

High Precision Linear Motor Drive Laser Cutting Machines

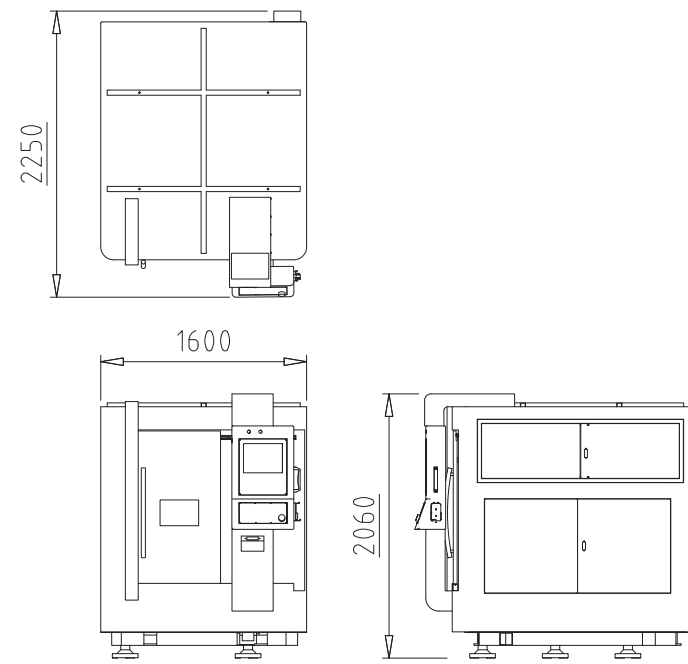


PL Series

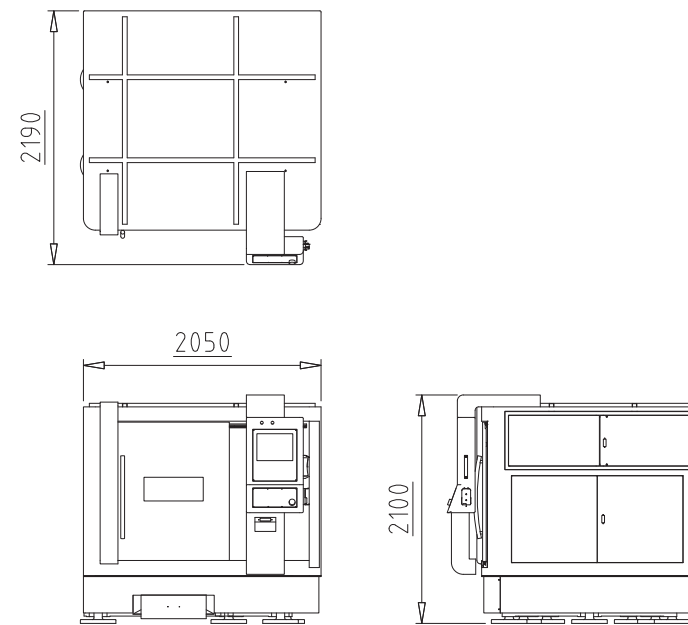
www.chmer.com

Machine Dimensions

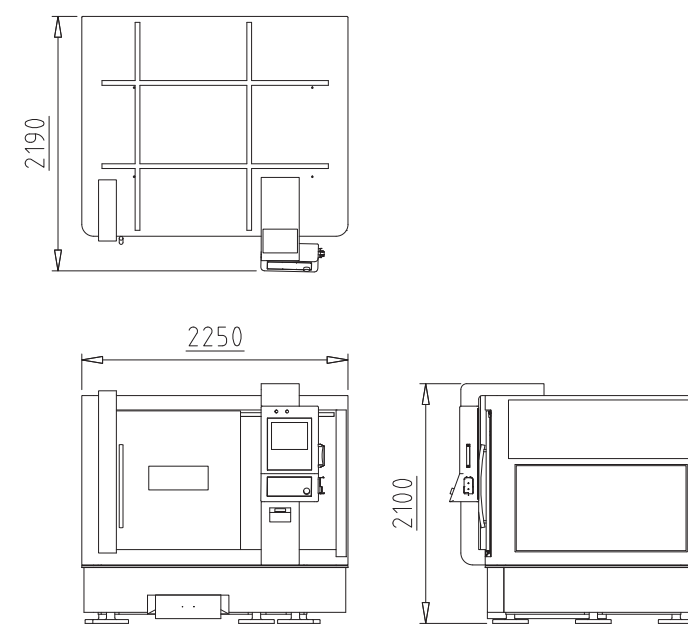
PL4030



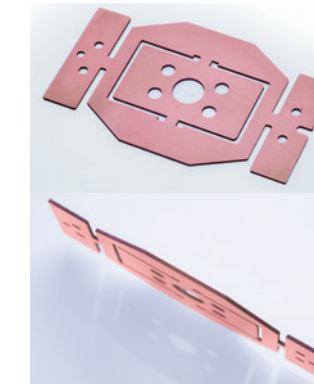
PL6880



PL8080



Samples



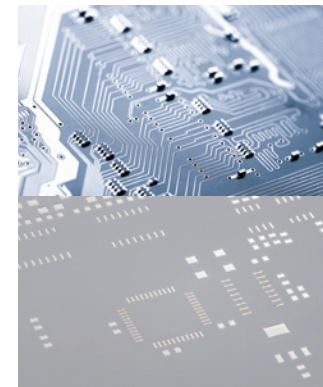
Cooling fins

Material : Copper
Thickness : 0.8mm
Processing Time: 3min20s



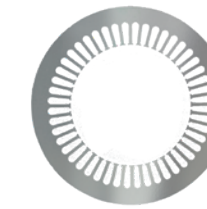
Motor lamination

Material : Silicon Steel
Thickness : 0.5mm
Processing Time: 1min45s



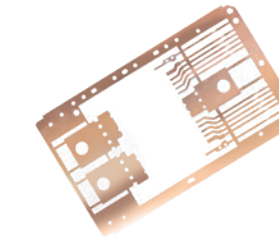
Circuit board

Material : SMT stainless steel
Thickness : 0.2mm
Processing Time: 22min43s



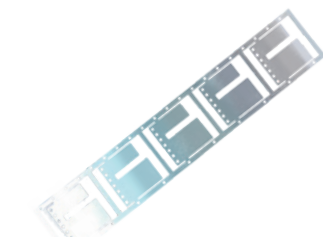
Silicon steel sheet

Material : Silicon Steel
Thickness : 0.35mm
Processing Time: 2min31s



Copper sheet

Material : Copper
Thickness : 0.5mm
Processing Time: 6min49s



Aluminum sheet

Material : Aluminum
Thickness : 0.2mm
Processing Time: 5min10s

Machine Specifications

Model	Unit	PL4030	PL6880	PL8080
X, Y axis travel	mm	400X300	680X800	800X800
Z axis travel	mm	120	120	120
Processing area	WxD mm	400X300	680X800	800X800
Max. weight of workpiece	kg	100	120	120
Max. speed of X and Y axes	mm/min	15	20	25
Positioning accuracy	mm/m	±0.008	±0.008	±0.008
Repeatability	mm/m	±0.004	±0.004	±0.004
Drive system	axis	XY Axes Linear Motor Drive/ Z Axes AC Servo Motor Drive		
Laser power	W	Standard 150W-IPG Optional 450W-IPG	Standard 1200W-nLIGHT Optional 450W-IPG	Standard 1200W-nLIGHT Optional 450W-IPG
Power consumption	kVA	2~8kVA	2~24kVA	2~24kVA
Machine dimensions	WxDxH mm	1600x2250x2060	2050x2190x2100	2250x2190x2100
Net weight of machine	kg	2000	2300	2400

※Due to continuous improvements, the design and specifications are subject to change without prior notice

PRODUCT FEATURES

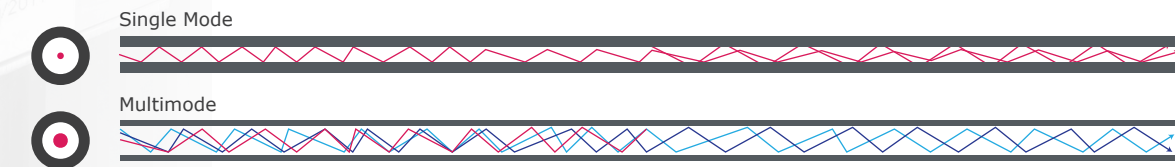
01 Fiber Lasers

CHMER high precision laser cutting machines adopt fiber lasers, which is more precise, straighter and smaller than other types of lasers, such as CO2 laser. They also have advantages of small footprint, good electrical efficiency, low maintenance and low operating costs. Fiber lasers are maintenance-free machines, and they have a long service life. Due to the high electrical efficiency of fiber lasers, they use significantly less power than CO2 lasers, resulting in huge cost savings for cutting applications.

02 Modes of Fiber Lasers

Fiber lasers can be classified into single mode fiber lasers and multimode fiber lasers. Selection of laser modes is depending on the thickness and cutting angle of the cut materials.

	Single Mode	Multimode
Beam Diameter	Small	Large
Applicable Thickness	1mm	3mm
Divergence Angle	Narrow	Wide
Energy Density (Same Power)	High	Low
Energy Distribution	Gaussian	Top-hat

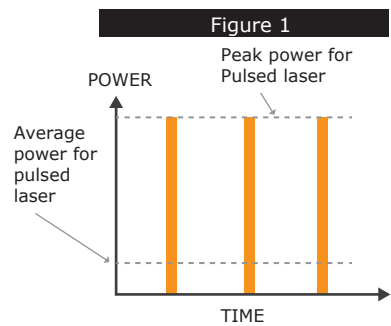


03 Operating Modes

The operating modes of laser outputs are either continuous wave or pulses wave. Pulsed laser produces a series of pulses at a certain pulse width and frequency while continuous wave (CW) simply means that the laser remains on continuously. The use of operating modes are limited by different kinds of lasers. Pulsed Nd:YAG lasers operate in pulsed mode only, diode lasers operate in continuous wave only, and fiber lasers can operate in either pulsed or CW mode.

Pulsed Lasers

A pulsed laser can produce peak power greater than its average power, sometimes could be tens of times. (Fig. 1) Therefore, pulsed lasers offer very efficient cutting capability.

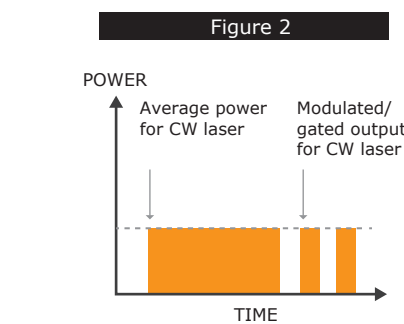


CW Lasers

CW lasers can penetrate at high processing speeds. For example, a 500W multi-mode laser can provide 0.5mm penetration at 125mm per second. These lasers are a good option for high speed cutting applications. So, when high-speed cutting is required, continuous wave lasers are selected.

Modulation Output

A modulation output produces discrete pulses of laser light. The peak power is the CW laser, for instance, the 500W in the above mentioned example. (Fig. 2)



04 Laser Sources

nLIGHT



nLight can quickly deliver the power and features continuous wave (CW) or modulated operating mode. For high reflective metals or unknown materials, the laser source can be well protected. In thin plate processing, the cutting kerf made by CHMER can be less than 0.1mm (the minimum kerf can be 0.06mm with special options). The cutting speed can be ten times more than that of a wire cut EDM.

IPG



IPG is the largest fiber laser manufacturer. Its unique quasi continuous wave (QCW) fiber lasers features continuous/ pulsed/ modulated modes and steadily provides average power and up to several thousand watts of peak power. It is able to minimize the slag and heat-affected zone for sensitive materials or deal with sharp and narrow angles of complex workpieces, resulting good cross-section on the workpiece. IPG 150W single mode and 450W multimode are options for CHMER laser machines.

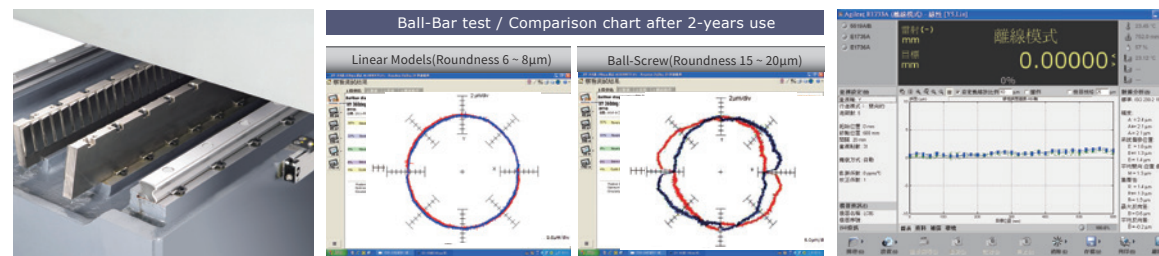
05 German PRECITEC Minicutter Laser Cutting head

CHMER laser cutting machines are equipped with German PRECITEC Minicutter Laser Cutting head. It is suitable for cutting thin sheets. Its structure is simple and compact. Particularly with very complex 3D metal parts, the fast-reacting distance control guarantees a consistently good and reproducible cutting quality. The protective glass can be changed quickly and without tools on your own. The protective glass can be changed quickly without tools. Adjusting the focus position, easily from outside, can change the cutting process.



06 Linear Motor Drive

X and Y axes are driven by linear motors, which are designed and manufactured by CHMER. Linear motors have high response, vibration free, no backlash, long life, maintenance free, which result in optimal motion control and high efficient processing. The T type rotor and parallel stators linear motor design can counteract the marginal effect of magnet. Every machine is inspected by ball-bar test and laser alignment. The error is within 10µm. The cutting accuracy is ±10µm.

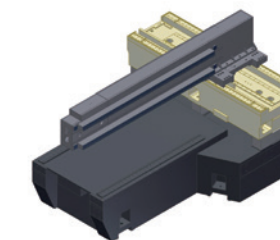


▲ Ball-Bar Test

▲ Laser Calibration Accuracy

07 Patented Center of Gravity Drive Structure

Avoids the deflection of the cantilever and improves the rigidity of the machine. The laser cutting head is able to make axial movement on the workpiece at high speed, so the cutting efficiency is high.



08

Patented Cutting Head Dust Collection

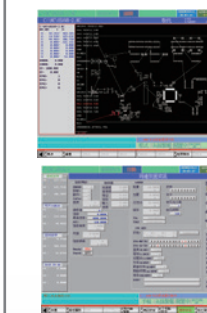
Using Taiwan made HEPA filter dust collection equipment, our laser machines can effectively filter all kinds of suspended smoke and gas to keep clean air quality in the workplace at any time.

09

New Laser Controller – L3i



The hardware and software of the all new laser controller, L3i, is developed and made by CHMER. It has many intelligent functions, including processing simulation, intuitive parameter adjustment, parameter adjustment, user friendly HMI, etc. Up to 7 axis control, it can support online measurement system, and can equip with embedded or multi-time multi-task operation system.

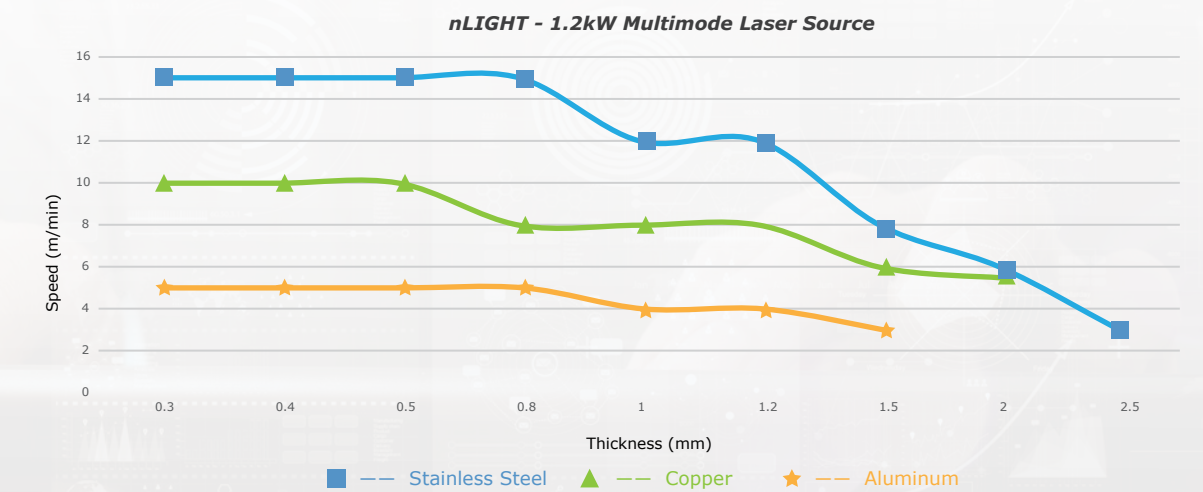


- Optional i-Connected system can remotely monitor machine condition through personal hand held devices and realize the automated production
- All-in-one fan-less design, eliminating complicated wiring, reducing more than 65% of volume and weight and 50% of energy consumption, compared with other controllers
- Supporting RS422/ RS485 data transfer, enhancing anti-interference ability, and increasing serial BPS speed by 4 times
- Dual core CPU, 1 GB RAM, 1GHz calculating speed, 1/3 calculating time compared with previous controllers
- 1G high storage space
- Touch screen and hot swapping USB
- DXF file converter and internet data transfer
- Interrupted power recovery

10

Cutting Examples

The chart below is using a 1.2KW multi-mode nLIGHT fiber laser source and PRECITEC Minicutter laser cutting head, and the cutting thickness is about 3mm or less. The cutting speeds are varied by different materials.



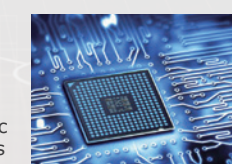
For different materials, the actual maximum cutting thickness, speed, cutting quality are depending on the setting of processing conditions, please contact CHMER for details.

11

Industrial Applications



Medical Industry
Precision medical parts, such as cardiac catheter stents



Electronics Industry
Precision parts, SMT stainless board



Other Industries
Metal composite material, Polymer Materials

