

engineering innovations
worldwide



talos
technical
specifications



	technical specifications	comments / measurements
system dimensions (w x d x h)	1,140 x 1,740 x 1,930 mm (44.8" x 68.5" x 76")	
system weight	680 kg (1,500 lbs)	max. floor load: 200 kg (440 lbs) castors // weight incl. crate: 950 kg (2,100 lbs)
facility requirements – electric	please see chart below	cable included (CEE7/7 -EU; NEMA5-15 -US; BS1363 -UK) – in case a different plug is required, please contact esmo semiconhandler works with US or EU power supply without having to change any settings electrical chiller has second power supply cable!

Config.	EU		US	
Voltage	230 V / 50 Hz single phase (CEE 7/7)		120 V / 60 Hz (Nema 5-15P)	
	Current cont. [A]	max (2s) [A]	Current cont. [A]	max (2s) [A]
Standby	1.2	1.2	2.5	2.5
Ambient	1.5	2.3	2.9	5.5
Hot	2.3	3.3	4.5	7.3
LN2 chiller	1.5	3.0	3.2	6.1

E-chiller (separate supply)	EU		US	
Voltage	200–230 V ~ 50–60 Hz single phase (CEE 7/7)		110–120 V ~ 60 Hz (Nema 5-20)	
E-chiller	7.7	8.0	14.8 (nom. cont.) – 18.0 (max cont.)	20.0 (starting/inrush)

facility requirements –pneumatic	compressed air: clean, dry - dew point -60 °C (-76 °F), oil-free, min. 6 bar (87 PSI) · max. 14 bar (203 PSI) max. consumption: 50 NI/min hot test operations, 170 NI/min cold test operation incl. chamber purge connection: FESTO quick coupling KD4-1/4-A or 3/8" NPT	50 NI/min for hot test 130 NI/min cold LN2 (50 NI/min for chamber purge) 170 NI/min cold electrical (90 NI/min for chamber purge)
facility requirements – vacuum	200 mbar (3 PSI) (absolute value) connection: FESTO quick coupling KS4-1/4-A or 3/8" NPT	only applies to talos without vacuum generator option – in case a vacuum generator option has been installed, no external vacuum supply will be provided
facility requirements – LN2	1.5 bar (22 PSI) to 4 bar (58 PSI) typical consumption (steady state): 3 l/h peak consumption: 8.5 l/h connection: nozzle Ø 12 x 25 mm or 3/8" NPT	only applies to LN2 heat exchanger option in case LN2 support pressure requirements exceed 4 bar (53 PSI), please contact esmo semicon up front
handling materials	from min. 2.5 x 2.5 x 0.5 mm (0.1" x 0.1" x 0.02") to max. 70 x 70 x 10 mm (2.76" x 2.76" x 0.4")	down to 1.0 x 1.0 x 0.4 mm (0.04" x 0.04" x 0.02") with vision alignment option (For detailed validation of device handling capabilities for your setup, please contact esmo semicon up front!)
human/machine interface (HMI)	15.6" multi-touch panel with esmo-customized HMI	
tester interface	RS232 · TCP/IP · GPIB optional	
x/y/z/theta handling system	4-axis portal plus extra contacting z-axis with thermal head positioning accuracy x/y/z = 0.05 mm (0.002")	
handler parallelism	single-/dual-/multi-site contacting	in special cases a higher parallelism option may be possible – please contact esmo semicon for clarification
max. permanent contact force z1 "handling axis"	115 N (12 kgf)	
max. permanent contact force z2 "temperature axis"	350 N	700 N on request (optional)
index time	11 sec. (tray-to-tray setup with pre-centering) 13 sec. (tray-to-tray setup with vision alignment)	The stated index time is based on an optimized dry run scenario and increases when optional features are used.
max. noise level	< 65 dB	
underlying standard	CE	
thermal performance	<p style="text-align: center;"><i>Following temp-values are referenced to the plunger only! The achievable device junction temperature has a setup-dependent offset to the plunger temperature! The typical junction temperature examples given may vary in reality (depending on the setup).</i></p>	

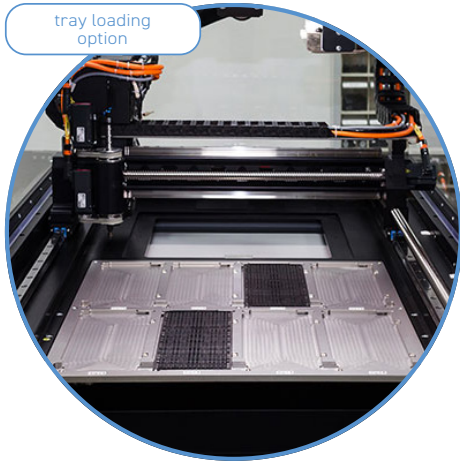
	technical specifications	comments / measurements
min. plunger temp. after 45 min.	-64 °C (-83 °F) with electrical chiller option -75 °C (-103 °F) with LN2 heat exchanger option	typ. junction temperature -50 °C (-58 °F) with electrical chiller option // -55 °C (-67 °F) with LN2 heat exchanger option → plus optional plunger micro chamber about +5 °C (+41 °F) lower, i.e. up to -60 °C (-76 °F) cooling airflow: 80 l/min LN2 or electrical chiller The maximum/minimum temperature range may be restricted for multisite plunger.
max. plunger temp.	+190 °C (+374 °F)	with an optional plunger micro chamber a junction temperature of up to +175 °C (+347 °F) can be achieved
stability	±0.5 °C (±33 °F) long-time test (heatsink)	junction temperature accuracy depending on calibration and setup (optimum calibration stability = accuracy) Temperature site-to-site deviation for multisite plunger: ±3° (± 37 °F) between -40 °C (-40 °F) and +150 °C (+302 °F)
initial heat-up time	< 2 min from +25 °C (+77 °F) to +175 °C (+347 °F) plunger temperature	measured with 3 x 3 QA standard plunger and +190 °C (+374 °F) system
initial cool-down time, electric chiller system	17 min from +21 °C (+70 °F) to -50 °C (-58 °F) plunger temp. 29 min from +21 °C (+70 °F) to -60 °C (-76 °F) plunger temp.	measured with 3 x 3 QA standard plunger
initial cool-down time, LN2 system	13 min from +21 °C (+70 °F) to -50 °C (-58 °F) plunger temp. 18 min from +21 °C (+70 °F) to -60 °C (-76 °F) plunger temp.	with 2 bar barrel and 1.5 m (59") supply tube measured with 3 x 3 QA standard plunger

tray loading option		
loading	JEDEC standard trays waffle pack (2" or 4") with waffle pack adaptor plate	JEDEC high-profile trays on request
capacity	max. 8 input/output trays · free input/output/BIN configurations	
jamming rate (ambient/hot/cold)	1 error per 8 h or less	one (1) jamming error at a maximum every eight (8) hours (esmo semicon internal QA acceptance criteria)
weight	7.3 kg (16.0 lbs)	
dimensions	677 mm x 710 mm x 12 mm (26.7" x 28.0" x 0.47")	

tube loading option		
compatibility	compatible with tape loading + dual-tray plate options	
capacity	max. 8 input tubes · max. 8 output tubes · free input/output/BIN configurations	
handling materials (mm/inch.)	max. tube dimensions 21 x 12 x 530 mm (0.83" x 0.47" x 20.87") max. device length: 17 mm (0.67") · metal + plastic tubes supported (tube-/device-specific tube loader/unloader conversion kit required)	for all tubes exceeding 460 mm (18.1"), a special front door will be required
jamming rate (ambient/hot/cold)	1 error per 8 h or less	one (1) jamming error at a maximum every eight (8) hours (esmo semicon internal QA acceptance criteria)
weight	loader: 5.3 kg (11.7 lbs) unloader: 4.6 kg (10.1 lbs)	

tape loading option		
compatibility	compatible with tray unloading + tape loading options	
tape width	each tape width requires a specific feeder module: tape modules available for tape widths of 8 mm (0.32"), 12 mm (0.47"), 16 mm (0.63"), 24mm (0.95"), 32 mm (1.26")	toolless module exchange with quick-release lock
jamming rate (ambient/hot/cold)	1 error per 8 h or less	one (1) jamming error at a maximum every eight (8) hours (esmo semicon internal QA acceptance criteria)
lateral protrusion	300 mm (11.81") without reel	

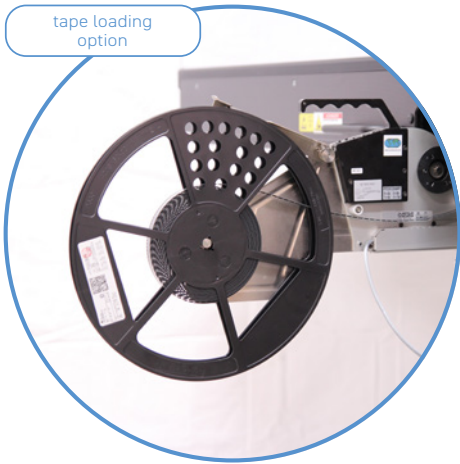
vision alignment option		
compatibility	compatible with tape loading + tray/waffle pack loading/unloading options	specific tray plate required
package types	leadless devices without calibration/modification	for leaded devices a customized vision task will be required
jamming rate (ambient/hot/cold)	1.5 x 1.5 mm to 5 mm x 5 mm (0.06" x 0.06" to 0.20" x 0.20"): 1 error per 8 h or less 1 mm x 1 mm to < 1.5 mm x 1.5 mm (0.04" x 0.04" to 0.06" x 0.06"): 1 error per 1 h or less	one (1) jamming error at a maximum every eight (8) or one (1) hour(s) respectively (esmo semicon internal QA acceptance criteria)
device sizes	1 x 1 x 0.4 mm to 5 mm x 5 mm (0.04" x 0.04" x 0.02" to 0.20" x 0.20")	



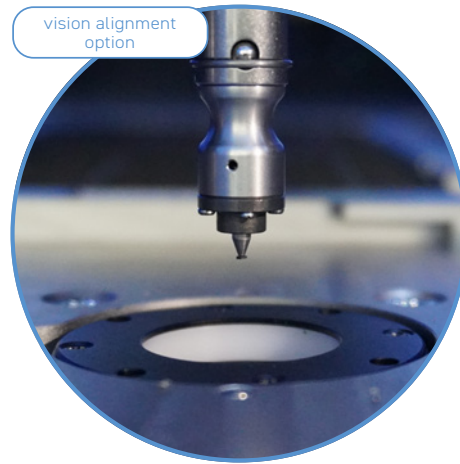
tray loading option



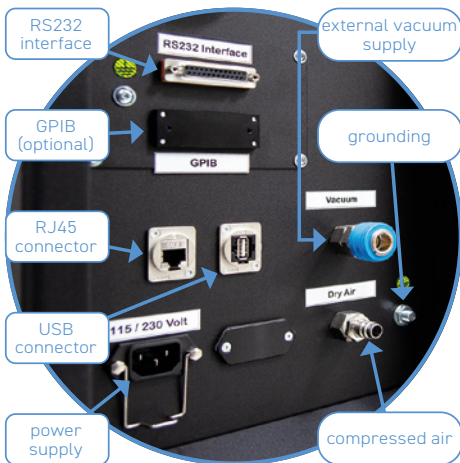
tube loading option



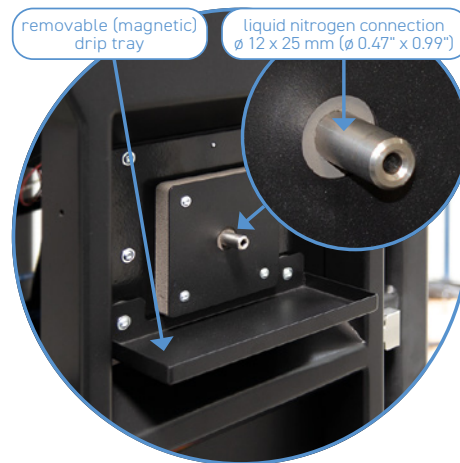
tape loading option



vision alignment option



RS232 interface
 GPIB (optional)
 RJ45 connector
 USB connector
 power supply
 external vacuum supply
 grounding
 Vacuum
 Dry Air
 compressed air



removable (magnetic) drip tray
 liquid nitrogen connection
 $\varnothing 12 \times 25 \text{ mm } (\varnothing 0.47" \times 0.99")$

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