TARANTULA Automatic Dispensing System

Version 1.8 / July 2025

Specifications

		TARANTULA (Inline)	
Process	Jet speed solder paste up to Shockwave valve	Optimum [1]	780'000 dots/h
		Dot matrix [2]	480'000 dots/h
		Application average [3]	310'000 dots/h
	Jet speed glue up to Piezo valve	Optimum [4]	2'000'000 dots/h
		Dot matrix Jet-on-the-Fly [5]	780'000 dots/h
		Dot matrix Stop 'n Jet [5]	177'000 dots/h
	Dispensing speed up to [5]	Time/pressure valve	38'000 dots/h
		Archimedean screw valve	30'000 dots/h
		Volume dispenser valve	26'000 dots/h
	Dispensing mode	Dot, line, 3D, curve, interpolated curves on multiple layers [6]	
	Programmable Z-stroke	80 mm (3.35")	
	Process height	± 18 mm (0.71") from zero height [7]	
	Number of processes	Up to 3x valves simultaneously	
Accuracy	Linear encoder resolution XY	0.2 µm	
	Dispensing accuracy XY dots	± 40 µm (3σ) [8]	
	Positioning accuracy Z axis	± 20 µm (3σ)	
PCB	Min. PCB dimensions	50 x 50mm (2 x 2")	
	Max. PCB dimensions	560 x 610 mm (22 x 24") standard 1830 x 610 mm (72 x 24") with longboard option	
	PCB thickness	0.5 - 5.0 mm (0.02 - 0.2")	
	PCB edge clearance	Top side 3.0 mm (0.11") Bottom side 5.0 mm (0.2")	
	Max. board weight	4 kg (8.8 lb)	
	Conveyor height	SMEMA 940 – 965 mm	
	Clearance below PCB	27 mm (1.1") [7]	

Machine Dimensions, Packaging and Supplies

Machine dimensions	Footprint without hood (L x W)	1380 x 1330 mm (54 x 52")	
	Footprint with hood (L x W)	1557 x 1357 mm (61 x 53")	
	Operating floor space (L x W)	2500 x 2200 mm (98 x 87")	
	Height (without / with light tower)	1582 mm (62") / 1942 mm (76")	
	Approx. weight	1670 kg (3680 lb)	
	Approx. floor loading	910 kg/m² (1.3 lb/sq.in)	
	Packaging weight	80 kg (176 lb)	
Supplies	Electrical	3 x 400 VAC/50Hz or with optional transformer: 3 x 190 – 600 VAC/60Hz (3 x 480 – 600 VAC/60Hz for TARANTULA Underfill)	
	Power consumption (peak)	3 kW	
	Entry fuse	16A / 400V	
	Min. wire cross section	1.5 mm²	
	Electrical connector	400V, CEE-16, 16A, 400V, 5P 3L+N+PE 6h, red color, cable length 3 m	
	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/m³)	
	Air consumption	max. 60 Nl/min (2.1 cfm) (depends on valve and application) With dispensing option vacuum cleaning station max. 90 Nl/min (3.2 cfm)	
	Air connection	Push-in connector for outer hose Ø8 mm	
Environment	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)	

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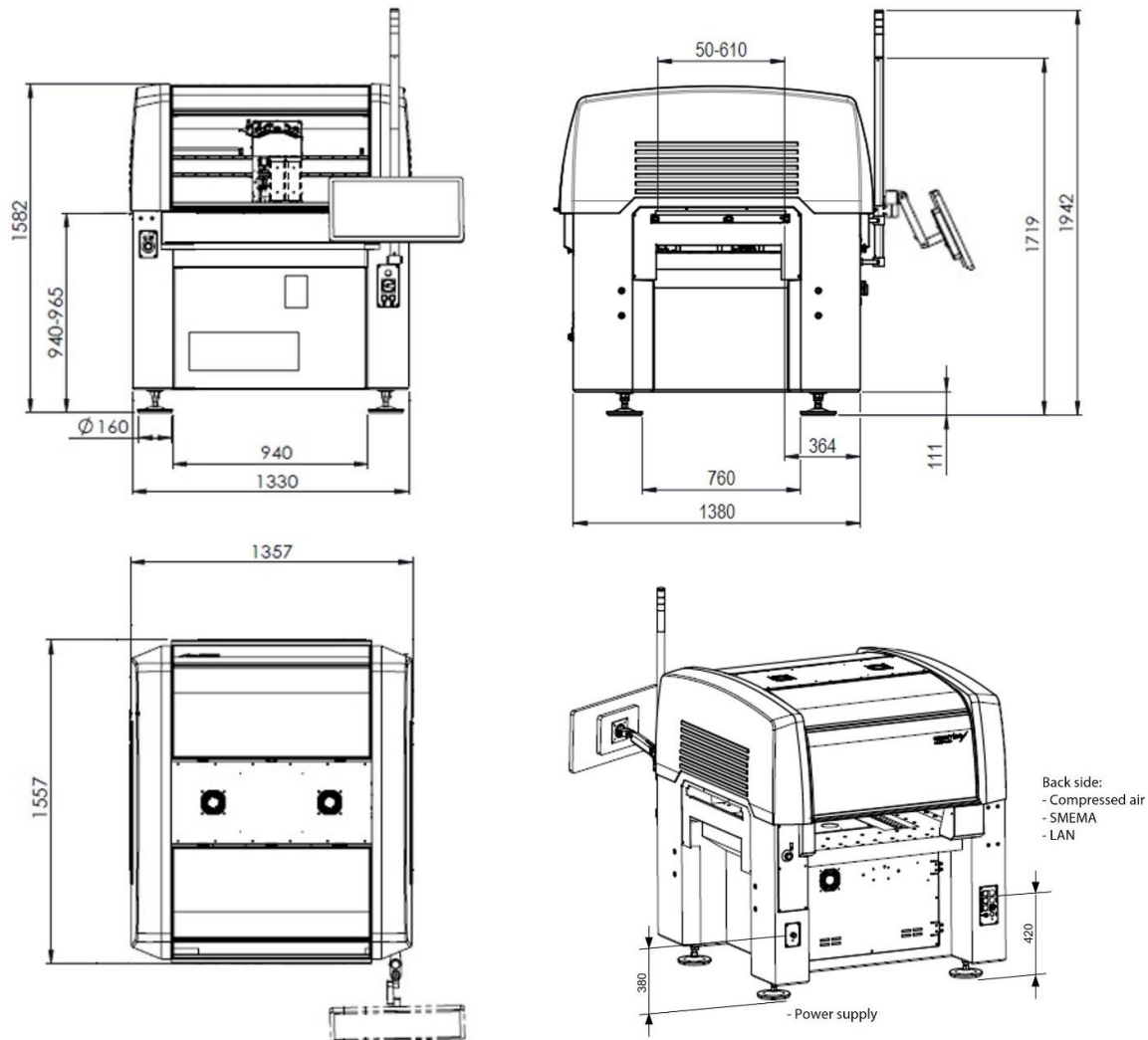
Configuration

		TARANTULA
Machine base	In line type (conveyor 3 stage, support pins, manual width adjust.)	●
	Dispensing basic 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	IPC-HERMES-9852, SMEMA interface	●
	Conveyor direction L/R, R/L, batch mode R/R, L/L	●
	Automatic width adjustment	☐
	Conveyor extensions	☐
	PCB inspection station on conveyor	☐
Control and software	ePlace dispensing software (En, De, Fr, Ru, Pl, Zh, Es, Cs, Ja)	●
	Machine PC with Windows 11 OS and 21.5" touch screen	●
	Technical support software	●
Alignment systems	Cognex base vision license (extended fiducial recognition)	●
	Red and blue color illumination for top camera	●
Dispensing valves *(Cartridge sizes)*	Piezo jet valve *(5, 10, 30 cm³)*	☐
	Shockwave jet valve *(5, 10, 30 cm³)*	☐
	Time/pressure valve *(5, 10, 30 cm³)*	☐
	Archimedean screw valve *(5, 10, 30 cm³)*	☐
	Volume dispenser valve *(10, 30, 55 cm³)*	☐
	Cartridge level control	☐
	Dispenser needle heating	☐
Dispensing options	Laser height measurement [9]	⊙
	High precision scale (only for Jet valves, not for solder paste applications)	☐
	Valve heating system (available for all valves)	☐
	Vacuum cleaning station for needles	☐
	Disp. Process Control Adjustment & Stabilization (PCAS) (software)	☐
	Lifting table with heating or vacuum	☐
Various *(extract)*	Standard user level management	●
	Bad mark sensing with vision	●
	Universal CAD conversion	●
	Calibration set dispensing	●
	Maintenance kit	●
	Key Performance Indicator (KPI with SEMI E10 standard)	☐
	Barcode reading over top camera	☐
	Second touch screen for machine backside	☐
	Keyboard and mouse holder underneath monitor	☐
	Clean room option ISO7 (class 10'000)	☐
	Full traceability package for medium and valves	☐
	Recipe import in ePlace	☐
	Communication interfaces: IPC-CFX, HERMES, ITAC, SECS/GEM, OIC, EEIP etc.	☐
	Integrated inspection system for dispensing (SW-I2S)	☐
	Jet-on-the-Fly - Extended Speed Performance (SW-ESP), see Application Matrix	☐

● **standard feature**   ☐ **optional feature**   ⊙ **mandatory option, model to choose**

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Dimension Drawings

1)   Maximum valve frequency, using settings from solder paste Application Matrix with Jet-on-the-Fly capability (req. SW-ESP license)
2)   Dot matrix 33x33 with pitch 1.0 x 1.0 mm, using settings from solder paste Application Matrix with Jet-on-the-Fly capability (req. SW-ESP license)
3)   Average of 17x different industrial PCBs, using settings from solder paste Application Matrix with Jet-on-the-Fly capability (req. SW-ESP license)
4)   Maximum valve frequency
5)   Dot matrix 33 x 33 with pitch 0.8 x 0.8 mm, dot size 0.5mm, medium Loctite 3621
6)   All 2.5D/3D applications need to be checked and approved by Essemtec Customer Application Engineering
7)   Other heights on request
8)   Full speed, dot size 1.0 mm, medium Loctite 3621
9)   Mandatory option: Two laser models available, to choose depending on needed application

All measurements realized at machine zero height level and within performance temperature / humidity range.

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

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