



ASLS-30 – Laser Scribing System

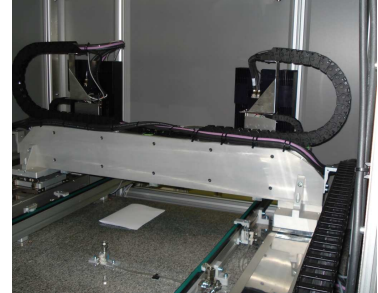
The Laser Scribing System (ASLS) is a high-precision laser cutting tool used in photovoltaic module manufacturing lines. Its purpose is to cut the deposited layers of the panels thus dividing them into individual solar cells. Continuously adjusted infrared and visible Nd:YAG lasers cut the metal and metal-oxide layers, while they move over the glass. A vacuum system removes any particles from the surface of the glass and from the air under it.



The Laser Scribing System (ASLS-30)

A completely automated machine – from the workpiece entry to its removal the entire process is software guided. A pair of production lines has a common triplet of such machines – to cut each of the module's 3 layers. A 1064 nm infrared laser cuts the foremost, transparent tin-oxide refractive layer, while 532 nm green lasers cut the middle and the rearmost layers, the amorphous silicon active layer and the refractive/reflective zinc-oxide/aluminum layer. The only difference between the IR and the visible-range scribes is the laser source.

ASLS-30 – Laser Scribing System



Specifications

Power:	3 kW
L × W:	2.5 × 1.7 m without the I/O tables
Mass:	2500 kg
Workpiece:	1245 × 635 mm (configurable)
Cycle time:	1.5 min
Laser type:	solid state (SPI, Spectra Physics)
Laser power:	2 × 1W (532 nm) / 2 × 20W (1064 nm)
Cutting width:	50 ±10 µm (programmable)
Scribe distance:	40 µm (programmable)
Straightness:	±20 µm
Repeatability:	±5 µm

Features

Two independent heads for simultaneous dual scribing
Programmable number of scribes and scribe spacing
Vision system for real-time alignment of the scribe positions
Glass pass-through or single side load/unload
Glass flipping I/O conveyor section perpendicular or parallel to the scribing axis
Travelling speed up to 1.5 m/s
Granite table support
PC-compatible control, data entry and process computer
Specialized PLC I/O and servo controllers
Pneumatic flatness control
1 triplet of machines can serve 2 production lines