

FOX SMD Pick & Place System

Version 3.4 / June 2021

Specifications

		FOX ¹		FOX ²		FOX ⁴		
		Stand Alone	In Line	Stand Alone	In Line	Stand Alone	In Line	
Productivity ⁽¹⁾	Optimum placement speed Chip	7'000 cph		12'000 cph		18'800 cph		
	Speed (IPC 9850)	Chip 6'100 cph QFP 5'600 cph		Chip 10'800 cph QFP 5'600 cph		Chip 16'100 cph QFP 7'600 cph		
	Speed (IPC 9850A)	Chip 5'900 cph QFP 4'500 cph		Chip 10'300 cph QFP 4'500 cph		Chip 15'000 cph QFP 5'600 cph		
	Dispensing speed up to	Piezo Jet valve up to 150'000 dots/h						
	Job changeover time	< 1 min (loading job, adjust conveyor/table, restart production)						
Feeder ⁽²⁾	Feeder system	EVO and hyQ (intelligent single feeder) CLM (intelligent cassette feeder) ⁽¹⁾ <i>⁽¹⁾ Restrictions on FOX⁴ with CLM racks on front, see System Description</i>						
	Feeder capacity (8mm tape)	180	120	180	120	180 / 200 ⁽¹⁾ 120 / 140 ⁽¹⁾ <i>⁽¹⁾ with optional Extended Rack, pick position cannot be taught with top camera</i>		
Components	Component size range	0201 (imp.) – 33 x 33 mm incl. leads → Standard 0201 (imp.) – 80 x 33 mm incl. leads → With optional MFOV ⁽¹⁾ software license Up to 80 x 80 mm incl. leads → With opt. MFOV license and Vision Box ⁽¹⁾ 01005 (imp.) → With opt. Nozzle 0 and EVO feeder type ⁽¹⁾ Multi Field of View ⁽¹⁾ Requires space up to 18 hyQ/EVO - 30 CLM Feeder lanes, front side mounting only (see System Description)						
	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 other heights						
	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 QFP100		± 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	406 x 305 mm (16 x 12")						
	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") <i>(varies with PCB thickness)</i>	T: 3.0 mm (0.11") B: 5.0 mm (0.2")	3.0-5.0 mm (0.11 – 0.2") <i>(varies with PCB thickness)</i>	T: 3.0 mm (0.11") B: 5.0 mm (0.2")	3.0-5.0 mm (0.11 – 0.2") <i>(varies with PCB thickness)</i>	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")	27 mm (1.1")	40 mm (1.57")	27 mm (1.1")	40 mm (1.57")	27 mm (1.1")	



Configuration

		FOX ¹	FOX ²	FOX ⁴
Machine base	Pick & Place head with 1 spindle, optional 1x dispensing axis	●		
	Pick & Place head with 2 spindles, optional 1x dispensing axis		●	
	Pick & Place head with 4 spindles			●
	Dual Bottom Camera System			●
	Stand Alone type (PCB table, magnetic PCB holder, support pins)	○	○	○
	In Line type (Conveyor 3 stage, support pins, manual width adjustment)	○	○	○
	Dispensing preparation kit (Dot plate, purge and z-height calibration station)	○	○	
	Interior lighting LED	●	●	●
	Signal tower (3 color)	●	●	●
PCB Handling	IPC-HERMES-9852, SMEMA interface	●	●	●
	Inline systems: Conveyor direction L/R, R/L, batch mode R/R, L/L	●	●	●
	Inline systems: Automatical conveyor width adjustment	○	○	○
	Inline systems: Conveyor extensions	○	○	○
	Inline systems: PCB inspection station on conveyor	○	○	○
Control and software	ePlace P&P software (En, De, Fr, Ru, Pl, Zh, Es, Cs, Ja)	●	●	●
	Machine PC with Windows 10 OS and 21.5" touch screen	●	●	●
	Technical support software	●	●	●
Alignment systems	Cognex SMD4 PatMax vision license (fiducials, chip, QFP, asymm. BGA and leads)	●	●	●
	Red and Blue color illumination for top camera	●	●	●
	Multi Field of View license (MFOV)	○	○	○
	Vision Box for 80x80mm components	○	○	○
	Laser height measurement	○	○	○
Dispensing valves (Cartridge sizes)	Piezo Jet valve (5, 10, 30 cm ³)	○	○	
	Shockwave Jet valve (5, 10, 30 cm ³)	○	○	
	Time/pressure valve (5, 10, 30 cm ³)	○	○	
	Archimedean screw valve (5, 10, 30 cm ³)	○	○	
	Volume Dispenser valve (10, 30, 55 cm ³)	○	○	
	Cartridge level control	○	○	
	Dispenser Needle Heating	○	○	
Various (extract)	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	●	●	●
	Process Improvement Tool P&P (PIT1 – 3 pictures) (software)	●	●	●
	Key Performance Indicator (KPI) (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	○	○	○
	Clean room option ISO7 (class 10'000)	○	○	○
	CVU (Component Verification Unit)	○	○	○
	Tray Slider (space for two additional JEDEC trays) Reduces max. PCB dimension in Y from 305 to 260 mm <i>(¹) Picking-area restrictions, see System Description</i>	○ ⁽¹⁾	○	○
	Tray Changer (space for up to 18 JEDEC trays)	○	○	○
Extended Feeder Rack (additional feeder lanes)			○	

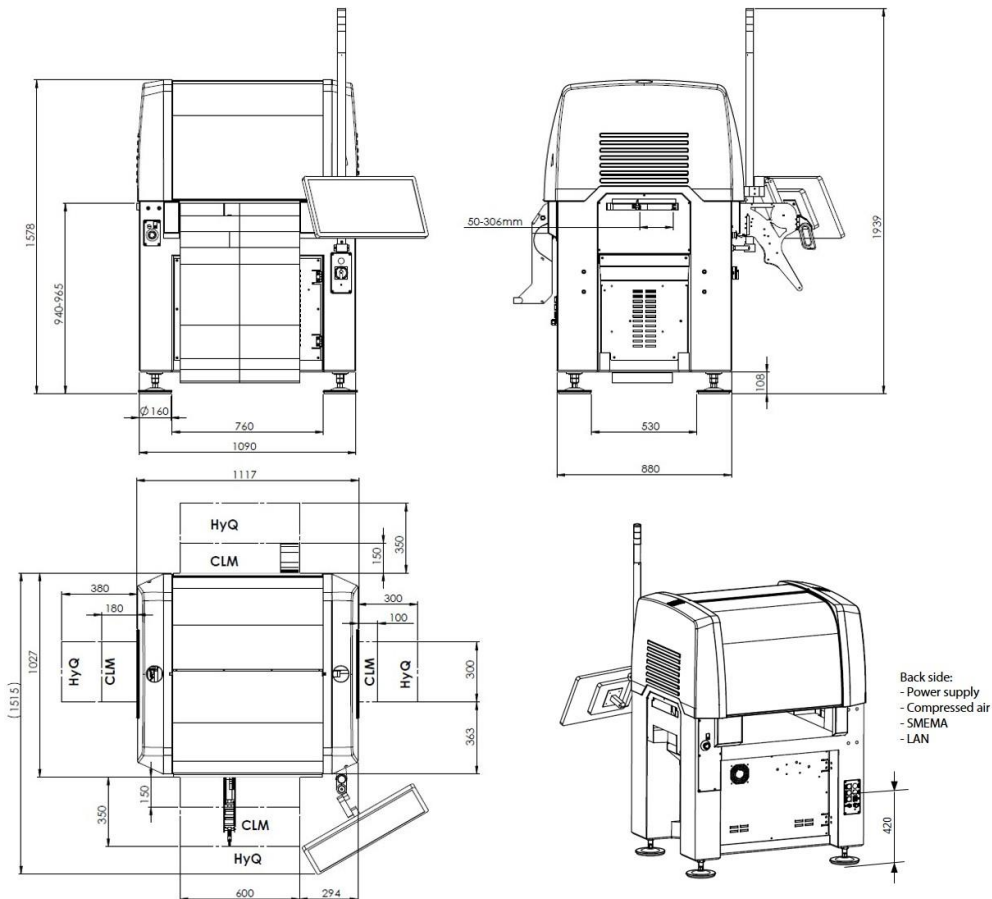
● standard feature ○ optional feature



Machine Dimensions, Packaging and Supplies

Machine dimensions	Machine footprint without hood (L x W)	880 x 1090 mm (35 x 43")
	Machine footprint with hood (L x W)	1027 x 1117 mm (40 x 44")
	Operating floor space (L x W)	1865 x 1797 mm (73 x 71")
	Machine height (without / with light tower)	1578 mm (62") / 1939 mm (76")
	Approx. machine weight (without / with feeder)	875 kg (1929 lb) / 1020 kg (2249 lb)
	Approx. floor loading (without / with feeder)	912 kg/m ² (1.3 lb/sq.in) / 1065 kg/m ² (1.51 lb/sq.in)
	Packaging weight	70 kg (154 lb)
Supplies	Electrical	230V / 50Hz or 120V / 60Hz (with optional transformer)
	Power consumption (average / peak)	0.75 kW / 1.7 kW
	Entry Fuse	13A / 230V
	Min. Wire cross section	1.5 mm ²
	Electrical connector	230V, CEE-16, 16A, 230V, 3P L+N+PE 6h, blue color 120V, CEE-16, 16A, 120V, 3P L+N+PE 4h, yellow 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)
	Air consumption	max. 60 NI/min (2.1 cfm)
Environment	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 EVO and hyQ feeder type only.
- 2) Some feeder type «CSM» are also compatible. See System Description for possibilities and details
- 3) **Used speed mode "Very Accurate"**, up to 3 different speed modes available. Only applicable at zero height and within performance temperature / humidity range.

For more information ask for the FOX System Description and Product Notes.

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