

Intelligent Manufacturing in China
Innovation-Driven Development

2022 Design
Intelligence Award

Asian Youth Art in 2022
Design Rookie Award(the highest award)

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Formbuilder

3D COMPUTER VISION TECH 非白三维



About

FORMBUILDER is backed by top technical talent from Microsoft Research Asia and the CAD team of Zhejiang University. A world-leading developer of 3D machine vision system with an independent capacity of full stack development from optics to underlying algorithms, FORMBUILDER is a national-level high-tech enterprise with 120+ patents and software copyrights, including 20+ invention patents.

FORMBUILDER establishes an international team and a European branch in Germany, which helps supply its products in more than 30 countries. By streamlining workflows and accelerating lead times, we help businesses achieve higher efficiency, precision, and product excellence—trusted by renowned brands and their supporting manufacturers, including Bosch, Siemens, Philips, Audi, BMW, Mercedes-Benz, SAIC Volkswagen, Great Wall Motors, Geely, BYD Auto, Yadea, AIMA, SUNRA, Tibet Everest, Aikosolar, the Chinese Academy of Sciences, and Peking University.

50+
销售国家及地区

10000+
客户

Enterprise Honor


Certificate of Compliance

Certificate Number : DJT-TRF20211215090

Certificate's Holder : Hangzhou Blackbox 3D Technology Co., Ltd. Room E901 and E902, Building 1, No. 1378 Wangyi West Road, Cangqian Street, Yuhang District, Hangzhou City, Zhejiang Province

Manufacturer : Hangzhou Blackbox 3D Technology Co., Ltd. Room E901 and E902, Building 1, No. 1378 Wangyi West Road, Cangqian Street, Yuhang District, Hangzhou City, Zhejiang Province

Trade Mark : FORMBUILDER

Product : Handheld 3D Scanner

Model(s) : IS-one, IS-two, IS-three, IS-four, IS-five, IS-six, IS-seven, IS-eight, IS-nine, IS-ten, IS-11, IS-12, IS-13, IS-14, IS-15, IS-16, IS-17, IS-18, IS-19, IS-20, IS-21, IS-22, IS-23, IS-24, IS-26, IS-26, IS-27, IS-28, IS-29, IS-30

Test Standard : EN 55032: 2015, EN 55032: 2007 EN 61000-3-2: 2014, EN 61000-3-3: 2013

This Attestation of Compliance is issued on a voluntary basis for electrical equipment below the voltage limits of EMC Directive 2014/35/EU. The essential requirement are fulfilled accordingly based on the technical specifications applicable at the time of issuance. See also notes overleaf.It is only valid in connection with the test report number: DJT-TRF20210-15090.

This Certificate of Conformity is based on single evaluation of the submitted sample(s) of the above mentioned product.It does not imply an assessment of the whole product and relevant Directives to be observed.


WH Technology Corp.

Declaration of Conformity

For the following equipment :

Equipment Under Test : 3D scaner

Model Name: T-1（CAT-1）, MIAOMIAO

Applicant: Hangzhou black box 3D technology Co., Ltd

C2-302, Dream town, No.3399 Liangmu Road, Yuhang District, Hangzhou City, Zhejiang Province, China

Report No.: CF17062414

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart B and CISPR PUB. 22 and the measurement procedures were according to ANSI C63.4-2014. The sold equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

FCC part 15 subpart B Class B

Taipei, Taiwan Jul. 19, 2017 Mike Lee / Manager


深圳计量检测技术(深圳)有限公司

校 准 证 书

CALIBRATION CERTIFICATE




中国合格评定国家认可委员会

实验室认可证书

（注册号：CNAS L6541）

兹证明：

东莞市欧冠检测技术服务有限公司

广东省东莞市厚街镇河田村河田大道 77 号

华丰大厦三楼，523945

符合 ISO/IEC 17025：2005《检测和校准实验室能力的通用要求》（CNAS-CL01《检测和校准实验室能力认可准则》）的要求。具备承担本证书附件所列服务能力，予以认可。

获认可的能力范围见标有相同认可注册号的证书附件。证书附件是本证书组成部分。

签发日期：2017-02-06

有效期至：2023-02-05

初次认可：2013-11-21

中国合格评定国家认可委员会授权人


高新技术企业

证书

企业名称：杭州非白三维科技有限公司

证书编号：GR202233008414

发证日期：2022 年 12 月 24 日

有 效 期：三年

批准机关：


深圳来测科技有限公司

SHENZHEN LAITEST TECHNOLOGY CO., LTD

（国家认可第三方实验室）

CNAS L10235

公正 · 科学 · 准确 · 优质



Catalogue

01 Overall-size QC Process/Scaning to drawings ready to process
Application Scenario 01/02

02 EXTR-one EXTR-22 EXYR 22 Max EXTR 30 Pro
EXTR Series 03/04

03 MangoFree 331 / 771
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Main Products



EXTR
Handheld Blue Laser 3D Scanner



MangoFree
Handheld Red Laser 3D Scanner



Photogrammetry



ArrayBlocks Education
Structured-light 3D Scanner



ArrayBlock Beast
Structured-light 3D Scanner



EarFiguer
Solutions for Medical Industry



DentalFiguer
Solutions for Medical Industry



AUTO—SCAN&Online3D



MiniScan

Application scenarios

FORMBUILDER provides a complete set of 3D solutions for each customer according to different needs of different industries, which are involved in fields including automobile industry, mold manufacturing, aerospace, machinery manufacturing, 3D printing, teaching and research, cultural relics and sculpture, XR, military industry and home design, etc.



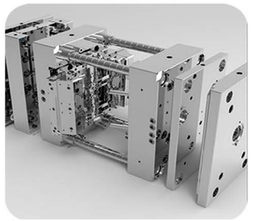
Automobile Industry



Transportation



Aerospace



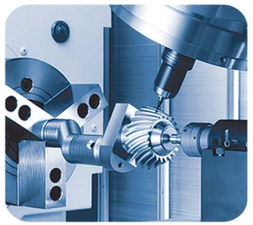
Mold Manufacturing



Medical Field



Teaching and Research



Machinery Manufacturing



Energy Manufacture



Home Design



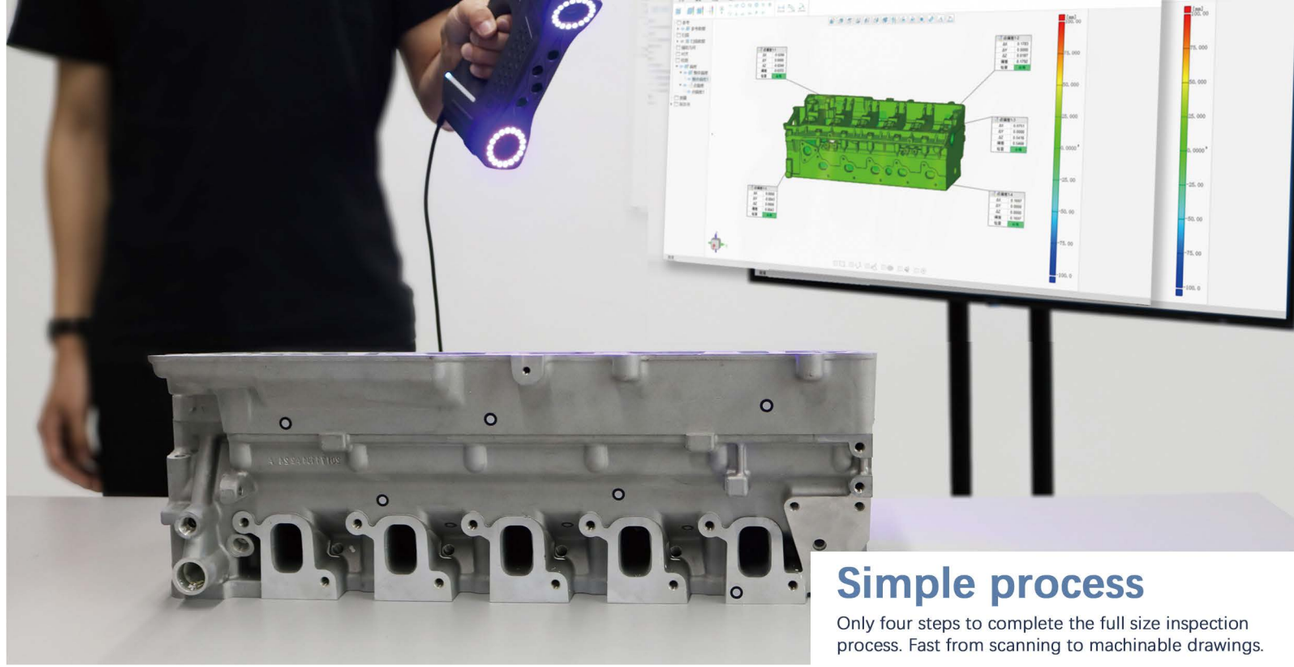
Cultural Relics and Sculpture



XR



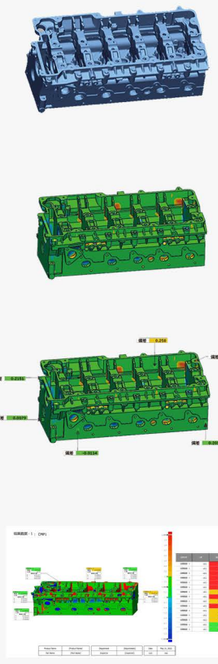
Military Industry



Simple process

Only four steps to complete the full size inspection process. Fast from scanning to machinable drawings.

Overall-size QC Process



Step 1

Import data

STL data , CAD data and more compatible to manistream soft-wares and formats

Step 2

One-click Data alignment

Automatic alignment of CAD and STL data with one click. support au-tomatic alignment of 321 ,RPS, etc

Step 3

Colorful overall-size quality in-spection

The global tolerance and regional tolerance can be set as use.

Step 4

One-click output

Customized report formats and test content , support batch and auto-mated quality inspection

Scaning to drawings ready to process



Step 1

Scan to get data

First scan the object to get high precision STL, after data align-ment,optimization and smoothing, at the end, repair to obtain high precision mesh method

Step 2

Feature Extraction

Mesh based on curvature

Step 3

Reversed Capture of CAD sur-face

Get drafts and parameters from grids for reverse modelling

Step 4

Generate 3D CAD drawings

Support UG(solidworks(Catia, high quality CAD data in STP,X_T and other formats for mainstream soft-ware such as Pro-E

EXTR

EXTR One|EXTR-22|EXTR 22 Max|
EXTR 30 PRO

DESIGN INTELLIGENCE AWARD

2022 Design Intelligence Award

- 3D modeling expert
- 3D Scanner original equipment



Campatible to Many
Support all mainstream reverse softwares

CAD

Simple Processes
Only four steps for the full-size scanning with produced drawings ready to use

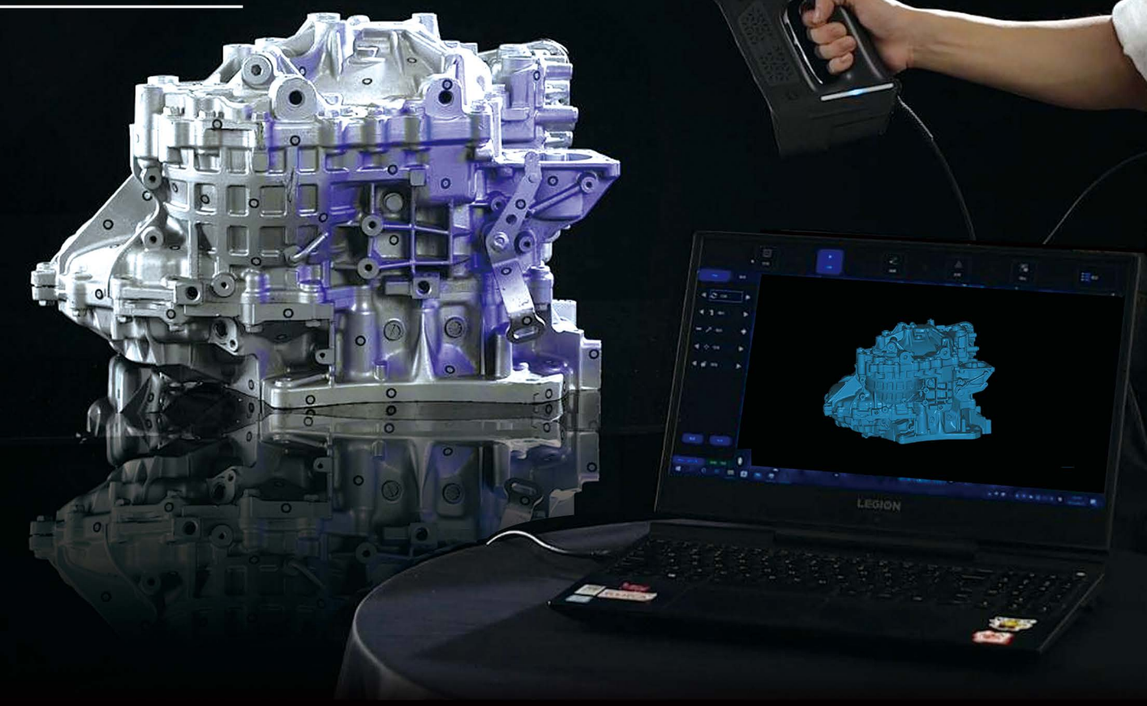
Excellent quality inspection
Doubled quality and drawing efficiency, Significantly reduce the production cost

Easy Operation
Crystally clear instruction of all cases. User-friendly operation interaface without effort to learn.

Global LEADER

From Zhejiang University CAD
Microsoft Asia Research

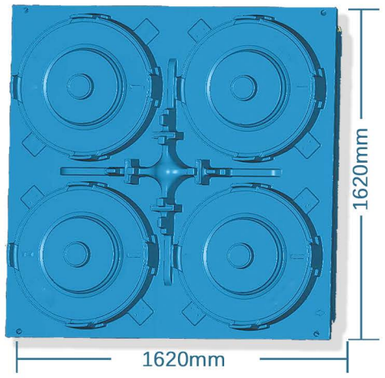
- **Metrology-Grade precision & Low cumulative error**
  High precision as 0.01mm+0.02mm/m!
  Plus photogrametric precision as 0.01+0.015mm!
- **High data speed & Silk-smooth scanning experience**
  2.1M points/sec & 30 laser lines
- **High Robustness**
  Apply to various materials,
  Easily handle high brightness objects.
- **Stable Repeatability**
  Reliable Meassurement, consistent results even for mutiple scannings of the same item!
- **Neat For Complex Workpiece**
  Built for all scenarios , the more complex workpieces, the better performance of scanning.





Large and large Format

Support large format mold scanning, the choice of high effieciency and low cost



- Overall size quality inspection
- Batch mode of quality inspection
- Automated quality inspection with robots
- Multiple DG&T quality inspection
- Settings of Global and Regional tolerence

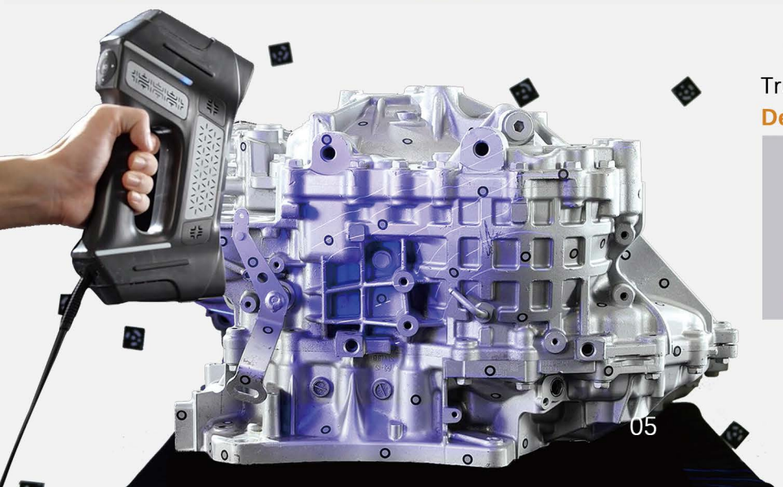
Excellent capability of photogram-metric error control

High precision, stable repeatability

0.01mm±0.015mm/m

Better cumulative error control

Photogrammetric precision up to 0.01mm
Medium to large parts(max):0.02mm



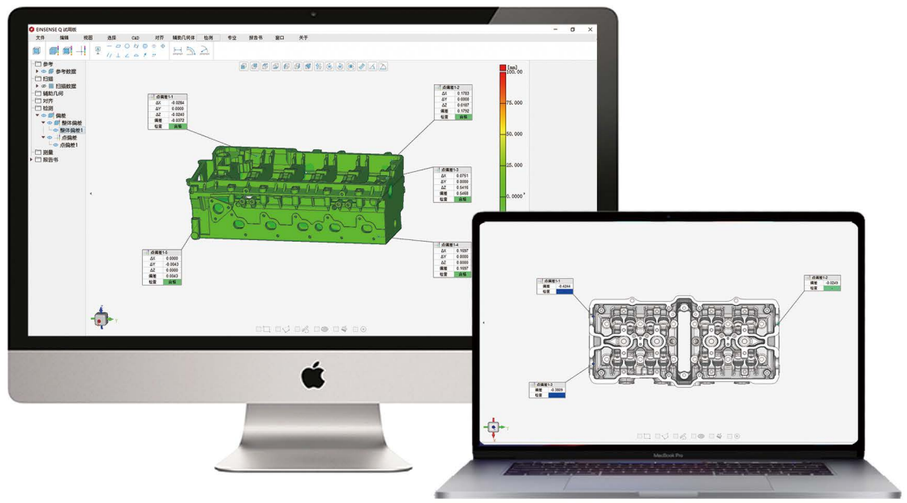
True cases: 1000.1mm
Deviation: 0.0053mm



True cases: 300 mm
Deviation: 0.007mm

Technical Specifications

Model	EXTR-One	EXTR-22	EXTR 30 PRO	EXTR22 Max
Depth of field(DOF)	620mm			
Scan mode	High-speed scanning large-area scanning , deep-hole scanning		High-speed scanning, large-area scanning deep-hole scanning, fine scanning	
Light source	14 beam crossed laser lines +1 laser line beam	22 beam crossed laser lines +1 laser line beam	30 beam crossed laser lines +7+1 laser line beam	22 beam crossed laser lines +7+1 laser line beam
Laser class	Class2(Eye-safe)			
Scan speed	1,650,000m/sec	2,020,000m/sec	2,100,000m/sec	2,020,000m/sec
Scanning range	100mm~4000mm			
Scanning method	Laser scanning(safety laser)			
Accuracy	0.02mm	0.02mm	0.02mm	0.015mm
Volumertric accuracy	0.020mm+0.020mm/m			0.015mm+0.020mm/m
Connection standard	USB3.2			
Operating temperature range	0℃—40℃ (Non-cold temperature)			
Stand-off distance	300 mm			
Output formats	.ply,.obj,.vtk,.stl,.off,.ma,.txt,.asc,.neu,.xyz,.scv,.pn,.pv,.pov and support customized format			



MangoFree

MangoFree 331 | 771

- High cost-effective 3D scanner
- Full stack independent research and development



Mainstream software
Mainstream reverse software

Easy to Use
The whole process of scanning guidance, software interface design is clear and easy to understand.

CAD

Simple Process
Completee the full size QC process in four steps&fast when scanning machine parts and drawings

Great/improved quality inspection
efficiency doubled to improve quality and drawing efficiency., reduces the production cost

Technical specifications

Model	MangoFree 331	MangoFree 771
Depth of field(DOF)	250mm	
Scan mode	Turntable automatic scanning, handheld laser multi-line scanning , handheld laser single-line scanning and handheld maker point scanning	
Light source	6 crossed laser lines +1 laser line	14 crossed laser lines +1 laser line
Laser class	ClassII (Eye-safe)	
Scan speed	250000m/sec	4800000m/sec
Highest resolution	0.2mm	
Scanning area	250mm*225mm	
Scanning method	Laser scanning(safe laser)	
Accuracy	the highest: 0.05mm	the highest: 0.03mm
Volumertric accuracy	0.050mm/m±0.060mm/m	0.030mm/m±0.060mm/m
Connection standard	USB3.0	
Operating temperature range	-10℃—40℃	
Stand-off distance	300 mm	
Output formats	.ply,.obj,.vtk,.stl,.off,.ma,.txt,.asc,.neu,.xyz,.scv,.pn,.pv,.pov and support customized format	

Global LEADER

From Zhejiang University CAD Microsoft Asia Research

- Full-scale inspection
- Mass quality inspection
- Automated quality inspection with robots
- DG&T Multiple DG&T quality inspection capabilities
- Free setting of global and local tolerances

0.02mm±0.06mm/m
0.02±0.03mm (photogrammmetry, stronger cumulativeerror control)metrological precision

14 Laser lines
480000 bps/sec
High data flow scanning experience

Precision stability
Stable and reliable accuracy, turntable linkage and automatic scanning

More efficient for complex workpieces
Suitable for extremely complex accessories



Array

Array Block Education | Array Block Beast

- Fully automatic High-precision Fine detailed
- Dual-axis/single-axis Colored/high-speed

Providing users with a complete solution of automatic 3D scanning system from calibration to editing and processing of data.

Providing users with 3D scanning data of fine details and textures.
Single-axis/dual-axis, colored/high-speed Different versions of configurations make users accessible to various options suitable for actual application.



Technical specifications

Model	Array Block Educatiom	Array Block Beast
Scanning mode	fully automatic scanning with turntable, free scanning	fully automatic scanning of turntable, fully automatic multi-axis scanning with turntable, professional scanning
Splicing mode	multi-axis scanning and splicing with turntable, automatic splicing with turntable, mark point splicing, manual splicing, feature splicing	
Scanning precision	volumetric accuracy: 0.1mm	volumetric accuracy: 0.05mm; detailed accuracy: 0.05mm
Scanning range	Fully automatic scanning with turntable : 220x220x210mm Fully automatic multi-axis scanning with turntable: 222x222x222mm Free scanning: 740x740x740mm	Fully automatic scanning with turntable : 200x150x150mm Fully automatic multi-axis scanning with turntable: 222x222x222mm Professional scanning: 1200x1200x1200mm
Scanning speed	Fully automatic scanning with turntable: 2min Free scanning: 6s (single scan)	⩽0.6s
Texture scanning	24 bit true color, texture export and import are supported, and texture segmentation, editing and modification are available	
Output formats	STL、ASC、OBJ、PLY、VTK、OFF、FB	
Sensor resolution	2 color cameras of 3 megapixels	2 industrial cameras of 1.3 megapixels Dot pitch
Dot pitch		0.10mm-0.15mm
Coding emitter	LED cold light（(Eye-safe)）	
Stand-off distance	400mm	
Working temperature	0℃-40℃	
Weight and dimensions	1.9kg、607x240x214mm	
Voltage of adapter	DC12V, 5A, 60w	
Maximum load bearing capacity of turntable	5kg	
Recommended computer configuration	OS: Windows7（64bit）　CPU: inteli5processor GPU: NVIDIAGTX650 or above　RAM: 4GB or above	

Product features

Ultra-thin turntable
Fully automatic scanning, intelligent splicing, one-click data output

Smooth docking
Smooth docking with 3D printing

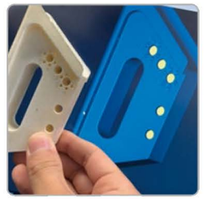
Super dual-axis
Super dual-axisFully automatic dual-axis turntable for 3D scanning of different dimensions and precision with one click

Fully automated
Fully automated splicing with turntable

More details
High precision makes multi-angle scanning without any omitting available

Ultra high-speed
Faster scanning saves more time

Application scenarios


Industrial small part


Cultural relics


Designer–assisted design


3D printing


Footwear scanning


Reverse engineering


Product metrics


Product metrics


Experimental teaching


Toys and garage kits


STEAM education


3D maker education

EARFIGURE

- Professional ear scanner
- Original equipment of 3D scanners



EarFigure, as its name suggests, is a professional medical 3D scanner for collecting 3D data of human ear models. With high-precision structured light 3D scanning technology, it realizes fully automatic multi-axis 3D scanning. And data achieved can be perfectly compatible with 3Shape shell designer and Envisiontec3D.

Technical specifications

Model	EARFIGURE	
Resolution of sensor	3 megapixels X2 black and white industrial CMOS cameras	
Overall precision	⩽0.03mm	
Repetition precision	⩽0.03mm	
Dimensions and weight	Size:263cmx231cmx529cm; Weight: 13kg	
Scanning range	100mm*100mm*75mm	
Scanning time	⩽2min	
Scanning principle	Industrial high-precision structured light	
Code emitter	LED cold light (safe to human eyes)	
Scanning mode	Fully automatic scanning with turntable	
Splicing mode	Ully automatic multi-angle splicing	
Format of data output	STL、Customize the fomat	
Voltage of adaptor	DC12V,5A	
Computer recommended configurations	OS:Windows 7 (64-bit) RAM: ⩾6GB	CPU: intel i5 processor GPU: NVIDIA GTX750 or above

Technical characteristics

One-click option
Fully automatic scanning, intelligent splicing, one-click data output

Ultra high-resolution
3-megapixel high-resolution industrial camera with repetition precision＜0.03mm

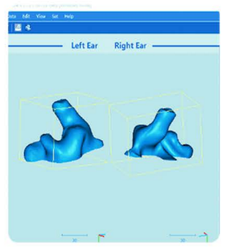
Smooth docking
Smooth docking with 3D printing tools

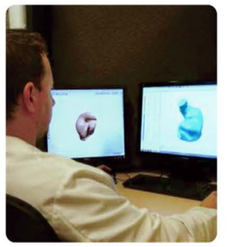
Automatic smoothing
Data are automatically smoothed to be used directly in production

Ultra high-speed
Time of single scanning⩽2min, obtaining data of ear mold in 4min

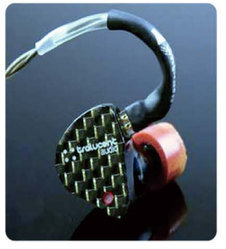
Perfectly compatible
Perfectly compatible with 3Shape shell designer and Envisiontec3D

Application scenarios












DENTISTRYFIGURE

- Professional dental scanner
- Original equipment of 3D scanners

DentistryFigure Dental 3D Scanner is a professional medical 3D scanner that obtains 3D data for human tooth models. It uses high-precision structured light 3D scanning technology to conduct multi axis full automatic 3D scanning. The scanning data can be seamlessly connected with the 3shape shell designer design software and Envisiontec 3D printing.



Technical specifications

Model	DENTISTRYFIGURE
Resolution of sensor	3 megapixels X2 black and white industrial CMOS cameras
Overall precision	⩽0.015mm
Repetition precision	⩽0.03mm
Dimensions	Size:263cmx231cmx529cm
Scanning range	100mm*100mm*75mm
Scanning time	Occlusion for 13s; Upper jaw/lower jaw 30s; 1-8 abutments for 30s; Die 120s
Scanning principle	Industrial high-precision structured light
Code emitter	LED cold light (safe to human eyes)
Scanning mode	Fully automatic scanning with turntable
Splicing mode	Ully automatic multi-angle splicing
Format of data output	STL、Customize the fomat
Voltage of adaptor	DC12V,5A
Computer recommended configurations	OS:Windows 7 (64-bit) RAM: ⩾6GB CPU: intel i5 processor GPU: NVIDIA GTX750 or above

Technical characteristics

One-click option
Fully automatic scanning, intelligent splicing, one-click data output

Ultra high-resolution
3-megapixel high-resolution industrial camera with repetition precision＜0.03mm

Smooth docking
Smooth docking with 3D printing tools

Automatic smoothing
Data are automatically smoothed to be used directly in production

Ultra high-speed
The single scan speed is less than 10s, and the complete model taking time does not exceed 90s

Perfectly compatible
Perfectly compatible with 3Shape shell designer and Envisiontec3D

Application scenarios



Photogrammetry

The system enjoys advantages of high precision, measurement speed and automation, large measured dimension and the ability to work in harsh environments, making it a mature commercial industrial digital photogrammetry product. The principle of photogrammetry is to calculate 3D coordinate information of coded mark points with machine vision. Magnetic coding points are affixed on the surface of the object to be measured, and a standard reference bar is arranged. Then, pictures of the object can be obtained with a digital camera which has a fixed focal length of 24mm. All pictures taken are imported into the 3D photogrammetry system software to calculate 3D coordinate information of magnetic coding points, which will form a complete and accurate coding coordinate system.



Technical specifications

Model	U5	U6
Measurement range	<100m	
Measurement precision	0.15mm/4m	
Camera configuration	Special SLR camera	
Methods of calibration	Self-calibration	
Methods of matching	Fully automatic matching	
Operating system	Windows 7/8/10	
Accessory configuration	Carbon fiber ruler and error-resilience coding point (reusable), mark point, flash, memory card	Carbon fiber ruler and error-resilience coding point (reusable), mark point, flash, memory card, reusable adhesive tape
Working environment	-20 to 60℃	-20 to 60℃
Methods of solving		High-precision solving (high-precision centroid modification)
Thickness compensation		support
Error compensation		support
Direct compensation		support
Contents		
Software	●	●
SLR camera and lenses	●	●
Carbon fiber ruler	●	●
Error-resilience coding points	●	●
Mark points	●	●
Flash	●	●
Memory card	●	●
Reusable adhesive tape		●
Special case for instrument	●	●

Technical characteristics

Wide measurement range

Portable large-scale 3D photogrammetry system with fixed-focus lens and 50.6 megapixels enjoys a wide collection range. Ensuring the precision, it keeps the width of single collection of nearly 10m and the measurement range of 100m.

High measurement precision

With the low-expansion and high-precision reference bar, the system supports the calibration with double reference bars, high-precision operation and thickness compensation of coding points so that the photogrammetry system achieves high-precision data. Its error shall not exceed 0.1mm per 4m.

High resolution

Applying fixed-focus high-resolution digital camera
Professionally tuned and calibrated by engineers

High flexibility

Working with the self-developed 3D scanner, it can quickly obtain accurate 3D data of large objects

Independent IPs

Self-calibration technology of camera enjoys independent software intelligent property right and unique core algorithms

Various

Applicable to collect, test and compare the data of complex curved surfaces of large objects

Application scenarios



Automobile Industry



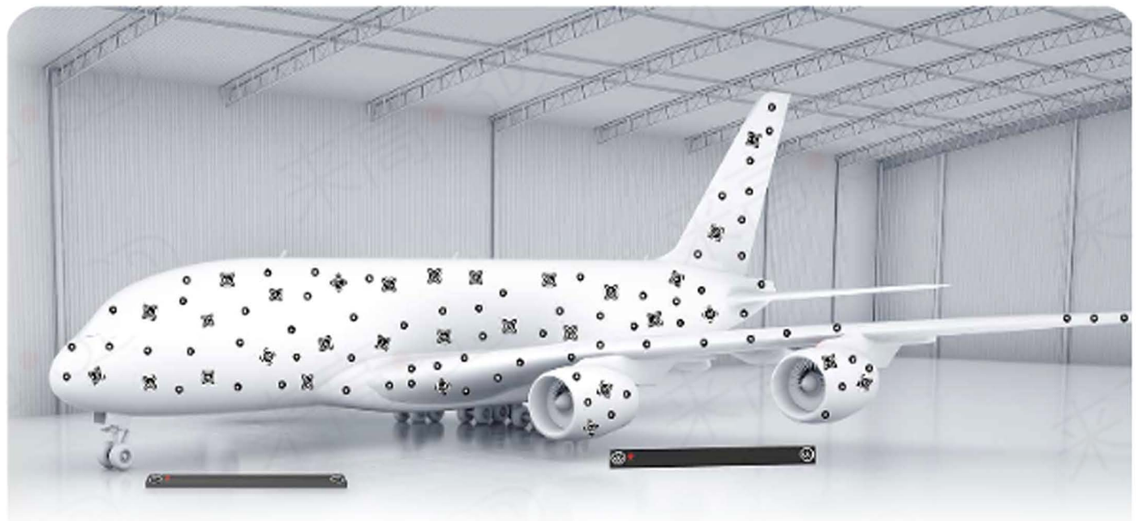
Energy Manufacture



Aerospace



Shipbuilder



Global Market





