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ESTUN CoDroid

Collaborative Robot Product Brochure



COGNITIVE
COLLABORATIVE
COEXISTING

MISSION

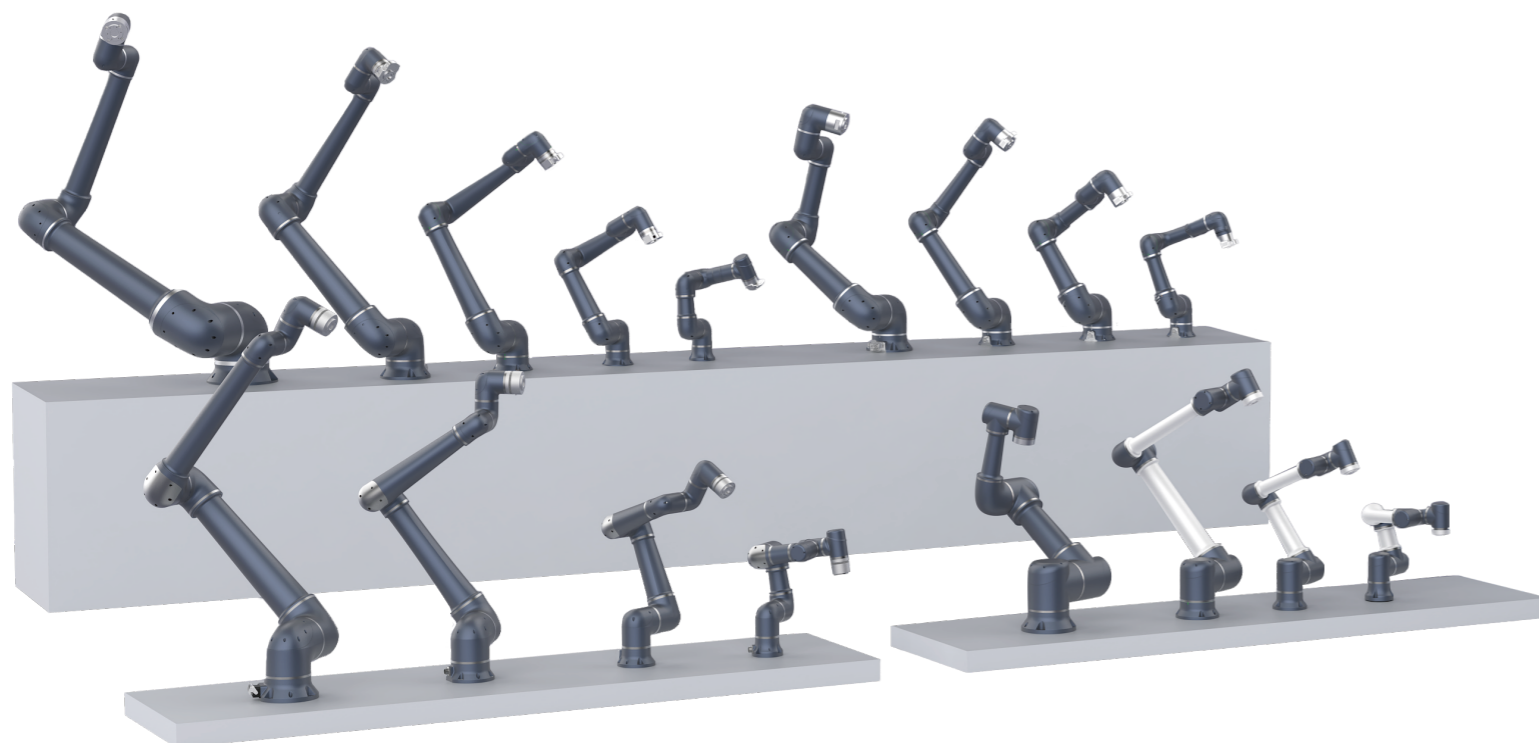
Cocreate the Human-CoDroid Future

VISION

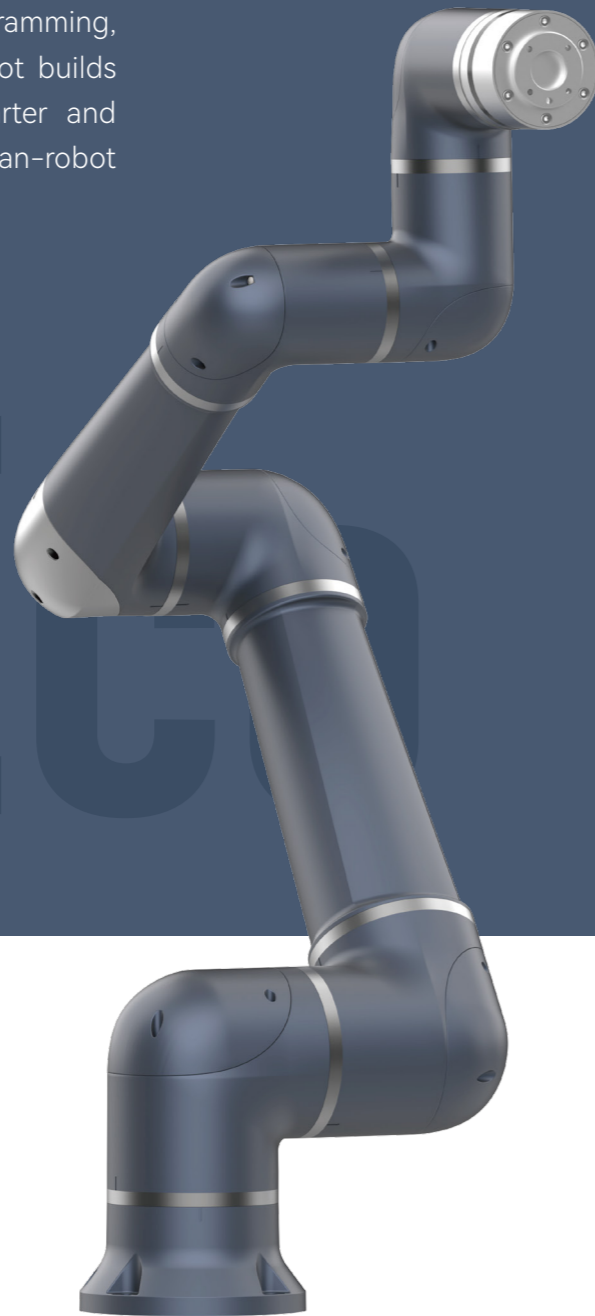
To be the vital promoter of embodied AI technologies and applications

ESTUN CODROID FOUNDED IN JULY 2022 BY PIONEERS WITH DEEP ROOTS IN AI AND ROBOTICS, WE'RE HERE TO REVOLUTIONIZE HOW HUMANS AND MACHINES INTERACT, LEARN, AND INNOVATE TOGETHER. THIS ISN'T ABOUT REPLACING HUMAN POTENTIAL—IT'S ABOUT AMPLIFYING IT.

By merging cutting-edge embodied intelligence with intuitive interfaces, we're dismantling barriers between complex programming and seamless collaboration. The company takes Operational Embodied Intelligence as the core technical route, delivering the next generation of embodied intelligent robotics and services with Hand/Foot-Eye-Brain Synergistic Control. Whether it's automating repetitive tasks or enabling complex, high-mix workflows, Estun Codroid redefines what's possible.



Multiple safety features, innovative UI and programming, and deep integration of AI – the S-series cobot builds flexible production processes, which are smarter and safer, more efficient and reliable, for human-robot collaboration in industries.



TRUSTED SAFETY



- Emergency stop, incl. STO, SBC, conforms to EN ISO 10218-1, EN ISO 13849-1 Pld.Cat.3*.
- Sensitive to collisions.
- Brakes built into all axes.

EASY AND FLEXIBLE TO USE



- Built-in torque sensor, supporting by wizard force control kit.
- Teaching precise points and paths by agile manual guidance.
- Graphical UI for easy programming that can be mastered in 1 hour by novice
- Integrated vision system, capable of running in unstructured and dynamic automation.

PERFORMANCE



- Paired with the speed of a traditional industrial robot.
- Precision upgraded to industrial robot level through accurate calibration and compensation technology.
- Identification and compensation of high precision kinematic models ensure both accurate trajectory and smooth movement.

QUALITY SYSTEM



- Comprehensive manufacturing quality management system.
- Rigorous and consistent quality control.
- Kinematic calibration before shipment to ensure absolute accuracy.
- 100+ design type tests, 20+ delivery inspections, 120 hours continuous no failure operating before shipment.

*Will be certified in Q4 2024

ESTUN CoDroid | Collaborative Robot

Series S-Pro

Torque sensors built into all axes, performance of safety and manual guidance improved completely

- More sensitive to collisions in all positions
- Compliant hand guide
- Supporting hand guide with fixed gestures

Easy programming by end display and customizable buttons, without teaching pendant.

Encoder upgraded from 19-Bit ↗ 20-Bit for more accurate position detection.

Drive performance improved again

- ↗ Rigidity 50%
- ↗ Lifespan 20%

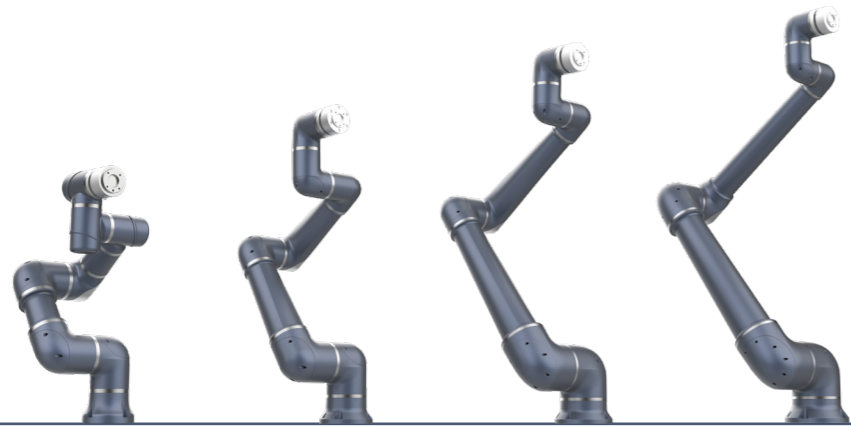
New software architecture brings the latest achievements

- Supporting extensions of force control kits
- New features added are accessible from updating



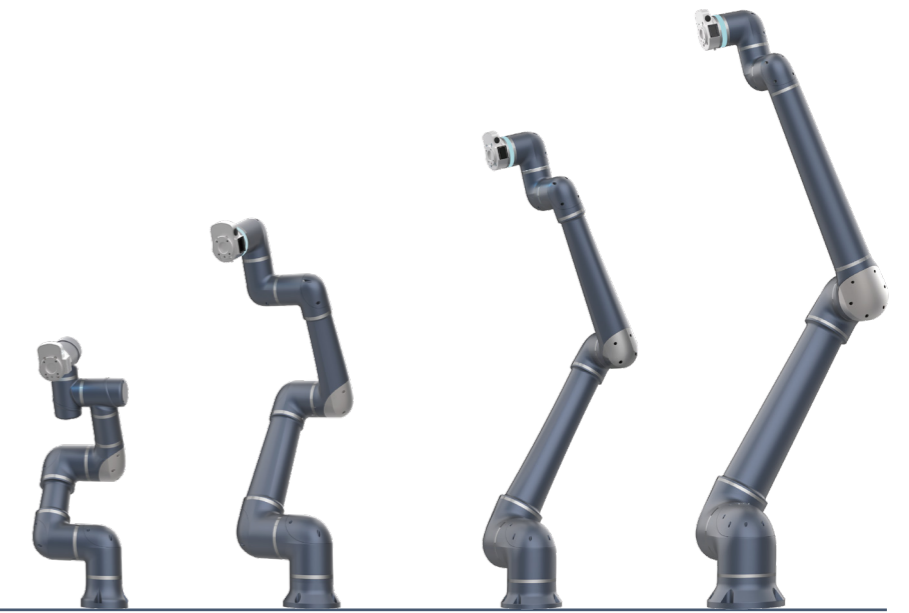
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Specifications



S-Eco

Model	S3-60 Eco	S5-90 Eco	S10-140 Eco	S20-180 Eco
DOF	6			
Payload (kg)	3	5	10	20
Reach (mm)	575.8	919	1400	1777.5
Repeatability (mm)	±0.03	±0.03	±0.03	±0.1
Weight (kg)	14	21	37	58
Safety	Hand guide, adjustable collisiondetection			
Certification	EN ISO 13849-1 PLd Cat.3 & EN ISO 10218-1			
IP Classification	IP54			
Max. Speed at Tool End (m/s)	2	2.5	2.5	3.2
Working Range	Axis1/2/4/5/6: ±360° Axis3: ±160°			
Max. Speed	[S3/S5/S10] Axis 1/2/3: 150 °/s [S20] Axis1/2: 110 °/s Axis3: 150 °/s Axis 4/5/6: 180 °/s			
Mounting	Any orientation			
Operating Temp.	0 – 50 °C			
Operating Humidity	70% RH			
Flange Connector	[S3/S5/S10] ISO 9409-1-50-4-M6 [S20] ISO 9409-1-50-6-M6			
Flange Communication	2 DI, 2DO, 24VDC, MODBUS RTU, RS485			



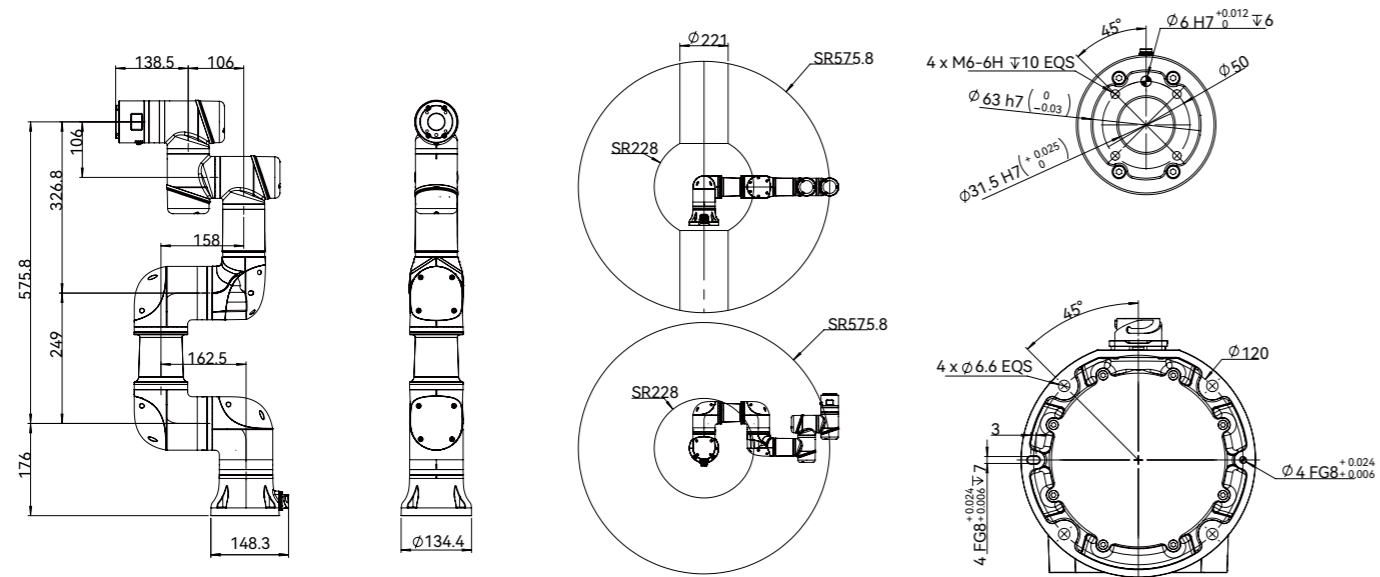
S-Pro

Model	S3-60 Pro	S5-90 Pro	S10-140 Pro	S20-180 Pro
DOF	6			
Payload (kg)	3	5	10	20
Reach (mm)	575.8	919	1400	1777.5
Repeatability (mm)	±0.03	±0.03	±0.03	±0.1
Weight (kg)	14	21	37	58
Torque Sensor Accuracy - Composition Error (F.S)	<2%			
Torque Sensor Accuracy - Repeatability Error (F.S)	<0.2%			
Safety	Hand guide, adjustable collisiondetection			
Certification	EN ISO 13849-1 PLd Cat.3 & EN ISO 10218-1			
IP Classification	IP54			
Max. Speed at Tool End (m/s)	2	2.5	2.5	3.2
Working Range	Axis1/2/4/5/6: ±360° Axis3: ±160°			
Max. Speed	[S3/S5/S10] Axis1/2/3: 150 °/s [S20] Axis1/2: 110 °/s Axis3: 150 °/s Axis4/5/6: 180 °/s			
Mounting	Any orientation			
Operating Temp.	0 – 50 °C			
Operating Humidity	70% RH			
Flange Connector	ISO 9409-1-50-4-M6			
Flange Communication	2 DI, 2DO, 24VDC, MODBUS RTU, RS485			

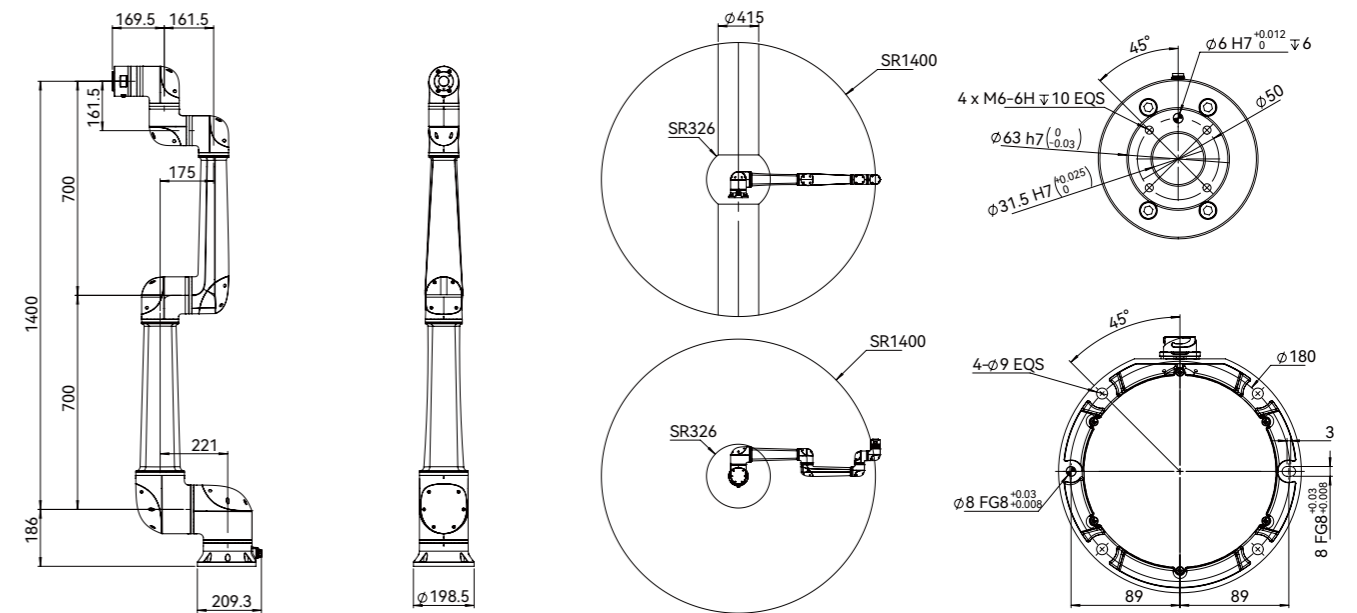
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Eco Series-Technical Drawings

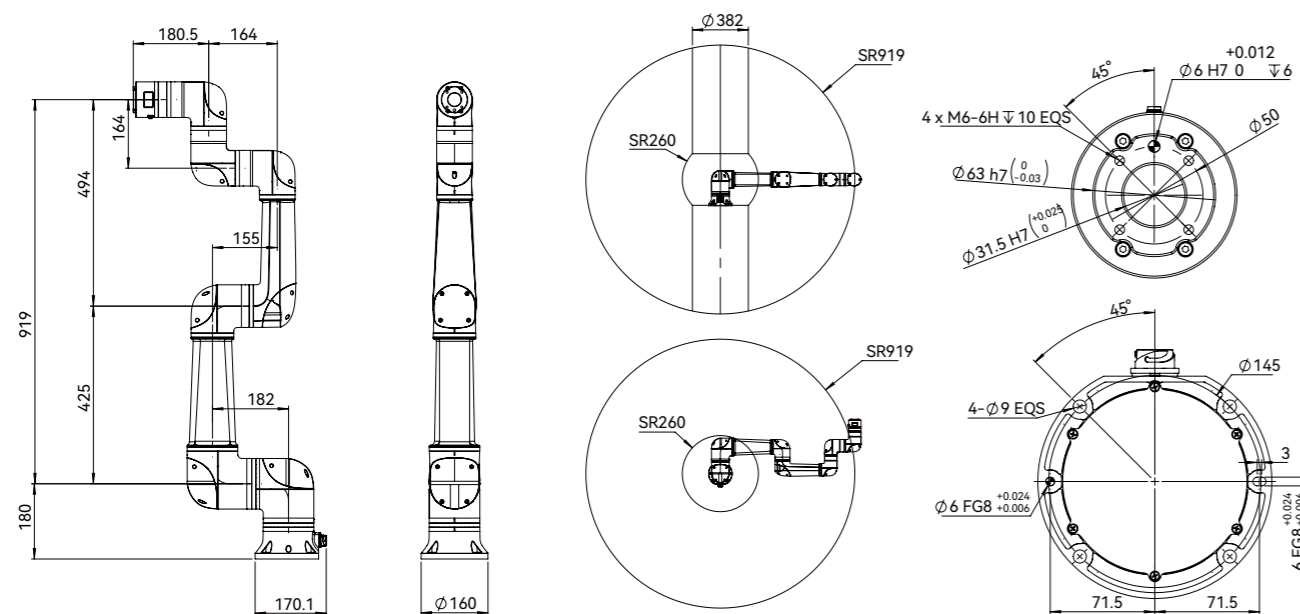
3kg Arm



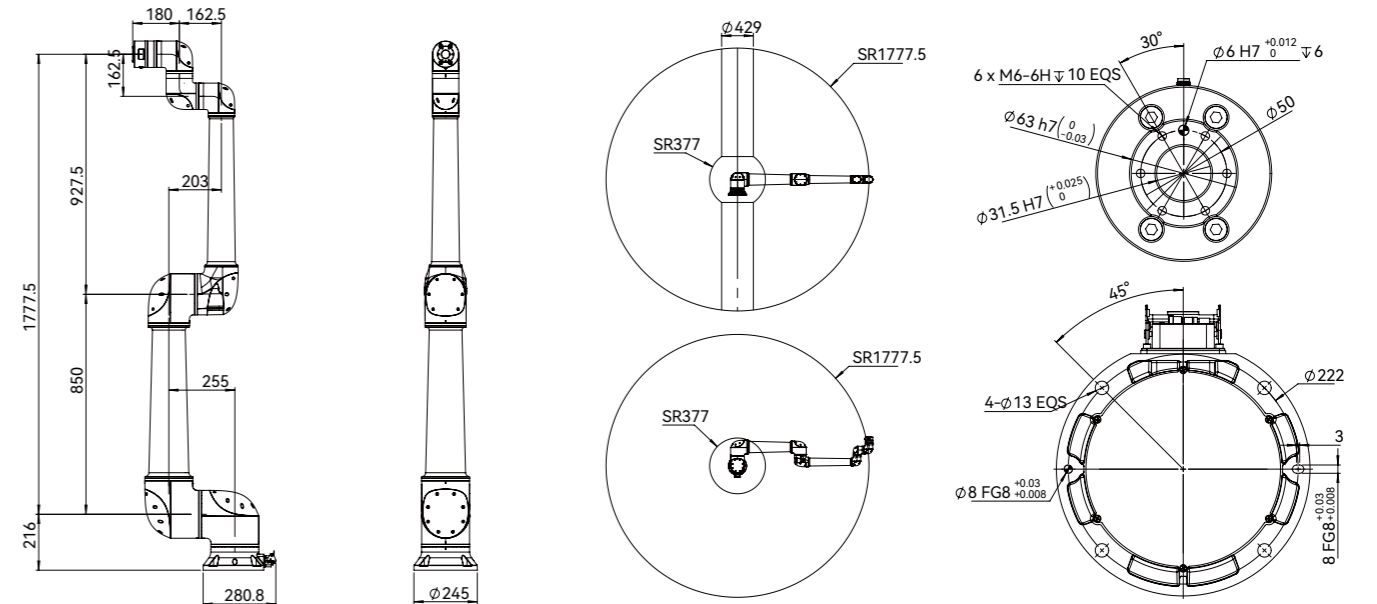
10kg Arm



5kg Arm



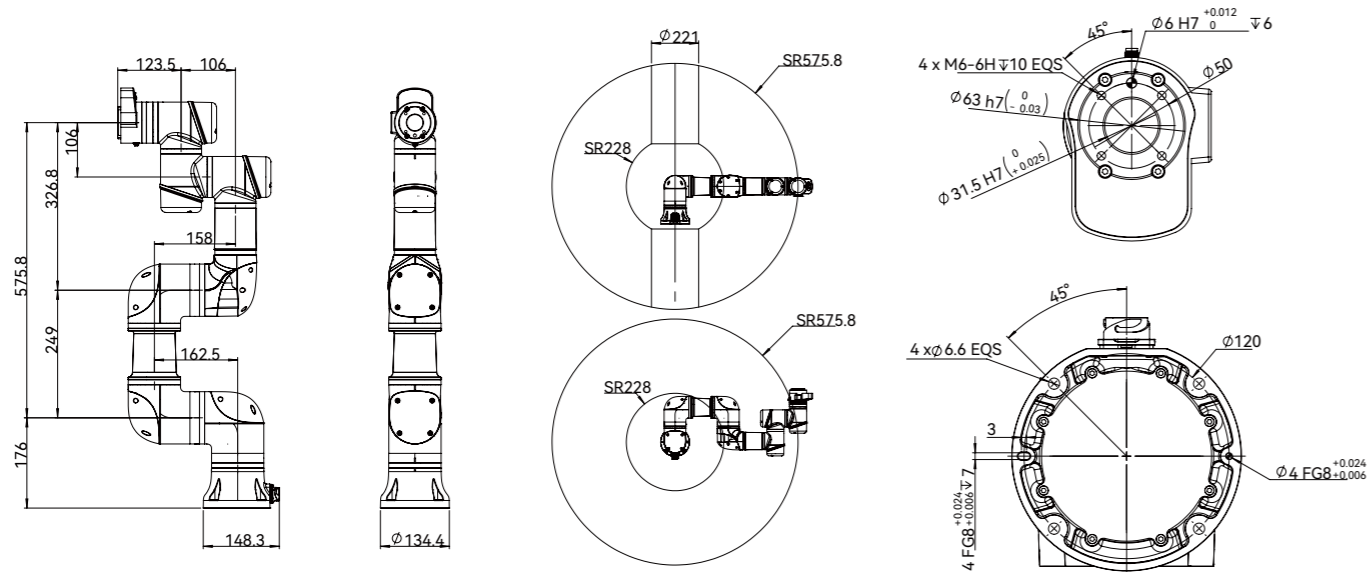
20kg Arm



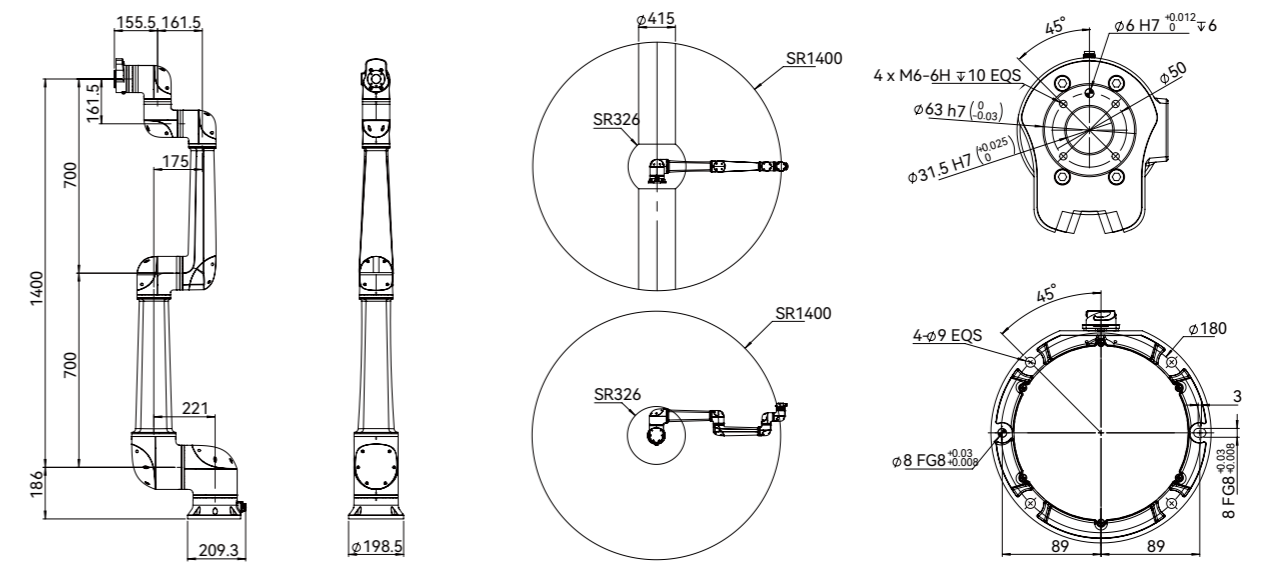
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Pro Series-Technical Drawings

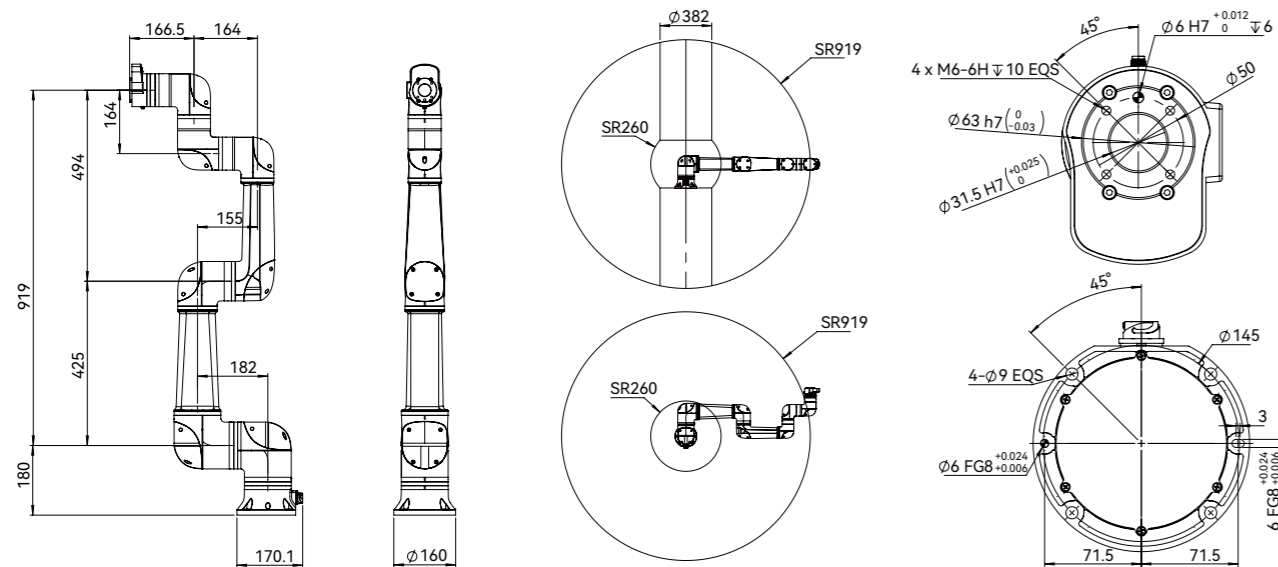
3kg Arm



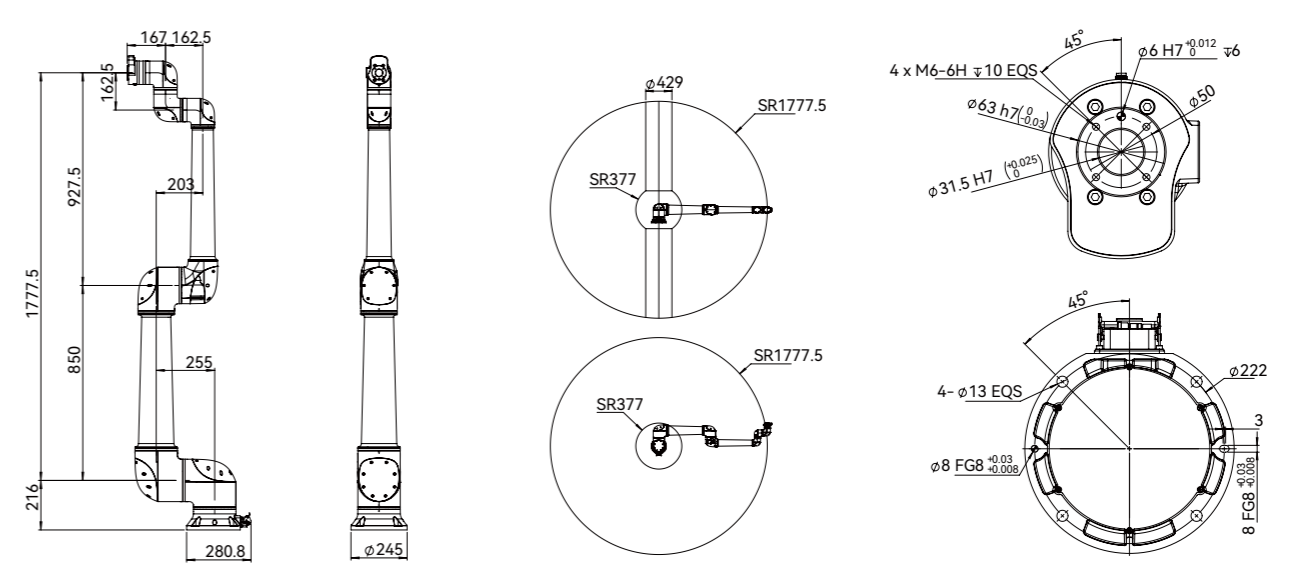
10kg Arm



5kg Arm



20kg Arm



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S Series-Control Cabinet

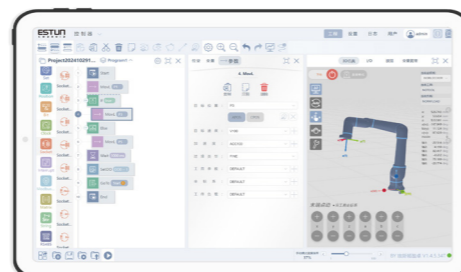


COCB-E03/05/10/20

Demonstrator	PC/laptop/tablet/smart phone/teach pendant
Safety device	1 hand-held enable channel, 1 hand-held E-stop channel
Hand guide	Cartesian space/axis space; Teaching method: point/continuous path
High dynamic force control	Cartesian space/axis space impedance control
IP classification	IP20
I/O ports	16DI(PNP), 16DO(PNP), 4AI, 4AO, five E-stop inputs
I/O power supply	24VDC, 2A
Communication	MODBUS RTU, MODBUS TCP, CAN, RS485 Profinet slave (optional), EthernetIP slave (optional)
Power supply	[E03、E05、E10] AC:100~240V 47~63 Hz/ DC: 48 [E20] AC:180~240V, 47~63Hz/DC:48V
Box dimensions	[3kg、5kg、10kg] 402*270*149mm [20kg] 420*290*200mm
Weight	[3kg、5kg、10kg] 12kg [20kg] 15.2kg
Material	SPCC
External control interface	Underlying force/position control interface; Robot control API Robot-Controller 3m
Cable length	Controller power cable 3m Manipulator handle 6m

PAD Teach Pendant optional

Teach Pendant	Pad
Weight	550g
Display Size	12.7 inch



End Effectors

Various end effectors can be quickly switched to match multiple industry applications



Handling



Screw fastening



Polishing

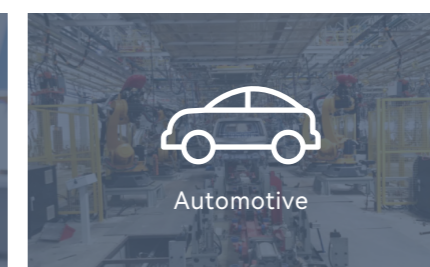
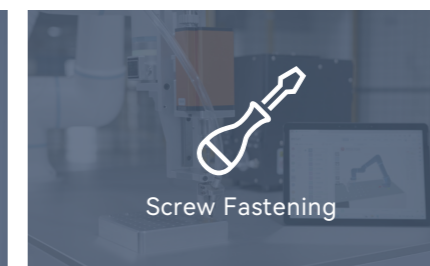
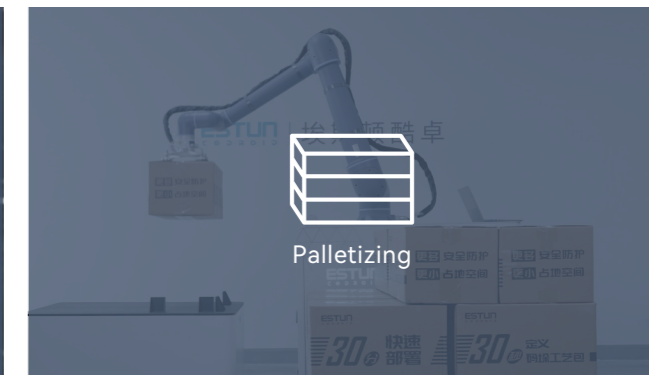


Welding



Spraying

Application Scenarios



Industry application cases

SCAN WITH WECHAT TO ACCESS
MORE ESTUN CODROID APPLICATION
CASE VIDEOS >> >>



Automotive Parts

HANDLING OF AUTOMOTIVE HIGH-VOLTAGE WIRING HARNESS MODULES

User story: An automotive manufacturer faced challenges in handling high-voltage wiring harness modules, as their previous production line relied on manual operations, resulting in low efficiency and an inability to meet market demand.

Solution: By transitioning to an automated assembly line for wiring harnesses and deploying robotic systems, the facility achieved seamless material transfer across two workstations using an inverted S10-140 Eco robot paired with a customized end gripper. The revamped production line delivered substantial gains in operational efficiency and product quality, allowing a single operator to supervise three lines concurrently.

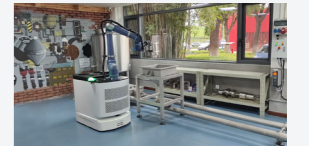


Food & Beverage

INGREDIENT FEEDING

User story: A Fortune 500 beverage company currently relies on manual operations for ingredient weighing and feeding. The factory is seeking automation upgrade solutions to enhance operational efficiency, aiming to establish a benchmark scenario for large-scale production line modernization.

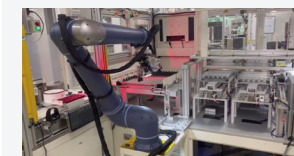
Solution: The deployment of two M10-B mobile manipulators enables cyclic handling and material transfer operations for hop casks, automating processes such as ingredient feeding, dry powder supplementation, and liquid injection. This solution achieves faster production rhythm, improves space utilization, and complies with safety requirements, establishing a critical benchmark for future unmanned workshop development in the industry.



Automotive Parts

HANDLING OF INTERNAL COMPONENT AIR TIGHTNESS TESTING

User story: The number of products at this station is large, requiring operator to do air tightness testing and scan the barcode one by one. This process requires 2-3 people to perform repetitive tasks for long, resulting in prolonged production cycles and low operational efficiency.



Solution: An S10-140 Pro collaborative robot, equipped with a 2D vision camera and barcode scanner, achieves automated material handling processes through customized secondary development. The workflow includes: material picking from the feeding tray via camera-guided positioning → airtightness testing and barcode scanning → final inspection and barcode scanning → moving to discharge position. Under full load conditions, the system ensures a production cycle time of 28 seconds per workpiece.

Metal processing

NEW ENERGY ELECTRICAL CABINET GRINDING

User story: The electrical cabinet production line previously relied on manual grinding processes, which was dangerous and tedious, and posed significant health risks due to inhalation of airborne particulates. Sustained full-day operation by human workers was impractical.



Solution: The deployment of an S20-180 Pro collaborative robot equipped with a custom force-controlled grinding head has enabled fully automated cabinet grinding, eliminating manual operation errors and mechanical hazard risks. This 24/7 unattended production line achieves significant improvements in both workplace safety and production efficiency.

Household appliances

FUNCTION TEST

User story: At an inspection station of a household appliance company in Southern China, manual quality checks were previously conducted. Manual inspection is boring and prone to errors such as false positives and omissions, leading to elevated customer complaint rates. Moreover, the working hours of manual labor are limited, making it difficult to increase the production capacity of the assembly line.

Solution: The deployment of an S10-140 Pro collaborative robot, integrated with a custom Mitsubishi PLC-controlled end-effector and external axis rail system, has automated final quality inspections. Operating 24/7 without human intervention, this solution minimizes operational errors while achieving marked improvements in workplace safety, production efficiency, and first-pass yield rates.



Household appliances

HANDLING OF SOLENOID VALVE

User story: An electrical equipment manufacturer in Eastern China, relying on manual material handling for solenoid valves, is facing challenges of high production volumes and rapid machining speeds. This workflow requires operators to maintain continuous standing positions without breaks, leading to significant physical strain. The manual operation inherently limits the ability to rapidly increase production efficiency.

Solution: The implementation of an Estun Codroid S5-90 Pro collaborative robot, equipped with a custom-designed end gripper, has fully automated solenoid valve material handling operations. Human intervention is now limited to post-delivery case transfers, saving two operators while maintaining seamless production continuity. This solution not only reduces labor requirements but also effectively mitigates capacity fluctuations during peak demand periods caused by workforce variability.



Metal processing

ARC WELDING

User story: A steel structure manufacturing company previously relied on manual operations in its production processes. The welding speed and quality were constrained by factors such as human fatigue and skill levels, making it difficult to ensure consistency. Welders worked in harsh environments with high labor intensity, which adversely affected their health. Furthermore, due to changes in the labor market, it has become increasingly challenging to recruit skilled welders.

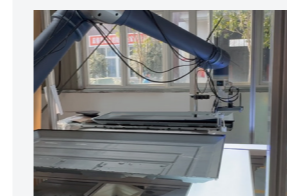


Solution: Estun Codroid S10-180 Pro collaborative robot arc welding solution provides an expert-level welding process package with advanced features such as multi-layer multi-pass welding and arc tracking. It enables precise control over critical parameters including current, voltage, and welding speed, ensuring consistent seam appearance, penetration depth, and bead width across all welding operations. This system delivers high-quality welds while maintaining exceptional process stability. The solution is particularly well-suited for multi-product, small-batch production environments, easy to move and operate.

Household appliances

TV BACK PANEL GLUING

User story: Traditional manual glue application processes suffer from poor consistency, often leading to issues such as glue interruptions, missed applications, or uneven deposition. And it also exposes workers to occupational health risk.



Solution: The deployment of the S10-140 Pro collaborative robot enables fully automated precision glue application for TV back panel. This system provides real-time regulation of glue flow rate and deposition positioning, ensuring application accuracy and consistent results with every cycle. And the robot was able to apply continuous glue at a faster speed, increasing productivity, saving time and human resources, and effectively eliminating health threats to employees.

M ESTUN CoDroid | Collaborative Robot

Series-Mobile Manipulator



Featured with advanced laser SLAM and navigation technology, visual sensing technology, and motion control, M-series provide a Hands-Feet-Eyes integrated control by combining cobot and AMR. It is intelligent to recognize environment and perform precise route planning to ensure that the operation process is accurate and consistent, which can also avoid obstacle and people independently.



Specification

Model	M5-B	M10-B	M5-L	M10-L
DOF	6	6	6	6
Arm Payload (kg)	5	10	5	10
Reach (mm)	919	1400	919	1400
Arm Weight (kg)	21	37	21	37
Navigation Mode	Laser SLAM navigation			
Drive Mode	Differential drive of double wheel			
Mobile platform length & width (mm)	1000*700			
Ground Clearance (mm)	25			
Turning Diameter (mm)	1200			
Total weight (kg)	144			
Mobile Platform Payload (kg)	300			
Min. Passage Width (mm)	840			
Position Accuracy of Navigation (mm)	±5			
Angle Accuracy of Navigation (°)	±0.5			
Speed (m/s)	<1.5			
Battery (V/Ah)	48			
Mobile platform integrated range (h)	12			
Charging Time (10-80%)(h)	≤1.5			
Charging Mode	Manual charging, battery quick swap			
Wi-Fi	Yes			
Laser Reflector Navigation	No			
DO	16			
DI	16			
AO	4			
AI	4			
E-stop Interface	4-output			
Ethernet	4 RJ45 Ethernet ports			
Laser Sensor	1 or 2			
Teach Pendant	pad/pc			
E-stop Button	Yes			
Speaker	Yes			
Status Light	Yes			
Bumper Strip	No			

FUNCTIONAL SAFETY HUMAN-ROBOT SHARED SPACE

- Autonomous obstacle avoidance
- Multiple functional safety
- Human-Robot collaboration



CLOUD+ EDGE INTERGRATION ENHANCED MANAGEMENT EFFICIENCY

- Real-time feedback of robot data
- Edge data consolidation
- Cloud data visualization



PRECISE AND EFFICIENT INTEGRATED HANDS, FEET, AND EYES

- Hands (Arm): Agile operations, smooth interaction, easy programming
- Feet (AMR): Rapid mapping, autonomous navigation, obstacle avoidance
- Eyes (2D/3D Vision): Open integration, intelligent recognition, dynamic sensing



FLEXIBILITY INTELLIGENT ENVIRONMENT SENSING

- Modular tooling for rapid deployment
- Plug-and-play end effectors
- L-shaped design for more space
- Various communication interfaces, adaptable for extended applications



Welding Solutions

SELF-DEVELOPED CORE TECHNOLOGIES, ENHANCING PROGRAMMING EFFICIENCY

- Swing welding: Providing triangular, sinusoidal, circular, and figure-eight swing patterns, allowing adjustment of swing frequency, swing amplitude, left-right dwell time, and other parameters to meet welding seam dimensions and forming requirements.
- Multi-layer, multi-pass welding: For middle thickness plate, as the relevant points of first weld seam have been taught by manual guidance, the remaining points will be calculated according to the offset parameters, which greatly shortens the programming time, and the parameters can be saved and recalled for next operation.
- Stitch welding: Suitable for single-pass fillet welding and stitch weld seams. This process only requires the relevant points of weld seam through manual guidance, and the welding parameters will choose appropriate weld length, gap length and welding sequence, which simplifies programming logic significantly.

INTELLIGENT ALGORITHMS, OPTIMIZING WELDING QUALITY

- Position search: Providing wire/laser position search to ensure the accuracy of repetitive work.
- Seam tracking: Providing arc/laser tracking to ensure great precision and consistency.
- Welding database: The core database offers professional parameters at any time.

ACCESSORY FUNCTIONS ENSURE CONSISTENT WELD QUALITY

- Fine turning: The parameters such as current, voltage, speed, swing, etc., and also the relative position of welding torch can be adjusted during welding process.
- Weld Resumption: When the program is interrupted due to external interference, it can be resumed from paused place without repeating the previous path.



ARC WELDING

Model	QINEO StarT 406
Welding output	20A/15V-400A/34V
60% duty cycle of welding current	400A
100% duty cycle of welding current	350A
Operating voltage	380V-400V/3-phase
Dimensions	1270*765*960 mm

LASER WELDING

Model	RFL-C2000H
Rated output power	2000W
Working mode	Continuous/Modulated
Modulation frequency	1-5000Hz
Fiber core diameter	50μm
Operating voltage	220±10%VAC、50/60Hz
Dimensions	1270*765*960 mm

Product Features

FLEXIBLE | The welding cart can be flexibly transported, suitable for various scenarios.

VERSATILE | Compatible with domestic and foreign main stream welding machine brands.

MULTIPLE | MIG/MAG, Laser.

REAL-TIME | Welding process parameters can be adjusted in real-time to ensure excellent welding quality.

SAFE | Interlocking signals between the welding machine and the robot ensure absolute safety.

CONVENIENT | Modular welding procedure calling, which can be divided into single-pass welding programs, multi-layer, multipass weld seams, and skip welding.

USER-FRIENDLY | Importing professional parameters from database with one click, and the user teaches weld points only.

TRACEABLE | Key parameters can be monitored and recorded to form a welding log.

Palletizing Solutions

- 📦
READY TO USE, RAPID DEPLOYMENT
 Plug and play, requiring only power and air supply connections for setup within 30 minutes. meeting fast-paced production without professionals to configure.
- 📱
TERMINAL COMPATIBILITY, UNLIMITED CONNECTION
 Supporting PC, tablet, and mobile devices to connect and log in directly via the web to teach pendant interface freely.
- 🖱️
GRAPHICAL PROCESS KIT, EASY PROGRAMMING
 Professional palletizing package with graphical guidance and no-code programming. Complete palletizing program setup with drag teaching, enabling easy programming in just "3 minutes" with "zero experience".
- 🏗️
CUSTOMIZABLE STACK PATTERNS, ENSURING STABILITY
 Define stack patterns through animated interactions, achieving tighter stacking with leaning palletizing.
- 🔄
MORE FLEXIBILITY, EASY TO MOVE
 Compatible with various sizes, weights, and materials of boxes, supporting mixed-size stacking. Easy to move among different production lines, making it ideal for various production and logistics scenarios.

***Rapid Palletizing
Deployment With
Unmatched Speed***



Specifications

Model	Co-Palletizer 20 (Fixed)	Co-Palletizer 20 (Elevating)
Payload(kg)	20	
Working Radius	1777.5	
Horizontal Distance(Pallet Size)(mm)	1200*1200	
Max. Joint Speed	Axis1/2: 110 °/s Axis3: 150 °/s Axis4/5/6: 180 °/s	
Repeatability(mm)	±0.1	
Communication	Analog, Digital, MODBUS RTU, MODBUS TCP, CAN, RS485	
IP Classification	IP54(arm)	
Operating temp.(°C)	0 - 50	
Weight(kg)	270	300
Footprint(mm)	1530*1480	
Rated Voltage(V)	220	
Max. Power Consumption(W)	3000	
Palletizing Speed	8-12/min	
Palletizing Height(mm)	1930	2430
Compatible surfaces	Cardboard, smooth surfaces	

