

3D Series

Laser Marking Machine

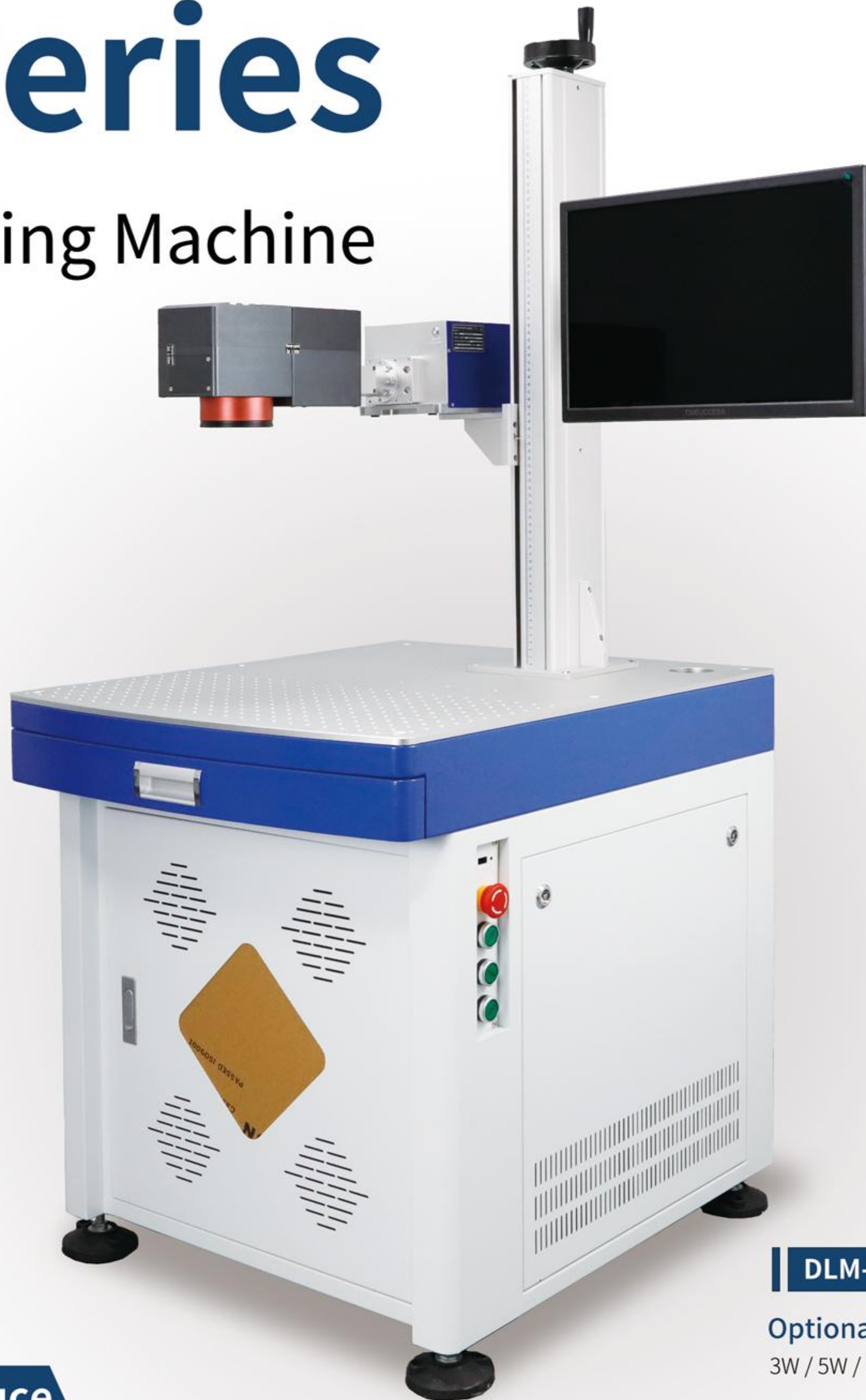
DLM-3D

Laser Type:

UV / Fiber / CO₂

Marking Range:

110*110 / 150*150 / 175*175 /
220*220 / 300*300mm (Optional)



DLM-3DUC

Optional Power:

3W / 5W / 10W / 15W

Machine Introduce

The 3D laser marking machine is composed of a 3D galvanometer system based on the ordinary laser marking machine. High-quality laser processing can be carried out on non-planar and complex surfaces with height variations.

Multi-dimensional: The 3D laser marking machine breaks through the planar limitations and achieves precise processing of complex curved surfaces.

High precision: 3D laser marking machine can automatically correct distortion to ensure the consistency of marking accuracy.

Large format: When paired with a 3D field lens, it can achieve an ultra-wide processing range while balancing marking speed and accuracy.

Application areas:

It is used for materials such as metal, plastic, ceramic, glass, coating, wood, leather, and composite materials, mainly to solve the problem of curved surface focusing. It is applicable to industries such as automobiles, 3C electronics, medical devices, hardware tools, plastic products, and jewelry.

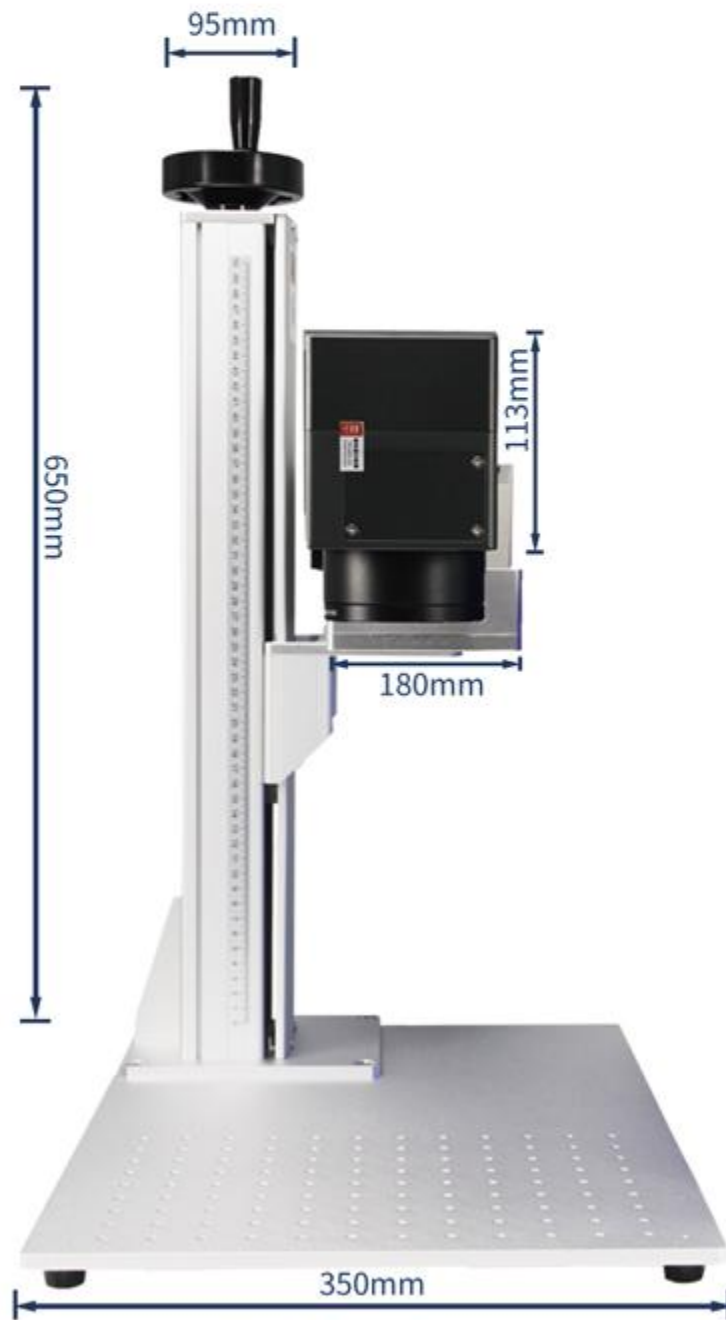
Machine Size

(DLM-3DUC)



	Machine	Chiller
Model	DLM-3DUC	3DUL-05
Size	780*680*1640mm	580*290*520mm
Weight	81.4kg	20kg

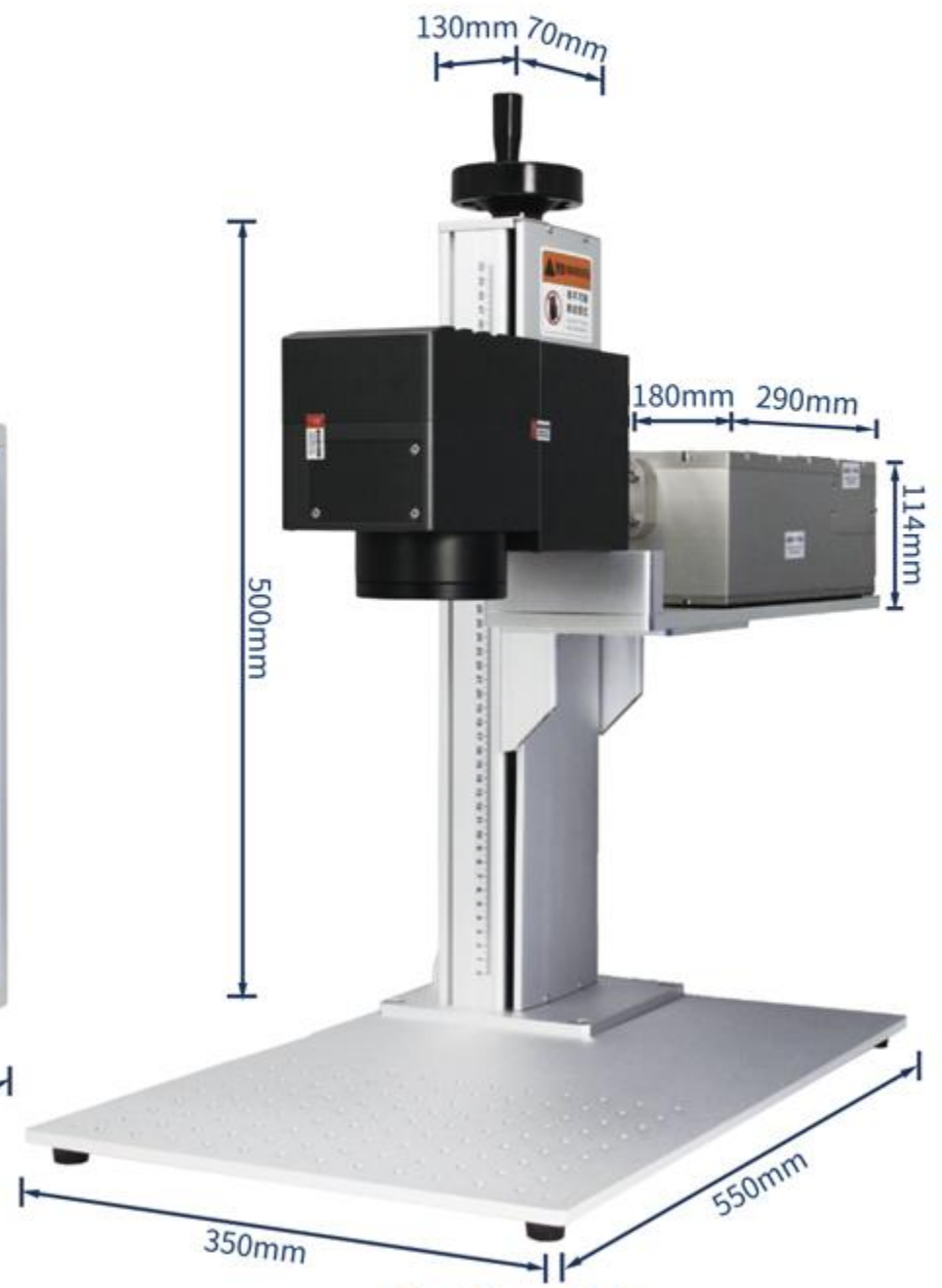
Machine Size (DLM-A3DS)



Machine Front



Main Box Side



Machine Side



Component Introduction

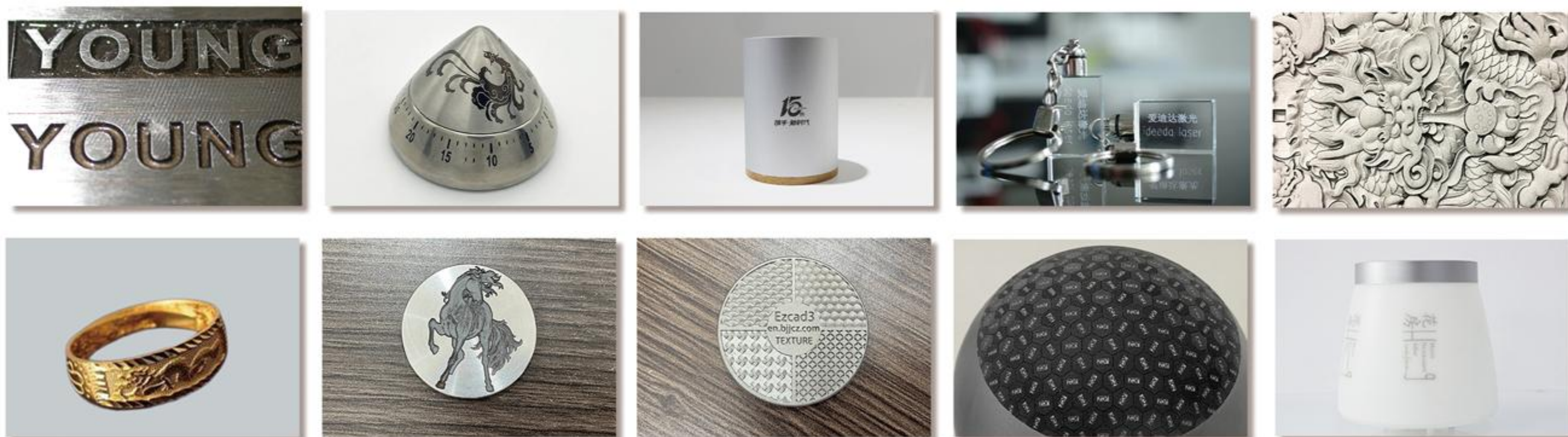


	Machine	Chiller
Model	DLM-3DUS	CWUL-05
Size	350*550*650mm (Main Machine)	580*290*520mm
	230*450*400mm (Main Box)	
Weight	32.5kg	20kg

Machine Size

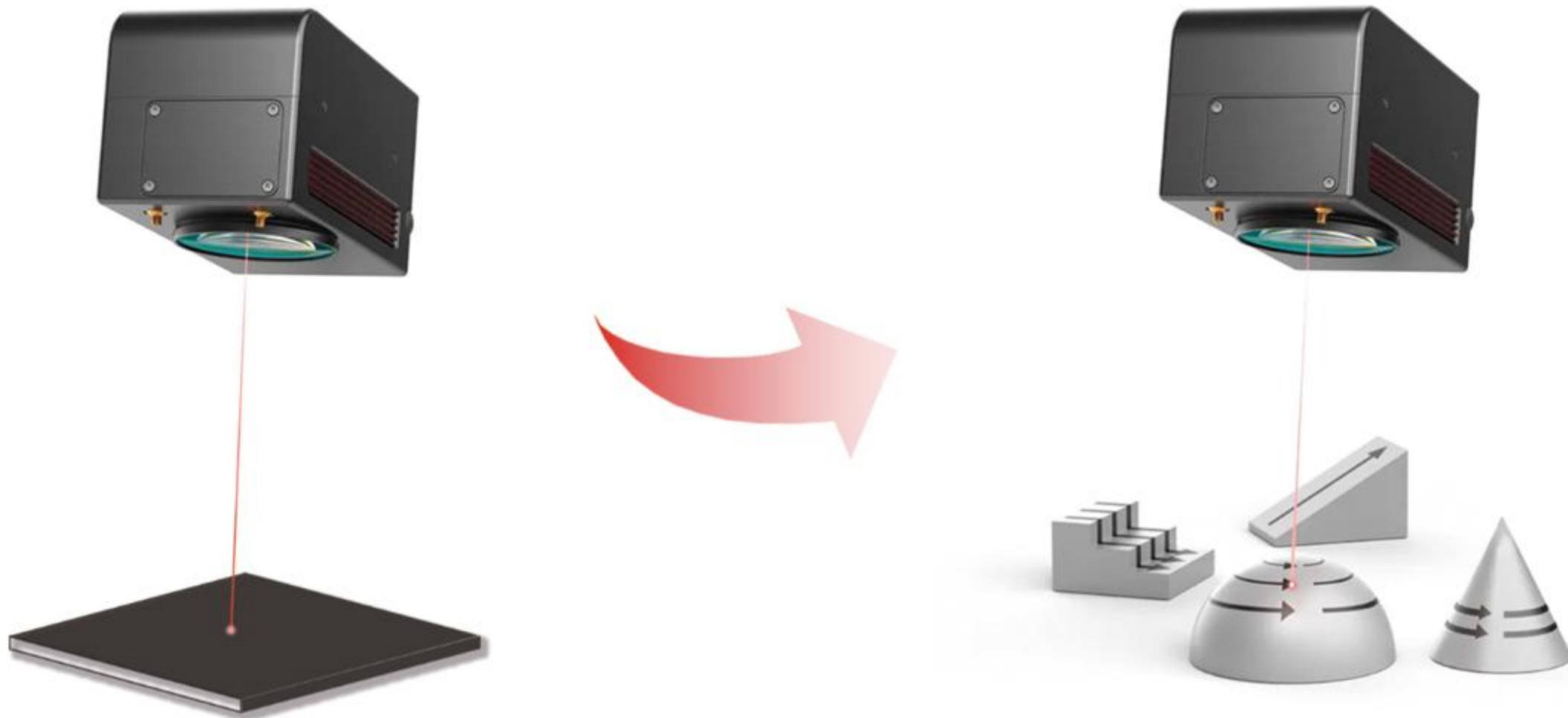
Model		DLM-3DF		DLM-3DU		DLM-3DC	
Laser Parameter	Laser wavelength	1064nm		355nm		10.6um	
	Brand	Raycus / Max / JPT		DXT / JPT / RFH		DAVI / CRD	
	Laser power	50W / 60W / 100W		5W / 10W		30W / 60W	
	Focal range	±30mm		±15mm		—	
Galvanometer Parameter	Brand	JCZ G3-3D					
	Marking speed	4000~8000mm/s					
Laser Output Parameter	Focal length	F=163mm	F=210mm	F=254mm	F=330mm	F=420mm	
	Marking range	110*110mm	150*150mm	175*175mm	220*220mm	300*300mm	
	Min line width	0.06mm @ F=163mm (View materials)					
	Min character	0.2mm @ F=163mm					
	Repeatability accuracy	<8urad					
Control System	Brand	JCZ-Multi axis mobile control card					
	Software	Ezcad 3.0					
	Support system	Windows					
	Support file format	PLT / DXF / AI / SVG / JPG / GIF / BMP / PNG etc.					
	Software language	CN/EN/DE/FR/ES/TC/JA/KOR etc.					
Other	Lifting method	Manual lifting (Optional electric)					
	Computer	Industrial computer (Intel I5+8G+128G;19'LCD)					
	Cooling method	Water cooling / Air cooling					
	Power supply	±15V DC, 3A					

Sample



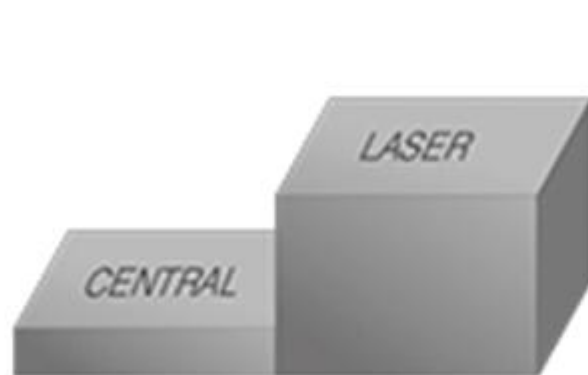
Working Principle

The working principle of a 3D laser marking machine is essentially to upgrade the traditional two-dimensional plane scanning to three-dimensional space scanning achieved through the collaborative control of a "dynamic focusing module" and an "X/Y galvanometer". It achieves a leap from "planar processing" to "curved surface processing" by precisely and in real time controlling the spatial position (X, Y, Z) of the laser focus to adapt to complex three-dimensional processing surfaces.



Scope Of 3D Application

3D laser marking machines are specifically designed for application markets such as high and low position marking, curved surfaces, irregular surfaces, 3D models, deep engraving/relief engraving, precision cutting, flying marking, large format marking, and automatic focusing. Whether the surface of the workpiece is flat, curved or has height difference, through dynamic focusing, extremely high uniformity and consistency of the marking effect can be achieved.



Static high low position

Marking at different heights in a static environment.



Interior carving and relief carving

Lasers shape images inside objects.



Large-format marking

The marking range can reach 300*300mm.



Curved surface marking

Models can be imported and labeled.



Marking on irregular surfaces

Support importing complex models and attaching labels.



3D molding

Support layered entity formation.

Core Component

Laser Source

The type of laser in a 3D laser marking machine directly determines the way it interacts with the material, and thus decides the basic principle and final effect of marking. Meanwhile, the performance parameters of the laser directly determine the beam quality, pulse width frequency, and average power, which in turn affect the processing accuracy, speed, and capacity.

Laser Type	Mode of action with materials	Applicable materials
Fiber Laser 1064nm	Materials absorb laser energy and undergo instant melting, vaporization or oxidation reactions.	Metals, most plastics, electroplated materials
UV Laser 355nm	High-energy photons directly break the chemical bonds of material molecules rather than mainly relying on heat.	Glass, semiconductors, flexible PCBS, high-end plastics
CO ₂ Laser 10.6um	It is easily absorbed by non-metallic materials, causing ablation or chemical reactions.	Wood, leather, glass, paper

Common Brand



● Raycus Fiber Laser Source



● JPT UV Laser Source



● DAVI CO₂ Laser Source

Galvanometer

The 3D scanning galvanometer, based on the traditional 2D scanning galvanometer, adds a dynamic focusing system. The main issue addressed is the focusing problem on curved surfaces or height differences. It does not change the interaction principle between the laser and the material itself, but merely ensures that the laser energy can be precisely focused onto the material surface at different heights or on curved surfaces.



● JCZ-G3-3D Galvanometer



● JCZ-INVINSCAN-3D Galvanometer

Galvanometer

Focus the incident laser reflected by the galvanometer at different angles onto a plane to ensure that the pattern on the entire process object is precise. Meanwhile, the focal length of the field lens directly determines the marking range. The shorter the focal length, the smaller the marking range, the smaller the light spot, and the clearer the marking effect.

Comparison Table Of Field Lens Optional Range

Focal Length	F=163mm (Standard)	F=210mm	F=254mm	F=330mm	F=420mm
Scanning Range	110*110mm	150*150mm	175*175mm	220*220mm	300*300mm
Working Range	176.94mm	228.63mm	271.98mm	352.47mm	438mm

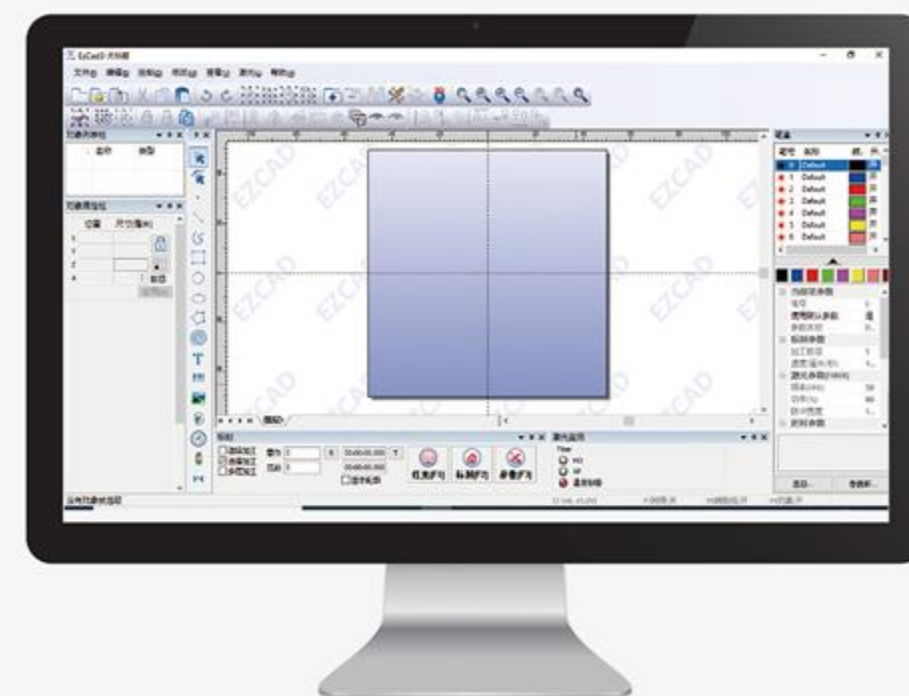
Control System

It adopts the Golden Orange DLC series control card, featuring a brand-new architecture that significantly speeds up data processing. It can meet the demands of high-precision and cutting-edge technologies and has both 2D and 3D functions. Supports large-format processing control, high-performance motion control expansion and other functions; Connected through the network port, the transmission distance is not limited and it can be remotely controlled and operated. Supports various types of lasers

It adopts the professional marking software Ezcad3, which is easy to operate and get started with. Support the PLT/DXF/AI/SVG/JPG, GIF, BMP file formats, such as 3 d model and the STL/DXF files; Supports various variable texts such as fixed text, date, time, skip number, list file, and dynamic file; Support multi-layer XY plane correction; Supports the switching and processing of 16 offline layers.



● DLC Series Control Card

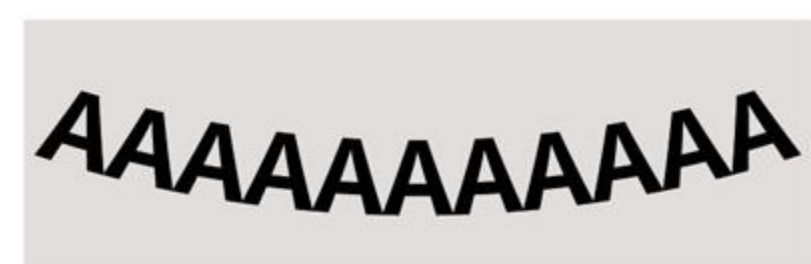
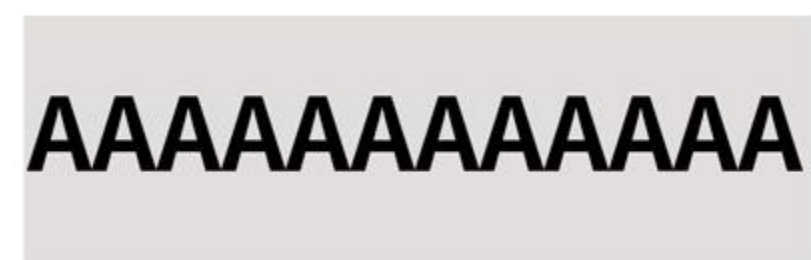
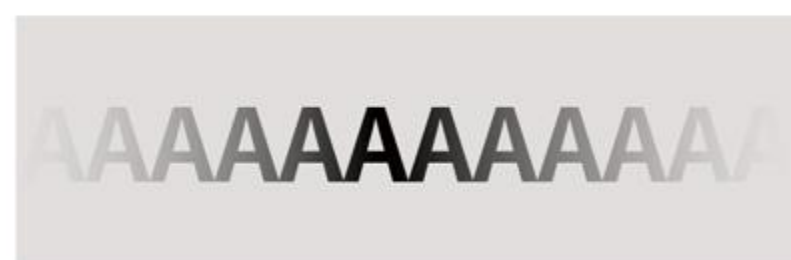


● Ezcad 3 Software

Effect Comparison

● 2D Marking Effect

● 3D Marking Effect



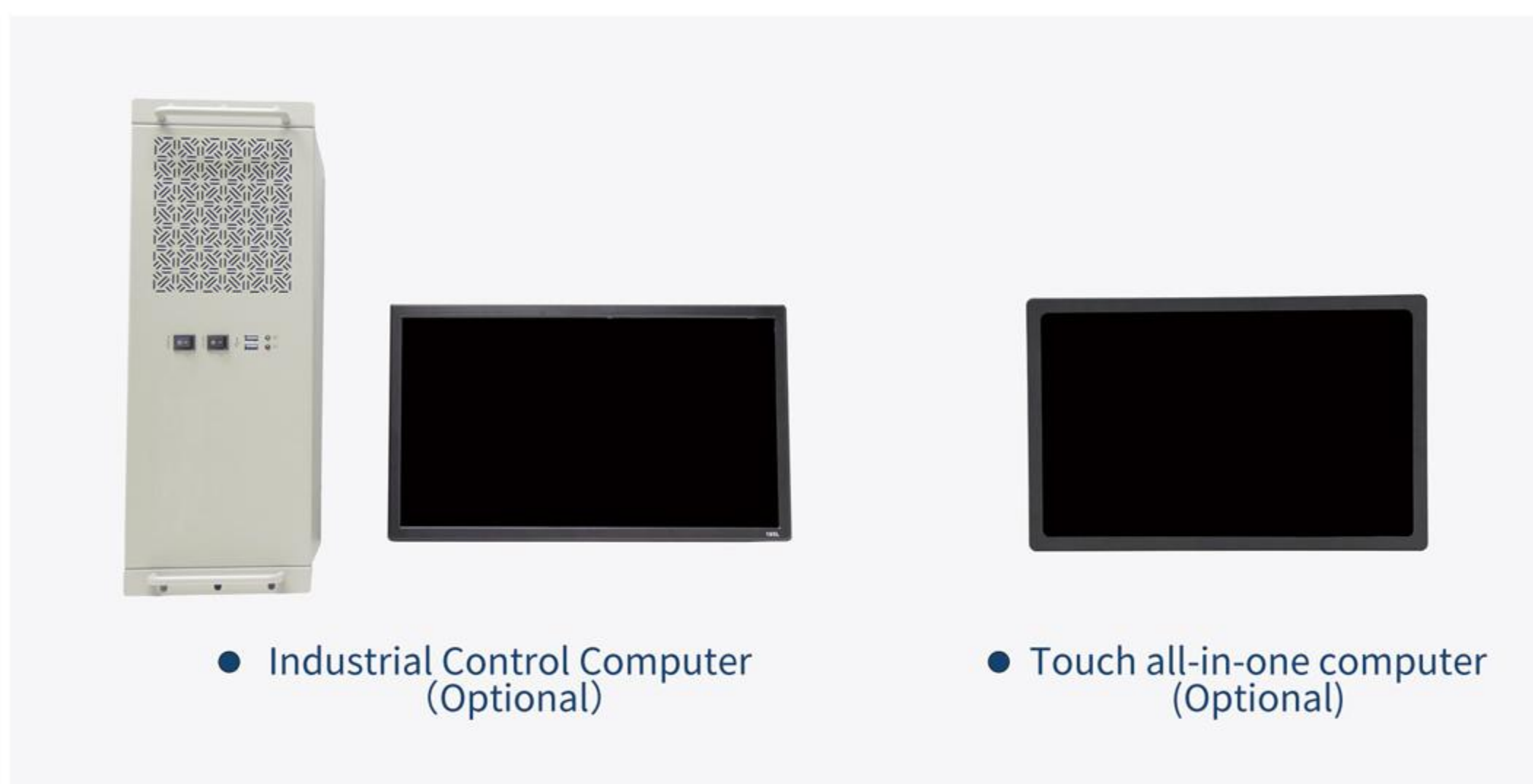
Conlumn

It features a 500mm stroke column. According to the marking range and the size requirements of the workpiece, columns of other specifications such as 800mm stroke and electric control can be selected.



Computer

Equipped with a professional-grade industrial control computer, it features stable performance, an inbuilt Windows system, rich compatibility, support for multiple software, and the ability to connect various extensions. It is sturdy and durable. It has strong environmental adaptability and can operate smoothly in various industrial production environments.



Accessories

Standard Accessories



Protective glasses



USB flash drive



Calibration paper



Focusing film



Foot switch



Ruler



Hexagonal wrench



Positioning bar



Data line



Power cord

Optional Accessories



Chuck rotating fixture



Lifting platform



Rotating disk



Roller rotating fixture



Fixed fixture



XY-Moving axis



Assembly line