

CONTRACT MANUFACTURING OF ELECTRONICS IN BULGARIA



by 4S4 GROUP

we can change the world within our reach

Together with our partners, **we achieve success** by providing them **with opportunities to manufacture** products — increasing volumes of guaranteed high-quality production **at our facilities:**

- ✓ SMT, THT and final assembling
- ✓ Mechanical processing of metal (sheet, rolled) and painting
- ✓ Full-color printing and cutting of packaging
- ✓ Testing laboratory (climatic, EMS, lighting, vibration tests)



Surface mounting of SMT components on high-performance equipment – 1 493 400 CPH IPC 9850

2 SMT lines Yamaha - 228 000 CPH IPC

- super tiny component size - 0201 metric
- odd-shaped components: 55x100mm, H 28mm
- PCB's size: 810x490 mm - 50x50 mm
- 3D SPI + 3D AOI in each line integrated into a single QC center
- convection ovens with 9 zones will provide high-quality soldering of boards of any complexity (with nitrogen)

3 SMT lines Juki - 145 400 CPH IPC

- supports component size: 0402 ~ 50x150mm, H 20mm
- AOI control of manufactured products

6 SMT lines Samsung (after 03/2025) – 1 120 000 CPH IPC

- supports component size: 0402 ~ 50x150mm, H 10mm
- PCB's size: 510x460 mm - 50x40 mm
- 3D AOI in each line integrated into a single QC center

1 SMT SMT line for the production of 1.5m aluminum PCB - 270 000 CPH IPC

Automatic assembly and soldering of THT components

- Radial THT component placer
- Automatic wave soldering
- Manual component finishing lines
- THT semi-finished product testing section

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FIBER LASER CUTTING MACHINE

- Laser power – 1500 W
- Working area – 3000 mm x 1500 mm
- Max. speed – 120 m/min.
- Laser head – RAYTOOLS
- Cooling Type – Water cooling
- Pneumatic clamp – 20-300 mm
- Profile length – 6000 mm



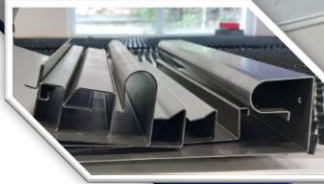
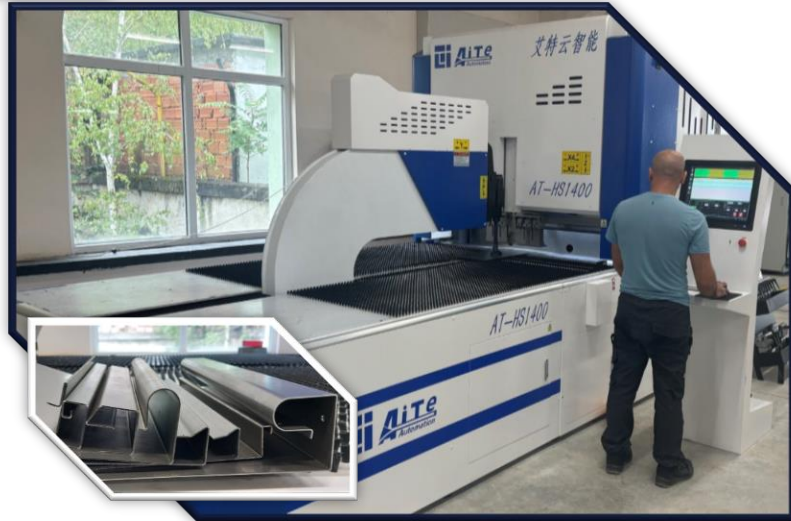
AUTOMATIC PANEL BENDER

- Max. Power – 28 kW
- Workbench length – 1400 mm
- Max. Bending Height – 170 mm
- Min. Arc Radius – 2 mm
- Max. Feeding Speed – 120 m/min.
- Min. for Four-side Bending – 160x240 mm
- Min. for One-side Bending – 160 mm



CNC TURRET PUNCHING MACHINE

- Nominal Force – 300 kN
- Max. Punch Size – $\Phi 88.9$
- Max. Sheet Size – 1250x2500
- Max. Sheet Thickness – 6 mm
- X/Y Traverse Length – 1250/1250 mm
- Max. Punching Frequency – 1500 min⁻¹
- Turret Rotation Speed – 30 r/min
- Tool Stations – 32
- Floating Clamps – 2



3+1 ALUMINUM PROFILE PROCESSING MACHINE

- Drilling and Milling
- Pneumatic clamps to fix the materials - 4 sets
- Rotate automatically +90 degree and -90 degree working table
- Max 5000*200*200mm effective working area
- SYNTEC 60WA control system
- HQD 9kw ATC air-cooling spindle + one saw blade, ISO30-ER32-24000rpm
- Syntec 1KW servo motors and drivers on XYZ axis, 3sets
- Syntec 1KW servo motors and driver on rotary working table, 2 sets
- Hidden Linear tool magazine with 8 slots
- Auto tool sensor



Production of items from metal sheets or rolled products (steel and aluminum)

CNC LATHE MACHINE

- Max.swing over bed – 560 mm
- Max. turning diameter – 400 mm
- Max. turning length – 500 mm
- Spindle motor power – 11 kW
- Max. spindle speed – 4500 rpm
- 2*Radial power head
- 2*Axial power head
- Powerturret 12 stations BMT55
- C - axis



VERTICAL MACHINING CENTER

- Table size – 1000 x 500 mm
- Max. table load – 500 kg.
- Spindle speed – 8000 rpm
- Spindle taper – BT50
- Main motor power – 7,5 kW
- Feeding rate – 10000 mm/min.
- Tools capacity – 24
- 210mm4thaxis +thimble tailstock + hydraulic station
- Renishaw workpiece measurement device OMP60
- Renishaw tool probe TS27R
- 20bar cooling through the spindle
- Fanuc 0i-MF(5) control System



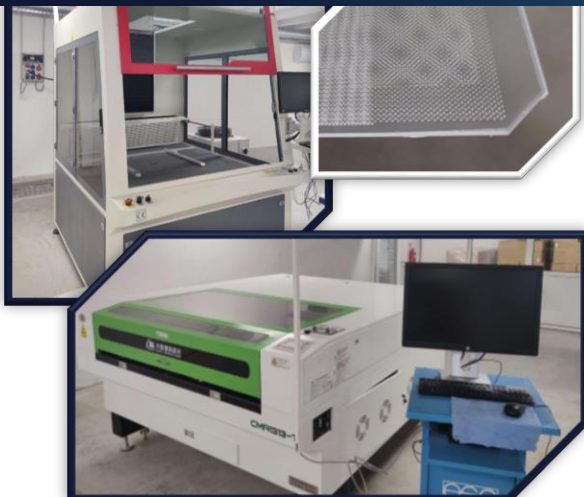
FULL AUTOMATIC POWDER COATING LINE

- Powder coating equipment, large cyclone powder recovery system
- The installation of the powder coating production line of and the high efficiency nonstick powder recovery
- Fast color change, high efficiency of powder recovery
- Suspension chain, spray painting line, powder coating line
- Dustless workshop, automation equipment



Laser cutting and engraving of acrylic

- A controlled light beam with focus at a specific point of the beam is used for cutting, resulting in: an extremely fine cutting line, precise matching of the most complex contours of the pattern and the finished part, exact alignment of micro-hole coordinates, no possibility of defects
- Fast and high-quality cutting of any amount of material with any contour complexity, including very small details
- High cutting precision within a tenth of a millimeter, without heat-induced deformation. The edge after cutting will be smooth and transparent
- Processing of acrylic sheets up to 1400x2300 mm
- Engraving on acrylic allows for beautifully designed products and the creation of light-conducting surfaces with high-quality execution



Four workshops for final assembly and product testing



Full-color printing and cutting of packaging



DIGITAL PACKAGING PRINTING MACHINE

- One piece printing, without plate, save printing cost
- With quality servo motor, high mute guide rail and drag chain, ensure stable movement
- With laser sensors, automatically distinguish multiple sheets, cardboard warping and cardboard errors
- Can provide slitting, printing, molding, nailing, automatic storage., etc comprehensive solutions



CUTTING TABLE

- Cardboard, grey board, KT board, PVC expansion sheet, honeycomb board, car sticker, light slice, PP gum, flex banner, flag fabric
- EPE foams, EVA, PVC plate, acrylic, thick foam etc



Testing laboratory in Sofia more information on the additional sheet



- Complete climate tests
- EMS testing (with anechoic chamber after 03/25)
- Measurement of all light parameters
- Vibration testing

Europe
Africa
Middle Asia
Latin America



The finished product will be delivered to any point around the Globe

Build a trusting relationship with the contract electronics manufacturer - 4S4 Production (by 4S4 GROUP)

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TWO CHAMBERS OF HEAT, HUMIDITY, AND COLD

- Climatic testing according to IEC 60068
- Temperature range from -60°C to $+150^{\circ}\text{C}$, with temperature control $\pm 0.5^{\circ}\text{C}$ / $\pm 2.0^{\circ}\text{C}$
- Relative humidity range from 30% to 98%, with accuracy of $\pm 2-3\%$
- Chamber dimensions: 1000*1000*1500 mm and 700*800*900mm



TEST CHAMBER FOR THE WATERPROOFNESS OF PRODUCT ENCLOSURES ACCORDING CATEGORIES TO IPX3, IPX4, IPX5, AND IPX6

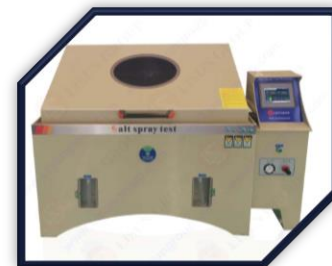
- IPX34 The half-radius of the rotating pipe is from 1 m. The inner diameter of the rotating pipe is 15 mm. The diameter of the rotating sample table is 1500 mm, and its height is adjustable. The rotation speed ranges from 1 to 5 rpm, controlled by a PLC panel
- IPX56 The nozzle diameter is 6.3 mm for the IPX5 waterproof test and $d=12.5$ mm for the IPX6 waterproof test. The flow rate is 12.5 ± 0.626 L/min for IPX5 and 100 ± 5 L/min for IPX6

TO IPX7

- For samples weighing up to 120 kg
- The size of the water tank is 1000x1000x1200 mm

TEST CHAMBER FOR SALT SPRAY

- Testing of products for corrosion resistance to climatic environmental factors, and suitability for operation in a humid environment in the presence of salts
- Exposure to salt mist
- IEC 60068-2-11:1981, IEC 60068-2-52:1996
- Internal chamber size: 1100*750*500 mm
- Tests can be conducted either in a continuous mode or in a cyclic mode

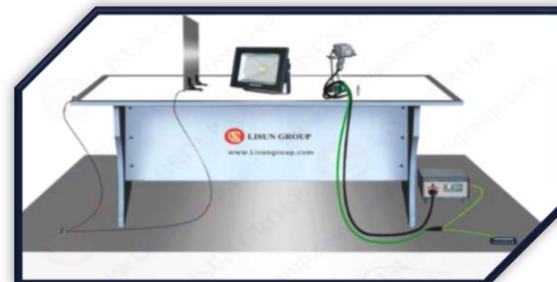


DUST CHAMBER

- Test for protection degree of enclosure IP 5X and IP 6X against dust according to IEC 60529:2013
- Chamber dimensions – 1000*1000*1500 mm
- Testing medium – talc
- Screen mesh size – 75 μm , wire diameter of the mesh: 50 μm

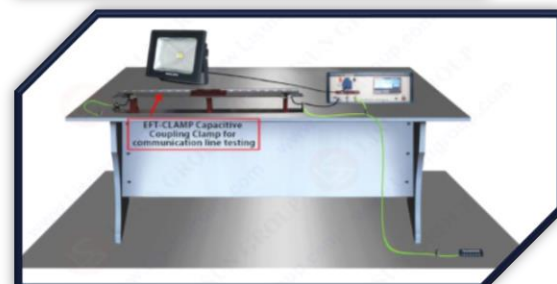
ELECTROSTATIC DISCHARGE GENERATOR

- Output voltage – 0.1-20 kV
- Pulse rise time – 0.6-1 ns
- Contact discharge, air discharge, trigger mode, IEC levels, negative polarity, positive polarity.



TEST GENERATOR FOR NANOSECOND PULSE DISTURBANCES

- Output voltage from 0 to 5 kV
- Pulse frequency – 1 kHz - 1 MHz
- Pulse rise time 5 ns $\pm 30\%$, pulse package duration 0.01 ms - 20 ms, burst period 100 ms - 500 ms, pulse width 50 ns $\pm 30\%$
- Polarity positive, negative



Testing laboratory in Sofia

ELECTRODYNAMIC VIBRATION TEST STAND

- Testing for resistance to vibration with a specified stiffness according to IEC 60068
- Sine wave oscillations at individual frequencies within a wide range, frequency and amplitude modulation, acceleration up to 2.0 g (~20 m/s²)
- Maximum amplitude up to 5.0 mm, frequency from 1 Hz to 600 Hz



INSULATION STRENGTH TESTING DEVICE

- AC Voltage - From 0 to 10 ± 5% kV
- AC Current - 0-20 mA



LABSPION LIGHT MEASUREMENT SYSTEM

- Measurement method - Far field, type C horizontal
- Standard spectrometer range - 360–830 nm
- Sensor distance range – 35 cm to 1,600 cm
- Light source diameter range – 0–1.5 m @2-axis
- Light source maximum weight - 25 kg
- Lumen, Peak candela, CCT, Spectrum, CRI, TM30, CQS, Beam angle, 3D Light Distribution, Power Specs, lm/W



Prototype production workshop for devices

ENGRAVING MACHINE

- Maximum number of control axes - five axes, 2-5 axis linear interpolation, arbitrary 2-axis arc interpolation
- Type of knife magazine - multi process, straight row, disc
- Knife alignment mode - automatic
- Compensation methods - directional gap compensation, radius compensation, length compensation
- Interpolation algorithms: S-shaped, arc hard algorithm, arc soft algorithm



3D PRINTER

- Work with a wide range of materials - PLA, ABS-ESD7, ABS-M30, ABS-CF10, ASA, Diran 410MF07, FDM TPU 92A, PC-ABS, QSR Support material
- Layer Thickness - 0.330-0.127mm
- Build tray dimension - 355 x 254 x 355 mm
- Material Bays - 4 total (2 model / 2 support)

PCB ASSEMBLY

- SMT assembly – high-speed paste dispensing machine (8-15 points/ sec), SMT placer Machine (15000CPH), reflow oven (8 temperature zones)
- THT manual assembly
- Final assembly
- Function test of finish product



REWORK STATION BGA

- Targeting - Optical lens + V-shaped card slot + laser positioning lamp for quick positioning
- Temperature control - High-precision K-type thermocouple (Ksensor) closed-loop control (Closed Loop), up and down independent temperature measurement. Temperature accuracy can reach plus or minus 1 degree
- PCB size – 10x10mm-500x450mm
- Applicable chip – 0,3x0,6mm-80x80mm (min pitch 0,15mm)