

ASMPT enabling the
digital world



DEK TQ L

Superior print quality & performance with open automation

Technical Specification 10/22 Edition

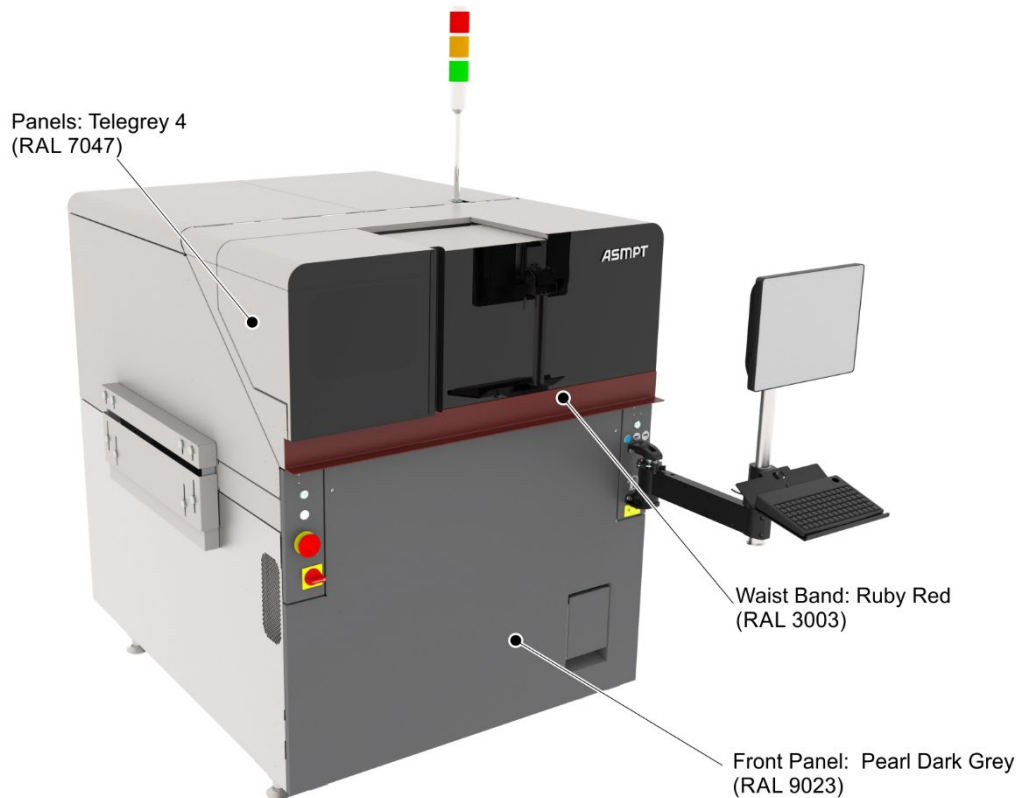
Contents

Overview of Technical Data	4
DEK TQ L	5
Machine Description	5
Machine Standard Configuration	6
Standard Configuration	6
Transport System	7
Process Parameter	7
Vision	8
Chase	8
Operating Environment*	8
Services	9
Shipping Information	9
Certification	9
Machine Productivity Options	10
Process	10
Software & Communications	10
Data Capture	10
SMART Factory Integration	10
Machine Footprint Single Access Cover	11
Machine Footprint Dual Access Cover	12
Disclaimer	13

Overview of Technical Data

Machine Alignment Capability	> 2.0 C _{mk} @ +/- 12.5 µm, (±6 Sigma)
Wet Print Capability	> 2.0 C _{pk} @ +/- 17.0 µm, (±6 Sigma)
Core Cycle Time	6.5 secs
Operating System	Windows 10 IOT
Squeegee Pressure Mechanism	Software controlled, motorised with closed loop feedback
Under Stencil Cleaning	New flexible and high speed DEK TQ L under stencil cleaner for 22m and 11m fabric rolls with different easy changeable sizes and inserts, fully programmable with wet/dry/vacuum wipe with internal 7L solvent tank

Machine colours for DEK TQ L



DEK TQ L

Machine Description

Superior print quality leading to greater first pass yield.

The DEK TQ printing platform, a completely new “from the ground up” design, sets records in performance and precision. Functions like the new off-belt printing, improved clamping systems and an innovative printhead with faster and more accurate squeegee pressure control deliver a superior printing quality for any type of printing requirements.

Certified wet print accuracy as standard, for next generation smart products.

Stencil positioning using fast, precise linear drives and highly accurate actuators creates a solid platform to produce a wet print accuracy of $\pm 17\mu\text{m}$ @ 2 Cpk, a capability which is measured and certified by the external AVS system on every DEK TQ and DEK TQ L prior to delivery.

From high to maximum throughput and floorspace performance in the industry.

The newly designed and extremely robust machine design of DEK TQ L has a footprint of only 1.95 square metres (DEK TQ only 1.3 square metres).

Featuring very fast linear drives, a new three-stage conveyor and the latest generation of the ASMP T NuMotion control system with optical fibre wiring has enabled a reduced core-cycle time to as little as 6.5 seconds. The DEK TQ L is the ideal platform for high-mixed and volume production within a flexible environment.

Designed for non-stop production up to a complete shift.

Operator assists and other consumable related line stops are reduced to a new minimum. The innovative platform is optionally equipped with a fully integrated automatic paste dispenser (DEK Automatic Paste Dispenser), paste height control (DEK Paste Roll Height Monitor) and a newly developed, highly efficient and flexible new under stencil cleaning system with an extra-large fabric roll or alternatively with standard DEK 11m fabric rolls, easily replaceable cleaning inserts and a new “non-stop” cleaning fluid dispensing system. As a result, the DEK TQ L has an average time between operator assists of up to 8 hours using the 22m fabric rolls.

Designed for the Integrated Smart Factory.

The DEK TQ is an open and future-oriented platform with respect to its connectivity. A multitude of future standard interfaces will be supported, such as IPC Hermes 9852, Closed-Loop-to-SPI, WORKS OIB and IPC CFX, enabling data to be exchanged with other line components or higher-level IT systems. The DEK TQ L is a perfect fit for ASMP T’s concept of the Integrated Smart SMT Factory and open automation.

Flexible and open automation

The flexible and open automation features of the DEK TQ platform offers many base automation features such as flexible clamping, smart pin placement, Paste management and auto job changeover. Many more exiting automation features will come soon.

B2B setup: Maximum flexibility for single or dual lane.

In its Back-to-Back setup the DEK TQ series units remain separately controllable, can be split up and used as single lane printers at any time

Machine Standard Configuration

Standard Configuration	Specification
System Alignment Capability	> 2.0 C _{mk} @ +/- 12.5µm, (±6 Sigma)
Wet Print Capability	> 2.0 C _{pk} @ +/- 17µm, (±6 Sigma)*
Core Cycle Time	6.5 secs**
Maximum Print Area	560mm (X) x 510mm (Y)
Machine Control	NuMotion control system
Operating System	Windows 10 IoT Enterprise
Human Machine Interface (HMI)	Colour TFT touch screen display, keyboard and trackball with DEK V1 software.
Camera	Digital camera, using IEEE 1394
Camera Positioning	Linear motors and encoders (0.5-micron resolution)
Squeegee Pressure Mechanism	Software controlled, motorised with closed loop feedback
Stencil Positioning	Automatic loading incorporating squeegee drip tray
Stencil Alignment	Motorised via actuators X, Y, and Theta
Under Stencil Cleaning	Independent Linear drive motor high speed cleaner, fully programmable with wet/dry/vacuum wipe with internal solvent tank 7L
Vacuum Assist for Under Stencil Cleaning	Programmable vacuum unit 35 litres/sec airflow
Machine Interface	Upline and downline FMI included IPC-Hermes -9852
Connectivity	RJ-45LAN (networking) and USB2/3 interface available
Tri Colour light tower	Audible alarm
Temperature & Humidity Sensor	Monitoring of the process environment
ESD Compatibility	Compliant with EN/IEC 61340-5-1, EN/IEC 61340-5-2, ANSI/ESD SP10.1, ANSI/ESD S20.20

*Accuracy values fulfil conditions in the scope of supply and service

**Contact Product Manager for details

Machine Standard Configuration

Transport System	Specification
Type	3-Stage High Throughput Conveyor
Width Adjustment	Programmable motorized rear rail
Transport Direction	Left to right Right to left Left to left Right to right
Substrate Handling Size (minimum)	50mm (X) x 50mm (Y)
Substrate Handling Size (maximum)	300mm (X) x 510mm (Y) (3-Stage Mode) 600mm (X) x 510mm (Y) (Single Stage Mode)
Substrate Thickness	0.1mm to 6mm
Substrate Weight (maximum)	3kg
Substrate Warp	Up to 7mm including substrate thickness
Substrate Fixture	Off Belt Printing Board clamps
Substrate Underside Clearance	Programmable 3mm to 42mm
Process Parameter	
Print Pressure	0kg to 20kg
Print Speed	20mm/sec to 200mm/sec
Print Gap	-2mm to 6mm
Substrate Separation	Speed: 0.1mm/sec to 20mm/sec Distance: 0mm to 20mm
Print Modes	Print/Print
Paste Knead	Programmable: number; period; on demand

Machine Standard Configuration

Vision	Specification
Vision System	SFF
Fiducials	3
Fiducial Types	Synthetic fiducial library
Fiducial Size	0.3mm to 3mm
Fiducial Locations	Anywhere on substrate
Camera Lighting	Software controlled programmable LED lighting

Chase	
Stencil Frame Sizes	29" x 29" / 23" x 29" / 23" x 23" / 650mm x 550mm / 600mm x 550mm
Stencil Frame Thickness	40mm to 10mm (adapter required below 25mm)
Image Position	Front Centre

Operating Environment*	
Temperature	10° to 35°C (50° to 95°F)
Humidity	30% to 70% relative humidity (non-condensing)
Altitude	Maximum 2,000 metres (6,500 feet)
Location	Internal only, not suitable for wet locations

*as described in the IPC Standard J-STD-001G-Requirements for Soldered Electrical and Electronic Assemblies Section 4 with respect to the following:

- Facilities - Cleanliness and ambient environments in all work areas be maintained at levels that prevent contamination or deterioration of tools, materials, and surfaces to be soldered or conformally coated. Eating, drinking, smoking, including use of e-cigarettes, and/or use of tobacco products be prohibited in the work area.
- Environmental Controls - The soldering facility (controlled work area) be enclosed, temperature and humidity controlled, and maintained at a positive pressure.
- Controlled Work Area (CWA) For the purpose of this statement, a Controlled Work Area (CWA) is defined as an enclosed assembly / processing area maintained to a high degree of shop cleanliness, environmental control, and foreign object debris (FOD) mitigation, either by process or procedure, to limit the entry of contamination.

Machine Standard Configuration

Services	Specification
Mains Supply Power Supply Voltage	110 Volts to 230 Volts $\pm 10\%$. Single phase 50/60 Hz
Maximum Current at 110V	15.2 Amps with internal vacuum pump 6.6 Amps without internal vacuum pump
Maximum Current at 230V	9.2 Amps with internal vacuum pump 4.6 Amps without internal vacuum pump
Over Current Protection at 110V	The following external circuit breaker is required to be fitted in line with the machine supply: With internal vacuum pump -16 Amps Without internal vacuum pump – 8 Amps
Over Current Protection at 230V	The following external circuit breaker is required to be fitted in line with the machine supply: With internal vacuum pump -10 Amps Without internal vacuum pump – 6 Amps
Compressed Air Supply	To ISO 8573.1 Standard Quality Class 2.3.3 Pressure 4.5 bar to 8 bar General usage 5 litres / minute at 5 bar to 8 bar Maximum usage 226 litres/minute at 6 bar

Shipping Information

Approximate Weight	1200kg boxed (dependent upon configured options selected with machine) 905kg unboxed (dependent upon configured options selected with machine)
Approximate Dimensions	2080mm x 1490mm x 1740mm High

Certification	Specification
CE	2006/42/EC 2014/30/EU 2011/65/EU Subsequent amendments
Acoustic Noise Level	Less than 70dB 2003/1/EC
Certified wet print accuracy	Accuracy Verification (AVS)

Machine Productivity Options

Process	Specification
Print Method	Paste Dispenser Solder Jar Dispenser Paste Roll Height Monitor (PRHM) Single Access Cover (Standard) Dual Access Cover (Optional)
Printing Environment Control	Temperature – Temperature Control Module (TCM)
Stencil Mount	Adjustable Width Stencil Mount (AWSM) Or ASMPT Factory set to accommodate frame sizes 736.6mm (29 Inch), 584.2mm (23 Inch), 650mm, 600mm. Image position: Centre / Front
Clamping	Foil-less clamps – (automatic board thickness adjustment) All Purpose Clamping (APC)* Note limitations
Substrate Support	Venturi Vacuum Flexible High Flow Vacuum (HFV) Smart Pin Placement (SPP)

* Contact Product Manager for details

Software & Communications

Software & Communications	Remote SMART Factory (RSF)
Statistical Process Control (SPC)	On board, reported via operator interface (QC-CALC)

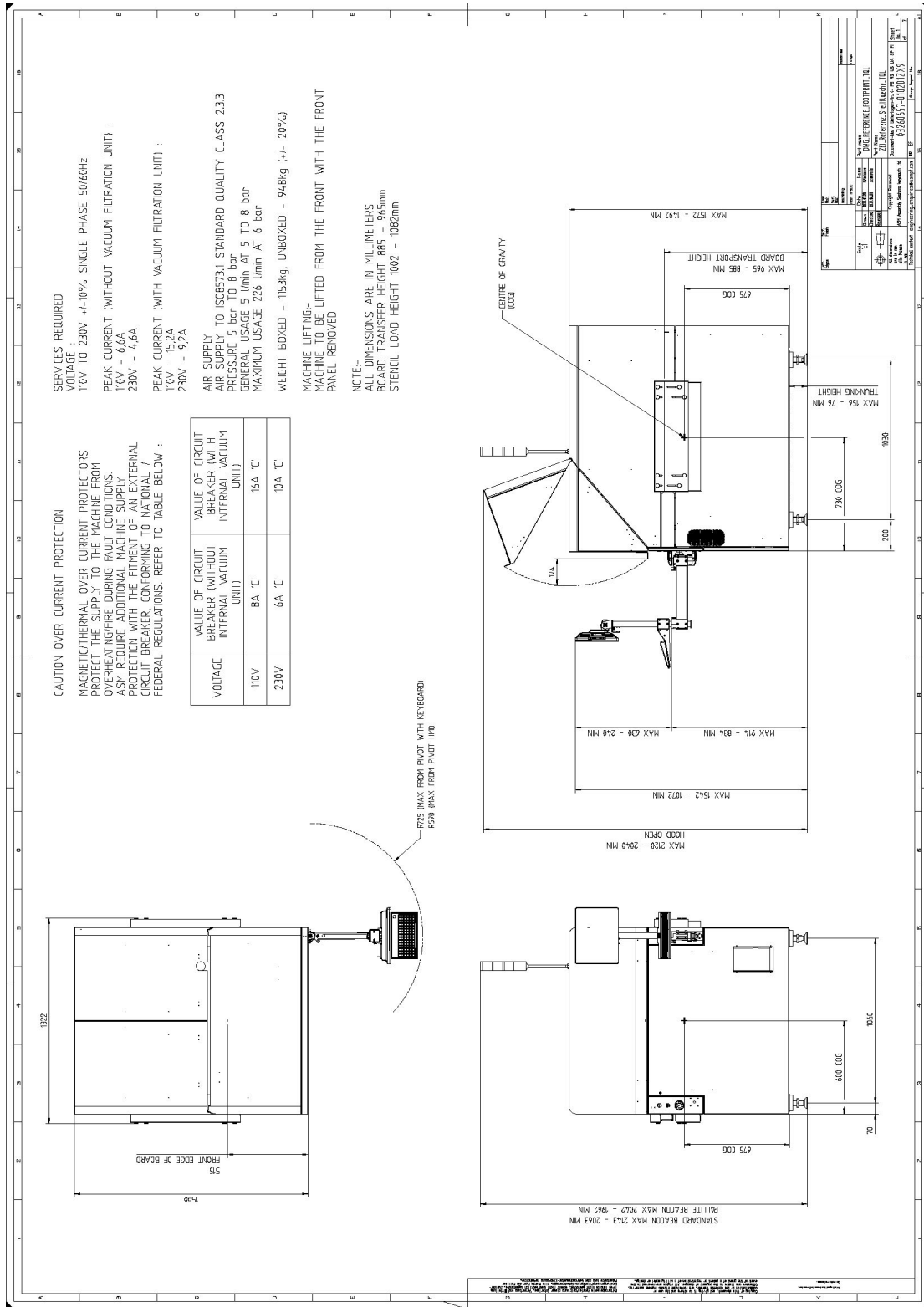
Data Capture

Software & Communications	Verification and Traceability Handheld barcode reader Remote barcode reader
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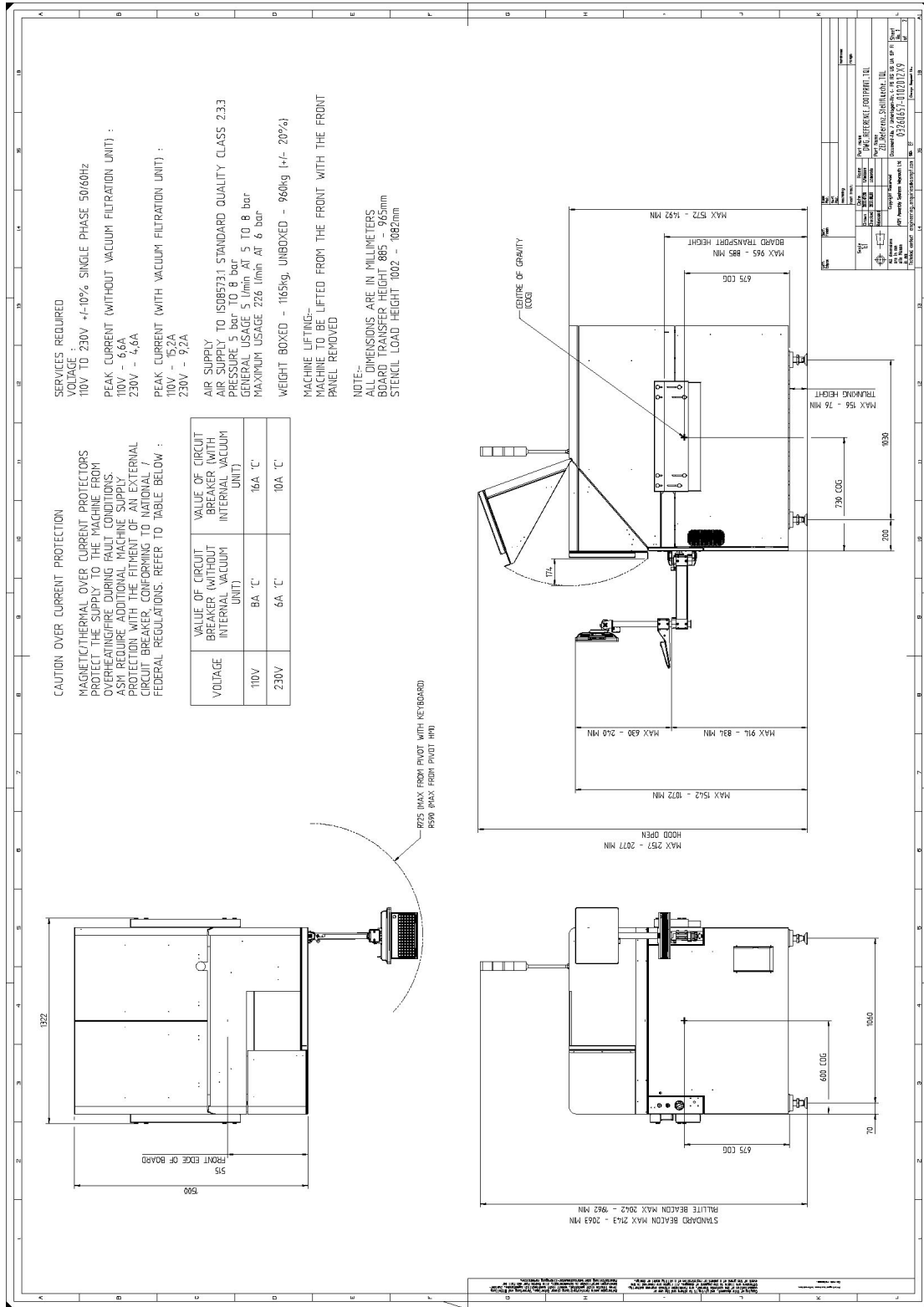
SMART Factory Integration

Software & Communications	WORKS OIB IPC CFX SECS / GEM Closed-loop-to-SPI Connection to WORKS Process Expert WORKS Printer Programming
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Machine Footprint Single Access Cover



Machine Footprint Dual Access Cover



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