



Prodrives Technology Co., Ltd.



TEC series

SF series



PRODRIVES TECHNOLOGY CO., LTD.
(Prodrives)

What kind of tools do you need?
We can help you to find suitable tools.

Industry 4.0 Power Tool Pioneer
PRODRIVES TECH





Traditional tools can't do it

PRODRIVES

help you solve it



traditional tools

✓ Traditional torque control locking tools (mechanical) cannot achieve higher precision locking, affecting production quality?

✓ Most of the traditional power tools are assembled manually, but the quality of the products is often not ensured on the production line, and manual quality control must be carried out at the end.

Prodrives tools

→ The built-in patented torque sensor provides the highest level of accuracy among screw locking equipment. The accuracy of locking target torque is guaranteed to be within $\pm 3\%$ (If the locking status is set correctly, it can be within $\pm 1\%$, and the CMK value is above 1.6)

→ Complete error detection and counting modes allow the locking process to fully meet your quality requirements and reduce human errors, including the most common problems on the production line such as floating locks, missing locks, and screw locks that are too tight or too loose.



Traditional tools can't do it

PRODRIVES

help you solve it



traditional tools

Prodrives tools

✓ Traditional tools do not transmit torque data, and the storage, analysis, and tracking of production data require manual statistical calculations.

✓ Traditional tools require regular calibration (external calibration), which affects production efficiency and costs.

→ Real-time recording and transmission of locking data, including the actual final torque value OK/NG result report, time, number of turns and workpiece ID, torque trend chart, and can be uploaded to cloud PLC/MES/ERP via wired and wireless networks. Carry out data analysis and statistics.

→ The product is designed with an automatic calibration function that can be calibrated in conjunction with a general torque meter, reducing the time required for external calibration and inspection, and ensuring the accuracy of the torque value at any time.



Traditional tools can't do it

PRODRIVES

help you solve it



traditional tools

Prodrives tools

✓ Traditional tool-less torque sensors cannot instantly understand the induced torque status, which affects the production efficiency and quality of the production line..

✓ When traditional tools are locked and changed on the production line, the efficiency and quality of the production line are often reduced.

→ It provides precise control of multi-stage locking without complicated parameter settings, making it easy for on-site personnel to operate. It has two locking control modes, basic and advanced, and meets different quality requirements through complete error detection.

→ It can be combined with the Barcode machine to bring in locking parameters and workpieces. The built-in Job function of the control box can simultaneously set different locking parameters and lock them sequentially, which can reduce problems such as reduced production efficiency and quality caused by personnel changing lines.

Product advantages

✿ Transducerized Electric Torque Control Screwdriver

✿ Transducerized Electric Torque Control High Precision Spindle



The product is easy to set up, does not require complex parameter settings, and is easy to operate.



It has two locking control modes, basic and advanced, which can be adjusted according to your needs and meet customer automated production equipment.



Complete error detection and counting modes allow the locking process to fully meet your quality requirements and reduce human errors.



Products comply with Industry 4.0 and are connected through the Internet of Things (IIoT), cloud connectivity, AI and other technologies to connect products and factories with each other during the manufacturing process.

Core technology and strategy



➔ Core technology areas

- ✓ Torque related drive, transmission and detection technology.
- ✓ Develop and manufacture innovative, efficient and reliable dynamic key components of automated machinery, changing the existing application and design methods of automated machinery.

➔ Core products

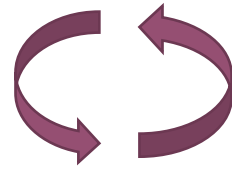
- ✓ Torque detection
- ✓ Thin Torque Sensing Motor Reducer

➔ Strategy

- ✓ Key components or modules
- ✓ The industry is diversified and targets industrial grade product applications with high entry barriers.
- ✓ The products are all Prodrives's own core technologies and patents.
- ✓ Industry 4.0 key components

Precision torque core technology

Torque sensing unit

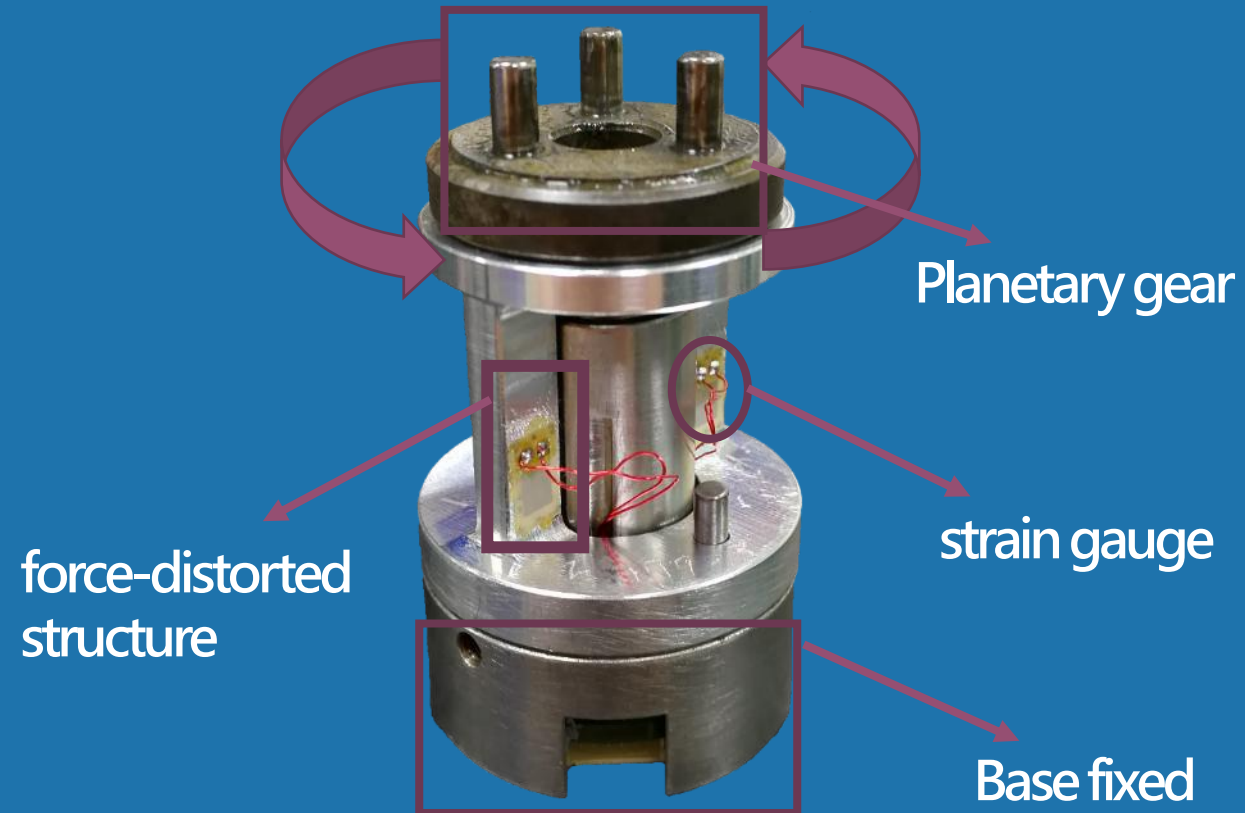


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reaction force

Prodrives Torque sensing unit

Combined with the planetary gear reducer, it is a non-rotating part in the transmission system. It senses the reaction force of the transmission system at different torque outputs, and then obtains the relative torque value.



Torque sensor

Prodrives torque detection is designed for torque detection and control in "practical application situations". It is not a product mostly designed for "experiment and calibration" purposes on the market, and is customized for various purposes.

- ✓ Principle of non-direct contact strain gauge: When a specially designed sensing unit with a strain gauge attached is deformed by torsion, the resistance value of the strain gauge changes. Such changes and the applied torque are linear under certain specific conditions. relationship.



Experimentation
and Calibration
Torque sensor

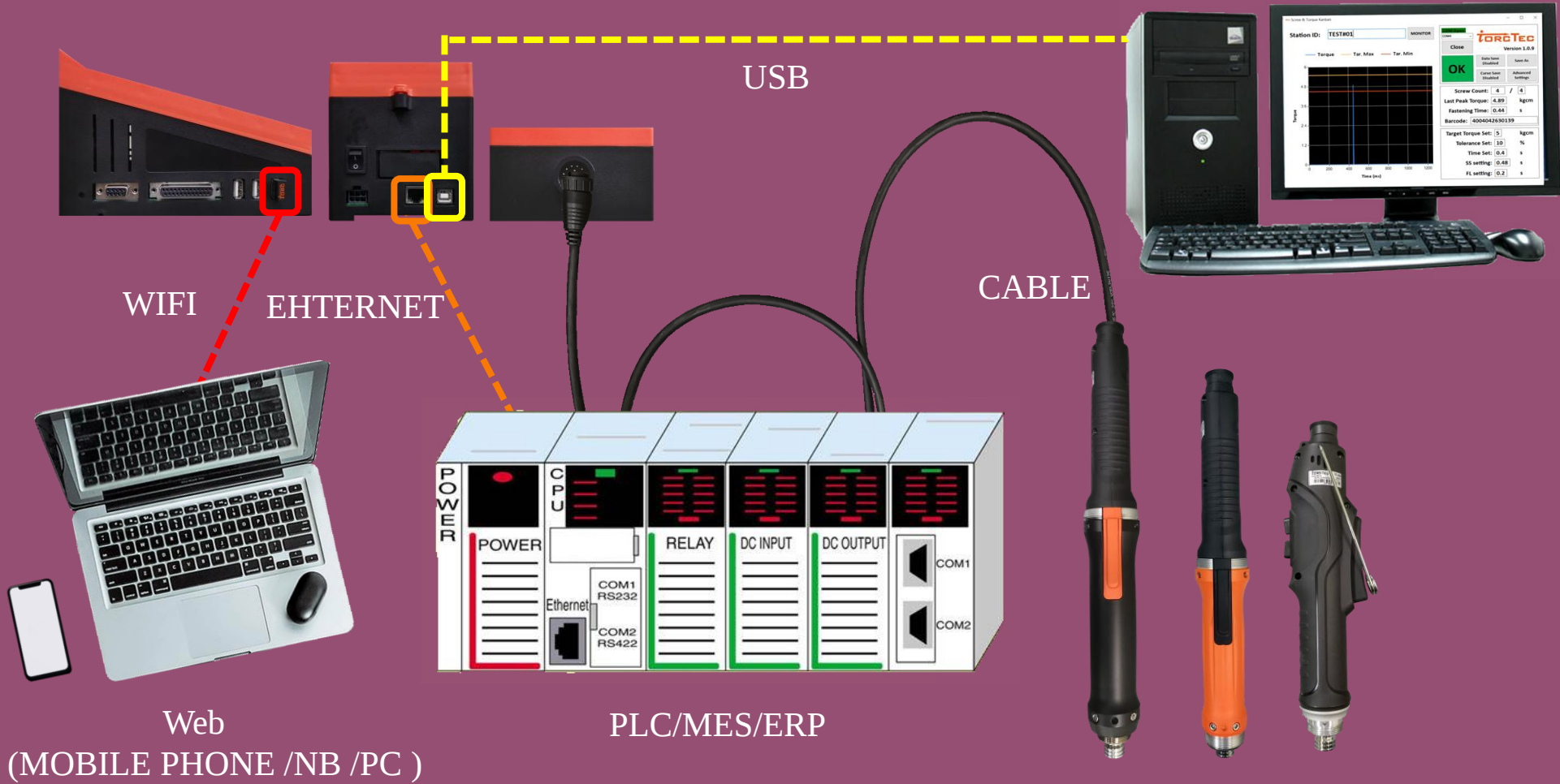
- ✓ High accuracy, expensive
- ✓ Must be used in experimental equipment and environment
- ✓ Large weight and volume
- ✓ Unable to be used in actual applications

Precision screw locking control software



- ✓ Non-traditional mechanical clutch or current-controlled precise torque control tool.
- ✓ Professional electronic control system and software can make the most detailed adjustments and settings for the torque, material, locking angle and speed of various screws and locked workpieces to achieve the highest accuracy.
Locking data can be recorded and transmitted, including the actual final torque, OK/NG result report, time, number of turns and workpiece ID. The torque trend chart can also be recorded and transmitted.
- ✓ Correction is only required every 200,000 times of locking, and it can achieve the purpose of equipment preventive maintenance.
- ✓ Various connection interfaces can communicate with automation systems.

Data integration



Conventional Current Tools vs. Prodrives Sensing Tools (I)

	Traditional current (clutch) tools	Famous foreign brand sensor power tools	Prodrives Servo Power Tools
Torque	It is suitable for general small torque. Tools with large torque need to be equipped with a reducer. They are larger in size, have large tolerances, and have inaccurate torque.	Suitable for both large and small torques	Suitable for both large and small torques
temperature	Easily affected by temperature, resulting in inaccurate accuracy	not affected	not affected
Locking accuracy	Accuracy changes due to usage time	high	The built-in patented torque sensor provides the highest level of accuracy among screw locking equipment. The accuracy of the locking target torque is guaranteed to be within $\pm 3\%$ (if the locking condition is set correctly, it can be within $\pm 1\%$, and the CMK value is above 1.6)

Conventional Current Tools vs. Prodrives Sensing Tools (II)

	Traditional current (clutch) tools	Famous foreign brand sensor power tools	Prodrives Servo Power Tools
Torque speed angle	Yes/poor accuracy	Customizable torque, speed, angle	Customizable torque, speed, angle
Industry 4.0	Unable to fully comply with Industry 4.0 standards	Products comply with Industry 4.0	The products comply with Industry 4.0 and are connected in series through the Internet of Things (IoT) and cloud connection technologies to connect products and factories with each other.
Link interface	few	many	Various connection interfaces can communicate with automation systems
Lock control mode	Basic mode	Basic advanced mode	It has two locking control modes, basic and advanced, which can be adjusted according to your needs and meet customer automated production equipment.
Torque data and locking real-time feedback	Current conversion torque value is inaccurate	Torque data and locking status OK/NG instant feedback	Torque data and locking status OK/NG instant feedback

Conventional Current Tools vs. Prodrives Sensing Tools (III)

	Traditional current (clutch) tools	Famous foreign brand sensor power tools	Prodrives Servo Power Tools
check	Regular calibration (external calibration) is required, which affects production efficiency and costs.	Must be sent back to original factory for verification	The product is designed with an automatic calibration function that can be calibrated in conjunction with a general torque meter, reducing the time required for external calibration and inspection, and ensuring the accuracy of the torque value at any time.
Production line changeover	When the production line is locked and changed, the efficiency and quality of the production line will often be reduced.	have	It can be combined with the Barcode machine to bring in locking parameters and workpieces. The built-in Job function of the control box can simultaneously set different locking parameters and lock them sequentially, which can reduce problems such as reduced production efficiency and quality caused by personnel changing lines.
Floating lock, sliding teeth, missing lock	Manual assembly operations cannot ensure product quality on the production line, and manual quality control must be carried out at the end.	Error detection and counting mode	Complete error detection and counting modes allow the locking process to fully meet your quality requirements and reduce human errors, including the most common problems on the production line such as floating locks, missing locks, and screw locks that are too tight or too loose.

Conventional Current Tools vs. Prodrives Sensing Tools (IV)

	Traditional current (clutch) tools	Famous foreign brand sensor power tools	Prodrives Servo Power Tools
patent	few	have	Self-developed multi-national patents
price	Cheap	high price	The price is higher than traditional power tools, but the price is relatively favorable compared with the sensor tools of well-known foreign brands.



ICTRG1-400

TEC series

Transducerized Electric Torque Control Screwdriver

Tool model: TEC-0100 TEC-0200 TEC-0300

control box : ICTRG1-400

Tool model :

TEC-0100 TEC-0200

TEC-0300 TEC-0750

TEC-1000 TEC-1200

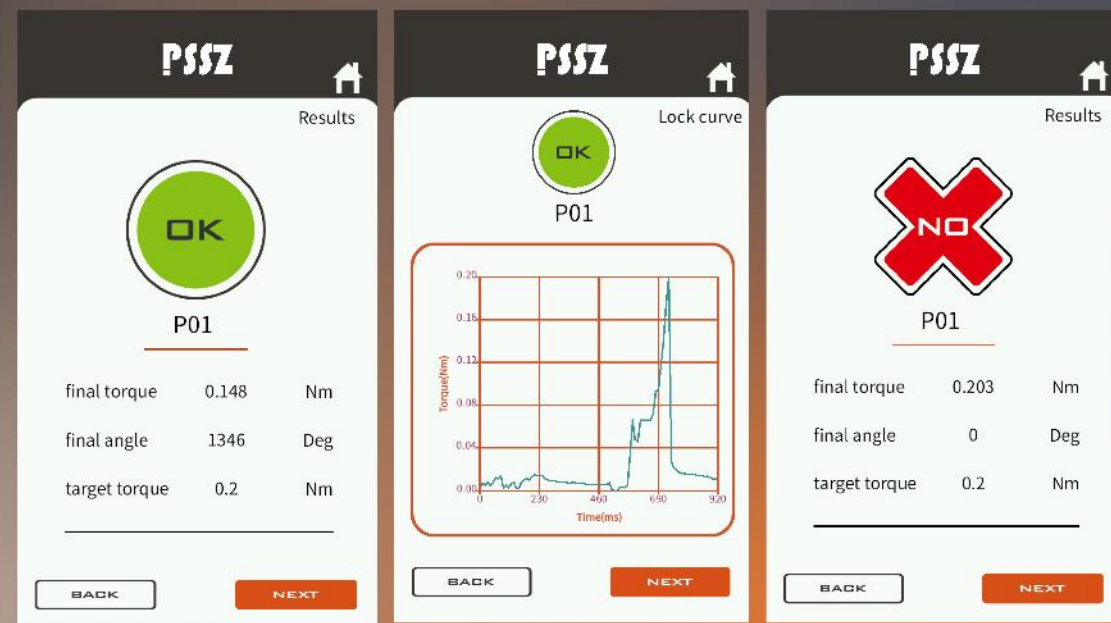
TEC-2000

control box :

TPCB1-700



TPCB1-700





+

TEC series

tool

power tools (CTRG1-400 control box)



+

power tools (TPCB1-700 control box)

- Supported tool models:
TEC-0100 、 TEC-0200 、 TEC-0300
- Maximum speed without load (rpm) : 800
- Torque test range : 0.1~3.0 Nm
- Locking accuracy : $\pm 3\%$
- Locking angle : 6°
- location sensing : Hall Sensor
- Warranty : 1,000,000 Second-rate / one year

- Supported tool models:
TEC-0100 、 TEC-0200 、 TEC-0300 、 TEC-0750 、
TEC-1000 、 TEC- 1200 、 TEC-2000
- Maximum speed without load (rpm) : 220~800
- Torque test range : 0.1~20.0 Nm
- Locking accuracy : $\pm 3\%$
- Locking angle : 6°
- location sensing : Hall Sensor
- Warranty : 1,000,000 Second-rate / one year



ICTRG1-400 control box

TEC series

control box



TPCB1-700 control box

- Front panel: LCD panel & keyboard
- communication interface : RS232 #1, RS232 #2, USB B-Type
- Communication protocol: Custom packet
- memory card slot : SD
- Connection function: none
- Wi-Fi: None
- USB : USB B-Type*1
- Set parameters : 8 Jobs, 30 sets of parameters
- Database: Relevant information required

- front panel: 7-inch LCD touch-sensitive full-color screen
- communication interface: RS232, RS485, USB B-Type, Ethernet
- Communication protocol: Custom packet 、 ModbusTCP
- Memory card slot: None (USB interface can be used to connect a flash drive)
- Connection function: Ethernet LAN connection
- Wireless network: WIFI adapter (accessory)
- USB: USB2.0*3 (can be connected to Barcoder, memory card (32G), WIFI adapter), USB B-Type*1
- Setting parameters: 8 Jobs, 64 groups of parameters
- Database: Complete and detailed record data, which can be fully integrated with Manufacturing Execution System (MES) and Enterprise Resource Planning System (ERP).

Transducerized Electric Torque Control Screwdriver (TEC series)

Specification sheet

tool							
model	TEC-0100	TEC-0200	TEC-0300	TEC-0750	TEC-1000	TEC-1200	TEC-2000
Torque test range (Nm)	0.1~1.0	0.4~2.0	0.6~3.0	1.5~7.5	2.0~10.0	2.4~12.0	4.0~20.0
Dimensions (diameter * length) (mm)	41 * 315	41 * 315	41 * 315	50 * 385	50 * 385	50 * 405	50 * 405
weight (kg)	0.67	0.67	0.67	0.83	0.9	0.95	0.95
Suitable drill bit shape	1/4" HEX (6.35)	1/4" HEX (6.35)	1/4" HEX (6.35)	1/4" HEX (6.35)	1/4" HEX (6.35)	1/4" HEX (6.35)	1/4" HEX (6.35)
Maximum output speed (rpm)	800	800	800	600	600	220	220
Locking accuracy	± 3%						
location sensing	Hall Sensor						
Warranty times	1,000,000 times/year						

Transducerized Electric Torque Control Screwdriver (TEC series)

Specification sheet

control box		
model	ICTRG1-400	TPCB1-700
front panel	LCD panel & keyboard	touch panel
Rated output power	400 W	360 W
AC input voltage	100-240 V, 50-60 Hz	100-240 V,50-60 Hz,3.8A
Output voltage	36 Vdc	36 Vdc
communication interface	RS232, USB B-Type	RS232, RS485, USB B-Type, Ethernet
protection function	Overcurrent/overvoltage/torque abnormality/temperature abnormality/position abnormality	Overcurrent/overvoltage/torque abnormality/temperature abnormality/
Number of I/Os	11 Points (Input: 6, Output: 5, Max Voltage 24V)	11 Points(Input: 6, output: 5, maximum voltage 24V)
Set parameters	8 Jobs, 30 sets of parameters	8 Jobs, 64 sets of parameters
Dimensions (length*width*height)(m m)	142 * 180 * 110	control box 185 *112 *120 power supply 217*94*44
weight (kg)	1.84 ± 10%	control box 670g ± 10% power supply 1.372± 10%



SF series

Transducerized Electric Torque Control High Precision Spindle



Tool model : NSFS010M1-00

NSFS020M1-00

NSFS075M1-00

Control Box : ASFS006-A



power tools

SF series

Tool + Control Box



ASFS006-A

- Supported tool models :
NSFS010M1-00 、 NSFS020M1-00 、
NSFS75AM1-00
- Maximum speed without load (rpm) : 690~920
- Torque test range : 0.1~7.5 Nm
- Locking accuracy : $\pm 3\%$
- Angular resolution : 0.1°
- location sensing : Encoder
- Warranty : 1,000,000 times / year

- Front panel: LED screen
- communication interface: RS232, RS485, USB B-Type
- Communication protocol: Custom packet 、 Modbus RTU ep 、 Modbus TCP
- Memory card slot: None
- Connection function: Ethernet LAN connection
USB : USB B-Type
- Set parameters: 16 Jobs(Each Job can set 8 sets of parameters)
- Database: Complete and detailed record data, which can be fully integrated with Manufacturing Execution System (MES) and Enterprise Resource Planning System (ERP).

Transducerized Electric Torque Control High Precision Spindle (SF series)

Specification sheet

tool			
model	NSFS010M1-00	NSFS020M1-00	NSFS75AM1-00
Torque test range (Nm)	0.2~1.0	0.4~2.0	1.5~7.5
Dimensions (length * width * height)	208 * 61 * 61.7	208 * 61 * 61.7	269.7 * 66 * 66.7
weight (kg)	0.75 ± 10%	0.75 ± 10%	1.15 ± 10%
Suitable drill bit shape	Ø 4 mm	HEX 5.0mm	HEX 6.35 mm
Maximum output speed(rpm)	920	920	690
Locking accuracy	± 3%		
location sensing	Encoder		
Warranty times	1,000,000 times/year		

Transducerized Electric Torque Control High Precision Spindle (SF series)

Specification sheet

control box	
model	ASFS006-A
front panel	None
Rated output powerAC	100-240 V, 50-60 Hz
AC input voltage	360W
communication interface	RS232, RS485, USB B-Type, Modbus RTU, Modbus TCP
protection function	Overcurrent/overvoltage/torque abnormality/temperature abnormality/position abnormality
Number of I/Os	20 Points (Input: 14, Output: 6, Maximum voltage 24V)
Analog output	2 Channels (data monitoring)
Set parameters	16 Jobs, 8 sets of parameters
Dimensions (length*width*height) (mm)	210 * 74 * 206
weight (kg)	1.75 ± 10%

Product patent (ROC)

中華民國專利證書

發明第 I656716 號

發明名稱：可感測扭力的自鎖式減速馬達

專利權人：健騰精密機電股份有限公司

發明人：周志成、胡越陽、湯國昌

專利權期間：自 2019 年 4 月 11 日至 2037 年 9 月 11 日止

上開發明係依專利法規定取得專利權

經濟部智慧財產局 局長

洪淑敏



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中華民國專利證書

新發明第 M649693 號

新發明名稱：電動起子的扭力管制裝置

專利權人：金昌泰科技股份有限公司

新發明創作人：倪瑞鴻、廖雲朋、張敬熙、鄭宏泰

專利權期間：自 2023 年 12 月 21 日至 2033 年 8 月 7 日止

上開新發明係依專利法規定取得專利權

經濟部智慧財產局 局長

廖承威



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中華民國專利證書

發明第 I573994 號

發明名稱：扭力感測裝置及結合扭力感測裝置的旋轉輔助工具

專利權人：健騰精密機電股份有限公司

發明人：梁嘉生、胡越陽、邱耀仁、曾竺湘

專利權期間：自 2017 年 3 月 11 日至 2035 年 10 月 5 日止

上開發明係依專利法規定取得專利權

經濟部智慧財產局 局長

洪淑敏



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中華民國專利證書

發明第 I565197 號

發明名稱：馬達減速機

專利權人：健騰精密機電股份有限公司、梁嘉生

發明人：梁嘉生、曾竺湘

專利權期間：自 2017 年 1 月 1 日至 2036 年 2 月 3 日止

上開發明係依專利法規定取得專利權

經濟部智慧財產局 局長

洪淑敏



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中華民國專利證書

發明第 I605215 號

發明名稱：傳動系統的扭力感測裝置

專利權人：健騰精密機電股份有限公司、梁嘉生

發明人：梁嘉生、曾竺湘、胡越陽

專利權期間：自 2017 年 11 月 11 日至 2036 年 5 月 30 日止

上開發明係依專利法規定取得專利權

經濟部智慧財產局 局長

洪淑敏



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中華民國專利證書

發明第 I640756 號

發明名稱：軸向旋轉式扭力感測器

專利權人：健騰精密機電股份有限公司

發明人：胡越陽、周志成、邱耀仁

專利權期間：自 2018 年 11 月 11 日至 2036 年 11 月 29 日止

上開發明係依專利法規定取得專利權

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洪淑敏



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中華民國專利證書

發明第 I519056 號

發明名稱：電動手工具之馬達控制電路及控制方法

專利權人：健騰精密機電股份有限公司、梁嘉生

發明人：劉添華、梁嘉生、王治國、陳瑞霖、彭程偉、曾紹凱

專利權期間：自 2016 年 1 月 21 日至 2034 年 11 月 17 日止

上開發明係依專利法規定取得專利權

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王美花



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中華民國專利證書

新發明第 M58039 號

新發明名稱：兼做扭力調整暨感測機能一體化的電動起子

專利權人：健騰精密機電股份有限公司

新發明創作人：張榮松、周志成、胡越陽

專利權期間：自 2019 年 12 月 21 日至 2029 年 7 月 31 日止

上開新發明係依專利法規定取得專利權

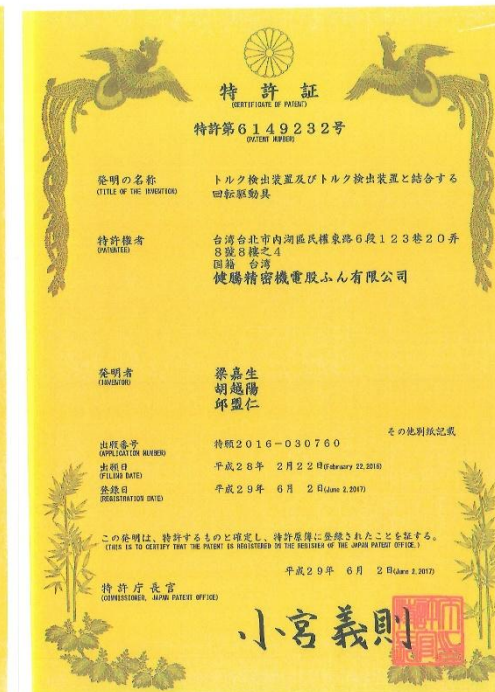
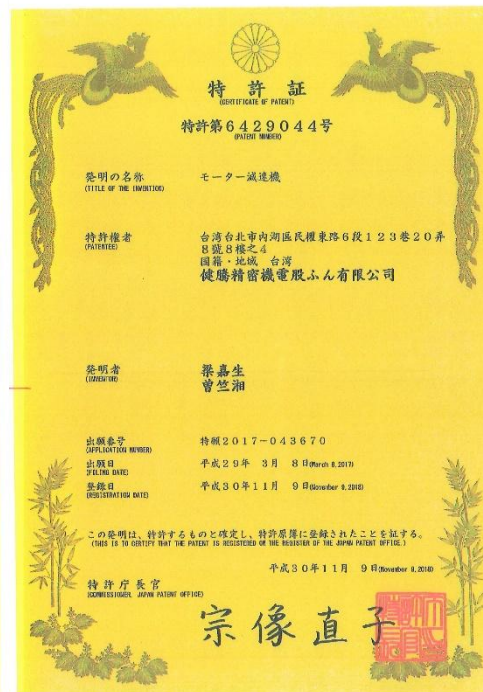
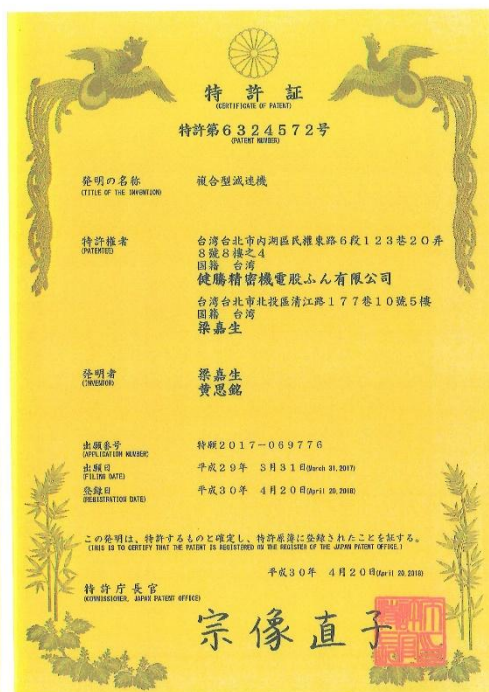
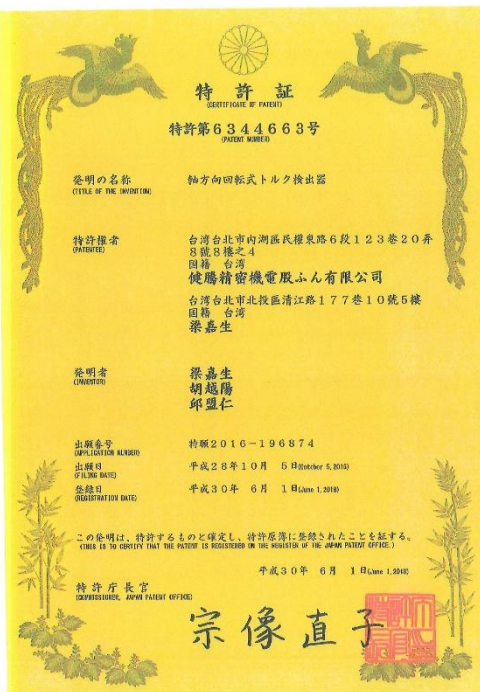
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洪淑敏



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Product patent (Korea Japan)



Product patent (China Germany)

证书号第20549085号



实用新型专利证书

实用新型名称：电动起子的扭力控制装置

发明人：倪崇桥;倪崇岳;张敬康;陈必泰

专利号：ZL 2023 2 2145173.X

专利申请日：2023年08月10日

专利权人：金昌泰科技股份有限公司

地址：中国台湾台北市

授权公告日：2024年03月26日 授权公告号：CN 220666087 U

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局长 申长雨

申长雨



第1页(共2页)

其他事项参见续页

证书号第304425号



发明专利证书

发明名称：具有自锁功能的波动减振器、其凸块轮廓与减振器座形成方法及复合式减振装置

发明人：梁嘉生;黄恩铭;郑宏泰

专利号：ZL 2015 1 0303907.2

专利申请日：2015年07月07日

专利权人：健隆精密机电股份有限公司;梁嘉生

地址：中国台湾台北市

授权公告日：2018年08月24日 授权公告号：CN 106337913 B

本发明经过本局依照中华人民共和国专利法的规定，经审查，决定授予专利权，颁发发明专利证书，并予公告。专利权自公告之日起生效。

本专利的专利权期限为二十年，自申请日起算。专利权人应当依据专利法及其实施细则的规定缴纳年费。本专利的年费应当在每年07月07日前缴纳。未按规定缴纳年费的，专利权自应当缴纳年费期满之日起终止。

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局长 申长雨

申长雨



第1页(共1页)

证书号第3052980号



发明专利证书

发明名称：轴向旋转式扭力传感器

发明人：梁嘉生;胡瑞阳;陈冠仁

专利号：ZL 2016 1 0897644.2

专利申请日：2016年07月27日

专利权人：健隆精密机电股份有限公司;梁嘉生

地址：中国台湾台北市

授权公告日：2019年10月11日 授权公告号：CN 106908176 B

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局长 申长雨

申长雨



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其他事项参见续页

证书号第3023316号



发明专利证书

发明名称：多滚子式被动有动齿的承窝轮齿、承窝轮齿及点接触轮齿的设计方法

发明人：梁嘉生;黄恩铭;郑宏泰

专利号：ZL 2015 1 0371790.9

专利申请日：2015年05月30日

专利权人：健隆精密机电股份有限公司;梁嘉生

地址：中国台湾台北市

授权公告日：2018年08月07日 授权公告号：CN 106321705 B

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申长雨



第1页(共1页)

Bundesrepublik Deutschland

Urkunde

über die Erteilung des Patents Nr. 10 2017 126 906

Bezeichnung:
Achsenrotations-Drehmomentsensor

IPC:
G01L 3/10

Inhaber/Inhaberin:
Cheng, Chien-Ho, Taipei, TW
PRODRIVES & MOTIONS CO., LTD., Taipei, TW

Erfinder/Erfinderin:
Hu, Yueh-Yang, Taipei, TW; Chou, Chin-Cheng, Taipei, TW; Chiu, Meng-Jen, Taipei, TW

Tag der Anmeldung:
15.11.2017

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Die Präsidentin des Deutschen Patent- und Markenamts

Cornelia Rudolf-Schäfer

Cornelia Rudolf-Schäfer

München, 01.07.2021

Das aktuelle Rechtsinstitut und Schutzumfang sind nach dem DP-Magazin unter www.dpma.de

Bundesrepublik Deutschland

Urkunde

über die Erteilung des Patents Nr. 10 2016 101 381

Bezeichnung:
Mit Selbstsperrung versehenes Voragelag für Wellenbewegungen und zusammengesetzte Untersuchungsanordnung mit diesem Voragelag

IPC:
F16H 25/06

Inhaber/Inhaberin:
Liang, Chia-Sheng, Taipei, TW
PRODRIVES & MOTIONS CO., LTD., Taipei, TW

Erfinder/Erfinderin:
Liang, Chia-Sheng, Taipei, TW; Huang, Szu-Ming, Taipei, TW; Cheng, Hung-Tai, Taipei, TW

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Cornelia Rudolf-Schäfer

Cornelia Rudolf-Schäfer

München, 12.04.2018

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