

PUMA SMD Pick & Place System

Version 1.1, November 2017

Specifications

	PUMA ¹		PUMA ²		PUMA ⁴					
	Stand Alone	In Line	Stand Alone	In Line	Stand Alone	In Line				
Productivity ⁽¹⁾	Optimum placement speed Chip		6'700 cph		11'200 cph		18'100 cph			
	Speed (IPC 9850)		Chip 5'800 cph QFP 5'200 cph	Chip 10'100 cph QFP 5'200 cph	Chip 15'300 cph QFP 7'200 cph					
	Speed (IPC 9850A)		Chip 5'600 cph QFP 4'200 cph	Chip 9'600 cph QFP 4'200 cph	Chip 14'200 cph QFP 5'300 cph					
	Dispensing speed		Jet valve up to 145'000 dots/h							
	Job changeover time		< 1 min (loading job, adjust conveyor/table, restart production)							
Feeder ⁽²⁾	Feeder system		hyQ (intelligent single feeder) CLM (intelligent cassette feeder)							
	Feeder capacity (8mm tape)		260	140	260	140	280	160		
Components	Component size range		0201 – 33 x 33 mm incl. leads → Standard 0201 – 80 x 33 mm incl. leads → With optional MFOV ^(*) software license Up to 80 x 80 mm incl. leads → With opt. MFOV license and Vision Box ^(**) 01005 (0.4 x 0.2mm) → With opt. Nozzle 0 and hyQ feeder type ^(*) Multi Field of View ^(**) Requires space of up to 10 Feeder lanes, front side mounting only							
	Mass moment of inertia		60 g x cm ²							
	Min. lead pitch		0.3 mm (12mil)							
	Min. ball diameter / pitch		0.2 mm							
	Min. component height		> 0.0 mm							
	Max. component height		Standard: 18 mm / On request 25 mm							
	Process height		± 18 mm (0.71") from zero height							
	Accuracy	Linear encoder resolution (x,y)		0.2 µm						
		Rotation axis resolution		0.007°						
		Overall placement accuracy XY Chips		± 50 µm (3σ) ³⁾						
Overall placement accuracy XY QFP 64/100		± 45 µm (3σ) ³⁾								
PCB	Min. PCB dimensions		20 x 20 mm (0.8 x 0.8")	50 x 50mm (2 x 2")	20 x 20 mm (0.8 x 0.8")	50 x 50mm (2 x 2")	20 x 20 mm (0.8 x 0.8")	50 x 50mm (2 x 2")		
	Max. PCB dimensions		560 x 610 mm (22 x 24")							
	PCB thickness		0.5 – 3.5 mm (0.02 – 0.13")	0.5 – 5.0 mm (0.02 - 0.2")	0.5 – 3.5 mm (0.02 – 0.13")	0.5 – 5.0 mm (0.02 - 0.2")	0.5 – 3.5 mm (0.02 – 0.13")	0.5 – 5.0 mm (0.02 - 0.2")		
	PCB edge clearance		3.0 – 5.0 mm (0.11 – 0.2") (varies with PCB thickness)	T: 3.0 mm(0.11") B: 5.0 mm (0.2")	3.0 – 5.0 mm (0.11 – 0.2") (varies with PCB thickness)	T: 3.0 mm(0.11") B: 5.0 mm (0.2")	3.0 – 5.0 mm (0.11 – 0.2") (varies with PCB thickness)	T: 3.0 mm(0.11") B: 5.0 mm (0.2")		
	Max. Board weight		-	4 kg (8.8 lb)	-	4 kg (8.8 lb)	-	4 kg (8.8 lb)		
	Conveyor height		-	SMEMA 940 – 965 mm	-	SMEMA 940 – 965 mm	-	SMEMA 940 – 965 mm		
	Clearance below PCB		40 mm (1.57")							

Configuration

		PUMA ¹	PUMA ²	PUMA ⁴
Machine base	1x spindle Pick & Place head and optional up to 2x Dispensing axis	●		
	2x spindles Pick & Place head and optional up to 2x Dispensing axis		●	
	4x spindles Pick & Place head and optional 1x Dispensing axis			●
	Dual Bottom Camera System			●
	Stand Alone type (PCB table, magnetic PCB holder, support pins)	○	○	○
	In Line type (Conveyor 3 stage, support pins, manual width adjust.)	○	○	○
	Dispensing preparation kit (Dot plate, purge and z-height calibration station)	○	○	○
	Interior lighting LED	●	●	●
	Signal tower (3 color)	●	●	●
	Clean room compatible ISO7 (class 10'000)	●	●	●
PCB Handling	SMEMA interface	●	●	●
	Inline systems: Conveyor direction L/R, R/L, batch mode R/R, L/L	●	●	●
	Inline systems: Automatic conveyor width adjustment	○	○	○
	Inline systems: Conveyor extensions	○	○	○
Control and software	Inline systems: PCB inspection station on conveyor	○	○	○
	ePlace P&P/Disp. software (En, De, Ru, Pl, Zh, Es, Cs, Ja)	●	●	●
	Machine PC with Windows 10 OS and touch screen	●	●	●
Alignment systems	Technical support software	●	●	●
	Cognex SMD4 PatMax vision license	●	●	●
	Multi Field of View license (MFOV)	○	○	○
	Vision Box for 80x80mm components	○	○	○
Dispensing valves (Cartridge sizes)	Laser height measurement	○	○	○
	Jet valve (5, 10, 30 cm ²)	○	○	○
	Pneumatic-Jet valve (5, 10 cm ²)	○	○	○
	Time/pressure valve (5, 10, 30 cm ²)	○	○	○
	Archimedean screw valve (5, 10, 30 cm ²)	○	○	○
	Volume Dispenser valve (10, 30, 50 cm ²)	○	○	○
Various	Cartridge level control	○	○	○
	Dispenser Needle Heating	○	○	○
	Standard User Level Management (software)	●	●	●
	Bad mark sensing with vision (software)	●	●	●
	Universal CAD conversion (software)	●	●	●
	Automatic Placement constraints (software)	●	●	●
	Basic calibration set P&P	●	●	●
	Maintenance kit	●	●	●
	Key Performance Indicator (KPI) (software)	○	○	○
	Process Improvement Tool P&P (PIT1) (software)	○	○	○
	Barcode Reading over Top Camera (software)	○	○	○
	Disp. Process Control Adjustment & Stabilization (PCAS) (software)	○	○	○
	Second touch screen for machine backside	○	○	○
	Keyboard and mouse holder underneath monitor	○	○	○
	CVU (Electrical Component Verification)	○	○	○
Tray Slider (space for 2 additional JEDEC trays)	○	○	○	
Tray Changer (space for up to 18 JEDEC trays)	○	○	○	

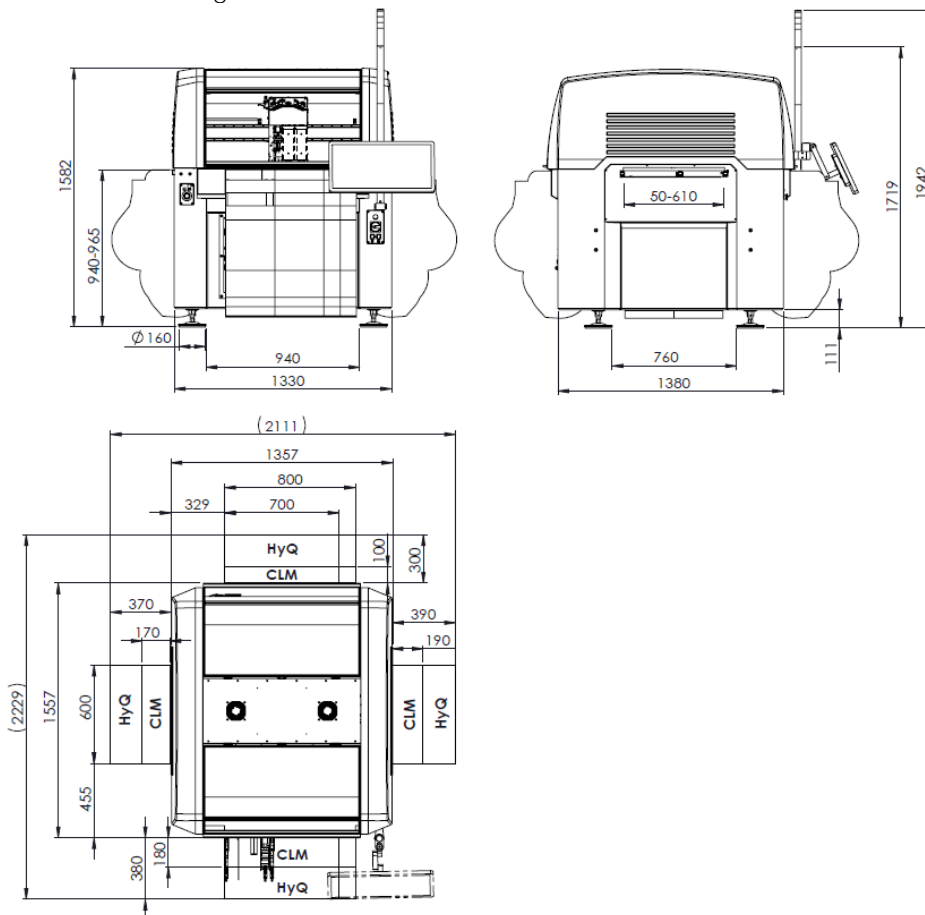
● standard feature ○ optional feature



Machine Dimensions, Packaging and Supplies

Machine dimensions	Machine footprint without hood (L x W)	1380 x 1330 mm (54 x 52")
	Machine footprint with hood (L x W)	1557 x 1357 (61 x 53")
	Operating floor space (L x W)	2600 x 2500 mm (102 x 98")
	Machine height (without / with light tower)	1582 mm (62") / 1942 mm (76")
	Approx. machine weight (without / with full feeder)	1670 kg (3680 lb) / 1920 kg (4233 lb)
	Approx. floor loading (with full feeder)	1050 kg/m ² (1.5 lb/sq.in)
Supplies	Packaging weight	80 kg (176 lb)
Supplies	Electrical	3 x 400 VAC/50Hz (or 3 x 208VAC/60Hz with optional transformer)
	Power consumption (peak)	3 kW
	Entry Fuse	16A / 400V
	Min. Wire cross section	1.5 mm ²
	Electrical connector	400V, CEE-16, 16A, 400V, 5P 3L+N+PE 6h, red color
	Compressed air	6 - 7 bar (87 - 102 psi), clean and filtered, dry, ISO 8573-1: class 3 (max. part diameter 5µm, dew point < -20°C, oil ≤ 1 mg/m ³)
Environment	Air consumption	max. 60 NI/min (2.1 cfm)
	Air connection	Push-in connector for outer hose Ø8 mm
	Performance temperature range / humidity	22 - 24°C / 50 - 70% RH
	Operational temperature range / humidity	15 - 30°C / 30 - 70% RH (non condensing)
	Noise level	max. 75 dB (A)

Dimension Drawings



- 1) Values reached using hyQ feeder type only
- 2) Some feeder type «CSM» are also compatible. See System Description for more details
- 3) Used speed mode "Accurate", up to 4 different speed modes available. Only applicable at zero height and within performance temperature / humidity range

For more information ask for the PUMA System Description and Product Notes. We reserve the right to make changes without notice

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