



Liyou Tech

Intelligent Tightening System

Digital Assembly Tools



CORE SECTORS



Consumer Electronics(3C)

Smart innovation
Connected Living

Automotive

Batteries - Energy Storage
E-Drive & Control Technologies

Aerospace

Aerostructure assemblies
MRO

Medical Devices

Healthcare Innovation
Life Technology



Transducerised Tightening Systems

Integrated solution of tools, controllers, and software

Liyu's transducerized tightening tools feature an integrated high-precision composite force sensor, enabling true closed-loop control for exceptional torque accuracy, consistency, and reliability. Engineered with a lightweight ergonomic design, these tools combine advanced error-proofing capabilities, comprehensive data traceability and analytics software, and outstanding operational performance.

With a torque range spanning from 0.05 to 16,000 N·m, speeds up to 1,800 rpm, and ultra-quiet operation below 70 dB, Liyou tightening solutions deliver superior assembly quality, enhanced productivity, and zero-defect manufacturing performance. They are the ideal intelligent fastening solution for modern, high-efficiency industrial assembly environments.

Technical Background



Axial Clamping Force and Factors Affecting Threaded Connections

The main objective of a threaded connection is to achieve the correct clamping force — one that is accurate, stable, and repeatable.

During assembly, the clamping force is usually controlled indirectly by adjusting the tightening torque and rotation angle applied to the screw.

The relationship between torque and clamping force can be explained by the formula:

$$T = KdF$$

Where:

T = Tightening torque

K = Torque coefficient

d = Screw diameter

F = Clamping force

The torque coefficient (K) is a key factor that determines the final clamping force. However, K is not a fixed value and can change depending on different assembly conditions, such as friction and pressure between contact surfaces.

Because these factors directly affect the final clamping force, proper control of assembly parameters is essential to ensure reliable and consistent screw fastening performance.

Friction and Factors Affecting Threaded Connections

The relationship between tightening torque and axial clamping force is greatly affected by the fastener design and the friction between contact surfaces.

During the tightening process, a large portion of the applied torque is used to overcome friction between:

- The screw threads
- The screw head and contact surface
- The assembled components

This friction is represented by the coefficient of friction, which directly influences how much torque is converted into actual clamping force.

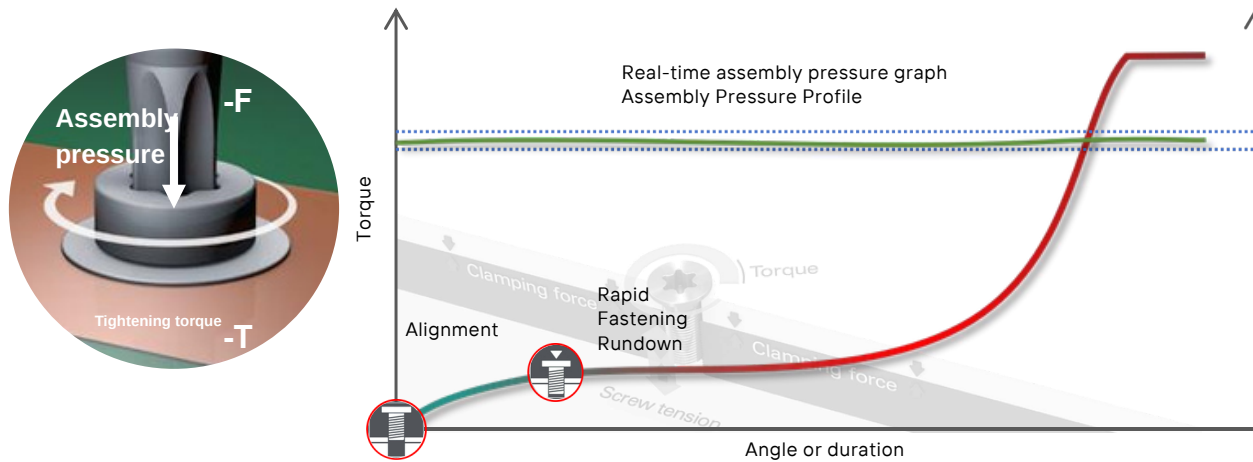
Changes in surface conditions, such as material properties, surface finish, lubrication, and assembly pressure, can cause the friction level to vary. These variations will affect the final clamping force and may lead to inconsistent tightening results.

Therefore, controlling assembly conditions and maintaining consistent tightening parameters are essential to achieve stable and reliable screw fastening quality.

Technical Background

Liyou Tech Solution – Composite Sensor Tool for Torque and Assembly Pressure

Liyou Tech tool is equipped with an integrated torque and pressure composite force sensor, enabling the monitoring of assembly pressure while regulating tightening torque, thereby enhancing the consistency of assembly quality.



Enhancing Parameter Monitoring and Process Control

During the screw tightening process, key parameters such as torque, angle, clamping force, and assembly pressure are monitored and controlled in real time to ensure consistent and reliable fastening results.

The system supports multiple tightening strategies, including:

- Torque control
- Angle control
- Torque + angle control
- Torque control with angle monitoring
- Angle control with torque monitoring

These flexible control methods allow the tightening process to be optimized for different assembly requirements.

In addition, the system can detect abnormal conditions such as:

- Stripped threads
- Floating screws / insufficient seating
- Damaged threads
-

When an issue is detected, the tightening process can be stopped immediately and an alarm triggered to prevent further damage or production losses. Unlike conventional clutch-type tools, this intelligent monitoring capability provides greater process control, accuracy, and assembly reliability.

Tool Family

Li Tech provides an array of tightening tools, encompassing handheld straight handles, elbows, and pistol tools, in addition to handheld cordless elbows and pistols. In addition to conventional tools, there exist specialized instruments such as fixed tightening shafts, intelligent servo tightening shafts, and rivet guns.

Cable Tightening Tools

Torque: 0.05–1.0 NM / Low torque: 0.3–45 Nm



ETC series -SH/GH/AH/AT

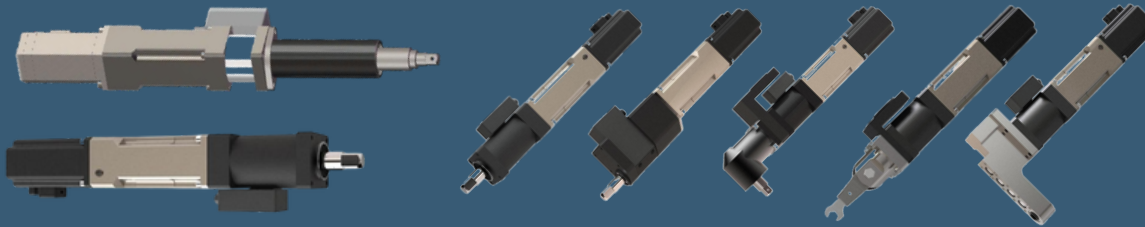
Battery Tightening Tools

Torque: 0.5–45 Nm



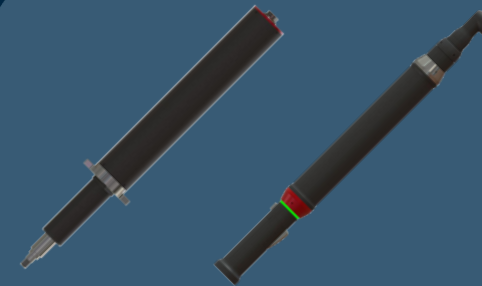
BTC series -WGH/WAH

High-Voltage Servo Cable tool 220V (torque range: 8 to 15,000 NM)



ETS series

High Voltage Servo - Wired Device 310V



ETH series

Smart Riveting Tools



Wireless Handheld Device

Wired Devices

Cable Tightening Tools



Straight Handheld Cable Tool

Attributes and benefits

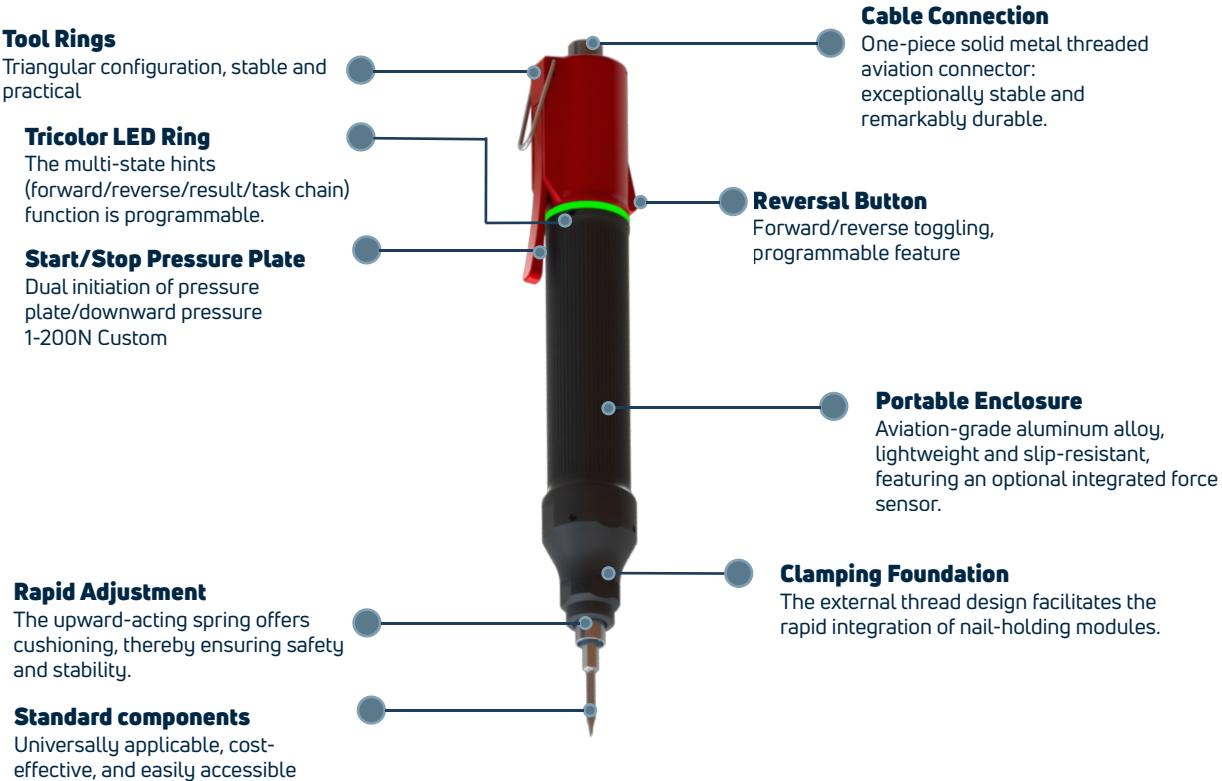
- Accuracy**

Integrated high-precision force sensor: Provides real-time feedback on actual output force; Dual-dimensional detection of torque and assembly pressure (optional): Mitigates the risk of overpressure damage to precision components. When the range accuracy remains stable within $\pm 5\%$: $CMK \geq 1.67$, adhering to the 6-Sigma standard.
- Comprehensive Coverage**

Torque varies from 0.05 to 30 N·m, encompassing applications from micro-circuit screws to motor end cap fastening. The tool features stepless speed regulation from 0 to 1900 rpm, enabling both precise fine-tuning and high-speed locking with a single device. Customizable pressure plate initiation pressure (1-200N): To accommodate various scenarios.
- Error Proofing**

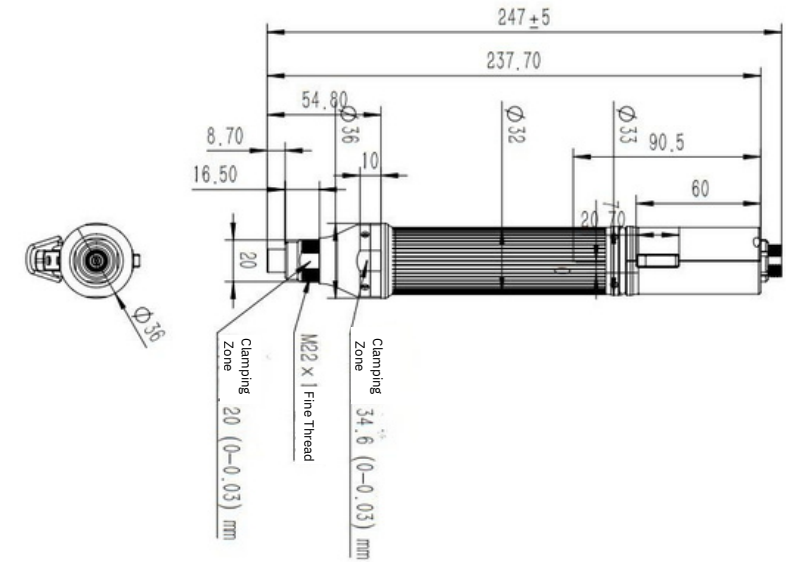
Multi-tool communication: Prevention of torque sequence errors
Tri-color LED ring programming: Synchronized sound and light prompts
Grounding resistance $< 4\Omega$: Mitigates the risk of electrostatic damage to the PCB.
- Ergonomics**

$< 70\text{dB(A)}$ Ultra-quiet: Long-term work hearing protection
310g ultra-lightweight: Decreases fatigue by 50% after 8 hours of work. Triple authoritative certifications: Endorsement from the Beijing Institute of Metrology for precision + CE/FCC international compliance.



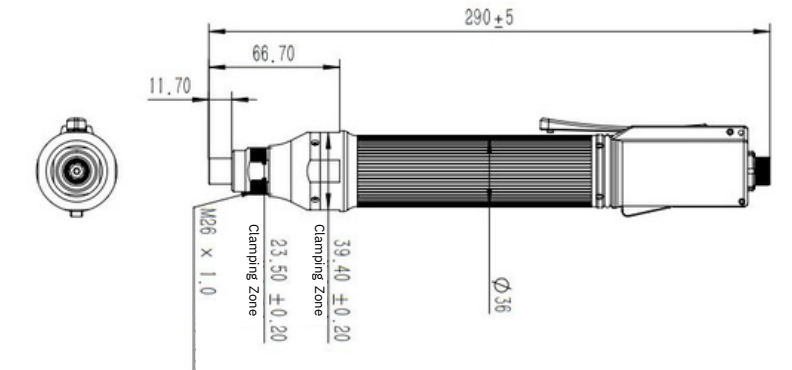
ETC-SH Micro-Twist Series Straight Handle Hand Tools Selection List (0.05~1.0NM)

modelMODEL	Torque range TORQUE RANGE						Assembly pressure PRESSURE	Maximum velocity MAXIMUM VELOCITY	length LENGTH	weight WEIGHT	Pipes DRIVER
	MIN	MAX	MIN	MAX	MIN	MAX					
	N.m	N.m	Kgf.cm	Kgf.cm	in/lb	in/lb	N	rpm	mm	g	
ETC-SH004	0.05	0.40	0.51	4.08	0.44	3.54	0~100	1900	248	305± 10	Double Wings / Half Moon
ETC-SH006	0.10	0.60	1.02	6.12	0.89	5.32	0~100	1120	248	305± 10	Double Wings / Half Moon
ETC-SH010/S	0.20	1.00	2.04	10.20	1.77	8.86	0~100	530/1250	248	305± 10	Double wings
Selection Notes: ① The assembly pressure detection function is an optional feature and not a standard configuration in the product selection; ② If the pressure-activated start function is necessary, the device equipped with assembly pressure detection must be chosen.											



ETC-SH Straight-handle Hand Tools Selection Guide (0.3~30.0NM)

model MODEL	Torque range TORQUE RANGE						Assembly pressure	Max Velocity	length	weight WEIGHT	Pipes DRIVER
	MIN	MAX	MIN	MAX	MIN	MAX					
	N.m.	N.m	Kgf·cm	kgf.cm	in/lb	in/lb	Pressure N	Max RPM	Length mm	(g)	
ETC-SH030	0.30	3.00	3.06	30.59	2.66	26.58	0~200	1300	272	610±10	HEX 1/4"
ETC-SH070S	1.00	7.00	10.20	71.40	8.86	62.02	0~200	1000	272	630±10	HEX 1/4"
ETC-SH100	3.00	10.00	30.60	102.00	26.58	88.60	0~200	220	290	650±10	HEX 1/4"
ETC-SH120	3.00	12.00	30.60	122.40	26.58	106.32	0~200	550	292	780±10	HEX 1/4"
ETC-SH200	5.00	20.00	51.00	204.00	44.30	177.20	0~200	280	345	1050±10	SQR 3/8"
ETC-SH300	5.00	30.00	51.00	306.00	44.30	265.80	0~200	300	345	1050±10	SQR 3/8"
Selection Notes: ① The assembly pressure detection function is an optional feature and not a standard configuration in the product selection; ② If the pressure-activated start function is necessary, the device equipped with assembly pressure detection must be chosen.											





Product Strategy

Sensor-driven tightening mechanism / Automated nail dispensing system / Equilibrated force boom system



ETC-AH series

Angle Handheld Cable Device

Attributes and benefits

Comprehensive Coverage

Torque 1~45N.m: Encompassing a range from precision instruments to robust bolts in engineering machinery. Speed 0~640rpm: Facilitating low-speed precision tightening and high-speed heavy-duty locking.

90 Angle

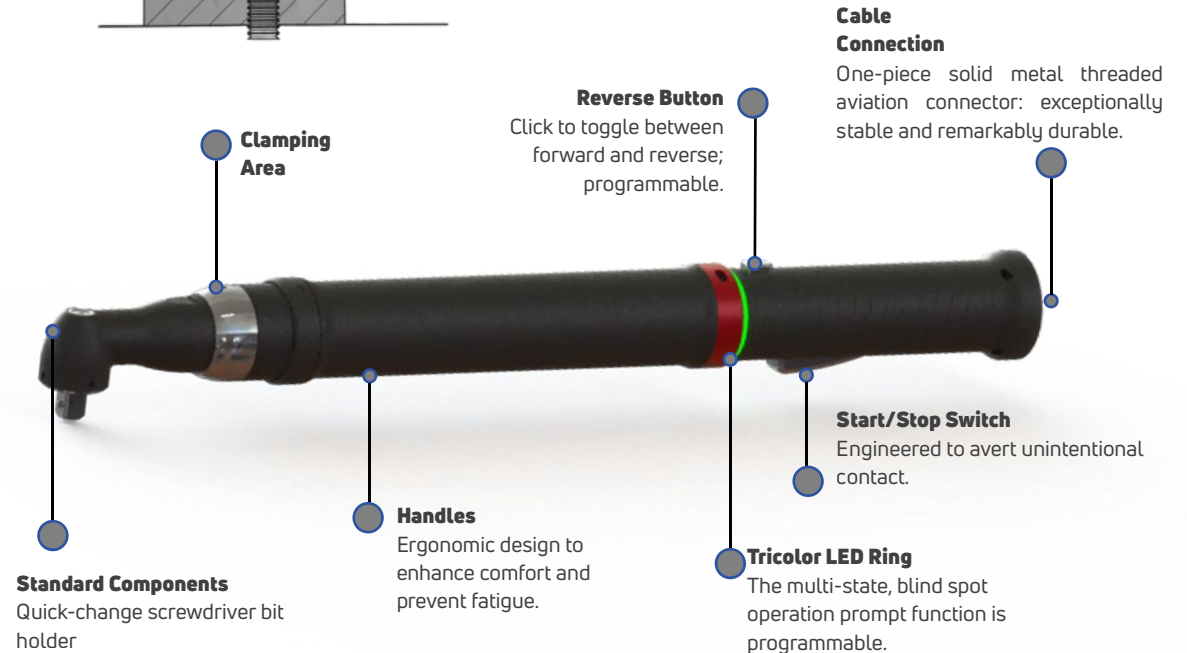
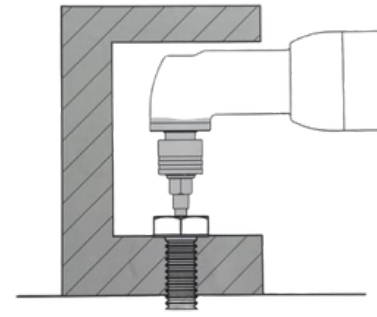
90° bend + 45 N-m torque: Robust locking in confined spaces . Closed-loop force testing: Accurate control in blind zone operations with a precision of $\pm 5\%$.

Error Proofing

Side-mounted tri-color indicator light ring: Ensures clear result indication even in elbow obstruction scenarios. Multi-tool communication: Eliminates the risk of incorrect tightening sequences for heavy-duty bolts.

Robust Construction

Durable and Precise: The motor sensor has successfully completed 2 million stability tests with no deformation during transmission. Robust Components: The drag chain cable endures over 5 million bends. Double-layer shielding, with a shielding rate exceeding 90%. Ultra-Lightweight: 60% lighter than rival heavy-duty tools.





Product Strategy

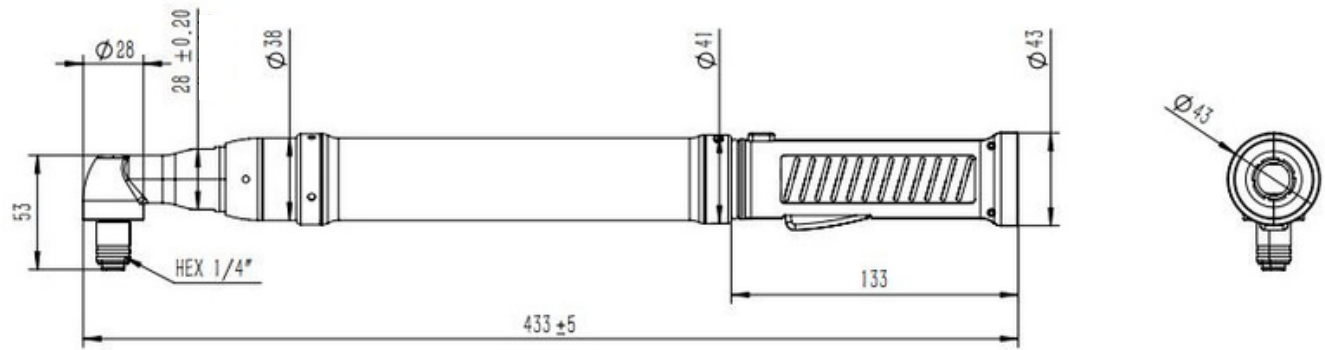
Sensor-driven tightening mechanism / Automated nail dispensing system / Equilibrated force boom system



ETC-AH Angle Handheld Cable Device

TORQUE RANGE (4~45.0NM)

model MODEL							rotational speed MAX SPEED	length LENGTH	weight WEIGHT	Pipes DRIVER
	MIN	MAX	MIN	MAX	MIN	MAX				
	N.m	N.m	Kgf.cm	Kgf.cm	in/lb	in/lb	rpm	mm	g	
ETC-AH035	1.00	3.50	10.20	35.69	8.86	31.00	640	433±5	1100±20	HEX 1/4"
ETC-AH070	2.00	7.00	20.39	71.38	17.71	62.00	580	433±5	1100±20	HEX 1/4"
ETC-AH120	3.00	12.0	30.59	122.37	26.57	106.28	290	433±5	1110±20	HEX 1/4"
ETC-AH300	5.00	30.0	50.99	305.92	44.29	265.71	140	530±5	1450±20	SQR 3/8"
ETC-AH450	10.0	45.0	101.97	458.87	88.57	398.57	140	530±5	1450±20	SQR 3/8"





Product Strategy

Sensor-driven tightening mechanism / Automated nail dispensing system / Equilibrated force boom system



ETC-GH Series

Pistol Handheld Cable Tool

Attributes and benefits

Robust Construction

The ergonomic grip is designed to conform to the palm's arch, resulting in a 60% reduction in fatigue after eight hours of use. The ultralight gun body weighs ≤625g and is constructed from aerospace-grade aluminum alloy. Operating at <70dB(A), it ensures ultra-quiet performance, safeguarding hearing during prolonged use.

Accuracy

Integrated high-precision force sensor: Provides real-time feedback on actual output force; Dual-dimensional detection of torque and assembly pressure: Mitigates the risk of overpressure damage to precision components. When the range accuracy remains stable within ±3%: CMK≥1.67, adhering to the 6-Sigma standard.

Comprehensive Coverage

Torque varies from 0.05 to 30 N·m, accommodating applications from microcircuit screws to motor end cap fastening; 0 to 1900 rpm enables both precise fine-tuning and high-speed locking with a single tool. The initial pressure of the pressure plate can be tailored (1-200N).

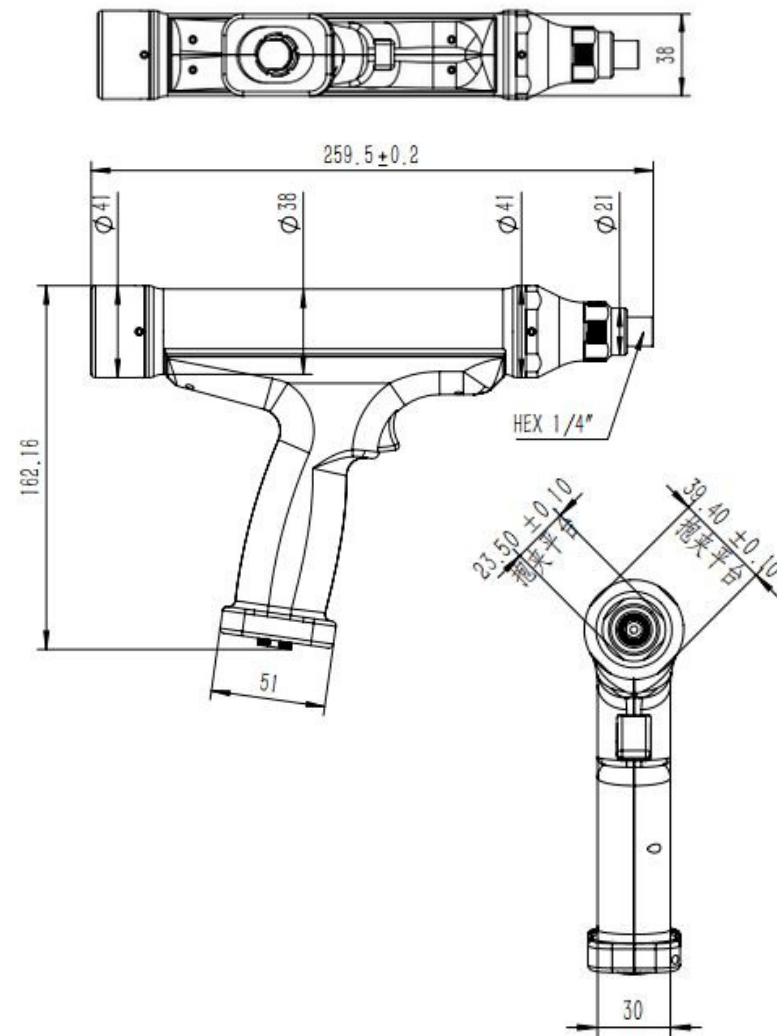
Error Proofing

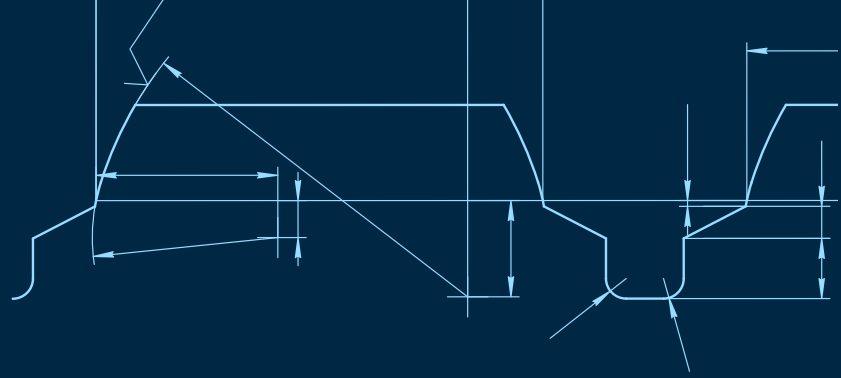
Multi-tool communication: Prevention of torque sequence errors
Three-color LED ring programming: Coordinated sound and light prompts
Grounding resistance < 4Ω: Mitigates the risk of electrostatic damage to the PCB.



model MODEL	Torque range TORQUE RANGE						Assembly pressure PRESSURE	Maximum velocity MAXIMUM VELOCITY	length LENGTH	weight WEIGHT	Pipes DRIVER
	MIN	MAX	MIN	MAX	MIN	MAX					
	N.m.	N.m	Kgf.cm	kgf.cm	in/lb	in/lb					
ETC-GH004 ±	0.05	0.40	0.51	4.08	0.44	3.54	0~100	1900	251	625 10	Biplane/Crescent
ETC-GH006 ±	0.10	0.60	1.02	6.12	0.89	5.32	0~100	1120	251	625 10	Biplane/Crescent
ETC-GH010/S ±	0.20	1.00	2.04	10.20	1.77	8.86	0~100	530/1250	251	625 10	Biplane/Crescent
Selection Notes: ① The assembly pressure detection function is an optional feature and not a standard configuration in the product selection; ② If the pressure-activated start function is necessary, the device equipped with assembly pressure detection must be chosen.											

model MODEL	Torque range TORQUE RANGE						PRESSURE	MAXIMUM VELOCITY	LENGTH	WEIGHT	DRIVER
	MIN	MAX	MIN	MAX	MIN	MAX					
	N.m.	N.m	Kgf.cm	kgf.cm	in/lb	in/lb					
ETC-GH030	0.30	3.00	3.06	30.59	2.66	26.58	0~200	1150	251	825±10	HEX 1/4"
ETC-GH070	1.00	7.00	10.20	71.40	8.86	62.02	0~200	1000	251	845±10	HEX 1/4"
ETC-GH100	3.00	10.00	30.60	102.00	26.58	88.60	0~200	220	251	835±10	HEX 1/4"
ETC-GH120	3.00	12.00	30.60	122.40	26.58	106.32	0~200	520	251	930±10	HEX 1/4"
ETC-GH200	5.00	20.00	51.00	204.00	44.30	177.20	0~200	440	285	1345±10	SQR 3/8"
ETC-GH300	5.00	30.00	51.00	306.00	44.30	265.80	0~200	220	285	1345±10	SQR 3/8"
Selection Notes: ① The assembly pressure detection function is an optional feature and not a standard configuration in the product selection; ② If the pressure-activated start function is necessary, the device equipped with assembly pressure detection must be chosen.											





Cordless Tightening Tools



BTC-WGH series - pistol-grip wireless tightening tool

Benefits

Wireless Intelligent Link

WIFI wireless transmission: Mobility on the production line
Cloud-based curve mapping for tighter curves: complete data traceability for operations in restricted areas; robust and precise: motor sensors are subjected to 2 million stable tests, guaranteeing no deformation in transmission.

Ergonomics

The ergonomic grip adapts to the palm's arch, resulting in a 60% reduction in fatigue after 8 hours of use.
<70dB(A) Extremely quiet: Safeguarding hearing for extended work periods

Actual Force Regulation

0.3~30 N.m torque: Encompasses a range from microcircuit screws to the fastening of motor end caps.
Integrated high-precision force sensor: Provides real-time feedback on actual output force; Dual-dimensional detection of torque and assembly pressure (optional): Safeguards against overpressure damage to precision components.
When the range accuracy remains stable within $\pm 5\%$: CMK ≥ 1.67 , adhering to the 6-Sigma standard.

Error Prevention

Multi-tool communication: Prevention of torque sequence errors
Tri-color LED Programming: Synchronized Sound and Light Prompts
Grounding resistance < 4 Ω : Reduces the likelihood of electrostatic damage to the PCB.

Rapid Adjustment

The spring that pushes upward offers cushioning, guaranteeing safety and stability.

Start/Stop Pressure Switch

Dual start pressure plate/downward pressure 1-200N adjustable

Portable enclosure

Aviation-quality aluminum alloy, ergonomic and slip-resistant

Standard components

Compatible with 1/4" HEX bits

Clamping Base

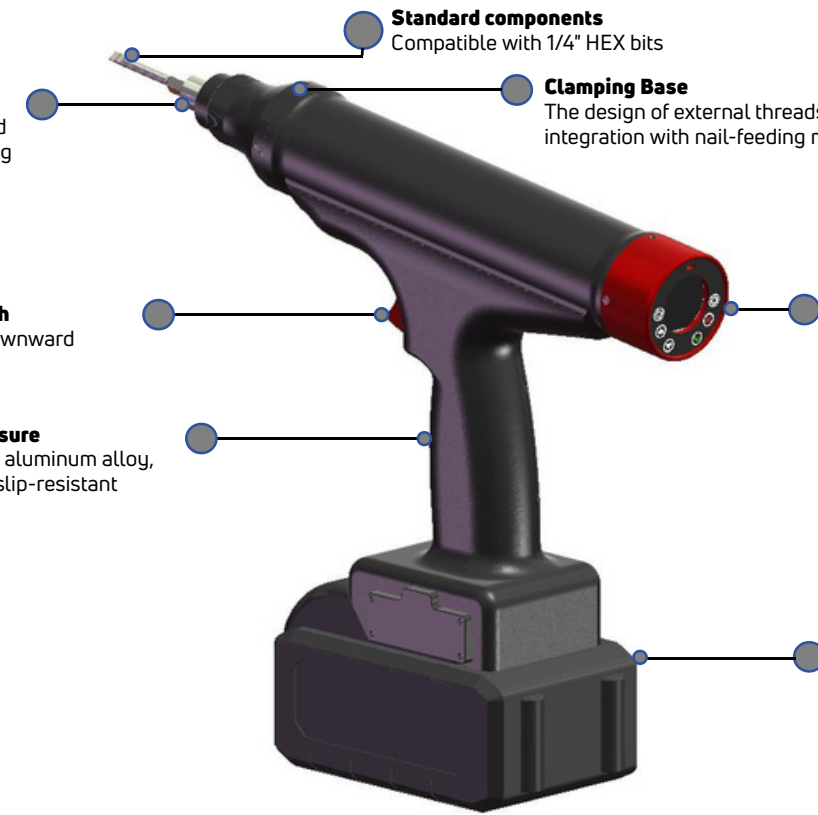
The design of external threads facilitates rapid integration with nail-feeding modules.

Digital Display Screen

Multi-function buttons facilitate straightforward operation. Essential data is prominently displayed, along with prompts for operation status and results.

Lithium-ion Batteries

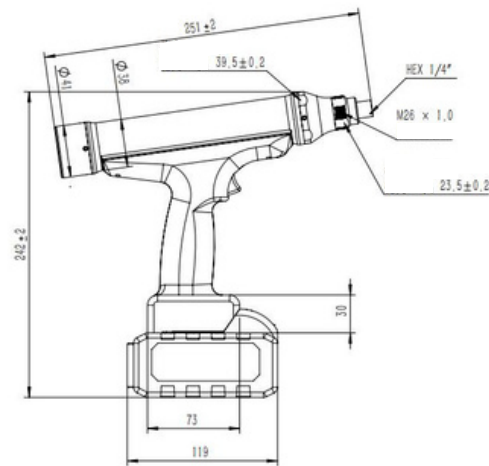
24V lithium-ion battery



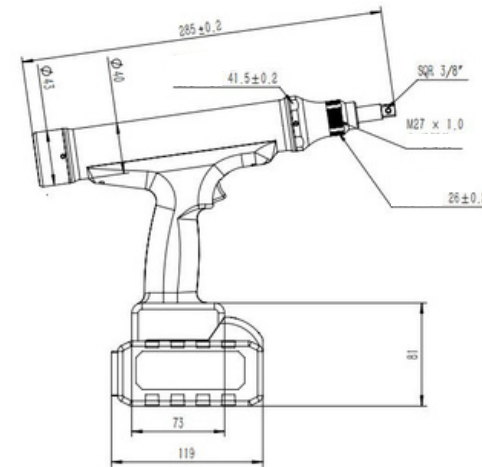
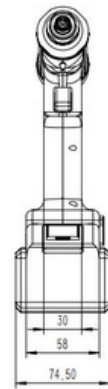
BTC-WGH Low Torque Series Pistol-Style Handheld Wireless Tools Selection Guide (0.3~30.0 NM)

model MODEL	Torque range TORQUE RANGE						PRESSURE	MAXIMUM SPEED	LENGTH	WEIGHT	DRIVER
	MIN	MAX	MIN	MAX	MIN	MAX					
	N.m.	N.m	Kgf.cm	kgf.cm	in/lb	in/lb					
BTC-WGH030	0.30	3.00	3.06	30.59	2.66	26.58	0~200	1150	251	925±10	HEX 1/4"
BTC-WGH070	1.00	7.00	10.20	71.40	8.86	62.02	0~200	1000	251	925±10	HEX 1/4"
BTC-WGH100	3.00	10.00	30.60	102.00	26.58	88.60	0~200	220	251	925±10	HEX 1/4"
BTC-WGH120	3.00	12.00	30.60	122.40	26.58	106.32	0~200	520	251	930±10	HEX 1/4"
BTC-WGH300	8.00	30.00	81.60	306.00	70.88	265.80	0~200	220	285	1300±10	SQR 3/8"

Selection Notes: ① The assembly pressure detection feature is optional and not included as a standard configuration in the product selection; ② If the pressure-activated start function is necessary, the device with assembly pressure detection must be chosen.



15N.m



20N.m



BTC-WAH Series

Wireless Angle Handheld Tightening Tools

Benefits

Wireless Intelligent Link

WIFI wireless transmission: Unrestricted movement along the production line; Cloud-based visualization of tightening curves: Complete data traceability for operations in limited spaces; Robust and precise: Motor sensors are subjected to 2 million stable tests, guaranteeing no deformation during transmission.

Comprehensive coverage

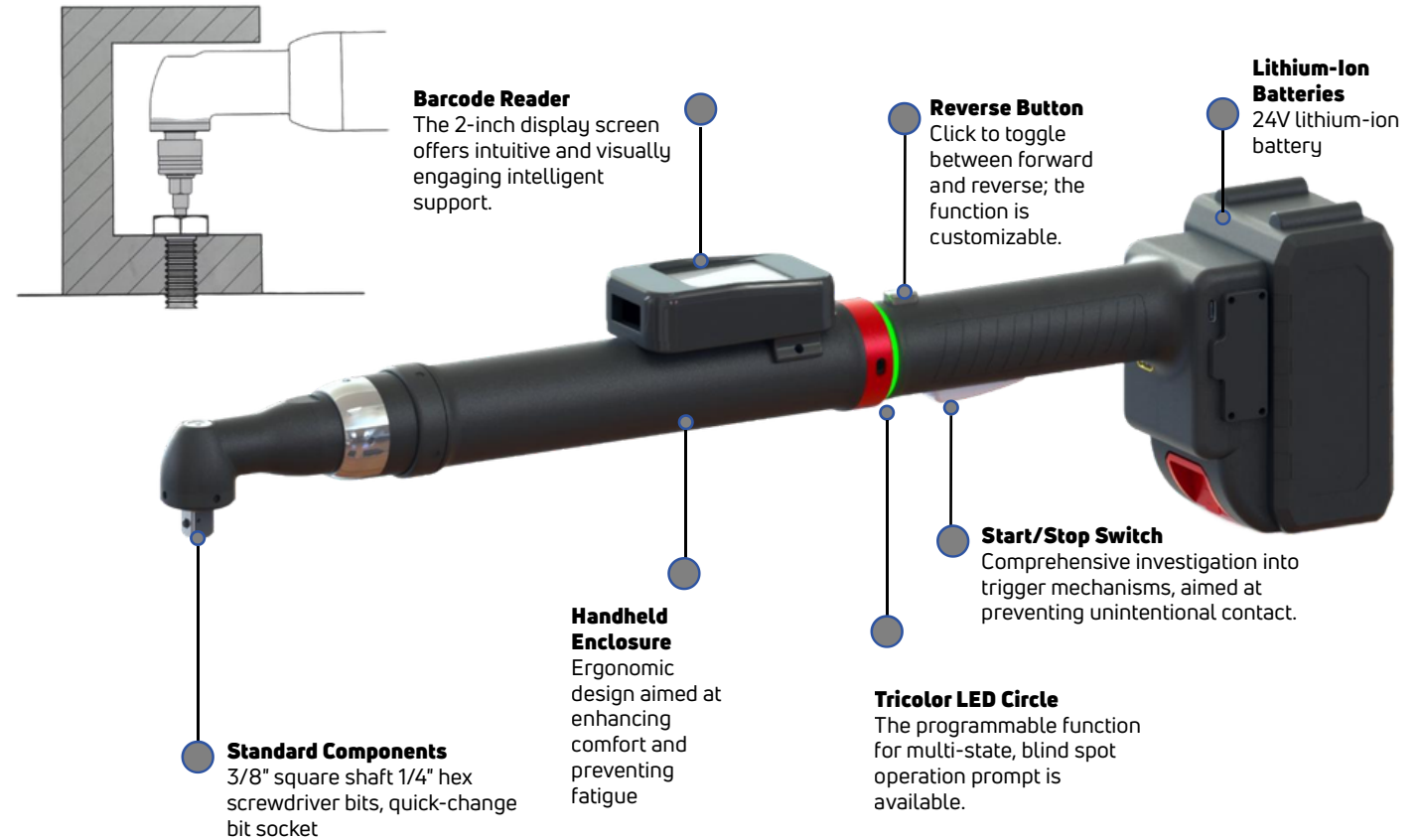
Torque 1~30N.m: Encompassing a range from precision tools to robust bolts in engineering machinery. Speed 0~640rpm: Facilitating low-speed precision fastening and high-speed heavy-duty securing.

Torque

90° elbow + 30 N·m torque: robust locking in tight spaces; closed-loop true force detection: accurate control in blind zone tasks; equivalent $\pm 5\%$ accuracy.

Error Proofing

Side-mounted tri-color LED ring: Provides a clear indication of results in bending or obstruction scenarios; Multi-tool communication: Prevents torque sequence errors.
-20°C~80°C Wide Temperature Certification: Suitable for extreme environments for battery packs and outdoor equipment.





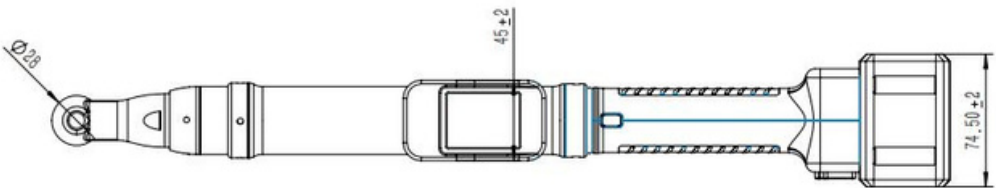
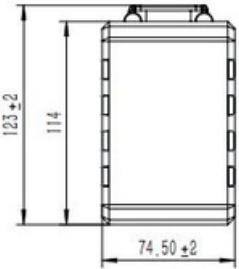
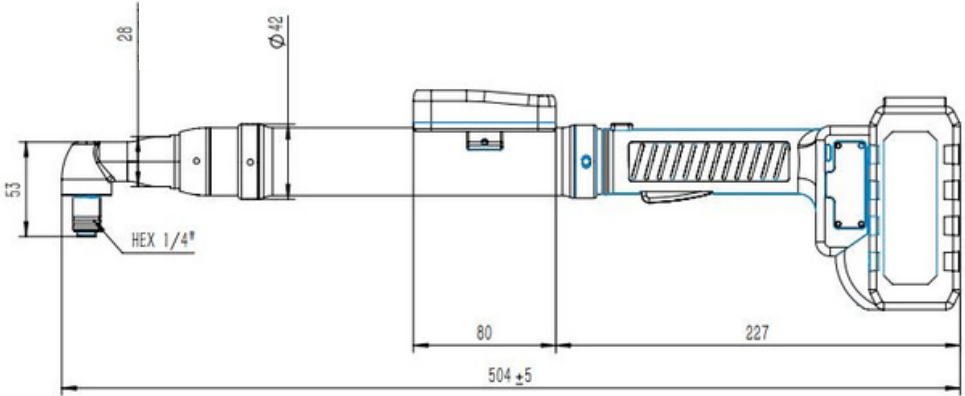
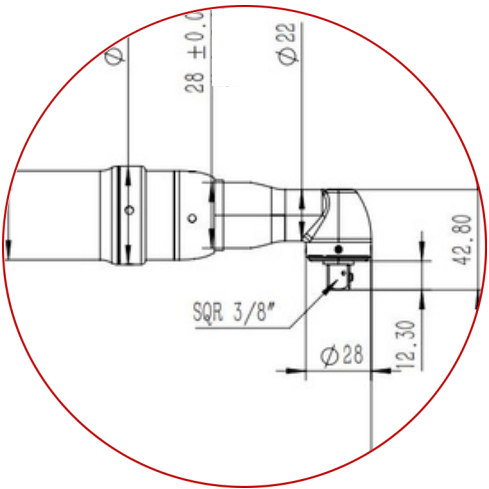
Product Strategy

Sensor-driven tightening mechanism / Automated nail dispensing system / Equilibrated force boom system



BTC-WAH Wireless Handheld Cordless Tightening Tools Selection Guide (1~30.0 NM)

MODEL	Torque range TORQUE SPECTRUM						ANGULAR VELOCITY	LENGTH	WEIGHT	DRIVER
	MIN	MAX	MIN	MAX	MIN	MAX	MAX SPEED	LENGTH	WEIGHT	
	N.m	N.m	Kgf.cm	Kgf.cm	in/lb	in/lb	revolutions per minute	in mm	grams	
BTC-WAH035	1.00	3.50	10.20	35.69	8.86	31.00	640	504±5	1100± 20	HEX 1/4"
BTC-WAH070	3.00	7.00	30.60	71.40	26.58	62.02	580	504±5	1100± 20	HEX 1/4"
BTC-WAH100	3.00	10.00	30.60	102.00	26.58	88.60	120	504±5	1100± 20	HEX 1/4"
BTC-WAH120	3.00	12.00	30.60	122.40	26.58	106.32	290	504±5	1200± 20	HEX 1/4"
BTC-WAH300	5.00	30.00	51.00	306.00	44.30	265.80	140	504±5	1280± 20	SQR 3/8"

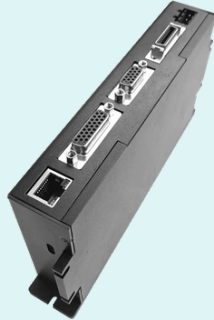


Cable Tool Controllers

ETC-SC series

Standard controller

- Plug & Play
- Lowest Cost



CORE CAPABILITIES

Data storage capacity:

- 50⁺ P-Set
- 1000,000⁺ Historical Data

Connectivity

-Software interconnection PLC interconnection
-MES

Communication:

IO/RS232/485/OP/Modbus TCP/PN

ETC-IC series

Integrated Controller

- Compact
- Minimalist



CORE CAPABILITIES

Data storage capacity:

- 50⁺ P-Set
- 10,000⁺ Historical Curve
- 100,000⁺ Historical Data

Connectivity

-Software interconnection PLC interconnection
-MES

Communication:

IO/RS232/485/OP/Modbus TCP/PN

ETC-IW

Integrated Workstation

- All in one solution



CORE CAPABILITIES

Data storage capacity:

- 50⁺ P-Set
- 1000,000⁺ Historical Curve
- 10,000,000⁺ Historical Data

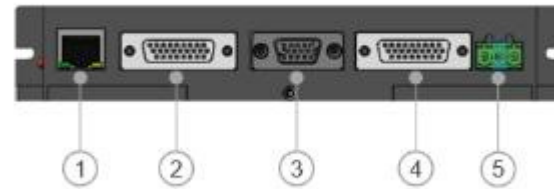
Connectivity

Software interconnection
PLC interconnection
MES
Real time curve drawing
Scan code gun connection

Communication:

IO/RS232/485/OP/Modbus TCP/PN

ETC-SC Standard Controller



1. TCP/IP — Equipment control and data exchange
2. I/O — Start/stop and screw group selection
3. Bus — Industrial protocol communication
4. Screwdriver — Tool connection
5. Power — Controller power supply

Compact Design

Space-efficient wall-mounted or embedded configuration for seamless production line deployment.

Optimized architecture with fewer components, enhanced reliability, and simplified serviceability.

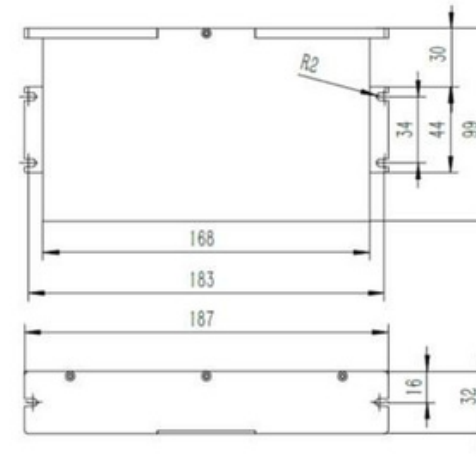
Plug & Play

Full Connectivity
RS-232/485, RJ45 Ethernet, and I/O terminals included.
Direct PLC, MES, and barcode scanner integration.
Modbus RTU/TCP reduces commissioning time by 50%.

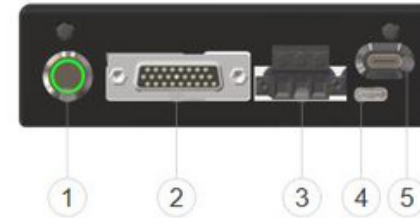
Low Cost

Low Total Cost
Compatible with existing PLC or industrial PC. No extra hardware required.
Modular design enables tool changes in under 5 minutes.

Dimension



ETC-IC Integrated Display Controller



Display

Minimalist Interaction: Manage the Entire Process from a Single Screen

7-inch HD touchscreen: Capacitive precision operation, substituting traditional physical buttons;

Multi-language interface (Chinese/English/Spanish, etc.): Effortless switching among multinational factories

Real-time tightening curve display: Transparent process with get real time date in seconds.

Compact

Compact Size, Significant Power; Slim Design: Reduces installation space by 60% compared to conventional controllers;

Wall-Mount/Desktop Dual Mode: Versatile adaptation for confined spaces on production lines;

Modular Peripheral Expansion: Plug-and-play peripherals, eliminating additional wiring requirements.

Error Proofing

Intelligent Error Prevention:

Task Chain Error Prevention Engine: Screw counting to avert missing components ,Programmed step-by-step locking (in conjunction with the lever arm) ,P-Set support for upper computer calls to mitigate material selection errors.

Dual-channel data traceability: Direct on-screen display; Type-C export to CSV; Industrial-grade interface coverage: Supports RS232/485/IO/Ethernet (compatible with Modbus RTU and Modbus TCP protocols); Expands the limitless potential of PLCs and robots.

① Power switch: Controls the power supply to the controller.

② Screwdriver body interface: Connects to the intelligent electric screwdriver body.

③ Power interface: Powers the central program controller (please use the controller's built-in power supply).

④ Debug interface 1: Used for updating the program; not currently open to external release.

⑤ Debug interface 2: Used for reading data.

⑥ TCP/IP communication interface: Uses a custom communication protocol for data exchange (controlling fastening equipment and reading results and data).

⑦ I/O interface: Used for interacting with other devices (controlling fastening equipment start/stop, screw groups, custom inputs, etc.).

⑧ Communication bus interface: Used for data exchange (controlling fastening equipment and reading results and data).

ETC-IW Integrated Graphics Workstation

Intelligent Hub

Industrial Intelligent Hub

- Integrated machine control and industrial PC in one rugged platform
- Intel® Celeron® J4125, 8 GB RAM, 128 GB SSD
- Secure local data storage and high-speed processing
- Industrial-grade reliability with interference resistance
- No frequency throttling during continuous operation
- Dual-fan fluid cooling for 24/7 high-temperature performance
- Dual-antenna Wi-Fi for stable MES connectivity and reliable data transmission

Connectivity

Smart Factory Communication Hub

- Supports RS232, RS485, RJ45, and Wi-Fi for seamless PLC-to-MES connectivity
- Unified communication platform for equipment and management system integration
- Real-time voice and visual feedback for immediate tightening status confirmation
- Hands-free operator awareness with audible result announcements
- Historical torque curve replay and comparison within 3 seconds
- Faster quality verification, traceability, and root-cause analysis

Error Proofing

Advanced Error-Proofing System

- Dual-layer error prevention for maximum process reliability
- 64 programmable P-Sets with parameter lock protection
- Automatic program switching via barcode scanning to prevent material mix-ups
- Task-chain sequencing ensures every fastening step is completed in the correct order
- Immediate machine lockout if a required screw is missed
- Multi-level user accounts with customizable access permissions
- Secure torque parameter protection to prevent unauthorized modifications



1. External Audio Port: Used to connect speakers and microphones.
2. LAN Port: Used to connect to the internet/network.
3. USB Port: Used to connect USB devices.
4. COM485 Port: Standard RS-485 communication port.
5. VGA Port: Used for screen expansion. Currently, there are two types of interfaces; please refer to the actual product.
6. Main Power Interface: Used to connect to a 220V AC power supply.



1. Tool Body Interface: Connects to the tool body via cable.
2. Communication Bus Interface: Used for data exchange (controlling tightening equipment and reading results/data).
3. I/O Interface: Used to interact with other equipment (controlling tightening equipment start/stop, screw groups, custom inputs, etc.).
4. TCP/IP Communication Interface: Uses a custom communication protocol for data exchange (controlling tightening equipment and reading results/data).

Cordless Tools

(BTC Series: 0.5~50NM——**Cordless Electric Tools**)

Integrated Controller Design and Easy System Setup

Our cordless tightening tools are equipped with built-in controllers, eliminating the need for external control units and simplifying system integration.

Configuration and parameter setup can be easily performed through a Windows-based computer, providing a user-friendly interface for adjusting tightening programs, monitoring parameters, and managing tool settings.

A single computer can support connection and management of up to 4 cordless tightening tools simultaneously, allowing efficient setup and control of multiple tools within the production environment.

This integrated design reduces installation complexity, saves workspace, and provides a flexible solution for modern assembly operations.



Software Intelligence

Built for Data Integration and Device Connectivity

Designed around seamless data and device integration, the platform delivers extensive functionality and rich operational data, making it the ideal solution for achieving factory-wide connectivity, interoperability, and digital transformation.



Enhanced User Experience

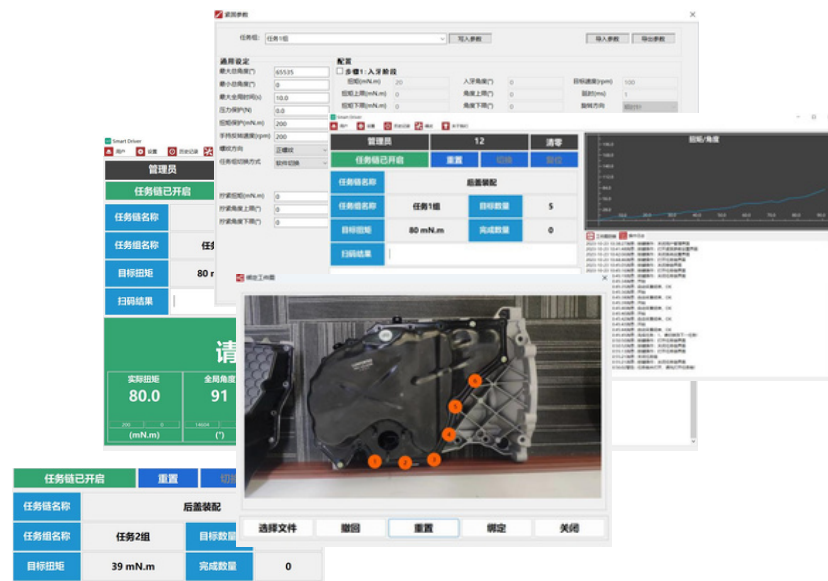
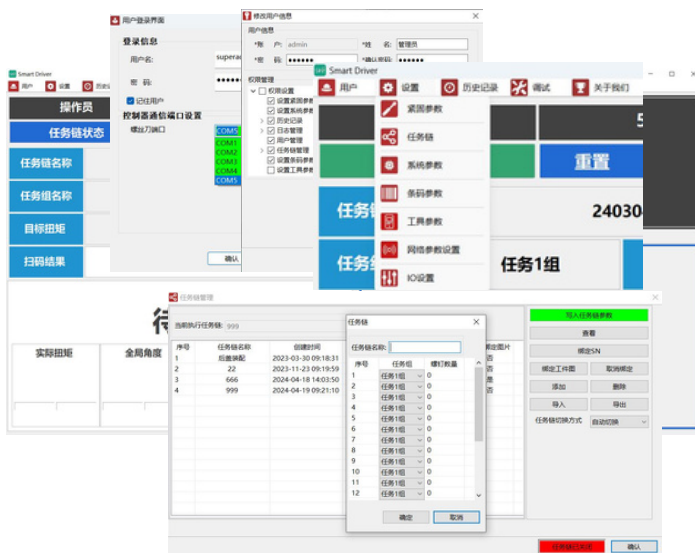
- Intuitive and user-friendly interface
- Flexible role-based permission management
- Advanced task configuration capabilities
- Simplified system operation for improved efficiency

Advanced Tightening Process Control

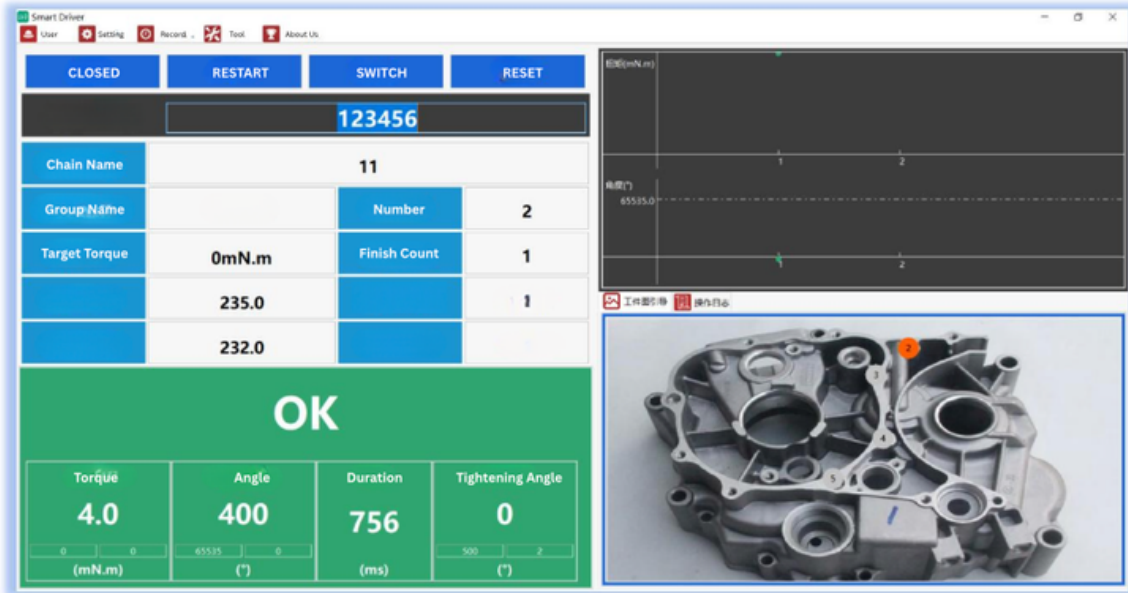
- Comprehensive tightening process monitoring
- Enhanced visibility of critical production data
- High-precision real-time torque and angle curve visualization
- Instant job status and result notifications

Powerful Analytics & Integration

- Capture and analyze critical production data with greater precision
- Advanced tightening curve analytics for process optimization
- Complete historical records for quality assurance and traceability
- Extensive development tools and customization capabilities to support requirements



Intelligent Positioning and Error Prevention

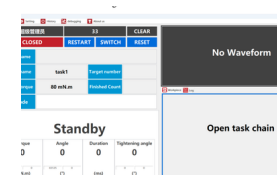


Drag and drop teaching
Tightening point

Position Error
Prevention

Process Sequence
Control

Visual Operator
Guidance



Intelligent Tightening - Set Up

Task group

Task: TASK1

Apply

Import

Export

GENERAL SETTINGS

Max.total angle(°) 65535
Min.total angle(°) 0
Total time(s) 10.0
Pressure protection(N) 16366.57
Torque protection(mN.m) 1000
Reverse speed(rpm) 200
Thread direction Right
Switching mode Software

Tightening torque(mN.m) 0
Max.tightening angle(°) 0
Min.tightening angle(°) 0

CONFIGURATION

☐ **Step 1: Thread engagement step**

Torque(mN.m) 20
Max.torque(mN.m) 30
Min.torque(mN.m) 0
Angle(°) 0
Max.angle(°) 0
Min.angle(°) 0
Target speed(rpm) 100
Delay(ms) 14392
Direction CW

☐ **Step 2: Screw in**

Torque(mN.m) 30
Max.torque(mN.m) 0
Min.torque(mN.m) 0
Angle(°) 0
Max.angle(°) 1000
Min.angle(°) 0
Target speed(rpm) 200
Delay(ms) 14392
Direction CW

☐ **Step 3: Torque and angle control**

Torque(mN.m) 1
Max.torque(mN.m) 2
Min.torque(mN.m) 0
Angle(°) 0
Max.angle(°) 0
Min.angle(°) 0
Target speed(rpm) 0
Delay(ms) 14392
Direction CW

☐ **Step 4: Torque and angle control**

Torque(mN.m) 70
Max.torque(mN.m) 200
Min.torque(mN.m) 0
Angle(°) 0
Max.angle(°) 0
Min.angle(°) 0
Target speed(rpm) 100
Delay(ms) 14392
Direction CW

☐ **Step 5: Seating control step**

Torque(mN.m) 0
Max.torque(mN.m) 0
Min.torque(mN.m) 0
Target angle(°) 500
Max.angle(°) 600
Min.angle(°) 0
Target speed(rpm) 200

Multi-Step Tightening Process

To achieve both high tightening accuracy and efficient operation, the fastening process should be divided into three speed stages:

Low-Speed Start:

Used for initial thread engagement to ensure proper screw alignment and prevent thread damage.

High-Speed Tightening:

Used for rapid screw tightening to improve overall assembly efficiency.

Low-Speed Precision Tightening:

Used for final tightening to accurately reach the required torque and ensure consistent clamping force.

The system supports multi-step tightening settings for each screw type, with up to 5 programmable steps. Each step can be independently configured with specific torque value, rotation angle, speed, and tightening direction to meet different assembly requirements.

Along with key parameter such as angle and torque , speed, rpm , rotation direction and time could be configured to suit the process.



Smart Balance Force Arm System

Smart Assembly Solutions for Every Application

Liyou specializes in intelligent human-machine collaboration systems designed to improve assembly efficiency and quality. Our range of boom systems—including push-pull, articulated, cylinder-assisted, and fishing-rod models—works seamlessly with intelligent positioning software to support applications ranging from lightweight electronics assembly to heavy-duty industrial fastening.

By combining innovative mechanical design with intelligent error-proofing technology, Liyou helps manufacturers increase productivity, enhance assembly precision, and optimize production processes.

Your partner in smarter, safer, and more efficient assembly operations.

Liyou provides various structures of force arm frames according to the needs of different applications.

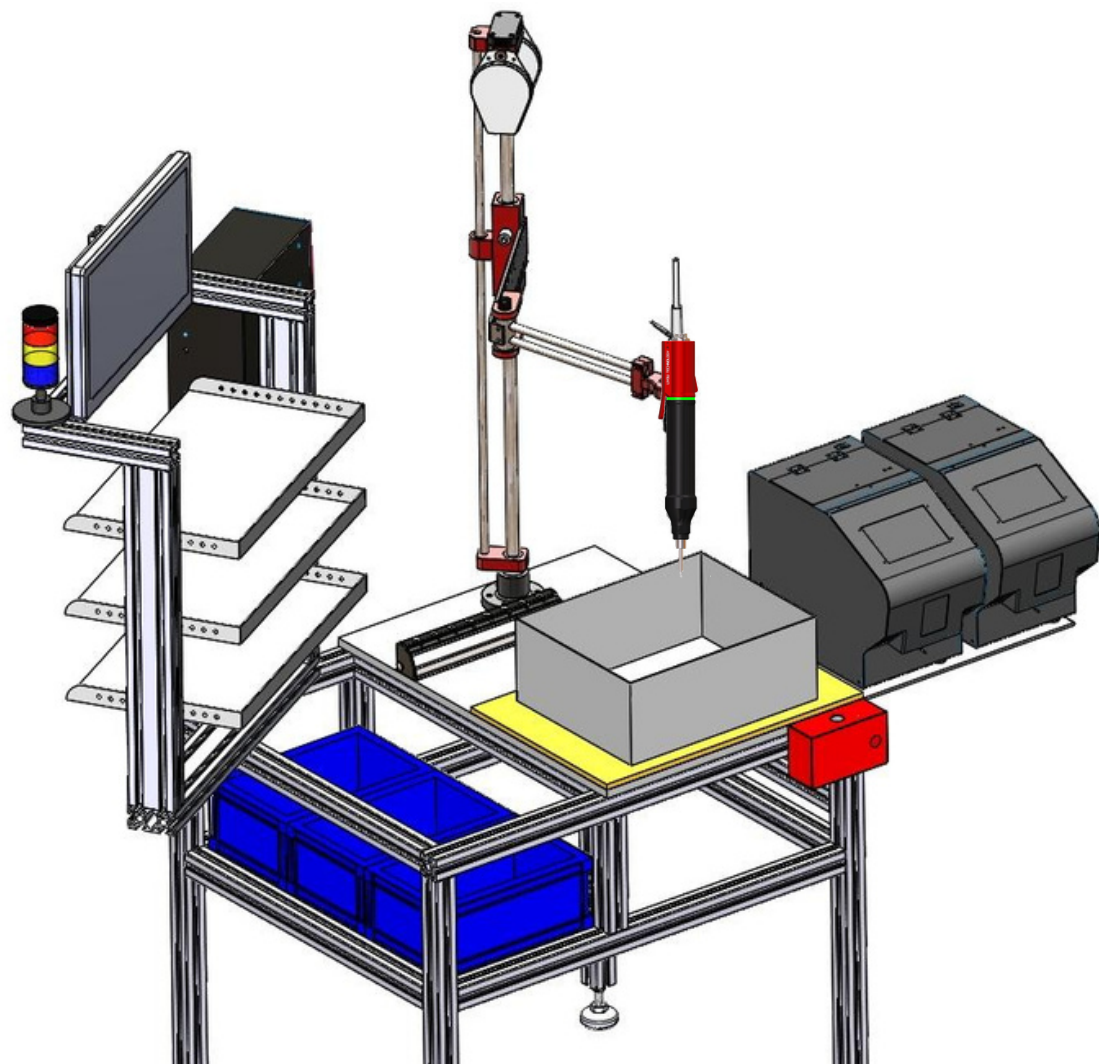
Style	Model	Advantage	Characteristic
Push Pull	PP	Compact and error proof, dual type optional, stable and easy to install	Wire sensor is widely compatible
Bending	BT	Lightweight and agile, 3C specific, intelligent and simple	Carbon fiber double bearing joint
Cylinder type	CT	Strong drive, wide area coverage, intelligent expansion	Pneumatic driven
Fishing rod style	RF	Over distance precision, effortless lifting, specialized in large items	2m travel+dual sensor positioning





PRODUCT & SOLUTION

Assembly Workstation Solution



- ADI assembly error prevention system
- Error prevention in product assembly process
- Tightening sequence error prevention
- Material omission and error prevention
- Data binding traceability



Login Devices



Bar Code Devices



Picking light



Andon Light



Picking Tray



Waste Collection Box



Screw Feeder



Force Balance Arm



Smart Tools



Intelligent 3D Positioning and Error Prevention

- Using visual guidance combined with infrared positioning recognition technology to monitor the assembly process, ensure product assembly consistency, achieve 100% prevention of bolt leakage problems, make sure product quality.
- Employees tighten without constraints, allowing for more freedom of operation;
- The workpiece does not require fixture fixation, and the system automatically calibrates;



Software



3D industrial camera



Smart Tool



Infrared marking board

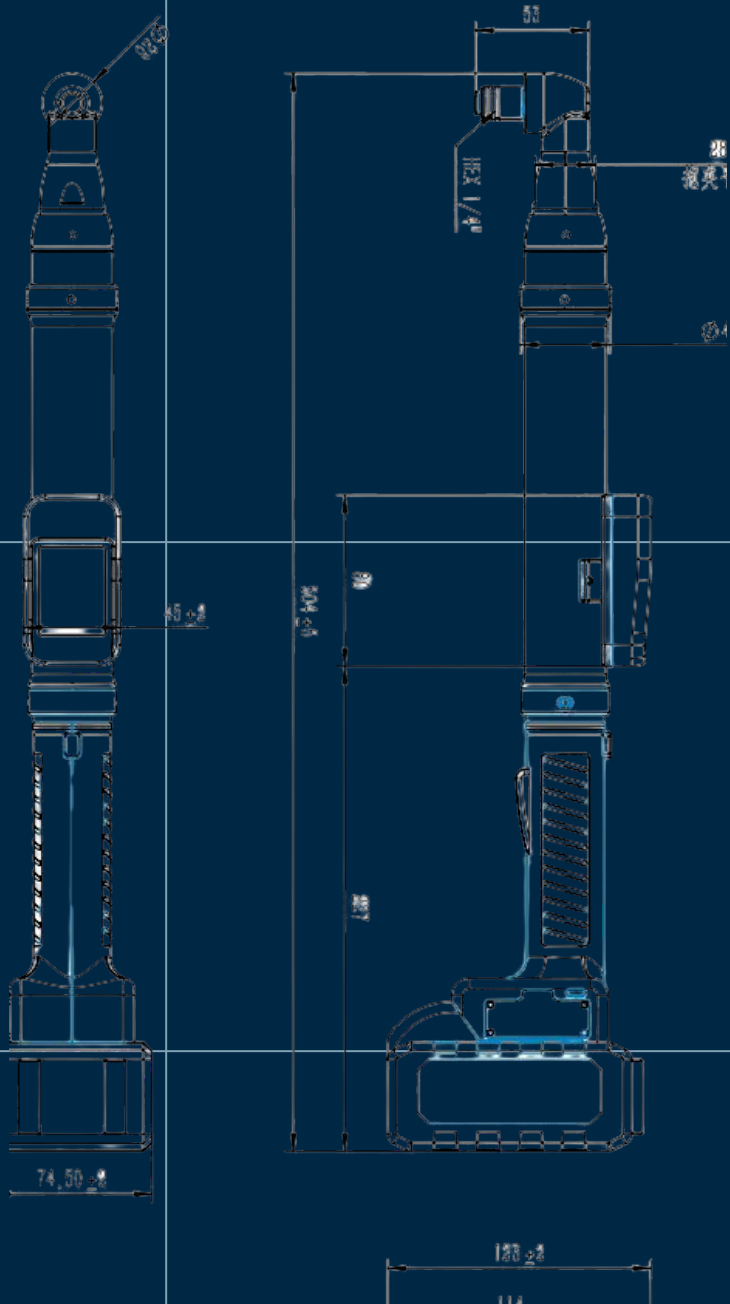




Digital/Workstation/Intelligent/Vision/Automation/Supporting Ecosystem

Committed to building a platform-based intelligent assembly platform, providing customers with comprehensive automated assembly solutions that can be quickly implemented.





THANK YOU!

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