








STANDARD PRODUCTS OVERVIEW

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- Complete solutions for multilayer ceramic products,
 - Custom designed equipment
 - Experienced production staff
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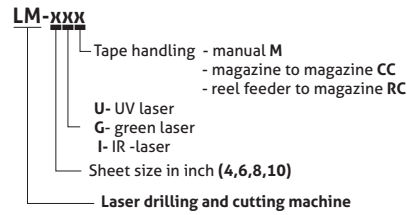


<p>Slurry preparing</p>	<p>Roller benches BL - series</p> <ul style="list-style-type: none"> - adjustable rotation speed and time - adjustable to different jar sizes 	<p>Models:</p> <p>BL-X</p> <ul style="list-style-type: none"> 1, 3, 6, 8 Max. number of jars on rubber rollers Roller bench 
<p>Tape casting</p>	<p>Laboratory tape casters L-series</p> <ul style="list-style-type: none"> - for laboratory or small production volume - casting on PET or other carrier - casting speed control - gravity slurry feeding - tape winding 	<p>CAM-L25xxxx(xxx)</p> <ul style="list-style-type: none"> Rotating casting wheel (R) Exhaust flow measurement (E) Slurry supply automatic (S) Ionizer device (I) Bottom heating (B) Top heating (T) Dryer length 2, 3, 4 (m) 25 only - max. PET film width in cm Laboratory type Casting machine <p>Tape casting on polyester film</p> 
	<p>Compact tape casters C-series</p> <ul style="list-style-type: none"> - compact size requiring minimum floor size - suitable for solvent and water based systems - high accuracy in thickness control - automatic tracking of carrier film - automatic slurry feeding - applicable for up to 150 micron tape thickness 	<p>CAM-C35xx</p> <ul style="list-style-type: none"> L - for 2 m longer drying section B - for base model without touch screen and automatic blade gap setting 35 - max. PET film width in cm Compact type Casting machine <p>Tape casting on polyester film</p> 
	<p>Horizontal drying zone tape casters H-series</p> <ul style="list-style-type: none"> - thickness 5-500 microns (0.2 - 2 mils) - advanced drying regimes possible - high accuracy in thickness control - automatic tracking of carrier film - automatic slurry feeding 	<p>CAM-Hxxx</p> <ul style="list-style-type: none"> Drier length: 6 - 20 (m) (in 3m steps) 35, 45 or 60 - max. PET film width in cm Horizontal type Casting machine <p>Tape casting on polyester film</p> 
	<p>Steel belt tape casters S-series</p> <ul style="list-style-type: none"> - suitable for price sensitive applications - different drying regimes - high accuracy doctor blade - automatic tracking of steel belt - automatic slurry feeding - tape winding 	<p>CAM-S x x x</p> <ul style="list-style-type: none"> Drier length 5 (7, 9, 11)(m) 30 or 60 - max. steel belt width in cm Stainless steel belt type Casting machine <p>Tape casting on steel belt</p> 
<p>Tape blanking</p>	<p>Automatic green tape blanker SC-series</p> <ul style="list-style-type: none"> - blanks single sheets from a roll of green tape - suitable for freestanding or Mylar based tapes - trims sheet edges - punch registration holes (option) - transfers blanked sheets to a magazine - sorting blanked sheets option (Vision, thickness) 	<p>SC-35xxxx</p> <ul style="list-style-type: none"> T- sheet to tray C- sheet to magazine (cassette) N - without registration punching P- with punch tool M for tape on Mylar F for freestanding tape 35 max. - Tape width in cm Sheet cutter 
<p>Mechanical punching and laser drilling</p>	<p>Punching machine PAM-series</p> <ul style="list-style-type: none"> - punch holes for vias and registration in green tape - punch cavity rectangle or square holes - manual, CAD, NcDrill and DXF file input - tool breakage detection - automatic sheets re-alignment - vision inspection option 	<p>PAM-xxxx</p> <ul style="list-style-type: none"> Tape handling - manual M - magazine to magazine CC - reel feeder to magazine RC S- single pin punching tools type M- multiple pins punching tool Number of tool position (4 or 8) Tools have to be specified separately Punching machine 

Laser drilling and cutting

Laser drilling and cutting machine LM-series

- drills or cuts holes vias or registration holes in green tape by laser
- cut rectangled or any cavity shape
- CAD, NcDrill and DXF file input
- three laser types available (IR, green, UV)
- vision inspection option

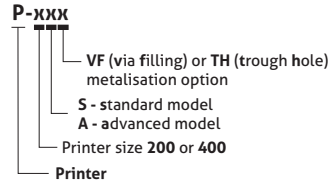


* material testing is recommended prior laser type selection

Screen printing

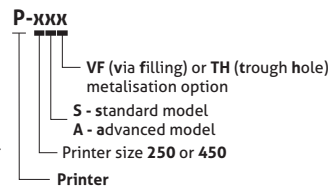
Screen printers P - 200/400series

- Economical, production proven manual screen printers
- Programmable printing parameters
- Print/print, print/flood, flood/print, on contact print, stencil printing, via filling
- Extensive options available



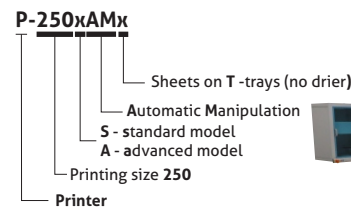
Screen printers P - 250/450series

- Newly developed screen printers
- Fully programmable printing parameters, no mechanical settings needed
- Print/print, print/flood, flood/print, on contact print, stencil printing, via filling
- Printing areas up to 250x250mm or 450x450mm
- Automatic versions standart included



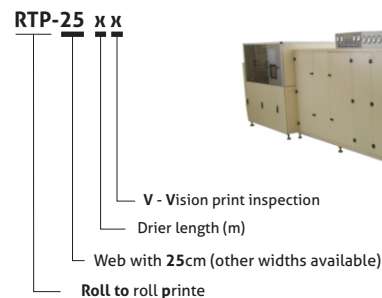
Automatic screen printers P-series

- Automatic sheet handling, printing, drying process
- Two models available to meet al requirements
- Fully programmable printing parameters
- Print/print, print/flood, flood/print, on contact print, stencil printing, via filling and screen cleaning
- Extensive options for demanding advanced technology applications



Roll to roll screen printers RTP- series

- Unwinding tape from roll, printing, drying, winding
- High productivity
- Up to two printers with automatic alignment possible
- Print vision inspection option available
- Fully automatic run
- Most suitable for products like: MLCC, MLCV, fuel cells, printed electronics, etc.



Drying

Dryer SD, SDI, DIR - series

- drying sheets, substrates, wafers, hybrids
- different designs for different purposes
- **SD** - type, convection drier, high air flow, temperatures up to 120 deg.C
- **SDI** - type, for thick film pastes drying regimes (ceramic IR heaters + hot air)
- **DIR** - fast IR drier (IR lamps installed)
- height adapted to Keko screen printers
- custom designs available

DIR
SDI
SD-XX X

Dryer length 1,2,3 (m)
Belt width 35, 45 (cm)
Dryer



Cover sheets making

Cover sheets maker CSM-series

- Makes cover sheets directly onto carrying palette or paper from a roll of tape
- Glues the cover sheet to custom carrying palette
- Sheet blanker and taking press in one unit

CSM-XXXX

C - cassettes for carriers
Foil type: F - Freestanding
M - Mylar
Foil width: 35 cm max.
Cover Sheet Maker



Stacking

Manual stacker / press SM / SMP - series

- Simple manual stacker (taking times up to 1minute)
- SMP type has uniaxial lamination possibility, SMP type replaces previous TPR press
- SMP pressing time up to 99minutes
- Registration can be done by registration pins
- High pressing force up to 70 tons
- Option: Programmable pressing curve

SM-XXXX

Pressing force: L - low up to 200 kN
M - medium up to 420 kN
H - high up to 700kN
- - no registration
P - pin registration
Sheet size: 4, 6, 8 inch
Stacker SM or SMP type



Universal stackers SW & SWU-series

- Manual or automatic stacker for low to high volume LTCC, HTCC or other similar component production
- Suitable for tapes with or without carrier film
- Process on vacuum plate or carrier block
- Possible to start building stack from top or from bottom
- Vacuum press for bubbling sensitive foils
- SWU type is suitable for more demanding production requirements and has more options available compare to SW type

SW-XXXXX

V - Vacuum press
Pressing force: L - Low up to 200 kN
H - High up to 420 kN
Sheet alignment: P - Pin
V - Vision
Sheet loading: M - Manual
A - Automatic from cassette
Sheet size: 6, 8 inch
Stacker - SW or SWU type



ST-series

- Automatic sheet loading from cassettes
- Stacking on to carrier palette or vacuum
- Automatically removes carrier film first, than stacks
- Sheet pre-registration
- Automatic vision alignment
- Suitable also for very high layer count (MLCC, piezo)
- Not suitable for tapes with punched holes

ST-XXXXX

P - Carrier plates auto loading
C - cavity for high stack without pressing possibility
V - vision alignment
P - pin alignment
Sheet loading: M - Manual
A - Automatic
Sheet size: 6, 8 inch
Stacker ST type



SB - series

- Automatic sheet loading from cassettes
- Carrier palettes automatic loading / unloading
- Pressing first than removing carrier film
- Pre-registration
- Automatic vision alignment
- Suitable for high volume production
- Suitable for various components (up to 50 layers stack), especially MLCI

SB- XXXX

V - vision alignment
P - pin alignment
Sheet loading: M - Manual
A - Automatic
Sheet size: 6, 8 inch
Stacker



Standard 24 carrier block carousel transport

Printing & stacking

Print on stack technology

Printing and stacking machine PAL - series

- Universal system for components up to 100 layers
- High productivity = low cost per component
- Suitable for smallest components size
- Uses carrier film tapes, freestanding tapes and individual sheets
- Special configurations like:
 - several printers
 - several driers
 - sheet vision alignment
 - other special requirements

PAL- xxx

- M - Mylar feeder
- F - Free standing tape feeder
- S - Sheet loading
- 1, 2, 3 Number of printers
- Sheet size: 6, 8 inch
- Printing And Laminating System



Contact supplier for particular application

Laminating

Uniaxial thermal press TPC

- Lamination in a cavity
- High stack lamination possibility
- Simplified versions available
- Rigid, compact design takes little floor space

TPC-xx

- Pressing force: L - low up to 400kN
H - high up to 700 kN
- Max. bar size in inch: 4 or 6
- Thermal Press-pressing in a cavity



Higher forces an vacuum chamber on request

Isostatic lamination press ILS

- Up to 40 stacks/substrates laminated simultaneously
- Wide selection range of bar size
- Easy to operate, quick product turn-around time
- Rigid, compact design takes little floor space
- Stores up to 99 pressure programs

ILS-xxx

- D in case of double chamber length (for ILS-6 only)
- Max. pressure 6 for 6000PSI (42Mpa)
10 for 10000PSI (70Mpa)
- Max. bar size in inch: 4 or 6 or 10 or 12 or 18
- Isostatic laminator



Vacuum sealing device included

Cutting

Cutting machine CM

- Cuts the most difficult high thickness green Ceramic Ware
- Automatically positions knife with high accuracy
- Automatically finds cutting markers
- Adjustable speed and cutting depth
- High productivity due to high cutting speed

CM-15xx

- A - Auto bar handling from/to cassette
- M- Manual machine without auto vision alignment
- bar size: 4, 6, 8, 10 inch
- Cutting Machine



Pre and post heating plates optionally

Edge Trimmer ET

- Simple, flexible and accurate
- Bar Edge trimming and splitting possibility
- Laser pointers installed for precise block positioning

ET-xx

- E - edge trimming only
- A - edge trimming & bar splitting function
- bar size: 4, 6, 8, 10 inch
- Edge Cutter/trimmer



Machining with automatic alignmet




CNC Milling / drilling CNC

- Cuts any shape out of green ceramic
- Up to 10 x 10 inches machining area
- Automatically positions bar by vision system
- DXF file conversion
- Vacuum product fixing
- Automatic tool changer (8 tools)

CNC - 10V



Contact producer for detailed specification!

Termination	<p>Dipping machine DM</p> <ul style="list-style-type: none"> - Fully programmable dipping conditions ensures accurate and excellent termination - Simple programming, more than 50 dipping programs can be stored - Truth chip leveling mode ensure uniform dipping height - High speed, high accuracy servo motors positioning - Easy cleaning features <p>DM - 6</p> <p>Dipping machine</p> 
AOI	<p>Vision inspection KVI</p> <ul style="list-style-type: none"> - Designed for inspecting green ceramic sheets prints and punched holes - Inspect wet and dry prints, via holes - High inspection resolution - Detects shorts, opens, neck downs, mouse bites, screen stretch - screen misalignment, contamination - Inline or offline version available <p>KVI- X</p> <p>6 or 8 inspected area in inches</p> <p>KEKO vision inspection</p> 
Vacuum generating	<p>Vacuum pump VP-series</p> <ul style="list-style-type: none"> - For vacuum supply - Consist of: vacuum pump, reservoir, electrical control with vacuum level switch - switching pump on / off, vacuum filter <p>VP - X</p> <p>300 Suction capacity 1000 1600</p> <p>Vacuum Pump</p> <p>Suitable to connect one to several machines requiring vacuum connection.</p> 
Materials and Technology	<p>Based on experiences and cooperation with institutes in field of material and technology development, Keko Equipment new strategy is offering complete solutions for multilayer ceramic products, including compatible materials, technology and machines.</p> <p>Please contact Keko equipment for particular solution.</p>
Custom designed equipment	<p>One of Keko Equipment strongest part is custom designed equipment based on custom requirements and our long term designing and machines production experiences.</p> <p>Many customers are satisfied with our innovative solutions adapted to their needs.</p> <p>Experienced production team is guaranty for quality and success.</p> <p>Contact us, if you are looking for custom solution, which you can not find on the market.</p>

Our machines are developed, designed and produced in our facilities