

SPECIFICATIONS.

Fluent® Automation Workstation.

SYSTEM OVERVIEW.

Instruments	Fluent 480	Fluent 780	Fluent 1080
No. of robotic arms	1–2	1–3[1]	1–3[1]

[1] Dual Flexible Channel Arms possible.

ROBOTIC ARMS AND OPTIONS.

Flexible Channel Arm™ (FCA)	Eight pipetting channels with independent Z movement and automatic Y tip spacing from 9-38 mm. Choice of liquid displacement or air displacement pipetting systems.	
Disposable tip (DiTi) sizes	10, 50, 200, 1,000, 5,000 µl – with or without filters; 10 and 350 µl – nested without filters	
Tip Ejection System	Ejection of disposable tips in a contained environment to prevent aerosols. Also used for tip re–racking	
Fixed tips	Standard, low-volume 384-well, Te-PS and piercing tips (liquid displacement pipetting system only)	
Rapid Wash	Ultra-fast delivery of wash solution by diaphragm pump (liquid displacement pipetting system only)	
Flexible Channel Arm Gripper	Gripper tool picked up by the disposable tip channels for certain plate moves within the work table; maximum lift 0.4 kg (0.88 lb)	
Multiple Channel Arm™ (MCA)	MCA 96: • Volume range of 1 to 1,000 µl free dispense • Disposable tips with individual liquid detection • Optional plate gripper with Finger Exchange System	MCA 384/ 96: • Automatic exchange between 384- and 96-tip formats • Volume range of 250 nl to 500 µl • Disposable- or fixed-tip adapters
Disposable tips (DiTi) sizes	15, 50, 125 µl in 384-well format; 50, 100, 150, 200, 500 µl in 96-well format, with and without filters	
Robotic Gripper Arm™ (RGA)	Standard or long Z axes; regular gripper head or automatic Finger Exchange System gripper head, both with a choice of gripper fingers: eccentric, long-eccentric, centric, tube; barcode reader option	
Positive identification	Fluent ID™ high capacity barcode scanning of tubes; plate scanning	

LIQUID HANDLING PERFORMANCE.

Range	Less than 1 µl to over 5 ml depending on configuration
Performance parameters	Coefficient of variation (CV); Accuracy (ACC) measured at 20-25 °C/68-77 °F, relative humidity 30-60 % (non-condensing). Altitude ca. 500 m above sea level. Measurements obtained on standard Fluent instruments maintained according to system care instructions. Minimum of 96 measurements. The specified CV and average accuracy are the maximum values obtained overall and per channel.

FLEXIBLE CHANNEL ARM – LIQUID DISPLACEMENT PIPETTING[2]

Gravimetric measurement using deionized water in single pipetting mode under optimized conditions[3]; free dispense using 1,250 µl syringe

TIP TYPE	**DiTi 10**		**DiTi 50**		**DiTi 200**		**DiTi 350**		**DiTi 1,000**	
Volume (µl)	CV	ACC	CV	ACC	CV	ACC	CV	ACC	CV	ACC
0.5	≤ 8 %	± 10 %	-	-	-	-	-	-	-	-
1	≤ 4 %	± 5 %	≤ 6 %	± 8 %	-	-	-	-	-	-
10	≤ 1 %	± 2 %	≤ 1 %	± 2 %	≤ 1.8 %	± 2.5 %	≤ 2 %	± 2 %	≤ 2 %	± 3 %
100	-	-	-	-	-	-	≤ 0.3 %	± 1 %		
200	-	-	-	-	≤ 0.2 %	± 0.75 %	-	-	-	-
1,000	-	-	-	-	-	-	-	-	≤ 0.3 %	± 0.5 %

TECAN.

TIP TYPE/ SYRINGE	STANDARD FIXED TIP 1,250 µl SYRINGE		LOW-VOL FIXED TIP 250 µl SYRINGE		Te-PS TIP 250 µl SYRINGE	
Volume (µl)	CV	ACC	CV	ACC	CV	ACC
0.2[4]	-	-	-	-	≤ 10 %	± 15 %
1	-	-	≤ 3.5 %	± 8 %	≤ 4 %	± 6 %
10	≤ 1.75 %	± 2.5 %	≤ 1 %	± 2 %	≤ 0.8 %	± 1 %
1,000	≤ 0.3 %	± 0.75 %	-	-	-	-

FLEXIBLE CHANNEL ARM – AIR DISPLACEMENT PIPETTING[2]
Gravimetric measurement using deionized water in single pipetting mode under optimized conditions[3]; free dispense

TIP TYPE	DiTi 10		DiTi 50		DiTi 200		DiTi 350		DiTi 1,000	
Volume (µl)	CV	ACC	CV	ACC	CV	ACC	CV	ACC	CV	ACC
0.5	≤ 6 %	± 9.5 %	-	-	-	-	-	-	-	-
1	-	-	≤ 4 %	± 8 %	-	-	-	-	-	-
10	≤ 1 %	± 2 %	≤ 0.5 %	± 1 %	≤ 2 %	± 2 %	≤ 2 %	± 2 %	≤ 1.2 %	± 2 %
100	-	-	-	-	-	-	-	-	≤ 0.3 %	± 0.5 %
200	-	-	-	-	≤ 0.2 %	0.5 %	0.2 %	0.5 %	-	-

PERFORMANCE: MULTIPLE CHANNEL ARMS[2] **(MCA)**
Colorimetric measurement results in single pipetting mode under optimized conditions; deionized water and free dispense unless otherwise indicated.

MCA HEAD	MCA 384		MCA 384		MCA 384		MCA 384		MCA 384		MCA 96		MCA 96	
TIP TYPE	**384 DiTi 15 µl**		**384 DiTi 50 µl**		**384 DiTi 125 µl**		**96 DiTi 500 µl**		**125 µl FIXED WASHABLE TIPS**		**96 DiTi 10 µl**		**96 DiTi 1,000 µl**	
Volume (µl)	CV	ACC	CV	ACC	CV	ACC	CV	ACC	CV	ACC	CV	ACC	CV	ACC
0.25 DMSO[4]	5%	± 10%	-	-	-	-	-	-	-	-	-	-	-	-
1 water[5]	≤ 3%	± 5%	≤ 4%	± 5%	-	-	-	-	-	-	≤ 4%	± 5%	-	-
2 water[5]	-	-	-	-	-	-	-	-	-	-	≤ 2%	± 5%	-	-
10 water[5]	≤ 2%	± 5%	≤ 1%	± 5%	≤ 1%[6]	± 5%[6]	-	-	≤ 4%	± 5%	≤ 1%	± 2%	-	-
20 water	-	-	-	-	-	-	-	-	-	-	-	-	≤ 1%	± 4%
100 water	-	-	-	-	≤ 1%	± 5%	-	-	≤ 2%	± 3%	-	-	≤ 1%	± 4%
500 water	-	-	-	-	-	-	≤ 2%	± 5%	-	-	-	-	≤ 1%	± 1%
1000 water	-	-	-	-	-	-	-	-	-	-	-	-	≤ 1%	± 1%

[2)] Manufacturer's field CV guarantee: Liquid FCA standard volume range 10 µl ≤ 3 %, 100 µl ≤ 0.5 % / Liquid FCA low volume range 1 µl ≤ 8 %, 10 µl ≤ 1.5 % / Air FCA 1 µl ≤ 8 %, 10 µl ≤ 2 % / MCA 96 & MCA 384 1 µl ≤ 4 % [3)] Optimization may include single channel calibration for volumes ≤ 5 µl [4)] Contact dispense, Orange G [5)] Using contact dispense for MCA 384 head [6)] Also achieved with DiTi 200 (96-well format)

PROCESS CONTROL FEATURES.

Liquid level detection	FCA-down to 2 µl aqueous solution or 3 µl deionized water or 10 µl ethanol in a 96-well skirted PCR microplate with DiTi 10. Determination of presence of sufficient liquid; liquid arrival check
Real-time quality control	FCA-aspiration supervision; tip diving prevention; tip occlusion detection. Detection of disposable tip pickup and ejection
Positive identification	Barcode scanning for plates and tubes
Active Stop and Resume	User-activated stop via door sensors on safety screen and resume on request
Door locks	Optional door locks protect process from free access
DeckCheck™	Camera-based system to assess the actual deck layout at run-time, compare to the expected deck layout and highlight any discrepancies.

SYSTEM CONFIGURATION AND DIMENSIONS.

Regulatory compliance	CE (2006/42/EU, 2014/30/EU and 2011/65/EU) and CSA marked; laser certification: IEC 60825-1:2014		
Software options	Fluent Gx Assurance Software for laboratories in clinical diagnostics, GMP and other regulated environments. Introspect™ Software dashboards for tracking usage of liquid handling instruments and consumables.		
Operating system	Windows 10 Enterprise LTSC 2019 (version 1809)		
Computer requirements	Intel® Core i7 processor or equivalent; minimum 32 GB RAM; solid state hard drive with 512 GB free space; NVIDIA GPU with minimum 5 GB RAM and CUDA node support; 750W power supply; two GigE Network cards with Intel® chipsets (one for external network, one for DeckCheck); 1 USB port for instrument; monitor with vertical resolution of 1024 pixels. Internet connection for remote support (optional), printer and additional USB or serial interfaces as required by instrument options.		
	Fluent 480	Fluent 780	Fluent 1080
Height (standard Z)	1,236 mm/48.6″	1,236 mm/48.6″	1,236 mm/48.6″
Height (long Z)	2,301 mm/90.6″	2,301 mm/90.6″	2,301 mm/90.6″
Width	1,150 mm/45.28″	1,650 mm/64.96″	2,150 mm/84.65″
Depth	785 mm/30.9″	785 mm/30.9″	785 mm/30.9″
Plate/tip box capacity (before stacking or nesting)	30	48	72
DeckCheck cameras	1	3	3
Precision of arm movement	± 0.1 mm on X,Y,Z axes		
Robotic Gripper Arm ranges	Gripper range: standard- and long-eccentric fingers and centric fingers: 74–135 mm (2.91 -5.35″); tube fingers: 8–60 mm (0.32 -2.36″) Vertical range: standard Z 335 mm (13.19″); long Z 645 mm (25.39″) Vertical access below worktable (standard Z): eccentric fingers 80 mm; centric fingers 137 mm Vertical access below worktable (long Z): eccentric fingers 385 mm ; centric fingers 438 mm Offset eccentric to centric fingers: horizontal 53mm, vertical 152 mm Max transportable weight (eccentric fingers) 0.45kg (1.00 lb)		
Supported barcodes types:	Code 128 (recommended), Code 39 standard, Codabar, Interleaved 2 of 5		
	Tube Barcodes	Plate Barcodes	
Density	≥ 6.6 mil	≥ 3 mil	
Height	≥ 8 mm	≥ 5 mm	
Length (incl. QZ)	≤ 80 mm	≤ 80 mm	
Number of digits	≤ 64	≤ 74	
Quiet zone (QZ)	≥ 10 x narrow bar width or 2.5 mm, whichever is greater		
Power requirements	Voltage: 100–240 V AC, frequency: 50/60 Hz		
Operating conditions	Temp. 15–32 °C/59–90 °F, relative humidity 30–80 % (non-condensing)		
Emissions	Instrument noise level < 60 dBA		

Fluent NAE (China only) is a Class 2 Laser Product when equipped with the Fluent ID option.



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