

以柔性制造为核心，助力全球工厂工业4.0落地

To enable our global customers to
lead 4IR transformation with smart & flexible automation solution

TEAM
柔性制造专家

智能螺丝锁付产品手册

Intelligent Screw Tightening Product Manual



江苏新惕姆智能装备有限公司

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了解更多柔性方案
For More Flexible Solutions

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COMPANY PROFILE
公司简介

江苏新惕姆智能装备有限公司，聚焦于柔性精密装配领域，持续开发更具自适应能力的通用型部件、通用型设备及数智化软件，为您带来更具拓展性和灵活性的柔性自动化解决方案！

在低压电器、医疗、汽车、新能源、3C电子等诸多领域，新惕姆与一批顶尖的企业并肩，探索着柔性生产的更多可能。经过多年沉淀，新惕姆已拥获多项发明专利与软件著作权，并获得国家高新技术企业认证、苏州市瞪羚企业称号。

新惕姆以雄厚的技术实力为支撑，服务于亟待转型升级的制造企业，助力全球工厂工业4.0落地。



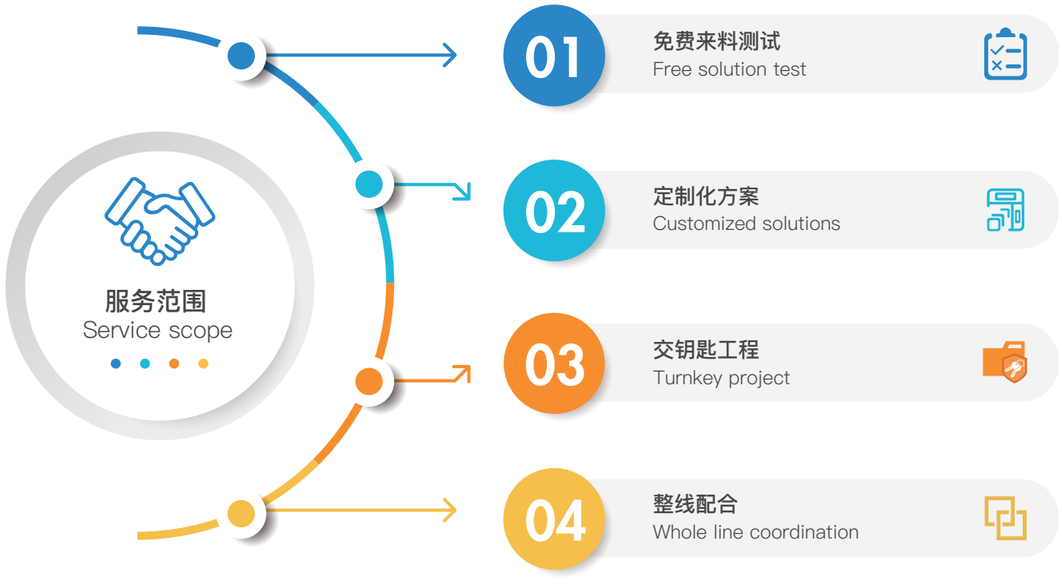
JiangSu Teamrobot Technology Ltd. specializes in the field of flexible precision assembly, continuously developing more adaptable universal components, equipment, and digital intelligence software to deliver scalable and flexible automation solutions.

In various sectors such as low-voltage appliances, medical, automotive, new energy, and 3C electronics, TEAM collaborates with leading companies to explore further possibilities in flexible production. With years of development, TEAM has obtained numerous invention patents and software copyrights, earning recognition as a National High-Tech Enterprise and a Suzhou Gazelle Company.

TEAM, with its robust technical capabilities, serves manufacturing businesses in urgent need of transformation and upgrading, supporting the global implementation of Industry 4.0.

10%+ 研发投入 R&D Investment	高新企业 国家级高新技术企业 National High-tech Enterprise	300+ 员工规模 Staff
2.5+亿 年营业额 Sales	200+ 工程师 Engineer	16000+㎡ 厂房面积 Plant Area
瞪羚企业 苏州市瞪羚企业 Suzhou Gazelle Enterprise	100+ 研发团队 R&D Team	50+ 专利 Patents

合作与服务 Collaboration & Service



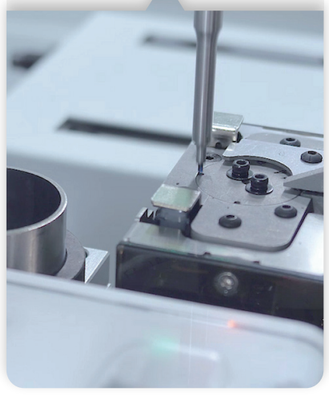
WHAT'S THE DIFFERENCE

有何不同

微细螺丝专属
Exclusive to micro screws

专为微细螺丝研发
最小可支持M0.6螺丝锁付
追求更精准的“打螺丝”

Specially developed for micro screws, the smallest can be supported M0.6 screw locking, the pursuit of more accurate of “screwing”



核心工艺可控
Core process controllable

核心部件自主研发
扭力控制精度高达3%
实现更专业的“打螺丝”

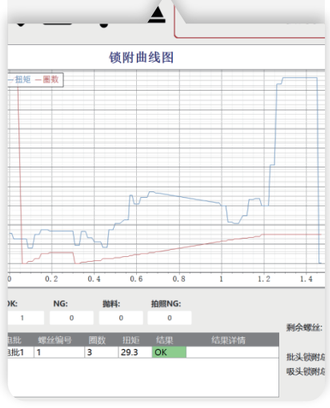
The core components are independently developed, with a torque control accuracy of up to 3%, achieving more professional “screwing”



锁付良率更高
Higher lock-in yields

自有锁付软件
锁付过程实时监测
多策略滑牙、浮高检测
良率高达99.95%，
实现更稳定的“打螺丝”

Self-owned locking software real-time monitoring of the locking process, multi-strategy tooth slipping, floating height detection, yield rate as high as 99.95%, to achieve more stable “screwing”



复杂场景适用
Suitable for complex scenarios

探寻实际锁付场景
研发了适合有干涉、沉孔、
侧边锁付等特殊场景的产品
适合更复杂的“打螺丝”

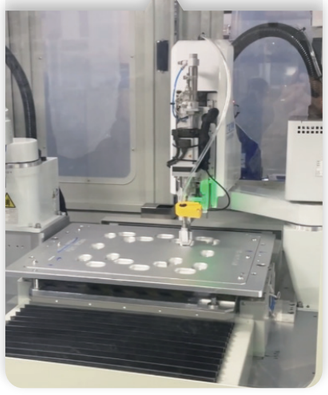
Exploring the actual locking scenarios, we have developed products suitable for special scenarios such as interference, counterbore, and side locking, which are suitable for more complex ”screwing”



兼容性更强
Greater compatibility

视觉定位引导锁付
兼容性更强，换型更便捷

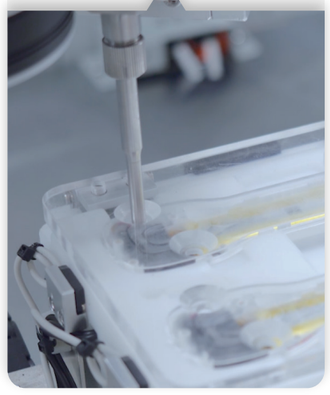
Visual positioning guides the tighten which is more compatible and easier to change



灵活部署
Flexible deployment

模块化设计，可灵活部署
快速与各类产线及设备对接

Modular design flexible deployment, and rapid docking with various production lines and equipment



WORKFLOW OF MACHINE

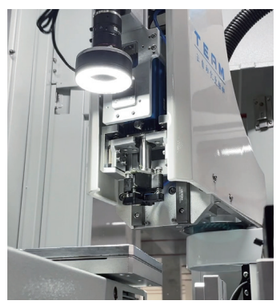
工作流程

01

视觉定位 Visual Positioning

机器利用CCD视觉系统进行螺丝位置的定位。通过CCD辅助示教螺丝坐标点，能够精确地识别螺丝的位置，从而消除人眼误差，确保螺丝能够准确地放置在预定位置。

The machine uses the CCD vision system to locate the screw position. Through the CCD-assisted teaching screw coordinate point, the position of the screw can be accurately identified, so as to eliminate the error of the human eye and ensure that the screw can be accurately placed in the predetermined position.

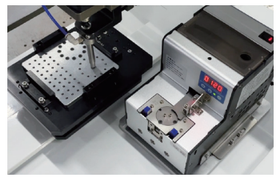


02

螺丝供料 Screw Feeding

自动喂料系统负责提供螺丝，确保机器在拧螺丝时有充足的螺丝供应。

The automatic feeding system is responsible for providing the screws to ensure that the machine has an adequate supply of screws when the screws are turned.



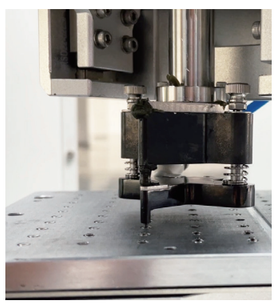
03

螺丝取料 Screw Eeclaiming

根据螺钉尺寸及特点，选择吹气式或吸附式取料。

Choose according to the size and characteristics of the screw Blow-up or adsorption reclaiming.





04

Screw Tightening 螺丝拧紧

通过智能电批，机器可以根据需要设置任意扭力和转速，对螺丝进行拧紧操作。在认牙、拧紧等不同阶段，自动调整最佳的拧紧参数确保螺丝能够被正确地拧紧

With the intelligent electric batch, the machine can set any torque and speed according to the needs to tighten the screws. At different stages such as tooth recognition and tightening, the optimal tightening parameters are automatically adjusted to ensure that the screws can be tightened corre

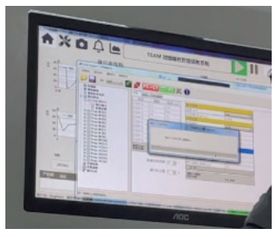


05

In-line Detection 在线检测

实时在线检测浮高、滑牙等不良现象，确保锁付良率

Real-time online detection of undesirable phenomena such as floating height and slippery teeth to ensure the tighten yield



06

Data Storage And Uploading 数据保存于上传

机器能够保存拧螺丝的数据，并且可上传至MES系统。进行有效管理和追踪，有助于提高生产效率和产品质量

The machine is able to save the data of the screws and upload them to the MES system. Effective management and tracking can help improve production efficiency and product quality

SCARA ROBOT SCREW MACHINE

四轴机器人螺丝机

换型生产更加便捷，灵活性更强

Changeover production is easier and more flexible



标 配	Standard	
螺丝规格	Screw specifications	M0.6 ~ M6
功 率	Power	1500 W
电 源	Power supply	AV220 / 10A
臂 长	Arm length	1轴臂 325mm & 2轴臂 265mm
重复精度	Repeatability	1~2关节 ±0.02mm & 3关节 ±0.03mm

选 配	Optional		
二次定位视觉	Secondary positioning vision	☐ 无 None	☐ 有 Yes
移动视觉	Mobile vision	☐ 无 None	☐ 有 Yes
浮高检测	Float detection	☐ 无 None	☐ 有 Yes
扭力自动校准	Automatic torque calibration	☐ 无 None	☐ 有 Yes

定制选型	Customized Selection	
螺钉供料方式	Screw feeding method	A：吸气式送钉 Aspirated nail feeding B：吹气式送钉 Blow-on nail feeding
保持器类型	Retainers type	SFM：直联保持器 Direct retainer ZJ：折角保持器 Corner retainer CK：沉孔锁付模组 Counterbore tightening module
批头	Bitbits	M0.8 / M1.0 / M1.2 / M1.5 / M2.0 / M2.5 支持非标定制 Support non-standard customization

选型范例 Example of selection

请根据实际应用需求选型，建议您联系业务人员帮助您选择最适合的型号。

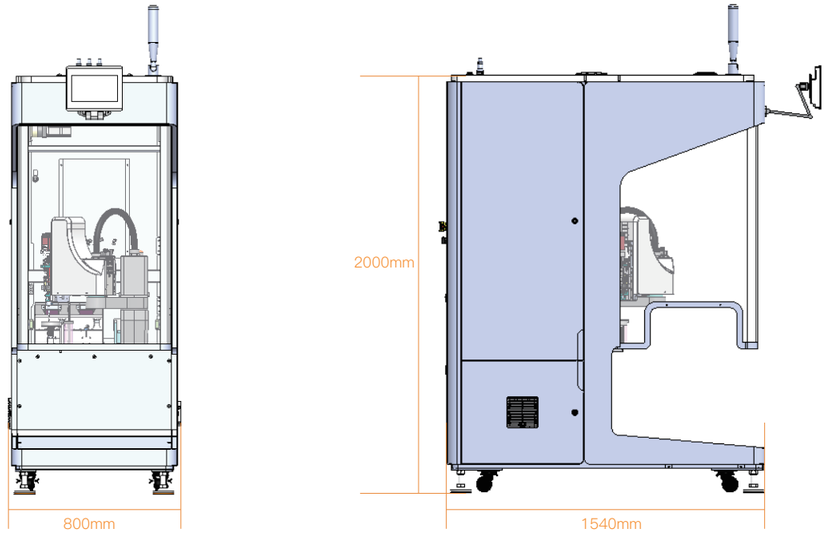
Please select the model according to the actual application requirements, and it is recommended that you contact the sales staff to help you choose the most suitable model.

T6S3 – A – SFM – M0.8
① ② ③ ④

① 机器人型号	Scara robot model
② 螺钉供料方式	Screw feeding method
③ 保持器类型	Retainers type
④ 螺丝规格	Screw specifications

四轴机器人螺丝机工作站

Scara robot screw machine workstation



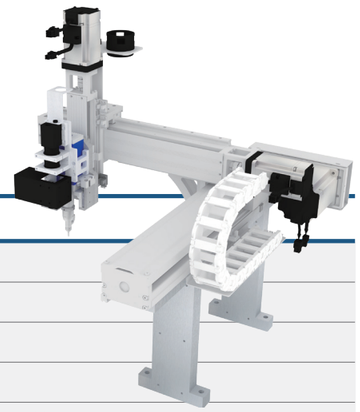
标 配	Standard	
螺丝规格	Screw specifications	M0.8 ~ M5
气 源	Air supply	正压 Positive pressure ⩾0.5MPA
电 源	Power supply	AC 220V / 20A 50HZ
锁付良率	Lock-up yield	＞99.5%
锁付精度	Tightening accuracy	±0.05mm
锁付CT	Lock-up CT	3~6 s/pcs
环 境	Environment	温度 Temperature：5~50℃ 湿度 Humidity：RH10~80%
螺钉供料器	Screw feeder	转盘式 Turntable 容量 Capacity: 1000~1500pcs 出料速度 Discharging speed：60 pcs/min

THREE-AXIS ROBOT SCREW MACHINE

三轴机器人螺丝机

单品锁付速度更快， 成本更低

Lock-in is faster and less costly



标 配	Standard			
螺丝规格	Screw specifications	M0.6 ~ M8		
功 率	Power	900 W		
电 源	Power supply	AC220V		
重复精度	Repeatability	±0.02mm		
臂 长	Arm length	X轴 100~700 mm	Y轴 100~300 mm	Z轴 100 mm
运动速度	Speed of movement	X/Y轴 1000 mm/s	Z轴 500 mm/s	

选 配	Optional		
二次定位视觉	Secondary positioning vision	☐ 无 None	☐ 有 Yes
移动视觉	Mobile vision	☐ 无 None	☐ 有 Yes
浮高检测	Float detection	☐ 无 None	☐ 有 Yes
扭力自动校准	Automatic torque calibration	☐ 无 None	☐ 有 Yes

定制选型	Customized Selection	
螺钉供料方式	Screw feeding method	A：吸气式送钉 Aspirated nail feeding B：吹气式送钉 Blow-on nail feeding
保持器类型	Retainers type	SFM：直联保持器 Direct retainer ZJ：折角保持器 Corner retainer CK：沉孔锁付模组 Counterbore tightening module
批头	Bitbits	M0.8 / M1.0 / M1.2 / M1.5 / M2.0 / M2.5 支持非标定制 Support non-standard customization

选型范例 Example of selection

请根据实际应用需求选型，建议您联系业务人员帮助您选择最适合的型号。

Please select the model according to the actual application requirements, and it is recommended that you contact the sales staff to help you choose the most suitable model.

CCR – A – SFM – M0.8

① ② ③ ④

① 机器人型号 Three-axis robot model

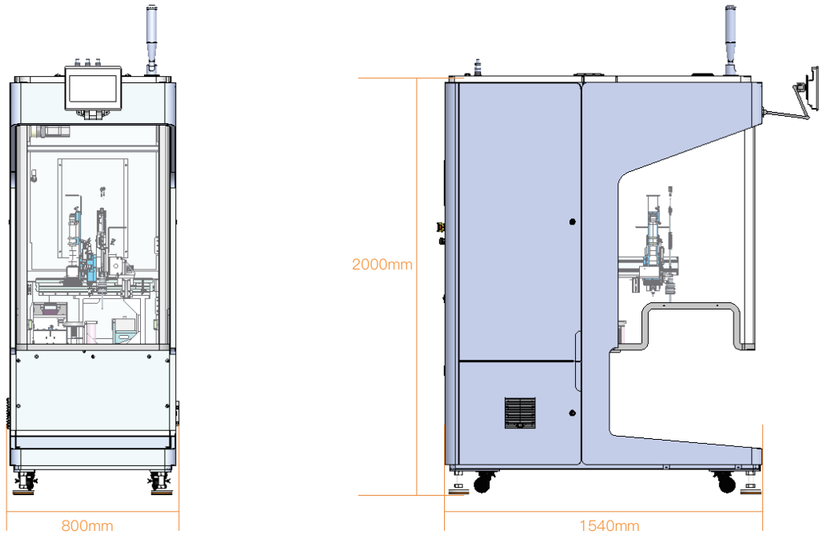
② 螺钉供料方式 Screw feeding method

③ 保持器类型 Retainers type

④ 螺丝规格 Screw specifications

三轴机器人螺丝机工作站

Three-axis robot screw machine workstation

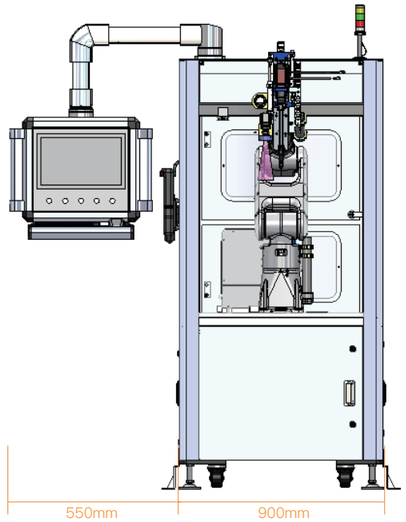


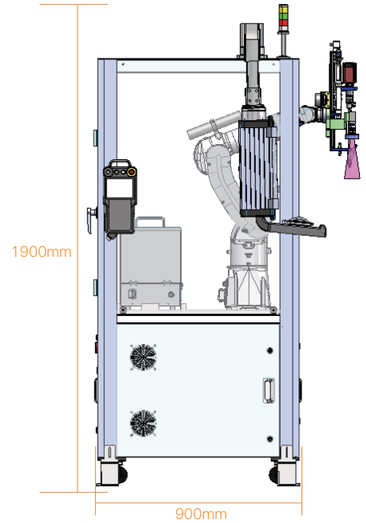
标 配	Standard	
螺丝规格	Screw specifications	M0.8 ~ M6
气 源	Air supply	正压 Positive pressure ≥0.5MPA
电 源	Power supply	AC 220V / 20A 50HZ
锁付良率	Lock-up yield	＞99.5%
锁付精度	Tightening accuracy	±0.05mm
锁付CT	Lock-up CT	3~6 s/pcs
环 境	Environment	温度 Temperature：5~50℃ 湿度 Humidity：RH10~80%
螺钉供料器	Screw feeder	转盘式 Turntable 容量 Capacity: 1000~1500pcs 出料速度 Discharging speed：60 pcs/min

SIX-AXIS ROBOT TIGHTENING SCREW SOLUTION

六轴机器人锁螺丝解决方案







配 置	Disposition	
机械手(推荐)	Manipulator (recommend)	EPSON
螺丝供料器	Screw feeder	TEAM
电 批	Electric batch	TEAM
螺钉供料方式	Screw feeding method	A：吸气式送钉　Aspirated nail feeding B：吹气式送钉　Blow-on nail feeding
批头	Bitbits	M0.8 / M1.0 / M1.2 / M1.5 / M2.0 / M2.5 支持非标定制　Support non-standard customization

基本参数	Basic Parameters	
螺丝规格	Screw specifications	M0.8 ~ M6
气 源	Air supply	正压 Positive pressure　≥0.5MPA
电 源	Power supply	AC 220V / 20A　50HZ
锁付良率	Lock-up yield	＞99.9%
锁付精度	Tightening accuracy	±0.02mm
锁付CT	Lock-up CT	3~6 s/pcs
环 境	Environment	温度 Temperature：5~50℃　湿度 Humidity：RH10~80%

功能选配	Optional Functions		
二次定位视觉	Secondary positioning vision	☐ 无 None	☐ 有 Yes
移动视觉	Mobile vision	☐ 无 None	☐ 有 Yes
浮高检测	Float detection	☐ 无 None	☐ 有 Yes
扭力自动校准	Automatic torque calibration	☐ 无 None	☐ 有 Yes

INTELLIGENT TIGHT POWER PAYMENT BATCH

智能锁付电批

支持多任务规划 Support Multi-task Planning

最多支持16种不同参数的拧紧任务，每种任务可分9步完成，可灵活应对各种拧紧工况

It supports up to 16 tightening tasks with different parameters, and each task can be completed in 9 steps, which can flexibly cope with various tightening conditions.

专为微细螺丝研发 Developed For Micro Screws

专为微细螺丝(M0.6–M2.5)设计研发支持自动化机用，能实现任意长径比的螺钉锁付

Specially developed for micro screws (M0.6–M2.5), it supports automatic machine use, and can realize screw tightening with any aspect ratio.



3M长线缆 3M long cable

超长线缆，满足长距离转配链接。

Extra-long cable to meet the requirements of long-distance transfer links.

数据适配器 Data adapter

螺丝锁付电批 Screw tightening electric batch

专为微细螺丝(M0.6–M2.5)设计研发。

Specially designed and developed for micro screws (M0.6–M2.5).





型 号	Model	SFM – S	SFM – L
螺丝规格	Screw specifications	M0.6 ~ M1.6	M1.2 ~ M2.5
目标扭力设定	Target torque settings	10~60 mN.m	30~140 mN.m
电 源	Power supply	DC24V / 3A	DC24V / 3A
外形尺寸	Dimension	51.6*40.5*86 mm	51.6*40.5*106 mm
精 度	Precision	±1 mNm	
电 机(控制方式)	Motor (control mode)	步进电机（闭回路） Stepper motor (closed loop)	
通 讯	Communication	Modbus TCP	
转 速	Rotate speed	3600 rpm	
旋转方式	Rotation method	顺时针 CW / 逆时针 CCW	
操作模式	Mode of operation	3种模式（圈数/时长/步进） 3 modes : turns, duration, step	

高精度 High Precision

搭载高精准扭力控制算法，扭力控制精度达1%

Equipped with high-precision torque control algorithm, torque control accuracy up to 1%.

寿命长 Long Lifespan

结构简单，历经数百万次疲劳测试，产品使用寿命长

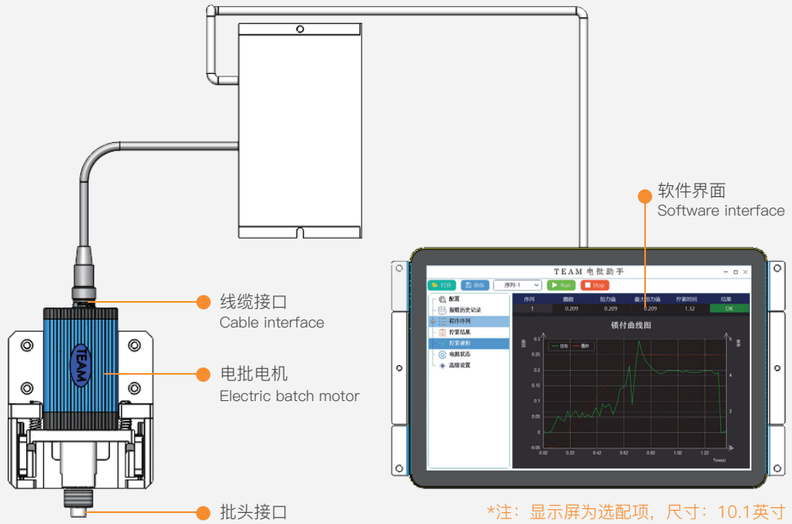
The structure is simple, after millions of fatigue tests, the product has a long service life.

人机交互 Interactive

可选显示屏一体机，人机交互界面操作简单易学，可快速部署

The optional display all-in-one machine, the human-computer interaction interface is easy to learn and can be quickly deployed.

人机交互示意图
Schematic diagram of human-computer interaction



*注：显示屏为选配项，尺寸：10.1英寸
*Note: Display is optional, size: 10.1 inches

锁付工艺三步骤

1.认牙阶段：

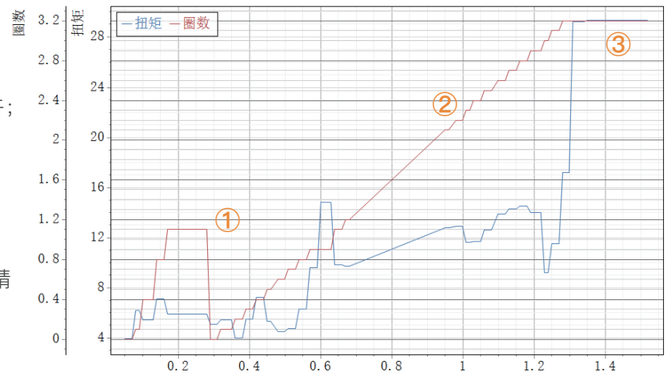
设置1~2圈一个较慢的速度确保有效入牙；

2.拧紧阶段：

根据螺丝实际牙长以最快速度拧入螺丝，确保锁付效率；

3.扭力保持阶段：

最后一两圈扭矩攀升，以慢速确保扭矩精准稳定，防止扭矩过冲。



There are three steps in the tightening process

1.Tooth recognition stage:

Set 1~2 circles at a slower speed to ensure effective tooth entry;

2.Tightening stage:

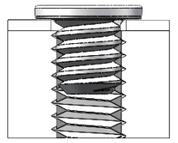
According to the actual tooth length of the screw, screw in at the fastest speed to ensure the tightening efficiency;

3.Torque maintenance phase:

The last two laps of torque climbing, slow speed to ensure accurate and stable torque, to prevent torque overshoot.

扭力、圈数、浮高、倾斜、滑牙检测
Torque, Number of turns, Float height, Tilt and Slip tooth detection

例: 设定扭力值1牛米，拧紧圈数为10
Example: Set the torque value to 1 Nm and set the number of tightening turns to 10



设定扭力：√
Set torque value

设定圈数：√
Set the number of turns

结果判断OK
The result judgment is OK

执行拧紧程序后，实时监控数据反馈，扭力值达到1牛米，圈数达到10圈，此时软件判断拧紧结果OK，输出OK信号

After the tightening procedure is executed, the real-time monitoring data feedback, the torque value reaches 1 Nm, and the number of turns reaches 10 turns, at this time, the software judges the tightening result OK and outputs the OK signal.



设定扭力：√
Set torque value

设定圈数：×
Set the number of turns

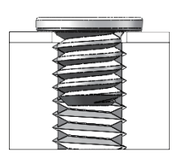
判定结果：浮高
Judgment results:
Floating Height

结果判断NG
The result judgment is NG

1、浮高检测 Float height detection

执行拧紧程序后，实时监控数据反馈，扭力值达到1牛米，圈数只有5圈，此时软件判断拧紧结果NG，NG类别为浮高，输出NG信号

After the execution of the tightening procedure, the real-time monitoring data feedback, the torque value reaches 1 Nm, and the number of turns is only 5 turns, at this time, the software judges the tightening result NG, the NG category is floating height, and the NG signal is output.



设定扭力：×
Set torque value

设定圈数：√
Set the number of turns

判定结果：空转(滑牙)
Judgment results:
Idling (slippery)

2、滑牙检测 Slip tooth detection

执行拧紧程序后，实时监控数据反馈，圈数已经达到10圈，扭力值一直达不到1牛米，此时软件判断拧紧结果NG，NG类别为空转（滑牙），输出NG信号

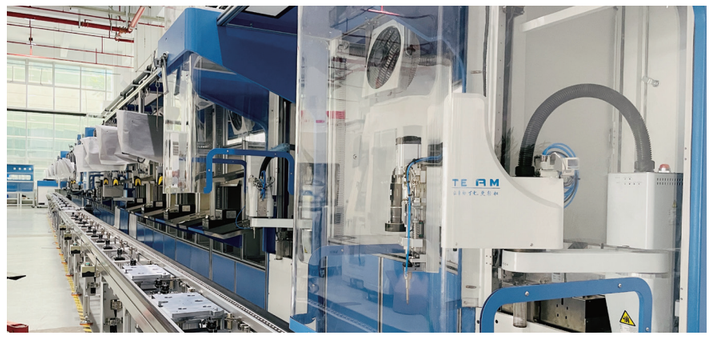
After the execution of the tightening program, real-time monitoring data feedback, the number of turns has reached 10 turns, and the torque value has not reached 1 Nm, at this time, the software judges the tightening result NG, the NG category is idling (slippery), and the NG signal is output.

APPLICATION CASE

应用案例

精准锁付
Precise Tightening

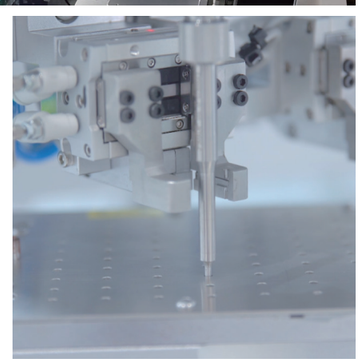


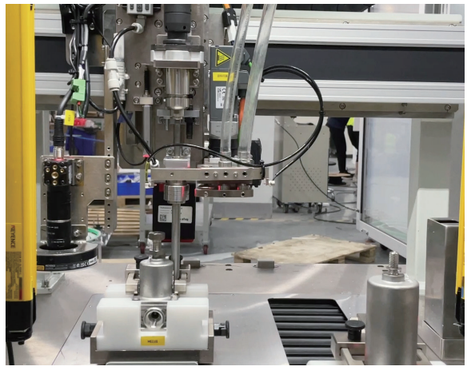


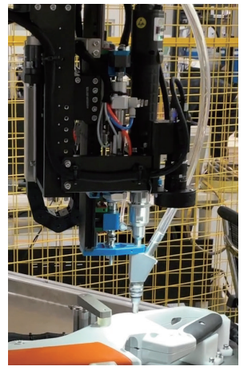






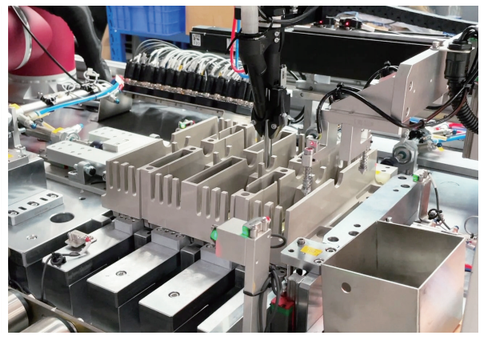












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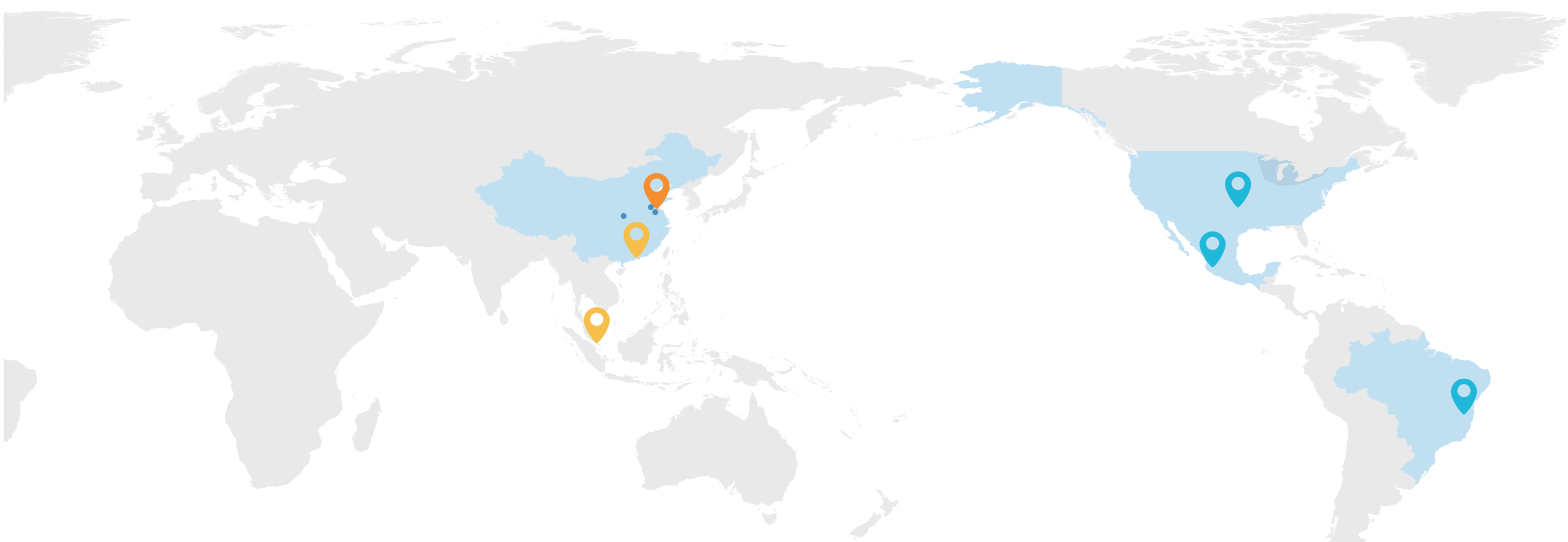


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