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Dimatix Materials Printer DMP-2831

System Description

- Flat substrate, xyz stage, inkjet deposition system
- Low cost, user-fillable piezo-based inkjet print cartridges
- Built-In drop jetting observation system
- Fiducial camera for substrate alignment and measurement
- Variable jetting resolution and pattern creation PC-controlled with Graphical User Interface (GUI) application software
- Capable of jetting a wide range of fluids
- Heated vacuum platen
- Cartridge cleaning station
- Includes PC, monitor, and software

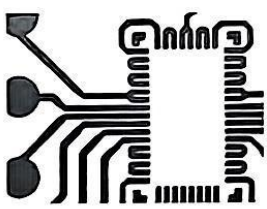
Mechanical System

- Printable area
  - Substrate < 0.5 mm thickness: 210 mm x 315 mm (8.27 in x 12.4 in)
  - Substrate 0.5 - 25 mm thickness: 210 mm x 260 mm (8.27 In x 10.2 In)
- Repeatability: ± 25 µm (± 0.001 in)
- Substrate holder
  - Vacuum platen
  - Temperature adjustable; ambient to 60° C
- System Footprint: 673 mm x 584 mm x 419 mm (26 in x 23 in x 16 In)
- Weight approximately 43 kg (95 lbs)
- Power 100-120/200-240 VAC 50/60 Hz 375 W maximum
- Operating range 15-40° C at 5-80% RH non-condensing
- Altitude up to 2000 m
- Safety and EMC compliance
  - Safety: NRTL Certified to EN 61010-1, UL 61010-1, CSA 22.2 No. 61010-1
  - EMC: EN61326-1 Class A, FCC Part 15 Class A

Drop Watcher View

Fiducial Camera

- Allows substrate alignment using reference marks
- Allows positioning a print origin or reference point to match substrate placement
- Provides measurement of features and locations
- Provides inspection and image capture of printed pattern or drops
- Provides cartridge alignment when using multiple cartridges
- Allows matching drop placement to previously patterned substrate



Fiducial Camera View

Cartridge

- Type: Piezo-driven jetting device with integrated reservoir and heater
- Usable Ink Capacity: Up to 1.5 ml (user-fillable)
- Materials Compatibility: Many water-based, solvent, acidic or basic fluids
- Number of Nozzles: 16 nozzles, 254 µm spacing, single row
- Drop Volume: 1 (DMC-11601) and 10 (DMC-11610) picoliter nominal

Control PC and Application Software

- Pre-loaded patterned templates
- Pattern preview
- Editors: Pattern, piezo drive waveform, cleaning cycle, substrate setting
- Bitmap (1 bit) files accepted
- DXF, Gerber, GDSII and OASIS file conversion to Bitmap

Replaceable Items

- Print cartridge with one-time user-fillable reservoir
- Cleaning station nozzle blotting pad
- Drop watcher fluid absorbing pad

Materials Printer & Cartridges
DMP-2831 & DMC-11601/11610

Datasheet

System Description

- Flat substrate, xyz stage, "ink jet" deposition system
- Low cost, user-fillable piezo-based ink jet print cartridges
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- Variable jetting resolution and pattern creation PC-controlled with Graphical User Interface (GUI) application software
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Drop Watcher View

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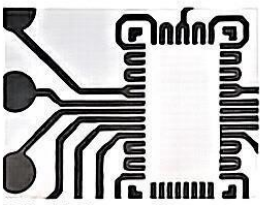

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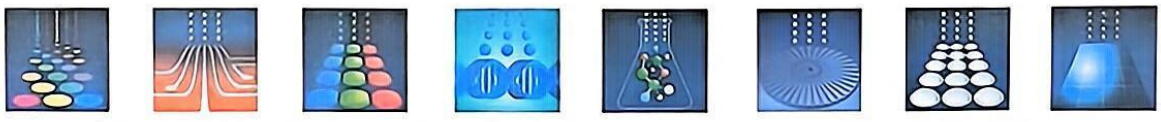

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Dimatix Materials Printer Selector Guide




MODEL	DMP-2800	DMP-3000	DMP-5000	DMP-5005	ATTRIBUTES
Format	200 x 300 mm	300 x 300 mm	500 x 500 mm	500 x 500 mm	Vacuum controlled substrate handling placement for accurate registration, up to 60°C heated platen, theta rotation for substrate alignment.
Accuracy	N/A	±5 microns	±5 microns	±5 microns	
Repeatability	±25 microns	±1 microns	±1 microns	±1 microns	
Drop Visualization	✓	✓	✓	✓	Droplet images dynamically captured for printhead tuning and waveform development.
Fiducial Camera	✓	✓	✓	✓	Allows substrate alignment, measurement of features and feature location.
Alignment Camera		✓	✓	✓	Facilitates auto printhead alignment.
PRINTHEADS SUPPORTED					
DMC-11601	✓	✓	✓	✓	16-jet, 1 picoliter silicon MEMS snap-in printhead with user fillable cartridge. Shares physical features with the DMC 10 picoliters allowing easy interchangeability. Features as small as 20 microns can be deposited.
DMC-11610	✓	✓	✓	✓	16-jet, 10 picoliters silicon MEMS snap-in printhead with user fillable cartridge. Shares physical features with the DMC 1 picoliter allowing easy interchangeability.
D-128/1 DPN		✓	✓	✓	128-inline jets, 1 picoliter silicon MEMS production printhead with integrated cooling and driver-per-nozzle and trimming capability. Shares identical physical features with D-128 10 picoliters allowing easy interchangeability.
D-128/10 DPN		✓	✓	✓	128 inline-jets, 10 picoliters silicon MEMS production printhead with integrated cooling and driver-per-nozzle and trimming capability. Shares identical physical features with D-128 1 picoliter allowing easy interchangeability.
SX3		✓	✓		128-inline tunable jets with 8 picoliters calibrated drop size. Hybrid silicon carbon construction. Has silicon nozzle plate with non-wetting coating.
SE-DPN		✓	✓		128-inline tunable jets with 30 picoliters calibrated drop size. Hybrid silicon carbon construction. Has an electroformed nickel-gold nozzle plate.
SE3		✓	✓		128-inline tunable jets with 35 picoliters calibrated drop size. Hybrid silicon carbon construction. Has silicon nozzle plate with non-wetting coating.
	Product Use: Small footprint, laboratory development tool for fluids, process and small format sample generation. **Special Features:** • Simple to use and operate • Tabletop device • Does not require special site-holder improvements	**Product Use:** Larger format, high accuracy floor standing system for process, fluids and low volume prototype generation. **Special Features:** • UV cure lamp option • Manual or automatic filling of fluid reservoir	**Product Use:** Largest format, high accuracy floor standing system for process, fluids and low volume prototype generation. **Special Features:** • UV cure lamp option • Manual or automatic filling of fluid reservoir • Optional HEPA filter	**Product Use:** Largest format, high accuracy floor standing system for production volume manufacturing. **Special Features:** • Support up to 5 printheads • Optional HEPA filter	

See other side for Materials Deposition Printheads

Rev 00 01/17/11

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Materials Deposition Printheads

							
OPERATING PARAMETERS	DMC-11601	DMC-11610	D-128/1 DPN	D-128/10 DPN	SX3	SE-DPN	SE3
Individual tunable nozzles	✓	✓	✓	✓	✓	✓	✓
Nozzle plate	Silicon with non-wetting coating	Silicon with non-wetting coating	Silicon with non-wetting coating	Silicon with non-wetting coating	Silicon with non-wetting coating	Electroformed nickel-gold plated	Silicon with non-wetting coating
Nozzle spacing (microns)	254	254	254	254	508	508	508
Nozzle diameter (microns)	9	21	9	21	19	35	42
Calibrated drop size (picoliters)	1	10	1	10	8	30	35
Adjustment drop size range (picoliters)	Fixed	Fixed	Fixed	Fixed	8 - 10	25 - 30	30 - 40
Maximum operating frequency (kHz)	15	20	15	20	10	40	15

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DMP-5000 Cartridges & Printheads

Printheads/Operating Parameters	Individual tunable nozzles	Nozzle plate	Nozzle diameter (microns)	Calibrated drop size (picoliters)	Adjustment drop size range (picoliters)	Maximum operating frequency (kHz)
 DMC-11601	✓	Silicon with non-wetting coating	9	1	± 20%	15
 DMC-11610	✓	Silicon with non-wetting coating	21	10	± 20%	60
 D-128/1 DPN	✓	Silicon with non-wetting coating	9	1	± 20%	15
 D-128/10 DPN	✓	Silicon with non-wetting coating	21	10	± 20%	20
 SX3	✓	Silicon with non-wetting coating	19	8	8 - 10	10
 SE3	✓	Silicon with non-wetting coating	42	35	30 - 40	15
 SE-DPN	✓	Electroformed nickel-gold	35	30	25 - 30	40
 QS-256/10 AAA	✓	Silicon	22	10	10 - 30	50
 QS-256/30 AAA	✓	Silicon	31	30	30 - 80	33
 QS-256/80 AAA	✓	Silicon	43	80	80 - 200	20
 QE-256/30 AAA	✓	Electroformed nickel-gold	31	30	30 - 80	33
 QE-256/80 AAA	✓	Electroformed nickel-gold	43	80	80 - 200	20








Materials Printer DMP-5000

Datasheet

System Description

- XYZ stage, inkjet deposition system
- User-fillable piezoelectric inkjet print cartridges and printheads
- Built-in drop watcher camera system for jetting analysis
- Fiducial camera for substrate alignment and measurement
- Variable printing resolution
- PC-controlled with graphical user interface (GUI) application software
- Wide range of fluid compatibilities
- Heated vacuum platen
- Printhead maintenance and cleaning station
- Includes PC, monitor and software

Mechanical System

- Printable parameters
  - Printable area: 500 x 500 mm
  - Substrate up to 30 mm thickness
  - System positional accuracy: ± 5 µm
  - Repeatability: ± 1 µm
- Substrate holder
  - Vacuum platen
  - Temperature adjustable; ambient to 60°C
- System footprint: 1.9 x 1.8 x 2.0 m
- Weight approximately 2100 kg
- Power 200-240 VAC 50/60 Hz, 1.5 kW maximum
- Operating range 15-30°C at 5-80% RH non-condensing
- Operates at altitudes up to 2000 m
- Safety and EMC compliant: CE/FCC/UL/RoHS/WEEE

Fiducial Camera

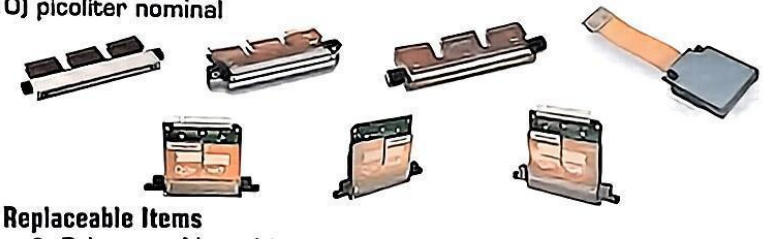
- Allows substrate alignment using reference marks
- Allows print origin or reference point positioning to match substrate placement
- Provides feature location and measurement
- Provides post-print pattern inspection and image capture

Cartridges

- Piezoelectric jetting device with integrated reservoir and heater
- 1.5 ml fluid capacity
- Broad materials compatibility
- Number of Nozzles: 16 nozzles, 254 µm spacing, single row
- Drop Volume: 1 (DMC-11601) and 10 (DMC-11610) picoliter nominal

Printheads

- SX3, SE3 and SE-DPN
- D-128/1 DPN and D-128/10 DPN
- QS-256/10 AAA, QS-256/30 AAA, QS-256/80 AAA QE-256/30 AAA, QE-256/80 AAA

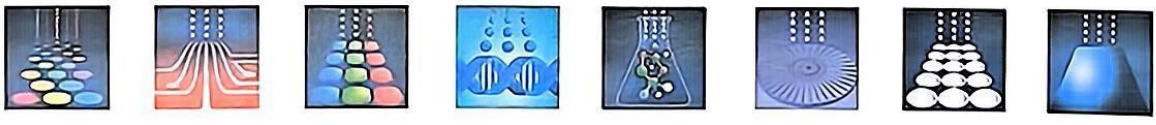


Control PC and Application Software

- Pre-loaded patterned templates
- Pattern preview
- Editors: Waveform and cleaning cycle
- Bitmap files accepted
- DXF, Gerber, GDSII and OASIS file conversion to Bitmap software

Replaceable Items

- Print cartridge with one-time user-fillable reservoir
- SX3, SE3 and SE-DPN
- D-128/1 DPN and D-128/10 DPN
- QS-256/10 AAA, QS-256/30 AAA, QS-256/80 AAA QE-256/30 AAA, QE-256/80 AAA
- Nozzle blotting material for cleaning station



Dimatix Materials Printing System

BUILDING PRODUCTS
ONE DROP AT A TIME

The world's first MEMS-based piezo cartridge printer enabling low-cost high-precision jetting of complex organic, inorganic and metallic fluids

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Dimatix Materials Printing System

Dimatix Materials Printer

- Laboratory benchtop digital inkjet printing system
- MEMS-based interchangeable cartridge
- Precision XYZ motion control

Features

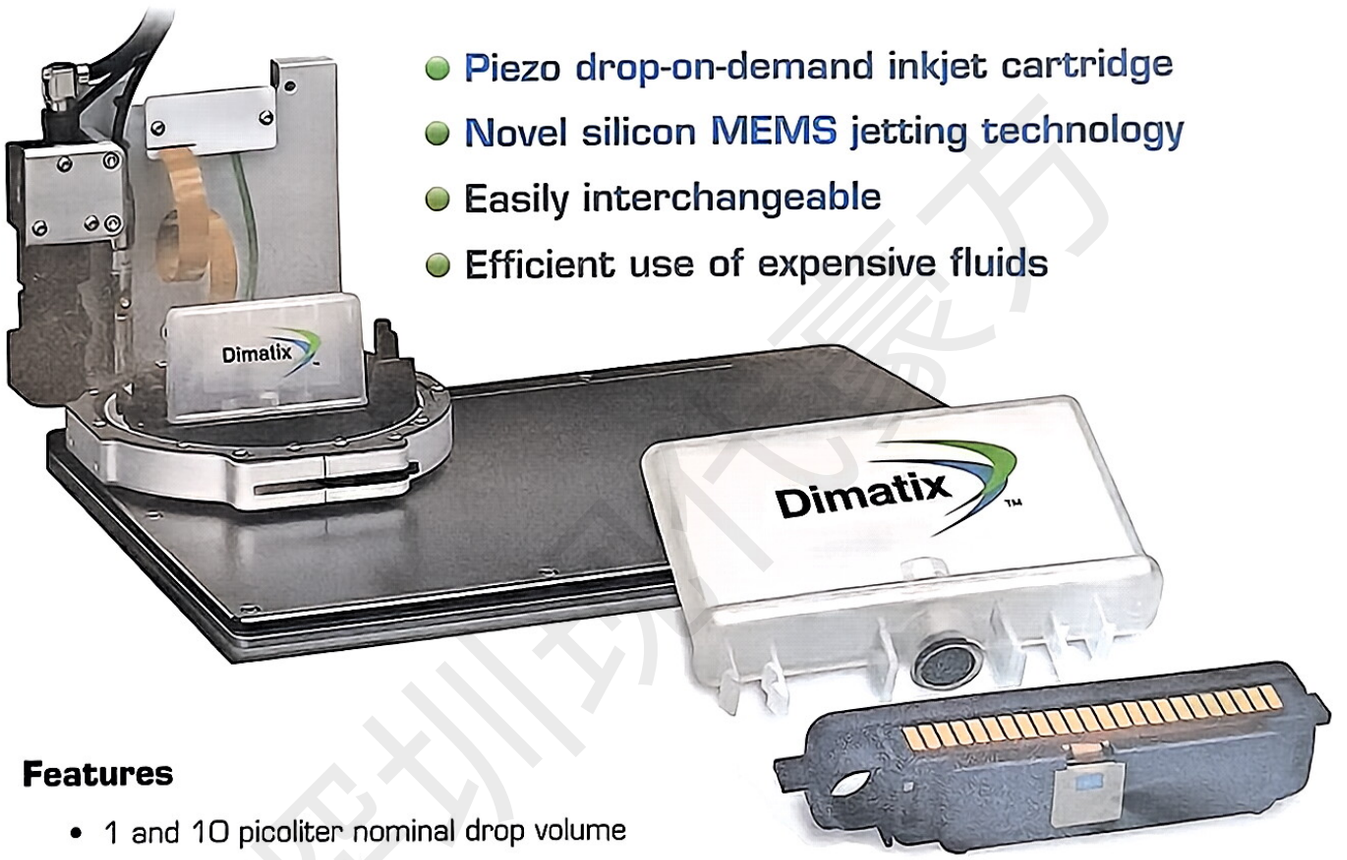
- Printing area approximately 200 mm x 300 mm (8 in x 12 in) with an adjustable Z height
- Print any pattern at 5 - 254 µm dot pitch (100 - 5080 dpi)
- Wide fluid compatibility/capability
- Substrates up to 25 mm thick
- Repeatability ± 25 µm (± 0.001 in)
- Heated vacuum table for rigid or flexible substrates
- Pre-loaded patterns, cleaning cycles and jetting waveforms or create your own
- Fiducial camera for alignment and inspection
- System footprint 673 mm x 584 mm x 419 mm (26 in x 23 in x 16 in)
- Weight approximately 43 kg (95 lbs)
- Power 100-120/200-240 VAC 50/60 Hz 375 W maximum
- Operating temperature range 15-40° C
- PC-user interface with monitor
- Software - driver and printer applications including software pattern generator and Bitmap file import
- DXF, Gerber, GDSII and OASIS file conversion to Bitmap

Benefits

- Self contained ready-to-go system
- Non-contact fluid deposition
- User-fillable up to 1.5 ml, interchangeable, disposable cartridge
- User-variable drop size and drop density

BUILDING PRODUCTS
ONE DROP AT A TIME

Dimatix Materials Cartridge



- Piezo drop-on-demand inkjet cartridge
- Novel silicon MEMS jetting technology
- Easily interchangeable
- Efficient use of expensive fluids

Features

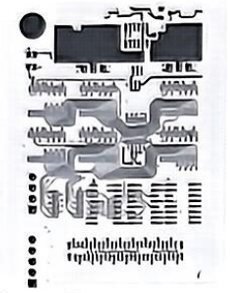
- 1 and 10 picoliter nominal drop volume
- Easy snap-in cartridge
- 1.5 ml capacity syringe fillable cartridge
- 16 nozzles, 254 µm spacing
- Tunable jetting parameters for many solvents, aqueous solutions, UV curing fluids, etc.
- Fluid temperature control up to 70° C for controlled jetting of viscous fluids

Benefits

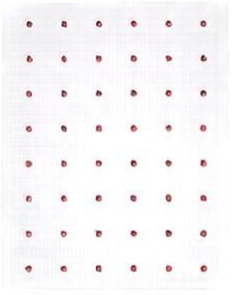
- Easy to use
- Fill with your own fluids
- Minimum material waste
- Excellent fluid compatibility

BUILDING PRODUCTS
ONE DROP AT A TIME

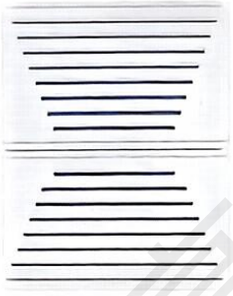
Printfile Examples:



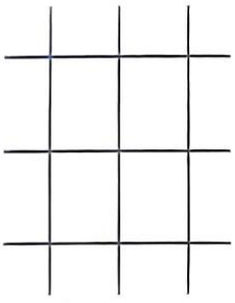
Your Pattern
via built-in pattern generator or Bitmap file import (DXF, Gerber, GDSII and OASIS file conversion to Bitmap)



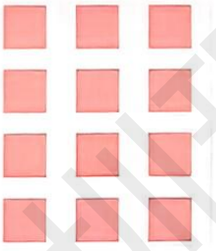
Dots



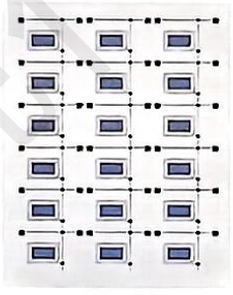
Lines



Hatch



Solid Files



Antennae