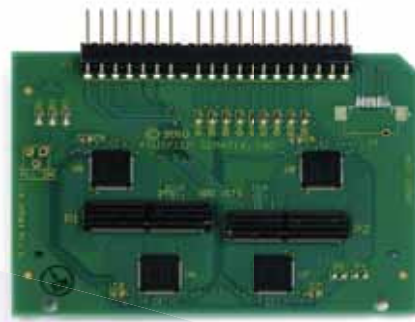
The unique registration features of the frame allows each 256-jet module within the frame to be replaced and accurately registered in the field without special tools or recalibration. An integral mounting bezel with precision registration points enables drop in alignment with other carriage features.

Q-Class frames are both lightweight and thin in the scanning direction. This space efficient design allows tight packing of many modules into even larger carriage assemblies and allows the intermingling of similar and complementary printhead models within the same array.

## New Horizons

If you aspire to move your new printer designs beyond common like inter-mingling small drop printheads with large for faster coating options or to expand the applications you serve beyond display graphics to perhaps ceramics or systems for functional coatings, or maybe broaden your product range to penetrate even lower price points by jetting 4-colors with only 1 printhead. Now you can while leveraging your product designs, minimizing your engineering design costs and reducing your time to market. One printhead, Q-Class does it all.

And that's what we mean by an entirely new way to think about inkjet systems design.



VersaDrop Multipulse Binary



VersaDrop Grayscale



Q-Class



# Q-Class Configurability



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- Sapphire
- Emerald
- Polaris



# Q-Class...An entirely new way to think about inkjet systems design

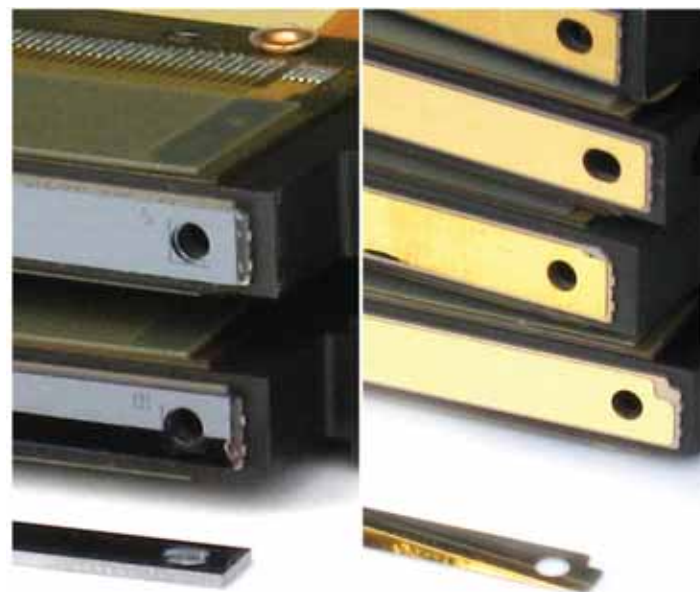
**Q-Class** – not simply another printhead family but an entirely new way to think about inkjet systems design. Built from the ground up – with the legendary performance, precision and reliability you’ve come to expect from FUJIFILM Dimatix.

**Q-Class** – a breakthrough that allows your inkjet printer designs to be easily migrated across many different printer models and applications using factory configurable options including drop sizes, operating modes, jetting characteristics, ink interfaces, electronics and mounting configurations.

## Q-Class Platform

Thin profile, light-weight, and robust materials combined with shared physical features allow over 70 Q-Class product variations to be manufactured to meet new designs, applications and price points. Q-Class is ideal for both scanning and single-pass printers. Today, nine baseline products comprised of three Sapphire, Emerald and Polaris models are available in a range of drop sizes from 10 to 200-picoliters and support UV-curable, solvent and aqueous fluid formulations. Sapphire and Emerald are designated Performa™ series by their multi-mode binary and grayscale operation while Polaris is categorized as Spectra™ series by its general-purpose, binary only operation.

Shared physical printhead features not only allow your initial design to be easily migrated to other printer designs and applications but it also allows Q-Class printheads to be intermingled within the same family in a mix-and-match fashion enabling you to offer entirely new printing system’s capabilities with unparallel flexibility and functionality.

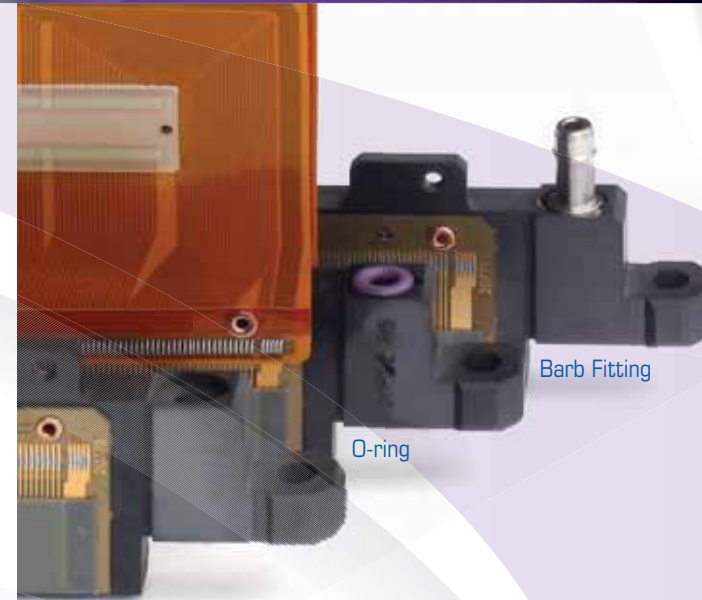


Silicon Nozzle Plate

Metal Nozzle Plate

## Fluids interface

Design versatility in ink delivery breaks new ground with more options. Q-Class is offered with an integral temperature sensor, dual-ported fluid interface comprised of O-rings face mounts or barb fittings to facilitate fast flushing or recirculation of inks. Flexible ink options even allow a single Polaris 512 printhead to be configured for single or 2-color operation making this particular variation the most cost effective implementation in the market today.



O-ring

Barb Fitting

## Frame Options

Q-Class frames solve many complex design issues like printhead-to-printhead registration and orientation, color capability, temperature control and replacement strategy.

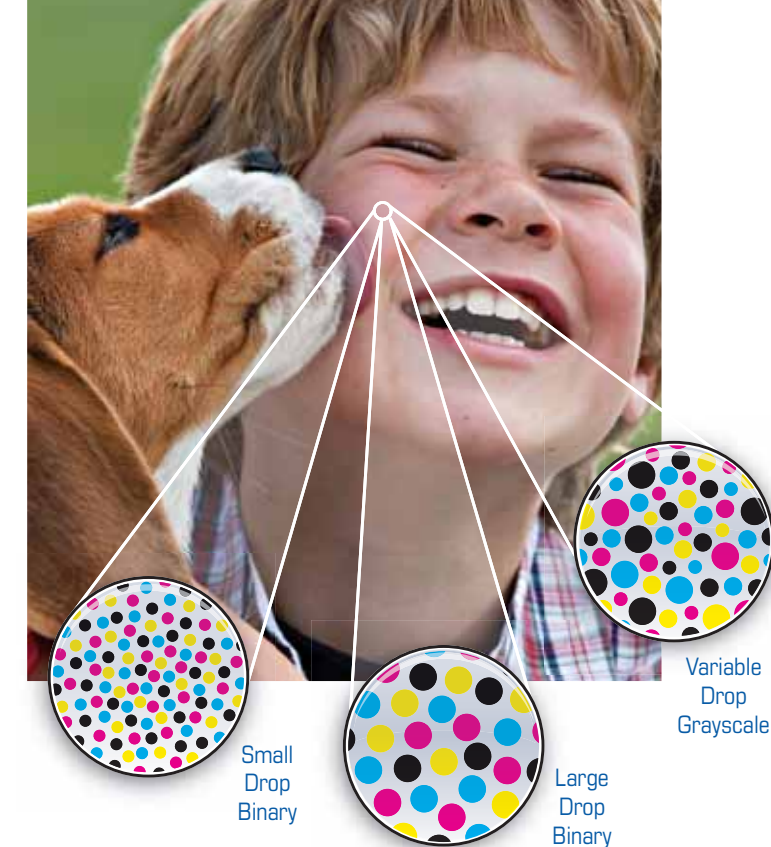
Each frame houses two or four individual 256-jet Q-Class based printheads and precisely indexes them in a non-saber orientation to create a 512 or 1024-jet printhead structure. Frame options are compatible with Q-Class Sapphire, Emerald and Polaris printheads. Each printhead is accurately aligned to its neighbor. Nested printheads can then be plumbed for single-, two-, or four-color operation.



Frame

Frame with Heaters

NOZZLE PLATE	METAL	SILICON
Application	Graphics	Materials Deposition
Accuracy	High	Highest
Durability	High	Highest
Corrosion Resistant	High	Highest
Ink Formulation Latitude	High	Highest
Fluids Accommodated	High	Highest
Stand-off Distance	High	Highest



Small Drop Binary

Large Drop Binary

Variable Drop Grayscale

## Drop Sizes

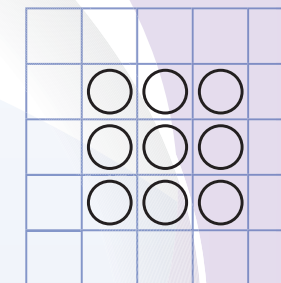
With the widest range of drop volumes from a single printhead platform, Q-Class starts with three basic drop sizes. From this basic design we derive a range of drop volumes from 10 to 200 picoliters. Fundamental drop sizes are either 10-15, 30-35 or 80-85 picoliters. With VersaDrop™ Jetting Technology each fundamental drop size can be dramatically extended resulting in 3 fixed drop sizes (small, medium and large) within each printhead. It’s like having 3 printheads in one! But that’s just the beginning.

## VersaDrop™ Grayscale & Beyond

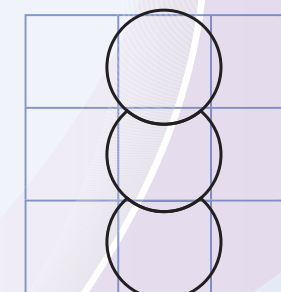
Whether designing scanning or single-pass systems, VersaDrop elevates Q-Class printheads to an entirely new level of operational performance by providing unparallel versatility without have to make trade-offs between print quality and production speed. We do this by leveraging the inherent characteristics of Q-Class high frequency response, velocity, superb channel-to-channel uniformity, low cross talk and channel straightness.

In the simplest implementation, adjustable binary mode, all of the nozzles of a single printhead are programmed to fire the same drop size on every cycle. But even in this instance the printer designer has the latitude in selecting whether the constant drop size will be the smallest possible, the maximum volume, or any amount in between thereby matching the spot size to the print system’s resolution setting.

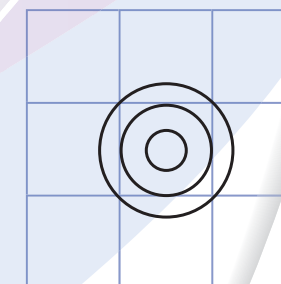
Beyond adjustable binary mode, VersaDrop supports full grayscale as any number of channels can be programmed to fire different sized drops under program control to print using and expanded range of tonal expression or even higher resolution – all while operating at the print system’s rated speed.



Higher Resolution



Lower Resolution



Grayscale