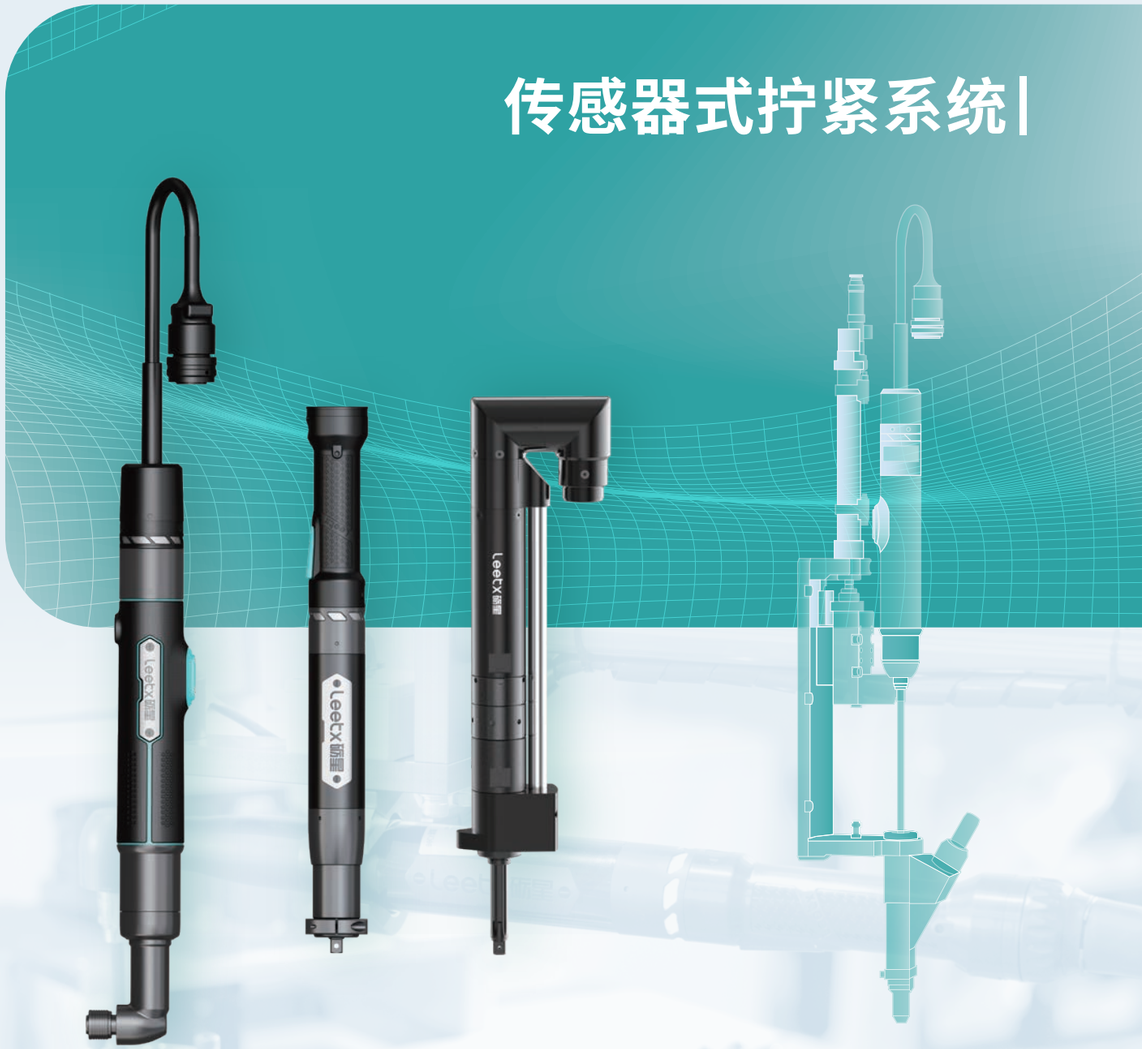
Leetx砺星

TRANSDUCERIZED TIGHTENING SYSTEM

传感器式拧紧系统|



Leetx_Transducerized Tightening System_202412_V1.2

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Contact Leetx


运行中
TCS.2000

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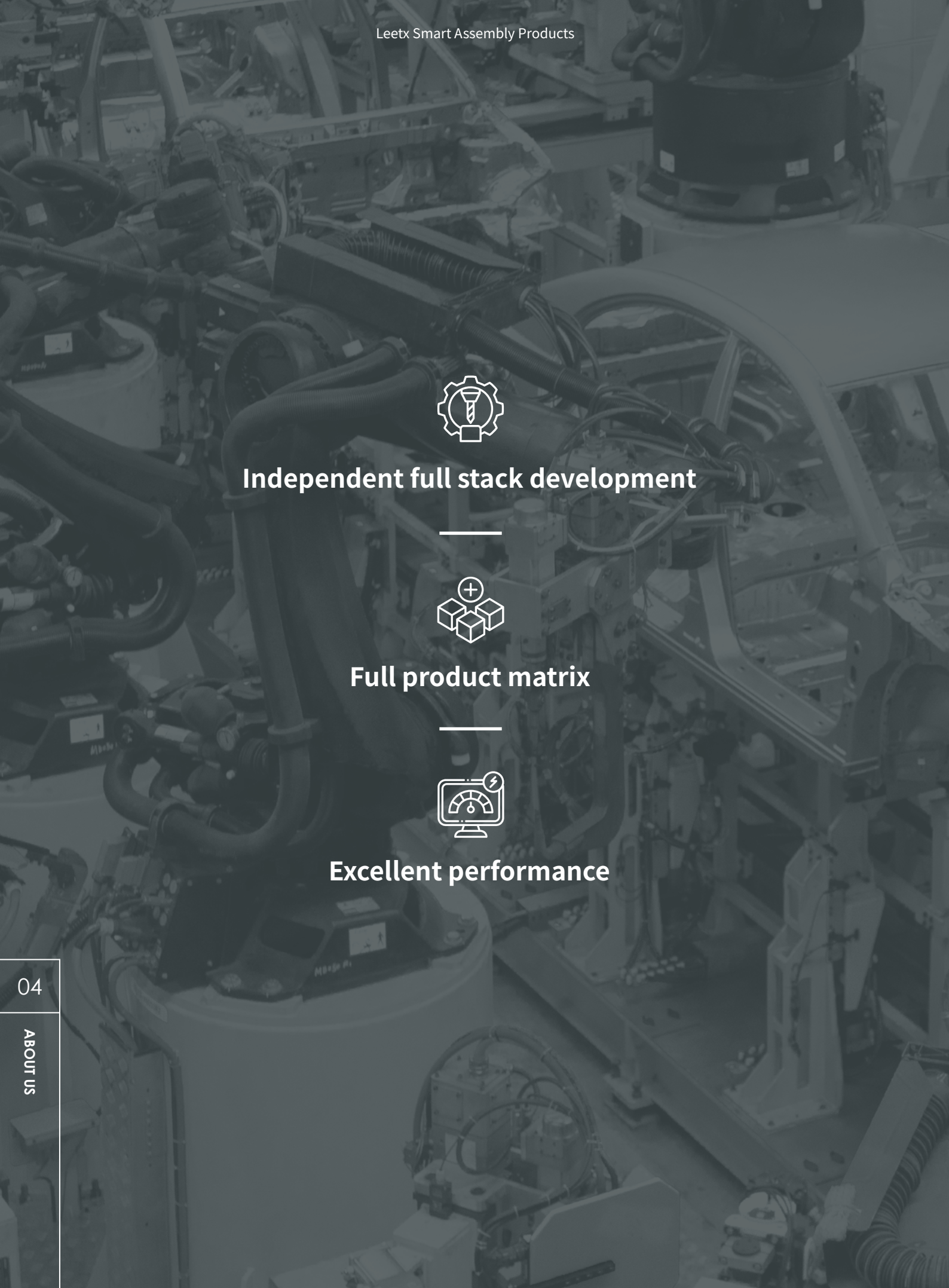


Independent full stack development

Full product matrix

Excellent performance

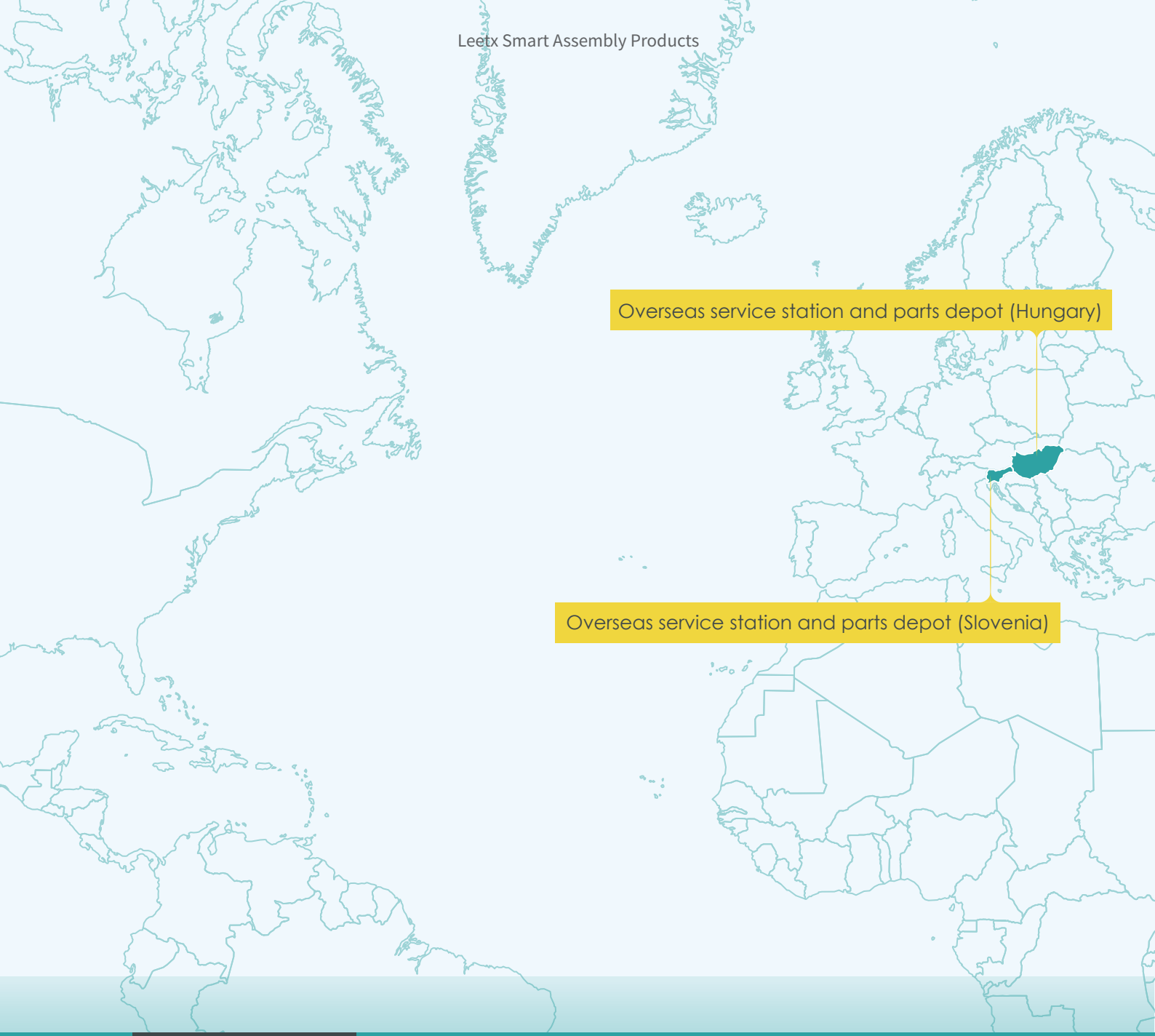
ABOUT US

Leetx®

Premium smart assembly product manufacturer

Leetx® is a company specializing in the development, production, and sales of smart assembly products.

We offer transducerized tightening system, automatic screw feeding system, and servo press system to the market. Our end users including EV battery, E-motor, NEV, automobile tiers, consumer electronics, rolling stock, aerospace, off-road machinery, medical, etc.



Core Technology

Independent full stack development

Forward development and technological platformization. Breakthroughs in application development technology are achieved by mastering the underlying logic and establishing a novel technology platform that caters to both embedded systems and upper computers.

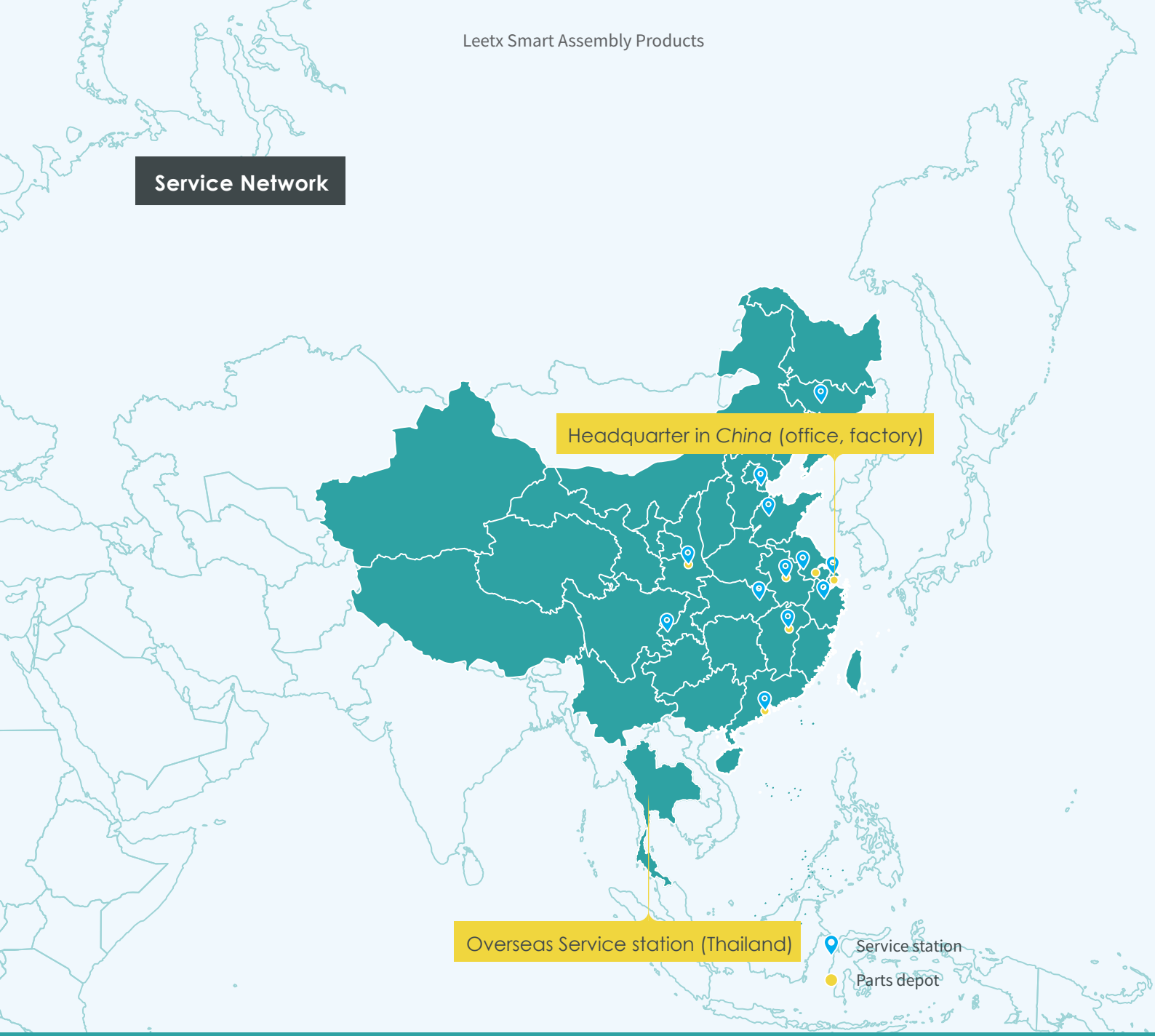
Product synergy

With full product matrix, we offer solutions for transducerized tightening system, automatic screw feeding system, and servo press system, to maximize the synergistic effect of each product line, adapting to a variety of application scenarios and meeting the development demands of the high-end smart assembly requirement.

Team Innovation Driven

We are committed to advancing the smart assembly sector, consistently enhancing the assembly level of manufacturing industry. Refusing to settle for mediocrity, we embrace the entrepreneurial spirit, and based on the development of the assembly industry, we deliver exceptional results for our customers.

Service Network

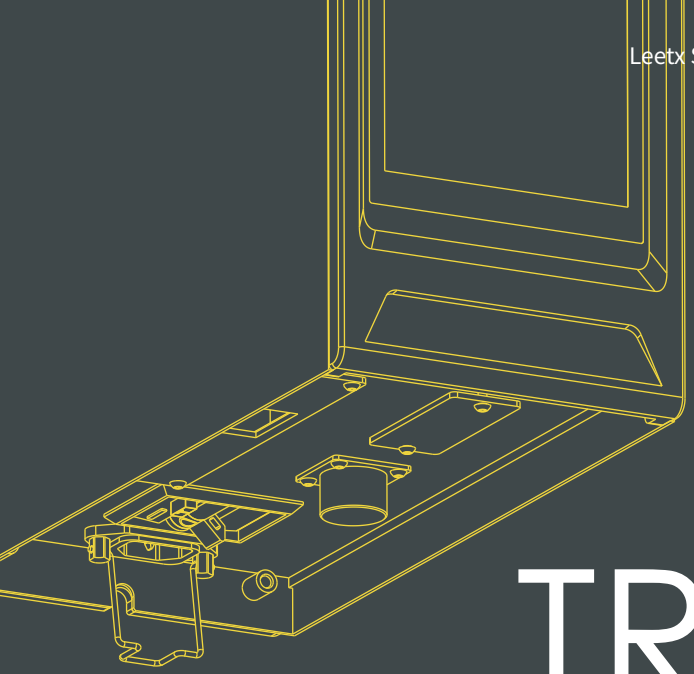


60+
service engineers

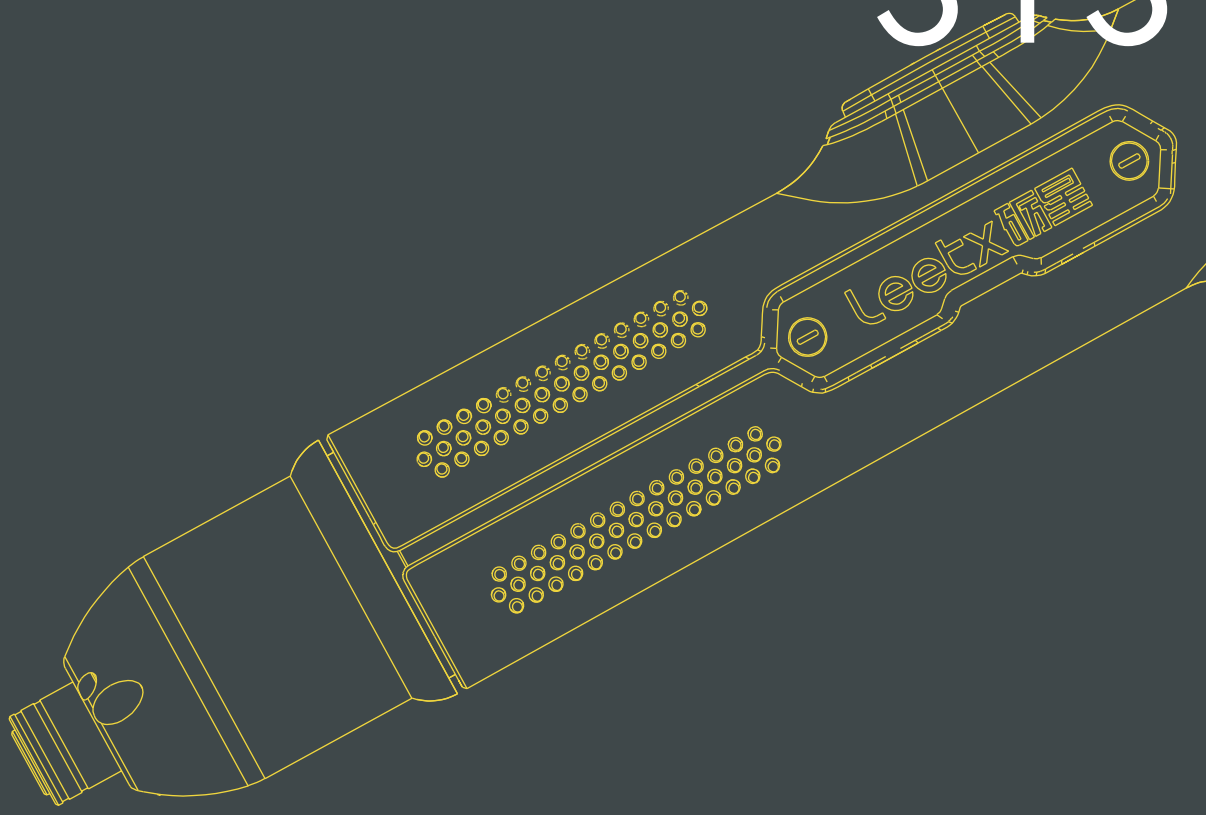
12
regional service centers
Shanghai/Shenzhen/Changchun/Wuhan/Chongqing/Xi' an/Jinan/Hefei/Fuzhou/Ningbo/Nanjing/Tianjin

7
parts depots
- China
Shanghai/Wuxi/Xi' an/Shenzhen/Hefei/Fuzhou
- Hungary

Response time
Field support within **24** hours
Phone support within 2 hours

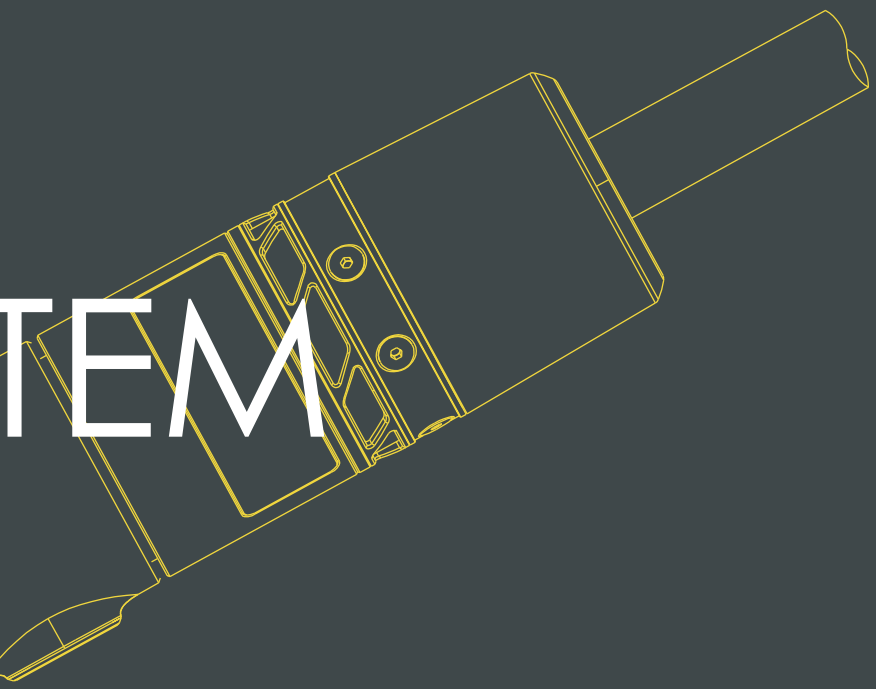


TRANSDUCE TIGHTENING SYST



ERIZED

TEM



Complete product range

Offering a complete innovative solution with products ranging from EHS in-line tool, EHA angle head tool and EFS fixtured spindle.

High torque, high speed

High voltage based motor provides high torque and high speed, increase productivity in a hihger level.

User-friendly interface

Big touch screen with a convenient controller interface for efficiency.

Transducerized Tightening System

Leetx provides a complete product range from 0.3Nm to 280Nm;

We persist in developing smart assembly products to fulfill your tightening requirements, ensuring each assembly is safe and reliable.

Product line

EHS series

Handheld - In-line Screwdriver
Torque range 0.3-15Nm

EHA series

Handheld - Angle Head Screwdriver
Torque range 0.6-22Nm

EHS series

Handheld - In-line Nutrunner
Torque range 5-65Nm

EHA series

Handheld - Angle Head Nutrunner
Torque range 8-105Nm

EFS series

Fixtured - Spindle
Torque range 3-360Nm

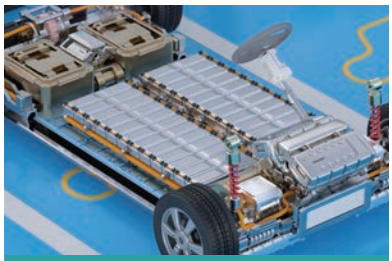
System structure

PLC

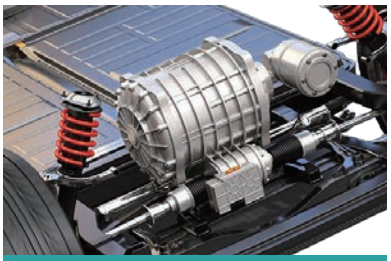
Controller	Controller	Controller	Controller	Controller
				
EHS series	EHA series	EHS series	EHA series	EFS series
Handheld - In-line Screwdriver	Handheld - Angle Head Screwdriver	Handheld - In-line Nutrunner	Handheld - Angle Head Nutrunner	Fixtured - Spindle

Applications

Motor vehicle

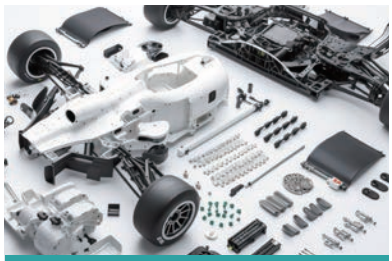


Power battery



Motor control

Power Storage



Auto parts

Off-road machinery

Solar

Aviation and aerospace

Rolling Stock

Controller

Tightening control

Data collection

HMI

The tightening system combined by TCS controller and tightening tools.
The TCS controller applies Leetx' s proprietary software and hardware technologies, seamlessly integrating tightening control, data collection, and human-machine interaction.

Product features & advantages

Comprehensive function and reliable quality

- Quick exchange and hot swapping, and virous tighening strategy like torque control, angle control, anti-rehit, and seating detection;
- Ethernet, IO, serial port, and main Fieldbus: PROFINET, EtherCAT, EtherNet/IP, PROFIBUS, ModbusTCP;
- Result data via USB port.

200
tightening programs

30,000
curves

100,000
results

Intuitive interface and convenient operation

- User-friendly interface, reducing learning time;
- Multi-steps display, real-time curve, system status display: date, time, tool data, program number, torque, angle, barcode, etc.;
- Error code by details, and easier root cause finding.

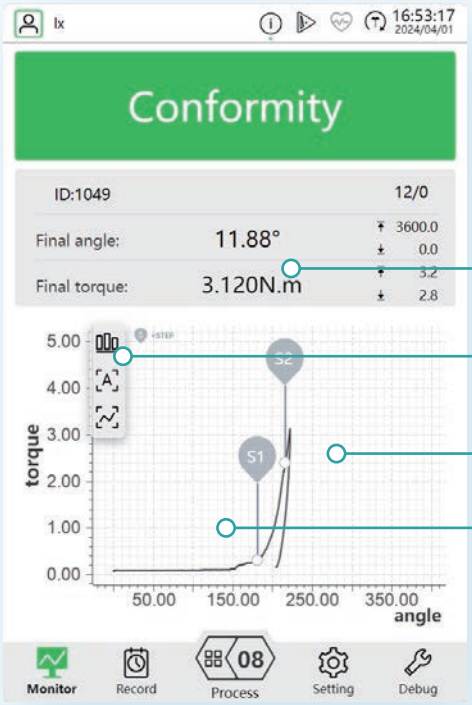
Big memory support data traceability

- Up to 200 tightening programs and 25 steps each;
- Real-time cureve display of torque-angle, torque-angle-time , and up to 30,000 historical curves;
- Up to 100,000 results, real-time torque and angle result display. Results, curves, and system logs can be exported via USB port for traceability and storage.

Function list		
Tightening program setting	Tightening strategy	Torque control
		Torque control angle monitoring
		Angle control torque monitoring
		Seating detection
		Gradient torque
	Process setting (Pset)	Search sequence
		Run-down speed
		Synchronous of multi-spindles
		Multi-steps
		Socket release
		Step IO
		Angle/torque reset
		Jump on NOK
		Step max. time
		Delay between steps
	JOB setting	Program combination
		Parallel/serial mode selection
		Batch counter
		Single-point/multiple point locking customization
Status monitoring	Job result display	Real-time torque
		Real-time angle
		Real-time speed
		Real-time dynamic curve
		Traceability barcode
		Final result
		Step result
	Device status	Controller status
		Tool status
Data storage	Tightening program	Up to 200 JOBs
		Up to 40 Psets per JOB
		Up to 200 Psets
		Up to 25 steps per Pest
	Job result	100,000 results
		30,000 curves
	Alarm information	100,000 alarm log
	Data export	Tightening program export
		Result export
		Curve export
Communication setting	IO communication	8 input and 8 output
		Configrable IO
		Expansion up to 64 IO
	Fieldbus	PROFINET
		EtherCAT
		EtherNet/IP
		PROFIBUS
		Modbus TCP
	Ethernet	Open protocol
		LX WebAPI
	Serial port	RS-232
		RS-485
		CAN Open
	USB port	USB port
Basic setting	User management	User login
		Scan to login
		Authority management
	Device management	Device number and name
		Torque angle unit selection
	Barcode setting	Barcode rule verification
		Barcode selection
	Tool calibration	Tool calibration
		PSet calibration
	Tool setting	Trigger start
		Push to start
		Remote start through display
		Remote start through IO/filedbus/protocol
		Configrable reverse

*Please contact Leetx for more details.

HMI

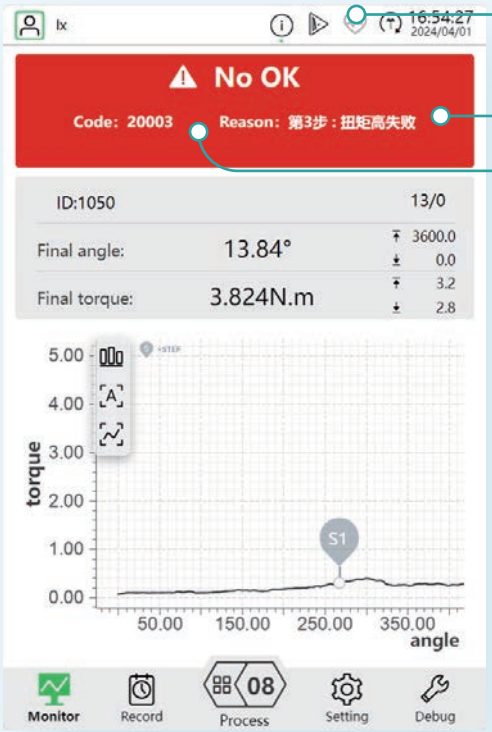


① Parameter and real-time results display

② Quick switching of multiple coordinates

③ Segmented display of multi-steps

④ Real-time dynamic curve display

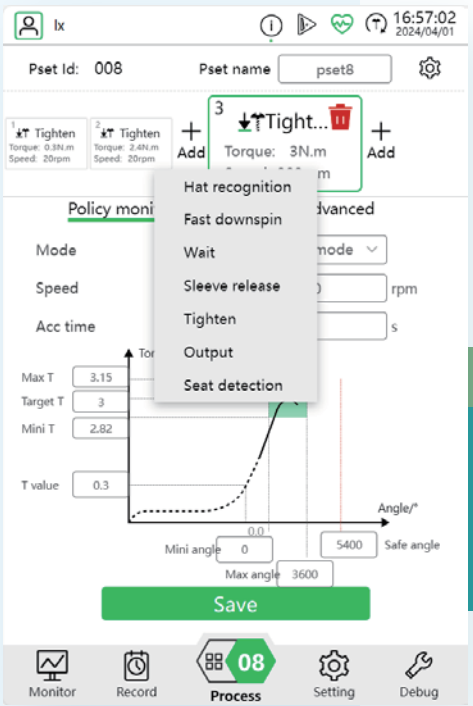


⑤ Real-time device status

⑥ Step result of multi-steps tightening

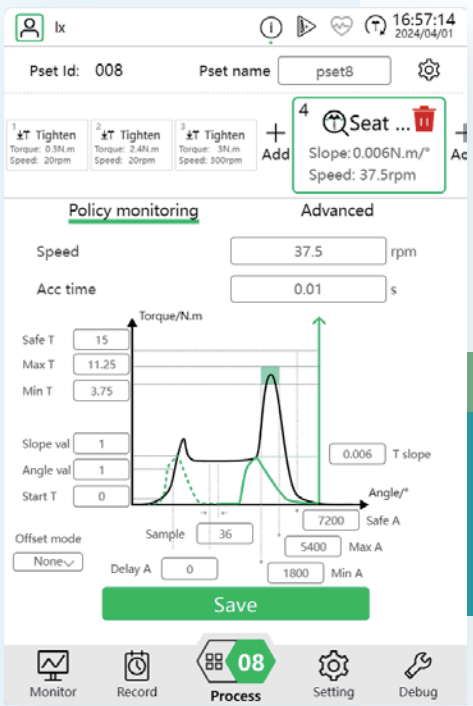
⑦ Failure code and detail description

Configuration



User-friendly interface

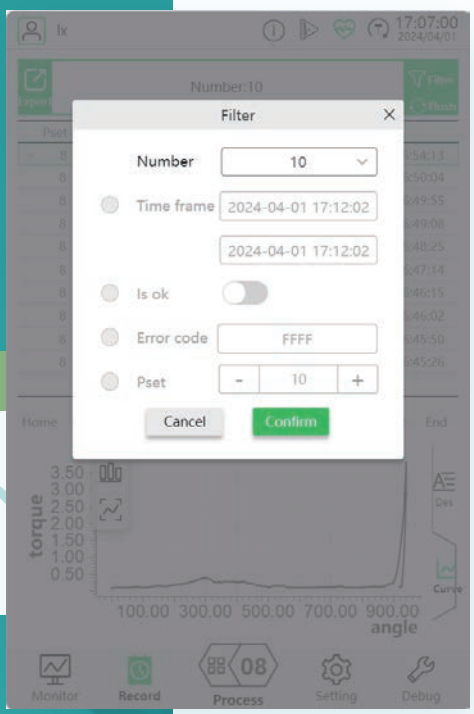
- Easy configuration
- Graphical interface
- Low learning cost
- Covering various application



Seating torque detection

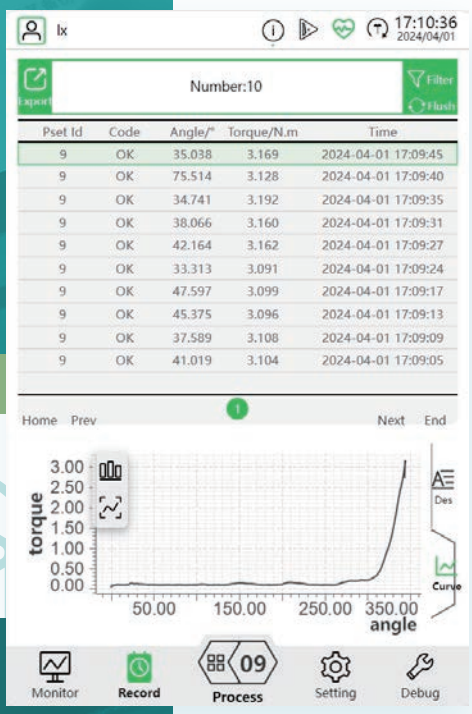
- Easy to set seating detection program
- Fit self-tapping application
- Better clamping force control
- Improved joint reliability and stability

Result display



Data export

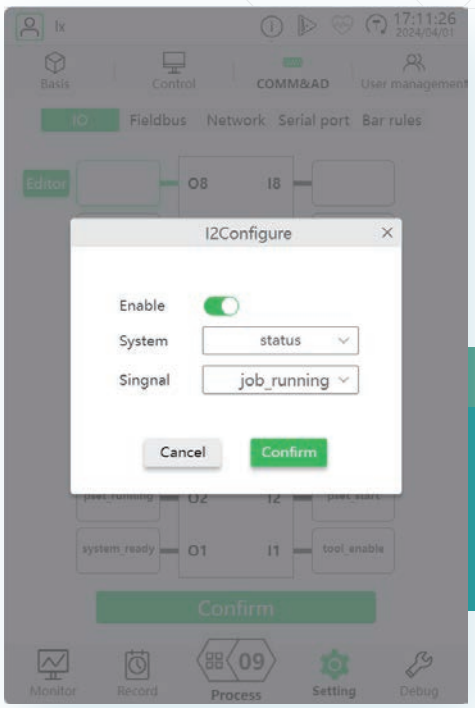
- Multiple data formats export
- Direct tightening results display
- On-demand data filter
- Multiple types of curves



Data storage

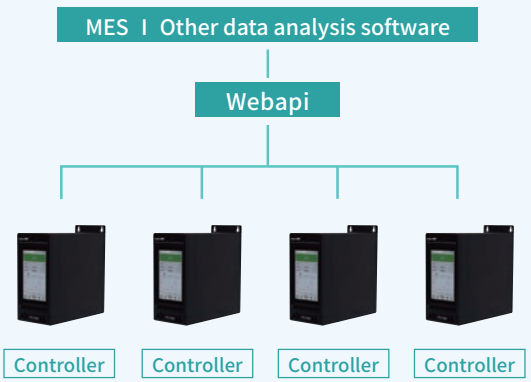
- 100,000 results
- 30,000 curves
- High resolution curve
- Sampling frequency of 1000 Hz

Communication



IO communication

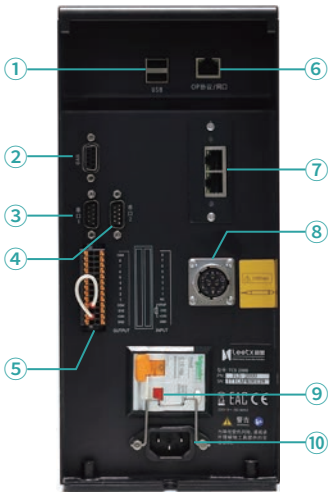
- Support IO communication
- 8 input and 8 output
- Configrable IO
- Fit various needs



Webapi

- Universal data interface
- Program calls and barcode issuance
- Process results and curve transmission
- Stable and convenient communication

Structure



① USB port

② CAN

③ Serial port 1 (debugging)

④ Serial port 2 (barcode reader)

⑤ 8 inputs / 8 Outputs connector for PLC or indicator box or socket tray connection, it includes the STOP signal

⑥ Open Protocol, Ethernet port

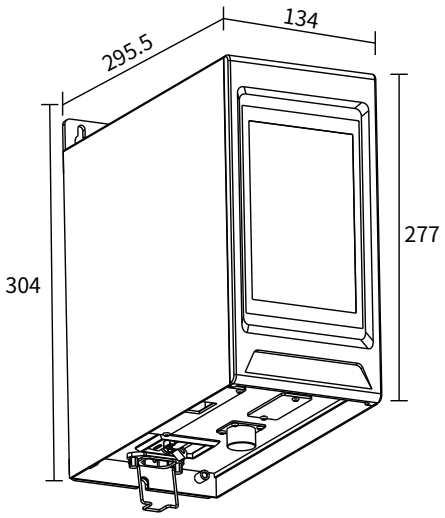
⑦ Fieldbus module (PROFINET,EtherCAT,EtherNet IP,-PROFIBUS,Modbus TCP)

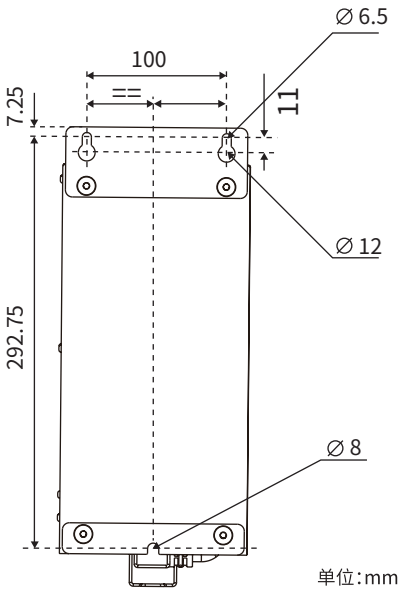
⑧ Tool connection

⑨ ON / OFF switch, over current protection and ground fault protection

⑩ Mains power inlet

Dimension drawing





TCS.2000 Controller

A

B

Reference Image	Model	Order Number	Bus Type	Compatible Tools	Voltage V/AC	Frequency Hz	Weight Kg
A	TCS.2000	68080030	N/A	Screwdriver - EHS.003 - EHS.008 - EHS.015 - EHA.003 - EHA.012 - EHA.022	180-250	50 - 60	6
A	TCS.2000.BUS.PN	68080040	ProfiNet		180-250	50 - 60	6
A	TCS.2000.BUS.EC	68080070	EtherCat		180-250	50 - 60	6
A	TCS.2000.BUS.EI	68080080	EtherNet/IP		180-250	50 - 60	6
A	TCS.2000.BUS.MT	68080050	MoudBusTcp		180-250	50 - 60	6
B	TCS.2000A	68080120	N/A	Nutrunner and Spindle (Except Screwdriver)	180-250	50 - 60	6
B	TCS.2000A.BUS.PN	68080060	ProfiNet		180-250	50 - 60	6
B	TCS.2000A.BUS.EC	68080090	EtherCat		180-250	50 - 60	6
B	TCS.2000A.BUS.EI	68080100	EtherNet/IP		180-250	50 - 60	6
B	TCS.2000A.BUS.MT	68080020	MoudBusTcp		180-250	50 - 60	6

Controller Accessories

A

B

C

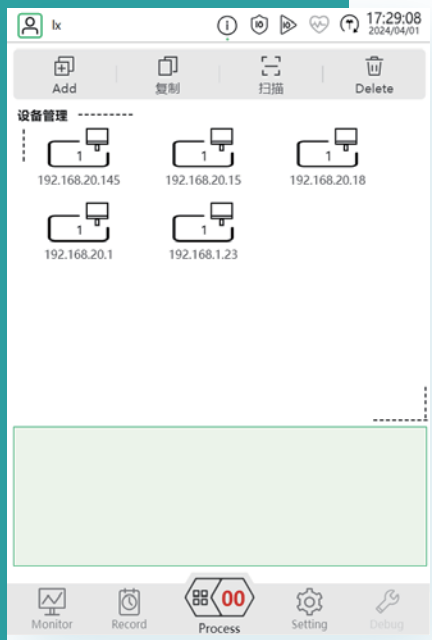
D

E

Reference Image	Description	Specifications	Order Number
A	8 Input 8 Output IO Expansion Box	Cable Length: 3 meters	60000426
B	4-Positions Socket Tray	Cable Length: 3 meters	60003147
C	4-Positions Bit Tray	Cable Length: 3 meters	60003150
D	8-Positions Socket Tray	Cable Length: 3 meters	60003148
E	8-Positions Bit Tray	Cable Length: 3 meters	60003152

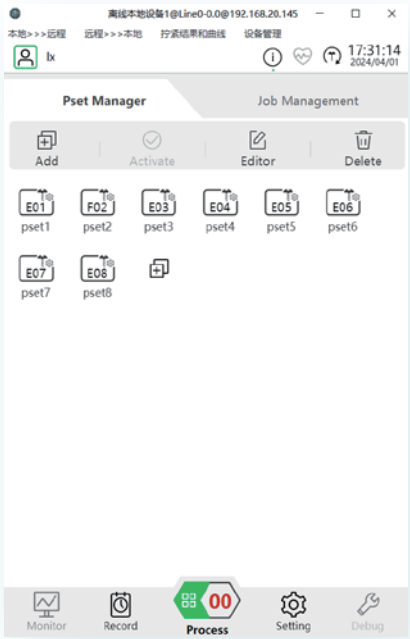
Configuration interface

Tightening system management



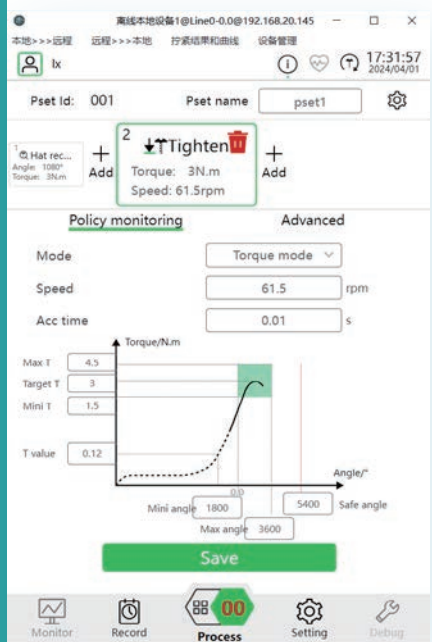
Centralized device management

Connect all devices by Ethernet



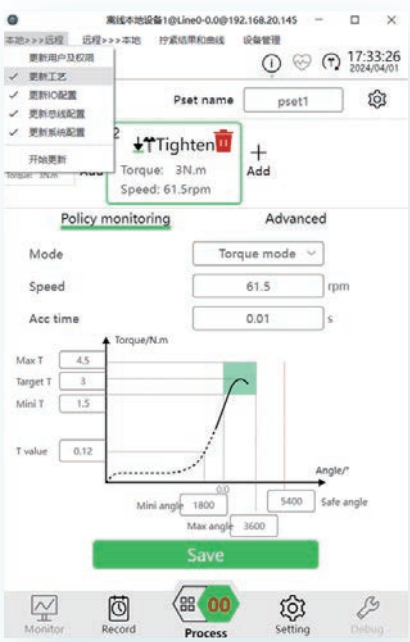
Easy data viewing

Real-time data synchronization through Ethernet, real-time station monitoring.



Offline parameter configuration

Configure the process, communication parameters, etc. in the offline mode.



One-click deploy

One-click deploy to each station.

Tool

Excellent performance

High accuracy

Well applicability

The Leetx tightening tool applies a HV servo control solution, featuring a Integrated torque transducer that detects the actual torque output in real time.

After receiving torque feedback, the controller performs motion planning and implements closed-loop control.

Therefore, the tightening system boasts higher torque accuracy (6σ accuracy of 3%~5%) and better dynamic response performance.

It is suitable for scenarios where higher assembly quality is required.

Product features & advantages

Good performance

In-house Integrated HV servo motor featuring high power density and robust overload capacity.

High accuracy

The handheld in-line and angle head tightening tools ensure ±5% accuracy at 6σ, while the fixtured spindles ensure ±3% accuracy at 6σ.

Wide applicability

Integrated torque transducer and angle encoder to meet the requirements of critical & safety level control.

Ultra-flexible cable design allowing for easy tool positioning.

Product value

Adapting to various assembly scenarios

Improving the product tightening quality

Reducing the operation difficulty

Reducing the use cost

Comparison of tightening tools

	Pneumatic clutch tool	Battery clutch tool	Current servo tool	Transducerized HV servo tool
Torque control	√	√	√	√
Re-hit alarm		√	√	√
Signal output		√	√	√
Counter linkage		√	√	√
Adjustable speed		√	√	√
Synchronous tightening			√	√
Multi-steps tightening			√	√
Angle variable			√	√
Result output			√	√
Mutually independent torque angle variable				√
Process curve				√
Tool accuracy at 6σ	±15%	±7.5-10%	±7.5%	±3-5%

Tool torque range selection reference

The following table shows the common torque range of general bolts, which can provide reference for tool torque selection.

If there are special regulations for tightening torque, the torque values specified in the corresponding technical specifications shall prevail.

Tightening torque of metric bolts Q/STB 12.521.5-2000		
Scope: This standard covers the tightening torque of bolts with mechanical performance grade 10.9 and specifications ranging from M6 to M39. This standard does not apply to bolts using nylon washers, sealing washers, or other non-metallic washers.		
Material	45, 35CrMo or equivalent material	
Nominal diameter of thread (mm)	Range Nm (kgfm)	Target Nm(kgfm)
M6	8.8-14.7(0.9-1.5)	12(1.2)
M8	14.7-34(1.5-3.5)	25(2.5)
M10	34-74(3.5-7.5)	54(5.5)
M12	54-123(5.5-12.5)	89(9.0)
M14	84-196(8.5-20)	137(14)
M16	147-309(15.0-31.5)	230(23.5)
M18	201-427(20.5-43.5)	315(32)
M20	319-608(32.5-62.0)	460(47)
M22	471-829(48.0-84.5)	650(66.5)
M24	588-1030(60-105)	810(82.5)
M27	883-1470(90-150)	1180(120)
M30	1130-1910(115-195)	1520(155)
M33	1470-2450(150-250)	1960(200)
M36	1860-3040(190-310)	2450(250)
M39	2260-3630(230-370)	2940 (300)

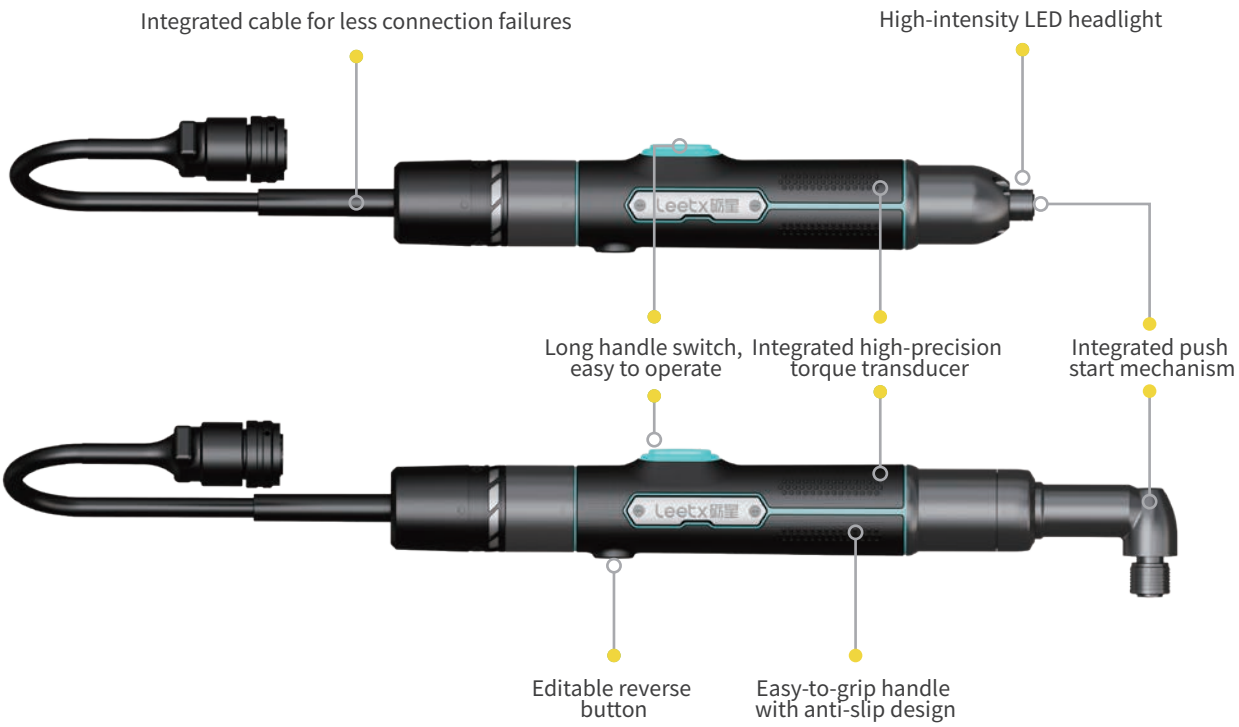
*Design drawings that specify torque requirements shall be followed.

Transducerized Tightening System - Screwdriver

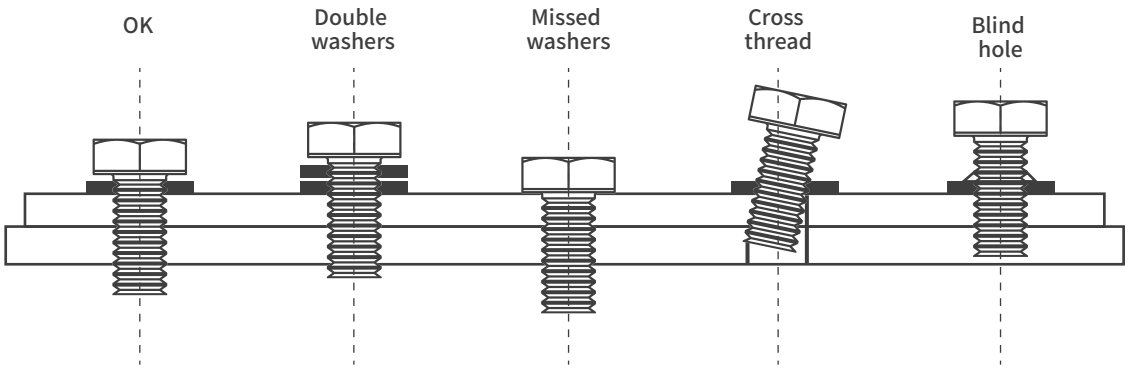
Features

- High-precision servo smart screwdriver System torque accuracy ±5% at 6σ
- Highly flexible cable design for easy wiring
- Integrated angle encoder to meet the requirements of tightening critical & safety level control
- Hot swapping for easy switching of production lines

Structure



Real-time NOK detection



Torque	OK	OK	OK	OK	OK
Angle	OK	NOK	NOK	NOK	NOK

Floating and cross thread are frequent assembly errors on production lines. Merely meeting a specified torque is insufficient for quality control. It is essential to incorporate independent angle monitoring and halt tightening at any sign of anomaly to prevent damage to the workpiece.

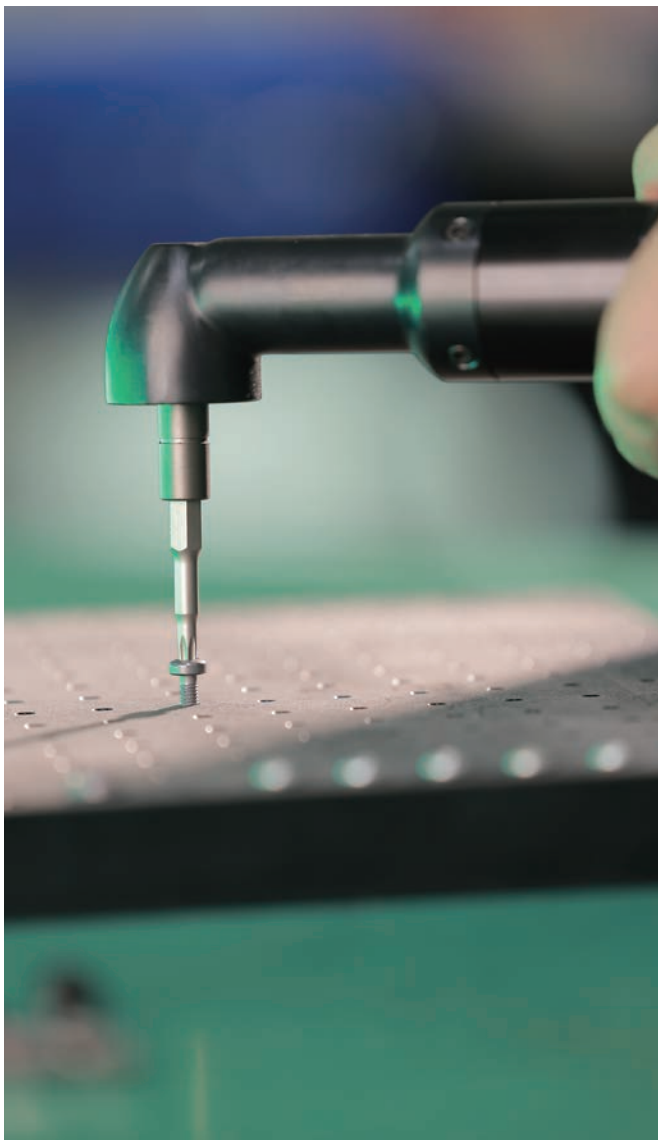
The Leetx tool, with its torque control - angle monitoring strategy, allows for multi-steps tightening that can help promptly identify assembly problems and enhance assembly efficiency.

Torque control - angle monitoring

The Leetx screwdriver comes with a Integrated torque transducer and an angle encoder, allowing for real-time monitoring of angle adjustments while managing torque.

Multi-steps tightening

The Leetx screwdriver features multi-steps tightening and step results display. When the target torque or angle is not achieved during the run-down stage, the system can be stopped in time to avoid any damage to the workpiece.



EHS Series - In-line Screwdriver

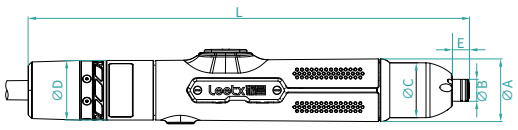
Model	Order Number	Output (in)	Min. torque (N·m)	Max. torque (N·m)	Speed (rpm)	Weight w/o Cable (Kg)	Cable Length (M)
EHS.003.05	68040120	Hex 1/4F	0.3	3	2500	0.75	5
EHS.003.10	68040250	Hex 1/4F	0.3	3	2500	0.75	10
EHS.003.15	68040340	Hex 1/4F	0.3	3	2500	0.75	15
EHS.008.05	68040160	Hex 1/4F	1	8	1200	0.75	5
EHS.008.10	68040170	Hex 1/4F	1	8	1200	0.75	10
EHS.008.15	68040180	Hex 1/4F	1	8	1200	0.75	15
EHS.015.05	68040080	Hex 1/4F	3	15	900	0.75	5
EHS.015.10	68040100	Hex 1/4F	3	15	900	0.75	10
EHS.015.15	68040110	Hex 1/4F	3	15	900	0.75	15

Model	Order Number	Output (in)	Min. torque (N·m)	Max. torque (N·m)	Speed (rpm)	Weight w/o Cable (Kg)	Cable Length (M)
EHS.003-M20.05	68040190	Hex 1/4F	0.3	3	2500	0.75	5
EHS.003-M20.10	68040200	Hex 1/4F	0.3	3	2500	0.75	10
EHS.003-M20.15	68040210	Hex 1/4F	0.3	3	2500	0.75	15
EHS.008-M20.05	68040220	Hex 1/4F	1	8	1200	0.75	5
EHS.008-M20.10	68040230	Hex 1/4F	1	8	1200	0.75	10
EHS.008-M20.15	68040240	Hex 1/4F	1	8	1200	0.75	15
EHS.015-M20.05	68040090	Hex 1/4F	3	15	900	0.75	5
EHS.015-M20.10	68040280	Hex 1/4F	3	15	900	0.75	10
EHS.015-M20.15	68040350	Hex 1/4F	3	15	900	0.75	15

In-line Screwdriver Accessories

Reference Image	Description	Specifications	Order Number
A	In-line Screwdriver Telescopic Kit	30mm Stroke	60003039
B	In-line Screwdriver Telescopic Kit	50mm Stroke	60003037
C	In-line Screwdriver Pistol Grip Handle	Compatible with EHS	60000299

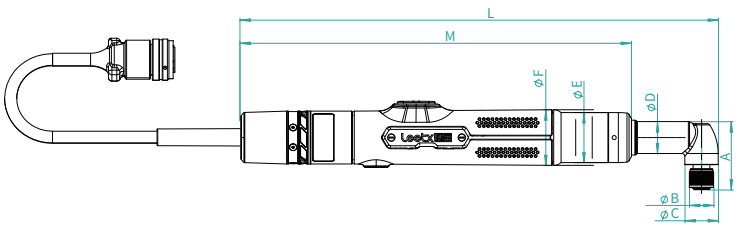
Model	A	B	C	D	E	L
EHS.XXX	40	14	35	38	11	282
EHS.XXX-M20	40	M20X1-LH	39	38	11	282



EHA Series - Angle Head Screwdriver

Model	Order Number	Output (in)	Min. torque (N·m)	Max. torque (N·m)	Speed (rpm)	Weight w/o Cable (Kg)	Cable Length (M)
EHA.003.05	68040030	Hex 1/4F	0.6	3	1600	1	5
EHA.003.10	68040300	Hex 1/4F	0.6	3	1600	1	10
EHA.003.15	68040360	Hex 1/4F	0.6	3	1600	1	15
EHA.012.05	68040010	Hex 1/4F	1.5	12	800	1	5
EHA.012.10	68040070	Hex 1/4F	1.5	12	800	1	10
EHA.012.15	68040370	Hex 1/4F	1.5	12	800	1	15

Model	Order Number	Output (in)	Min. torque (N·m)	Max. torque (N·m)	Speed (rpm)	Weight w/o Cable (Kg)	Cable Length (M)
EHA.022.05	68040020	Sq 3/8	5	22	500	1	5
EHA.022.10	68040040	Sq 3/8	5	22	500	1	10
EHA.022.15	68040380	Sq 3/8	5	22	500	1	15



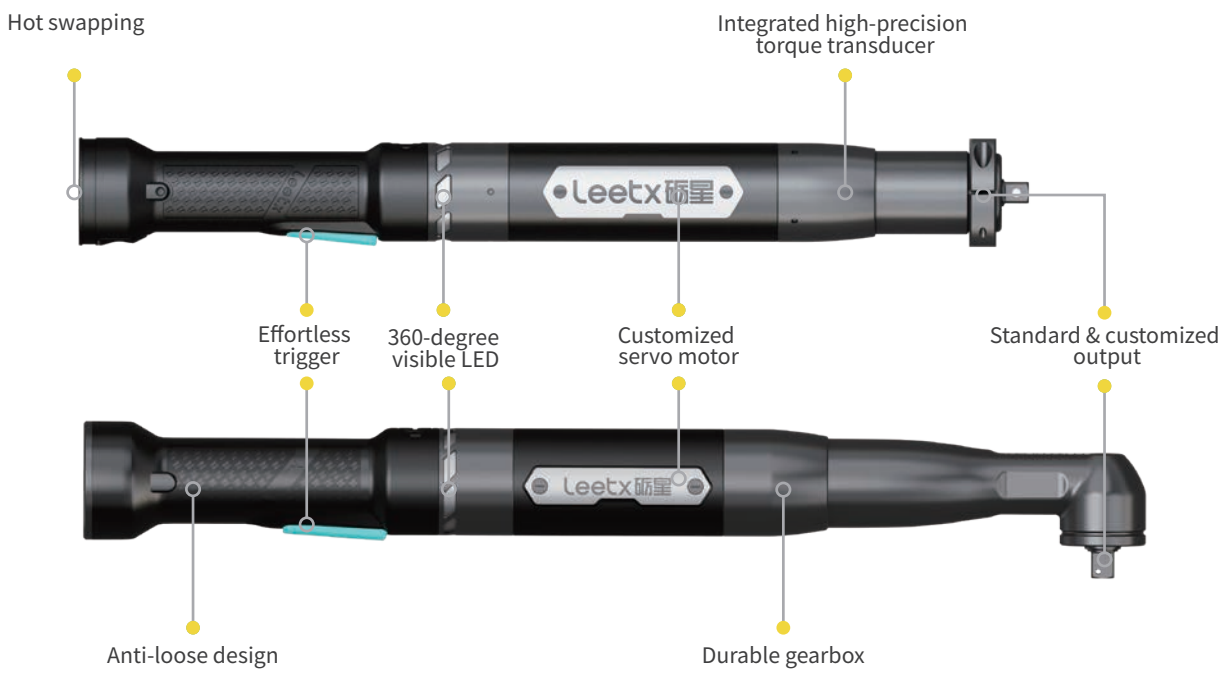
Model	A	B	C	D	E	F	L	M
EHA.003	49	17.5	24	23	36	40	343	281
EHA.012	49	17.5	24	23	36	40	343	281
EHA.022	41	Sq.3/8	27	20	36	40	345	280

Nutrunner

Features

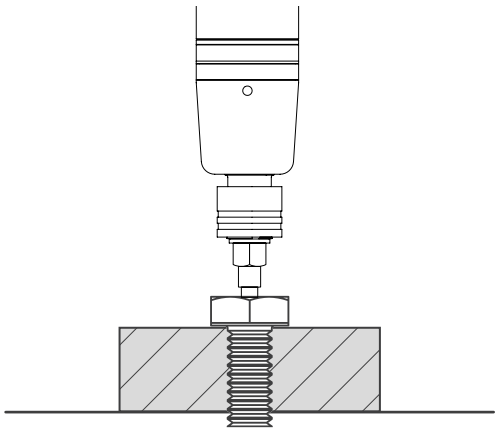
- High-precision servo intelligent screwdriver
- Easy gripping
- Integrated angle encoder to meet the requirements of tightening critical & safety level control

Structure



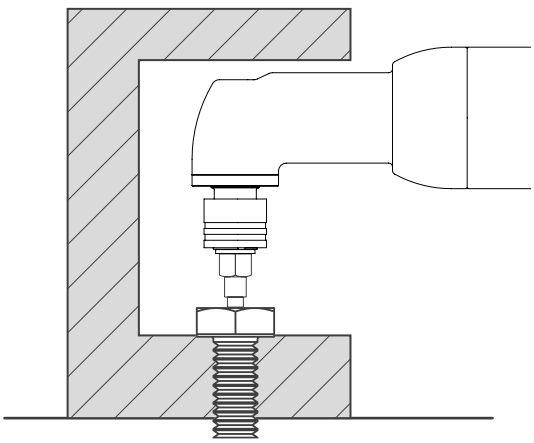
Application in limited space

Leetx's angled tightening tool features a spiral bevel gear structure in its output head. This design enables the tool to operate in narrow spaces, even when there are interferences on inclined, lateral, or multiple surfaces. It ensures accurate assembly processes with full traceability of tightening data.



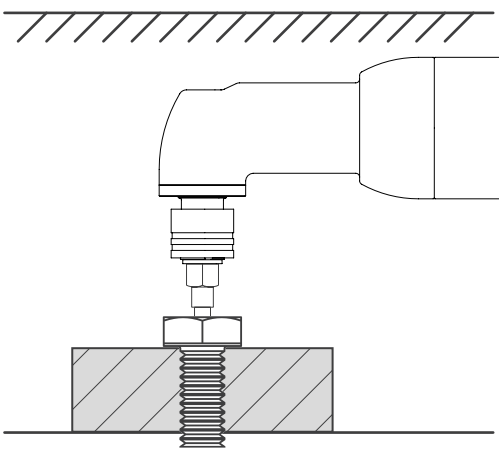
Application of in-line screwdriver

General operating conditions



Application of angle head nutrunner

Interference from workpiece



Application of angle head nutrunner

Interference from working space

Nutrunner

A

B

Reference Image	Model	Order Number	Output (in)	Min. torque (N·m)	Max. torque (N·m)	Speed (rpm)	Weight (kg)
A	EHS.032	68060040	Sq 3/8	5	32	900	1.9
A	EHS.065	68060050	Sq 1/2	10	65	900	2.5
B	EHA.032	68060020	Sq 3/8	6	32	900	2
B	EHA.050	68060010	Sq 3/8	10	50	900	2.2
B	EHA.070	68060080	Sq 3/8	15	70	800	2.3
B	EHA.105	68060030	Sq 1/2	20	105	500	2.8
B	EHA.180	68060060	Sq 1/2	50	180	400	5.2

Nutrunner Accessories

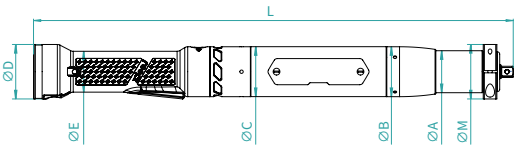
Reference Image	Description	Specifications	Order Number
A	Nutrunner Cable	5m	60000060
A	Nutrunner Cable	10m	60000268
A	Nutrunner Cable	15m	60000053
A	Nutrunner Cable	20m	60000269
A	Nutrunner Cable	30m	60000270
B	Swivelling Ring	EHA.022	60003154
B	Swivelling Ring	EHA.032 EHA.050	60003158
B	Swivelling Ring	EHA.105	60003156

A

B

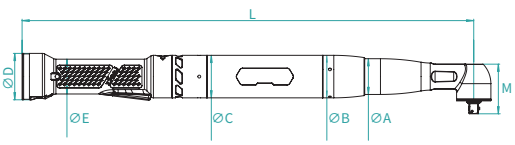
EHS Series - In-line Nutrunner

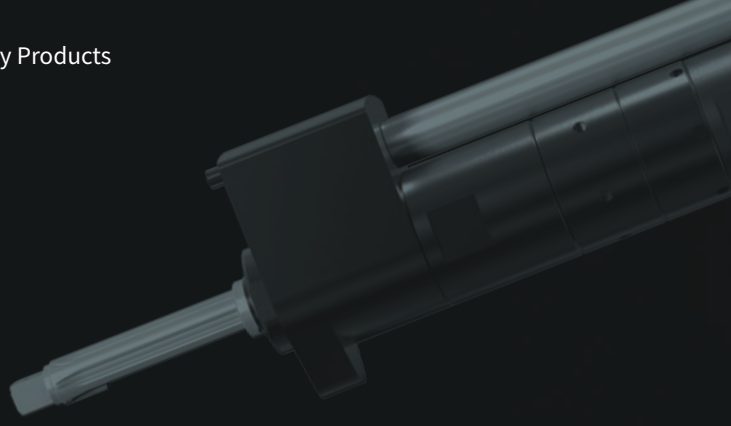
Model	Output	A	B	C	D	E	L	M
EHS.032	Sq.3/8	37	44	44	48	36	423	60
EHS.065	Sq.1/2	49	58	44	48	36	460	60



EHA Series - Angle Head Nutrunner

Model	Output	A	B	C	D	E	L	M
EHA.032	Sq.3/8	37	44	44	48	36	420	50
EHA.050	Sq.3/8	37	44	44	48	36	467	51
EHA.070	Sq.1/2	40	46	44	48	36	493	63
EHA.105	Sq.1/2	49	58	44	48	36	495	61
EHA.180	Sq.1/2	49	58	44	48	36	545	73





Fixtured Spindle

Features

- High-precision servo spindle, with a measuring range of 7-360 Nm
- Integrated angle encoder to meet the requirements of tightening critical & safety level control
- Design for high durability meeting the requirements for long-term use in production lines
- Critical components with average lifespan of millions of cycles meeting the requirements for proper use throughout the lifecycle of the product

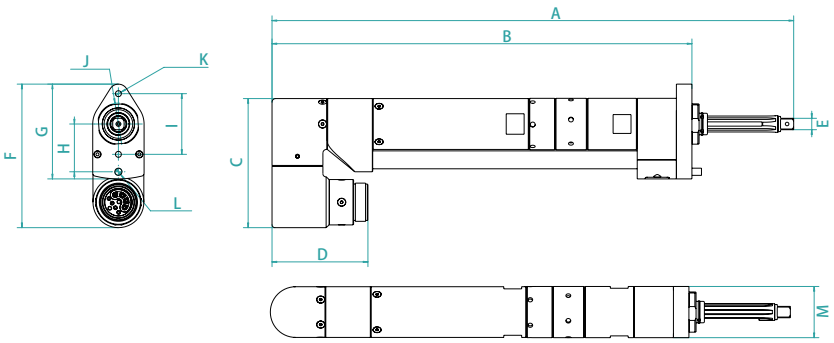
Structure

EFS Series - Spindle

Model	Order Number	Output (in)	Min. torque (N·m)	Max. torque (N·m)	Speed (rpm)	Weight (kg)
EFS.020	68070140	Sq 3/8	3	20	2000	2.2
EFS.050	68070110	Sq 3/8	7	50	800	2.7
EFS.150	68070120	Sq 1/2	30	150	300	4.2
EFS.280	68070130	Sq 3/4	55	280	200	6.0
EFS.360	68070150	Sq 3/4	50	360	140	10.0

Spindle Accessories

Description	Specifications	Order Number
Spindle cable	5m	60000254
Spindle cable	10m	60000255
Spindle cable	15m	60000256
Spindle cable	20m	60000048
Spindle cable	30m	60000257

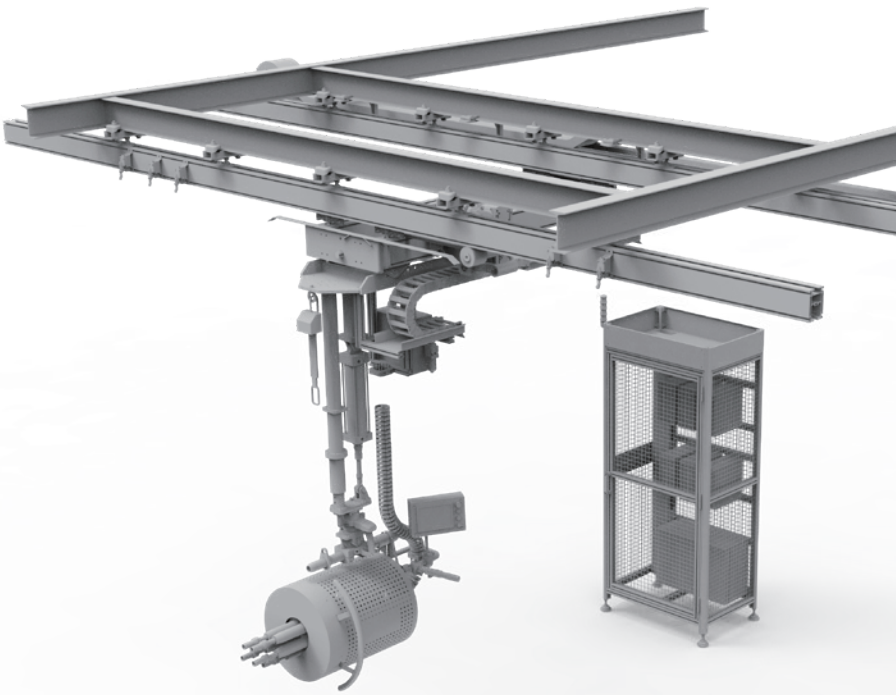


Model	A	B	C	D	E	F	G	H	I	J	K	L	M
EFS.020	417	332	108	80	Sq.3/8	120	79	40	50.8	Φ35	2*M6x1-9	Φ6	Φ43
EFS.050	437	352	108	80	Sq.3/8	120	80	40	50.8	Φ35	2*M6x1-9	φ6	φ43
EFS.150	510	399	121	92	Sq.1/2	140	93	35	70	Φ49.2	2*M8x1-12	φ6	φ51
EFS.280	536	416	121	92	Sq.3/4	140	93	70	35	Φ49.2	2*M8x1-12	φ6	φ60
EFS.360	626	460	121	92	Sq.3/4	143	97	38	76.5	Φ40	3*M10x1.5-20	Φ10	Φ60

Multi-Fixtured Spindles

In the automotive assembly industry, in order to maintain high quality and efficiency in the assembly process, multi-fixtured spindles have emerged to meet the requirements for high consistency tightening. By combining the controller and software, the accuracy and completeness of the assembly process can be maintained and recorded, facilitating process analysis and quality record keeping.

This product is suitable for tightening in scenarios such as engines, transmissions, steering mechanisms, chassis, (sub) frames, and tires. It is mainly used in the manufacturing industry of automobiles and parts, compressors, gasoline engines, and large diesel engines.



Features

- A master-slave structure with all parameters configured in master station only
- Flexible configuration function catering to complex tightening conditions
- Flexible configuration function catering to complex tightening conditions
- With comprehensive condition monitoring, the working status of each screw shaft can also be viewed in real time

Hardware architecture of multi-fixtured spindles

The controllers are connected via Ethernet to achieve data transmission. Network topology: star connection.

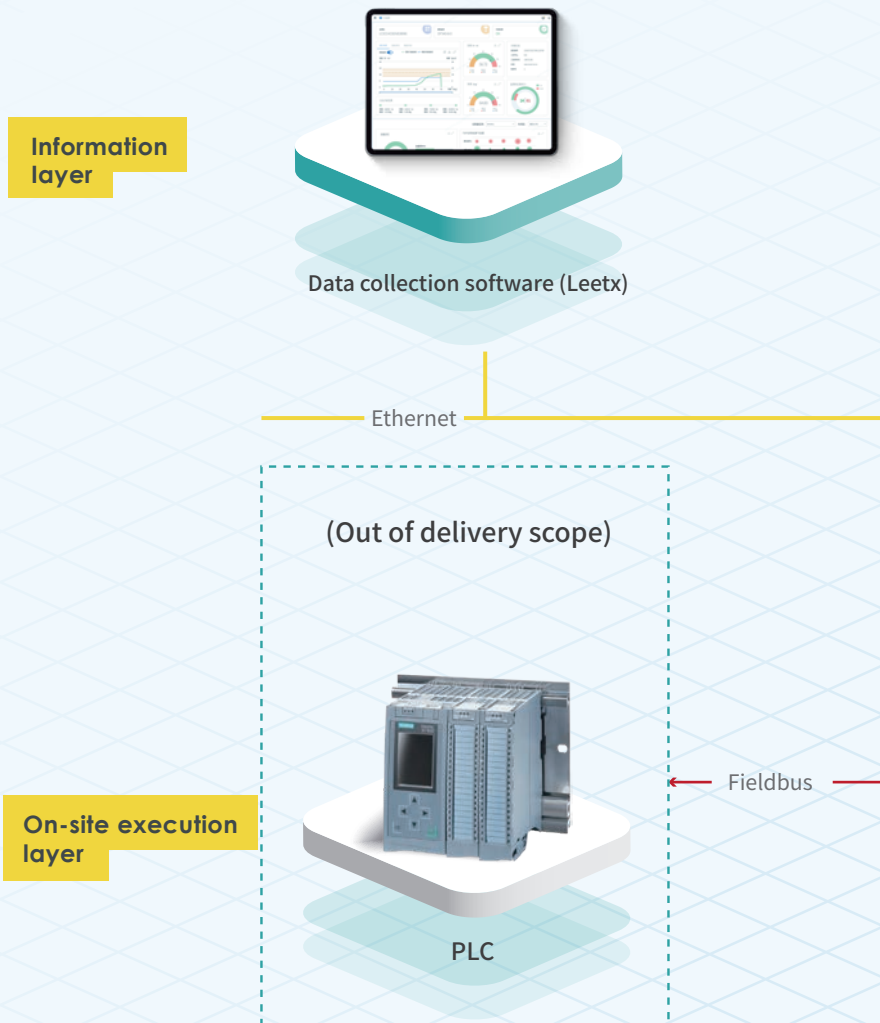
The controllers are connected through fieldbus to achieve synchronization of multiple spindles. Network topology: fieldbus connection.

The Ethernet network realizes the centralized collection of data for multi-fixtured spindles at the product line or workshop.

PLC communicates with the master controller through fieldbus, receiving instructions for formula, barcode information, etc., and obtaining the result information of multiple spindles.
Provided fieldbus: mainstream fieldbus such as PROFINET, EtherCAT, Ether-Net/IP, PROFIBUS, and Modbus TCP.

The master controller can connect up to 39 slave controllers, achieving control of up to 40 spindles in the entire system.

Leetx delivery scope



MES and other systems

Topology structure of multiple spindles

Internal Ethernet

Leetx controller (master)

Leetx controller (slave) #1

Leetx controller (slave) #2

Leetx controller (slave) #39

Sync fieldbus

Cable

Cable

Cable

Cable

Spindle #1

Spindle #2

Spindle #3

Spindle #40

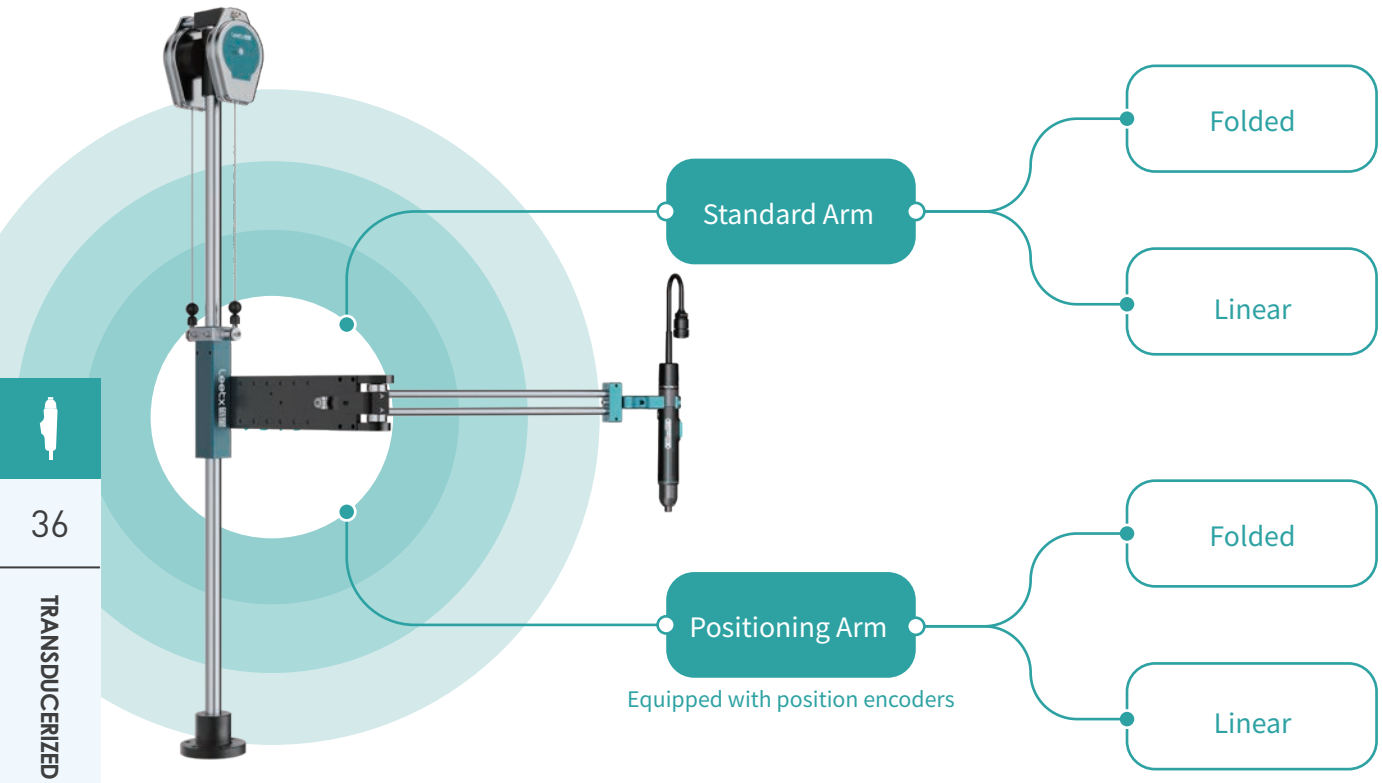
Accessory - Reaction Arm

Less effort

Higher comfort

Reduced error

The reaction arm is designed to reduce operator effort and provide freedom of movement. Using a reaction arm reduces the counterforce during tightening, enhances operator comfort, minimizes manual tightening errors, and ensures precise clamping force.



Linear and folded reaction arms

Linear reaction arm

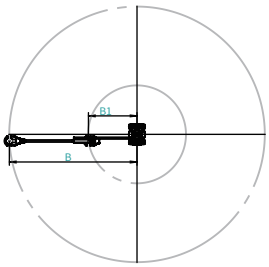
It absorbs the reaction of torque, reducing the tool torque and weight to be borne by the operator' s wrist.

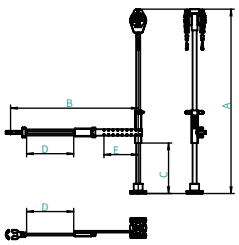
Folded reaction arm

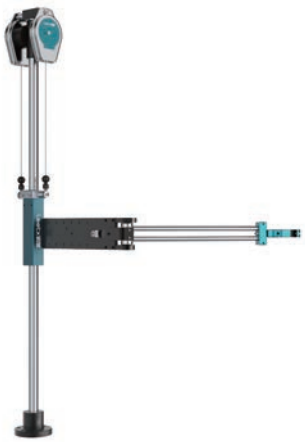
Larger scope of work, especially suitable for workstations with limited space

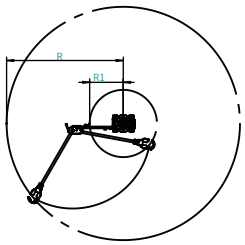
The tool holder can be installed at ±90 degrees.

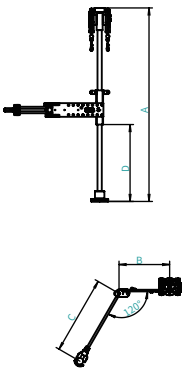
Horizontal or vertical tightening.











Linear reaction arm

Model	Order Number	Max. torque (Nm)	Max. tool weight (Kg)	Clamping range of the tool holder (mm)	Total Height （mm）	Maximum Working Radius （mm）
A1F.012.NS	60003218	12	1.5	28.5-41	888	710
A1F.025.NS	60003224	25	2.5	28.5-41	1132	779
A1F.050.NS	60003226	50	5	Must be ordered separately	1147	888
A1F.100.NS	60003228	100	6		1147	916

Folded reaction arm

Model	Order Number	Max. torque (Nm)	Max. tool weight (Kg)	Clamping range of the tool holder (mm)	Total Height （mm）	Maximum Working Radius （mm）
A1S.012.NS	60003233	12	1.5	28.5-41	12	1.5
A1S.025.NS	60003230	25	2.5	28.5-41	25	2.5
A1S.050.NS	60003235	50	5	Must be ordered separately	50	5
A1S.100.NS	60003236	100	6		100	6

Positioning error-proof tightening system

Tightening guidance

The positioning reaction arm features a 10” display that provides guidance for the tightening sequence and shows the tightening results.

Bolt positioning

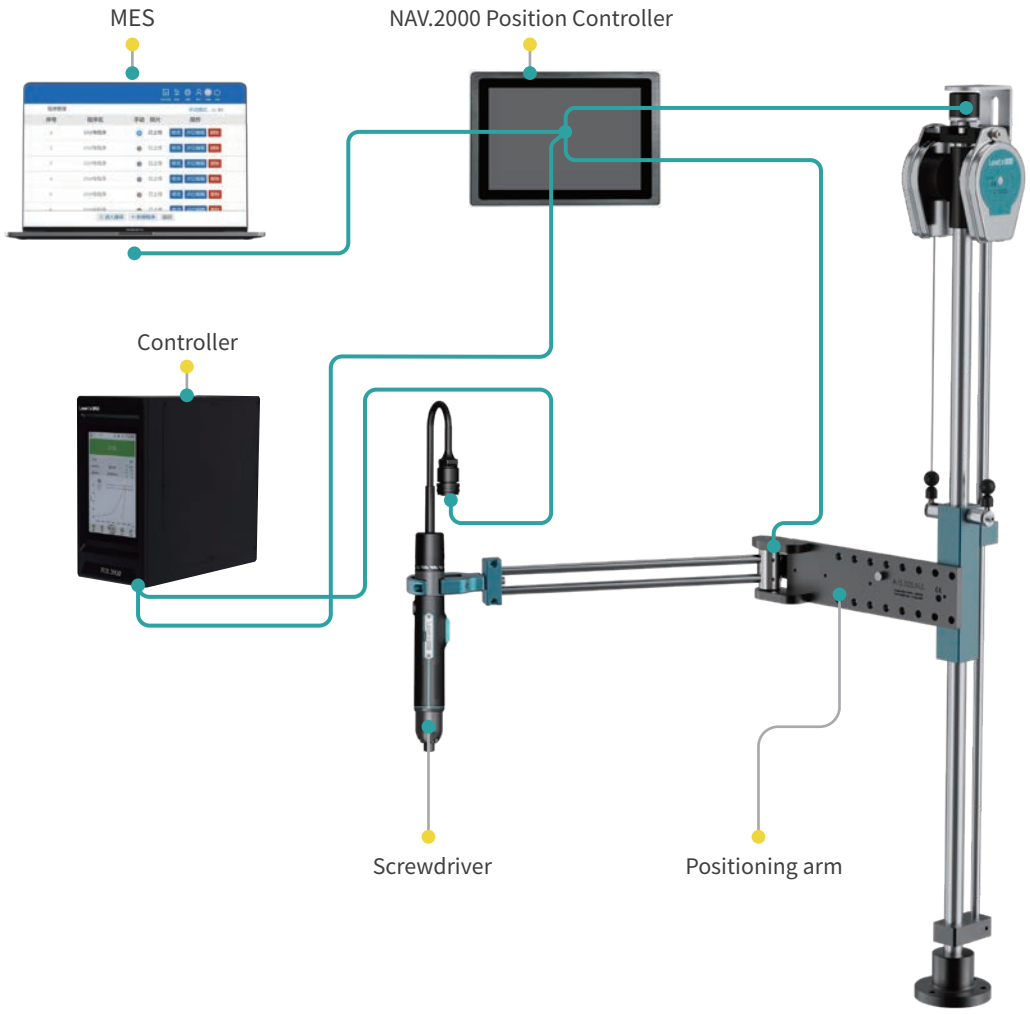
The positioning reaction arm allows setting a monitoring range, ensuring the tool only starts when the bit is within the defined range.

Strong positioning: enforces strict control over the bolt tightening sequence, allowing the next bolt to be tightened only after the current one is correctly tightened or with authorized permission.

Weak positioning: The tool must align with the bolt to start, but the tightening sequence is not controlled.

Program switching

When different bolts require different torque programs, the system automatically switches to the corresponding tightening program based on the bolt's position defined by the reaction arm.



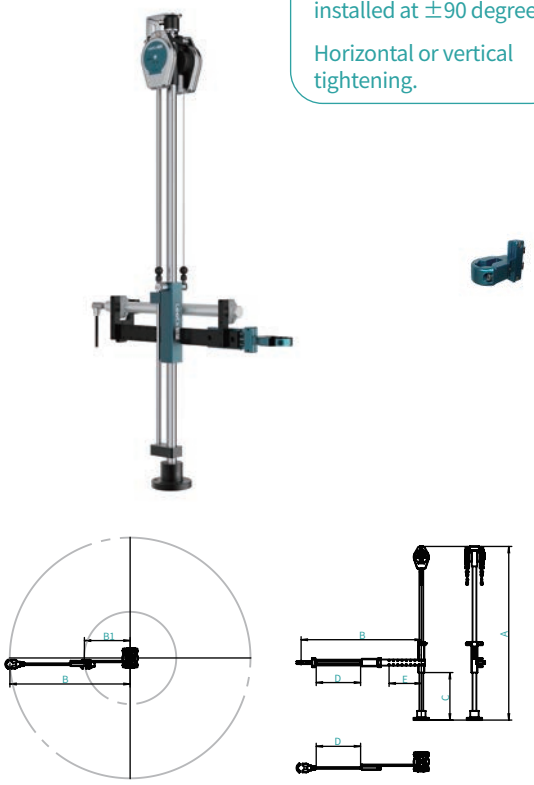
Linear and folded positioning arms

Linear reaction positioning arm

Equipped with rotary and linear encoders, the screw tightening position can be precisely defined.

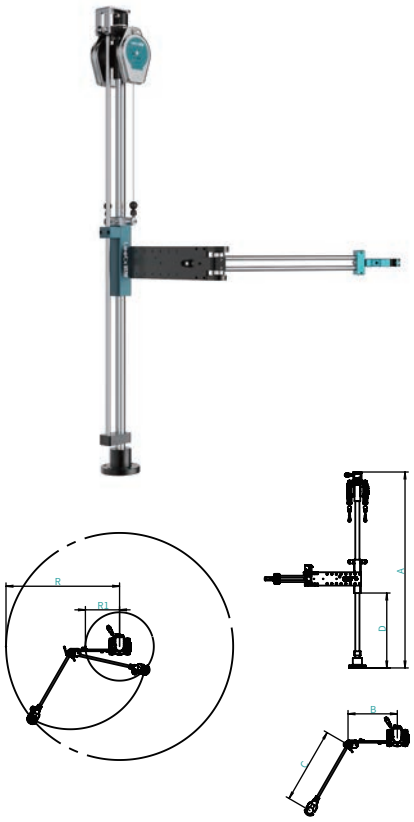
The tool holder can be installed at ±90 degrees.

Horizontal or vertical tightening.



Folded positioning arm

Equipped with two rotary encoders, the screw tightening position can be accurately defined.



Linear positioning arm

Model	Order Number	Max. torque (Nm)	Max. tool weight (Kg)	Tool holder size (mm)	A Height (mm)	B Length (mm)	Horizontal stroke C (mm)
A1F.012.PS	60003223	12	1.5	28.5-41	945	238.5	436
A1F.025.PS	60003225	25	2.5	28.5-41	1189	291.5	586
A1F.050.PS	60003227	50	5	Must be ordered separately	1189	259.5	486
A1F.100.PS	60003229	100	6		1189	398.5	486

Folded positioning arm

Model	Order Number	Max. torque (Nm)	Max. tool weight (Kg)	Tool holder size (mm)	A Height (mm)	B Length (mm)	C Length (mm)	R Radius (mm)	R1 Radius (mm)
A1S.012.PS	60003232	12	1.5	28.5-41	945	298	420	639	146
A1S.025.PS	60003231	25	2.5	28.5-41	1158	296	470	685	183
A1S.050.PS	60003234	50	5	Must be ordered separately	1158	336	440	698	154
A1S.100.PS	60003237	100	6		1158	391	490	788	158