

PRODUCT ECOSYSTEM MANUAL



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FAIRINO

FAIRINO

- » Modularization
- » Quick deployment
- » Easy operation



FAIRINO ROBOT

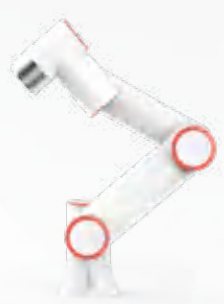
PRODUCT VISION

产品愿景

Collaborative robots will extend your time and space, liberate complex and inefficient repetition, and let you embrace a wider horizon. In the future, You will see **FAIRINO ROBOTS**.

With its emergence, it not only improves the efficiency of human-machine collaboration, but also speeds up the automation process for more enterprises and frees floor space and lowers the cost of implementing robots for manufacturers.

PRODUCT DISPLAY



▼

FR3



▼

FR3-C



▼

FR3-WMS



▼

FR3-WML



▼

FR5



▼

FR5-WML



▼

FR10



▼

FR16



▼

FR20



▼

FR30

FR3 SERIES

FR5 SERIES



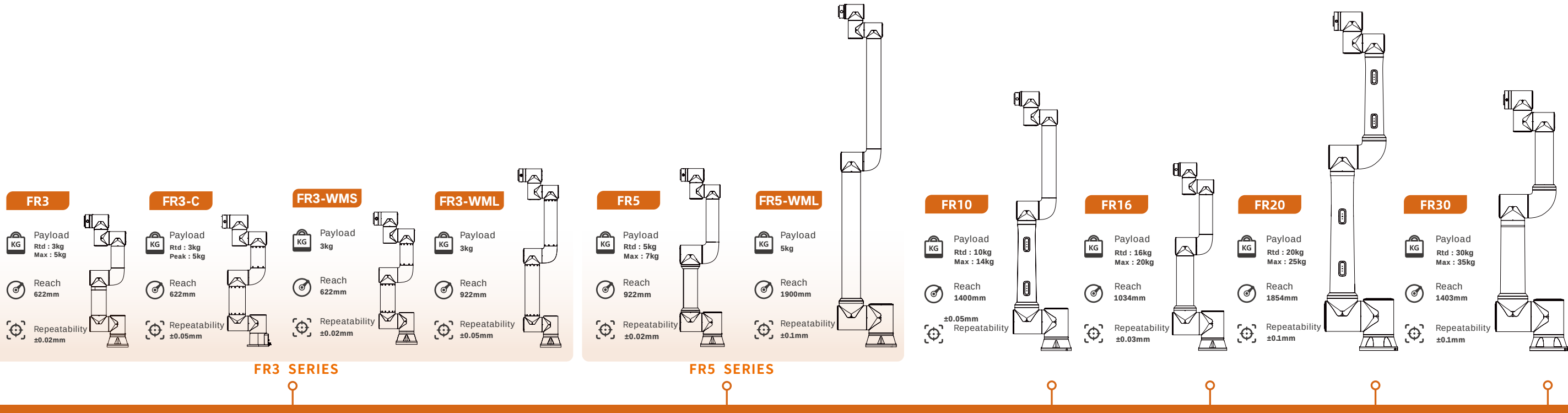
FAIRINO FR SERIES

According to different payload and parameter, FAIRINO collaborative robots FR series are divided into the following models:FR3(Optional Mirror Version), FR3-C, FR3-WMS,FR3-WML, FR5,FR5-WML, FR10, FR16, FR20 and FR30.

To provide partners&customers with better quality assurance,FAIRINO has obtained a more comprehensive range of certificates through international certification organizations.

Quality Management System: ISO 9001 Product Certification: CR, CE, KCs, NRTL, RoHS 2.0, NSF, SEMI, IP65 ISO Functional Safety Certification: ISO10218, ISO13849, ISO15066

Intelligent human-robot cooperation system solutions



ROBOT ARM TECHNICAL SPECIFICATION

		>> FR3 SERIES <<										>> FR5 SERIES <<									
		FR3		FR3-C		FR3-WMS		FR3-WML				FR5		FR5-WML							
	Payload	3kg(Max:5kg)		3kg (peak:5kg)		3kg		3kg				5kg (Max:7kg)		5kg							
	Reach	622mm		622mm		622mm		922mm				922mm		1900mm							
	Degrees of freedom	6 rotating joints		6 rotating joints		6 rotating joints		6 rotating joints				6 rotating joints		6 rotating joints							
	HMI	10.1 inch teach pendant or mobile terminal Web App																			
	Dual arm robotics applications	Mirror versions available to build dual arm robots																			
	Pose repeatability per ISO 9283	±0.02mm		±0.05mm		±0.02mm		±0.05mm				±0.02mm		±0.1mm							
	Axis movement	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed				
	Base	±175°	±180°/s	±175°	±150°/s	±175°	±150°/s	±175°	±150°/s	±175°	±150°/s	±175°	±180°/s	±175°	±120°/s	±175°	±120°/s				
	Shoulder	+ 85°/ - 265° (Dual Arm: - 85°/ + 265°)		±180°/s		+ 85°/ - 265°		±150°/s		+ 85°/ - 265°		±150°/s		+ 85°/ - 265°		±180°/s		+ 85°/ - 265°		±120°/s	
	Elbow	±150°		±180°/s		±150°		±150°/s		±150°		±150°/s		±160°		±180°/s		±170°		±180°/s	
	Wrist 1	+ 85°/ - 265° (Dual Arm: - 85°/ + 265°)		±180°/s		+ 85°/ - 265°		±180°/s		+ 85°/ - 265°		±180°/s		+ 85°/ - 265°		±180°/s		+ 85°/ - 265°		±180°/s	
	Wrist 2	±175°		±180°/s		0°~355°		±180°/s		±175°		±180°/s		±175°		±180°/s		±175°		±180°/s	
	Wrist 3	±175° (Optional ±360°)		±180°/s		±175°		±180°/s		±360°		±180°/s		±175°(Optional ±360°)		±180°/s		±360°		±180°/s	
	Typical TCP speed	1m/s		1m/s		1m/s		1m/s		1m/s		1m/s		1m/s		2m/s					
	IP classification	IP54 (IP65 Optional)		IP54		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)					
	Noise	<65dB		<65dB		<65dB		<65dB		<65dB		<65dB		<65dB		<65dB					
	Robot mounting	Any orientation		Any orientation		Any orientation		Any orientation		Any orientation		Any orientation		Any orientation		Any orientation					
	I/O Ports	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2				
		(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1				
	Tool I/O power supply	24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A					
	Footprint	128mm		125mm		128mm		128mm		128mm		149mm		190mm							
	Weight	≈15kg		≈10kg		≈10.5kg		≈11.25kg		≈11.25kg		≈22kg		≈45kg							
	Operating temperature	0~ 45℃		0~ 45℃		0~ 45℃		0~ 45℃		0~ 45℃		0~ 45℃		-20~ 45℃							
	Operating humidity	90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)					
	Materials	Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel					
	Black Optional	no		no		no		no		no		yes		no							
	■ Typical power test payload settings, different loads are set according to robot models, payload configuration parameters are as follows :																				
		FR3 payload setting: 3kg, Z-axis: 18mm		FR3-C payload setting: 3kg, Z-axis: 18mm		FR3-WMS payload setting: 3kg, Z-axis: 18mm		FR3-WML payload setting: 3kg, Z-axis: 18mm		FR3-WML payload setting: 3kg, Z-axis: 18mm		FR5 payload setting: 5kg, Z-axis: 30mm		FR5-WML payload setting: 5kg, Z-axis: 30mm							
Select aging test program, connect robot's total power to power meter, set robot to automatic mode, set global speed to 100, click run, if there are no abnormalities after running two cycles, start continuous testing for 24 hours. After 24 hours, respectively, record the peak and average power of the power meter, and then statistically analyze each model :																					
	Typical average power	220W		200W		90W		140W		260W		270W									
	Typical peak power	280W		230W		130W		240W		310W		620W									

ROBOT ARM TECHNICAL SPECIFICATION

	FR10		FR16		FR20		FR30	
Payload	10kg (Max:14kg)		16kg (Max:20kg)		20kg (Max:25kg)		30kg (Max:35kg)	
Reach	1400mm		1034mm		1854 mm		1403 mm	
Degrees of freedom	6 rotating joints		6 rotating joints		6 rotating joints		6 rotating joints	
HMI	10.1 inch teach pendant or mobile terminal Web App							
Dual arm robotics applications								
Pose repeatability per ISO 9283	±0.05mm		±0.03mm		±0.1 mm		±0.1 mm	
Axis movement	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed
Base	±175°	±120°/s	±175°	±120°/s	±175°	±120°/s	±175°	±120°/s
Shoulder	+ 85° / - 265°	±120°/s	+ 85° / - 265°	±120°/s	+ 85° / - 265°	±120°/s	+ 85° / - 265°	±120°/s
Elbow	±160°	±180°/s	±160°	±180°/s	±160°	±120°/s	±160°	±120°/s
Wrist 1	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s	+ 85° / - 265°	±180°/s
Wrist 2	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s	±175°	±180°/s
Wrist 3	±175°(Optional ±360°)	±180°/s	±175°(Optional ±360°)	±180°/s	±175°	±180°/s	±175°	±180°/s
Typical TCP speed	1.5m/s		1m/s		2m/s		2m/s	
IP classification	IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)		IP54 (IP65 Optional)	
Noise	<65dB		<65dB		<70dB		<70dB	
Robot mounting	Any orientation		Any orientation		Any orientation		Any orientation	
I/O Ports	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2	(DI) 2	(DO) 2
	(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1	(AI) 1	(AO) 1
Tool I/O power supply	24V/1.5A		24V/ 1.5A		24V/ 1.5A		24V/ 1.5A	
Footprint	190mm		190mm		240mm		240mm	
Weight	≈40kg		≈40kg		≈85kg		≈85kg	
Operating temperature	0 ~45℃		0 ~45℃		0~45℃		0~45℃	
Operating humidity	90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)	
Materials	Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel		Aluminium 、 Steel	
Black Optional	yes		no		no		no	
■ Typical power test payload settings, different loads are set according to robot models, payload configuration parameters are as follows :								
	FR10 payload setting: 10kg, Z-axis: 60		FR16 payload setting: 16kg, Z-axis: 96mm		FR20 payload setting: 20kg, Z-axis: 120mm		FR30 payload setting: 30kg, Z-axis: 200mm	
Select aging test program, connect robot's total power to power meter, set robot to automatic mode, set global speed to 100, click run, if there are no abnormalities after running two cycles, start continuous testing for 24 hours. After 24 hours, respectively, record the peak and average power of the power meter, and then statistically analyze each model;								
Typical average power	300W		310W		620W		600W	
Typical peak power	500W		410W		810W		910W	

EXPLOSION-PROOF CABINET [Optional]



Explosion-Proof Cabinets (Integral Explosion-Proof)



Robot (full range explosion-proof)

It has good technical performance. The cabinet must be resistant to vibration, impact, corrosion, dust, water, and radiation to ensure stable and reliable operation of devices. Good usability and safety protection facilities, easy operation, installation and maintenance, and to ensure the safety of the operator.

IP classification	IP65
Operating Environment Temperature	0℃-45℃
Minimum Positive Pressure	100pa
Maximum Positive Pressure	1000pa
Rated Input Voltage	100-240Vac
Maximum Leakage	15L/Min
L*W*H	682*500*1100(Includes alarm light 1286)
Weight	75kg
Materials	Carbon Steel + Stainless Steel
Cabinet Volume	126L
Ventilation Flow Rate	120L/min
Ventilation Time	14min
Protective Gas	AIR
Explosion-proof Cabinet Certificate	CE22.7131

SAFETY BOX



IP classification	IP54
Button function	Manual/Auto, Drag, Point Record, Match or Not with Safety Button Box, Start/Stop, Shutdown
Communication	TCP/IP
Network transfer rate	100M
Power over ethernet	Standard POE
L*W*H	136*60*66mm (No protrusions)
Weight	490g (Cable weight included)
Materials	ABS
Cable length	5m
Number of keys	≥20W

Human-robot interaction tools for basic interaction functions. It can be linked with computers, tablets and other devices through the RJ45 interface, and directly log in to the Web App teaching interface.

TEACH PENDANT [Optional]



IP classification	IP54
Operating humidity	90%RH(non-condensing)
Display resolution	1280 x 800 pixels
L*W*H	268*210*88mm
Weight	1.6kg
Materials	ABS, PP
Cable length	5m

The teach pendant, computer, tablet or mobile phone is connected to the WebAPP system to realize the operation of the collaborative robot.

COLLABORATIVE ROBOT MOBILE MOUNTING KIT

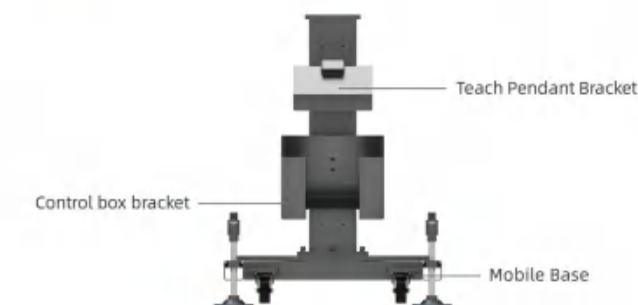
[Optional]

The mobile mounting kit is specifically designed for collaborative robots, supporting rapid deployment and flexible mobile operations. The kit includes a mobile base, fixed column, robot base adapter, teach pendant bracket, and control cabinet bracket module. Components can be optionally selected according to application needs and flexibly configured into light-duty or heavy-duty versions, making the kit suitable for mobile operation requirements across various industrial scenarios.

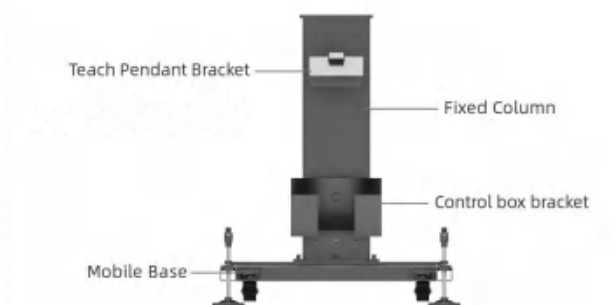


1 Robot Base Adapter	Material	Steel Plate
	Steel	45°: 280mm*280mm*245mm 15°: 280mm*280mm*150mm
	Stiffness	Light: Meets the requirements for full-load and full-speed operation of the compatible robot (the adapter base needs to be fixed)
2 Robot Fixed Column	Material	Hollow Square Tube + Steel Plate
	Dimensions	Total height of the column: 610mm, 760mm, 915mm, 1065mm, 1220mm
	Stiffness	Light: Meets the requirements for full-load and full-speed operation of the compatible robot (column needs to be fixed) Heavy-duty: Meets the full-load operation requirements of compatible robots (within a speed of 1 m/s, the column needs to be fixed)
3 Teach Pendant Bracket	Material	Sheet Metal + Universal Adjustment Bracket
4 Control box bracket (optional as needed)	Material	Sheet Metal
5 Mobile Base	Material	Q235
	Size	Light: 1020mm*600mm*250mm Heavy: 1240mm*920mm*300mm
	Mobility and Support	Adjustable Foot Supports and Swivel Casters for Movement
	Stiffness	Light: Meets the requirements for full-load and full-speed operation of the compatible robot (base must be fixed) Heavy-duty: Meets the full-load operation requirements of the compatible robot (within a speed of 1 m/s, with the base required to be fixed)

■ **Lightweight Mobile Mounting Kit:** Compatible with FR3 and its series of products (FR3-C, FR3-WMS, FR3-WML), FR5 and its series of robots FR5-WML, FR10, and FR16



■ **Heavy-duty Mobile Mounting Kit:** Compatible with FR10, FR16, FR20, FR30



CONTROLLER TECHNICAL SPECIFICATION



DC MINI Controller 2kW



DC Controller 5kW



AC MINI Controller 2kW



AC Controller 5kW

Features

IP classification	IP54		IP54		IP54		IP54	
Operating temperature	0-45°C		0-45°C		0-45°C		0-45°C	
Operating humidity	90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)		90%RH(non-condensing)	
I/O Ports	(DI) 16	(DO) 16	(DI) 16	(DO) 16	(DI) 16	(DO) 16	(DI) 16	(DO) 16
	(AI) 2	(AO) 2	(AI) 2	(AO) 2	(AI) 2	(AO) 2	(AI) 2	(AO) 2
	High speed pulse input 2		High speed pulse input 2		High speed pulse input 2		High speed pulse input 2	
I/O power supply	24V/1.5A		24V/1.5A		24V/1.5A		24V/1.5A	
Standard communication	I/O、TCP/IP、Modbus_TCP/RTU		I/O、TCP/IP、Modbus_TCP/RTU		I/O、TCP/IP、Modbus_TCP/RTU		I/O、TCP/IP、Modbus_TCP/RTU	
Optional communication	CC-Link IE Field Basic、Profinet、Ethernet/IP、EtherCAT		CC-Link IE Field Basic、Profinet、Ethernet/IP、EtherCAT		CC-Link IE Field Basic、Profinet、Ethernet/IP、EtherCAT		CC-Link IE Field Basic、Profinet、Ethernet/IP、EtherCAT	
Communication Board Optional Configuration	MiniPCI Express - real-time Ethernet PC Board		MiniPCI Express - real-time Ethernet PC Board		MiniPCI Express - real-time Ethernet PC Board		MiniPCI Express - real-time Ethernet PC Board	
Software development kit	C#/C++/Python/ROS/ROS2		C#/C++/Python/ROS/ROS2		C#/C++/Python/ROS/ROS2		C#/C++/Python/ROS/ROS2	

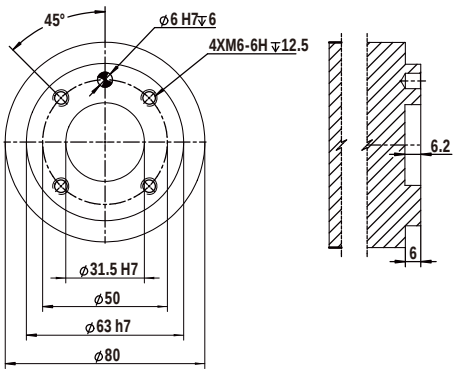
Physical

L*W*H	245*180*44.5mm (No protrusions)		245*180*89 mm (No protrusions)		245*180*44.5mm (No protrusions)		245*180*89mm (No protrusions)	
Weight	2.1kg (Weight without wire)		2.957kg (Weight without wire)		2.5kg (Weight without wire)		3.6kg (Weight without wire)	
Materials	Galvanized plate		Galvanized plate		Galvanized plate		Galvanized plate	
Power supply	30-60VDC		30-60VDC		100-240VAC / 10A / Single-phase / 50-60Hz		100-240VAC / 16A / Single-phase / 50-60Hz	
Output power	48VDC / 42Amax		48VDC / 104Amax		48VDC / 42Amax		48VDC / 104Amax	
Applicable Robot	FR3,FR3-WMS,FR3-WML,FR5,FR5-WML,FR10,FR16		FR20/FR30		FR3,FR3-WMS,FR3-WML,FR5,FR5-WML,FR10,FR16		FR20/FR30	

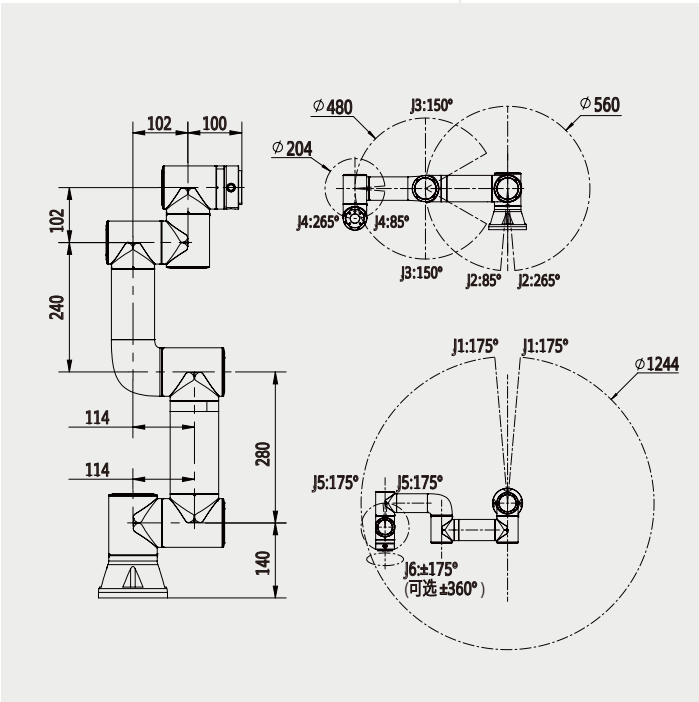
Note: The FR3-C control cabinet is integrated into the robot base.

DRAWINGS

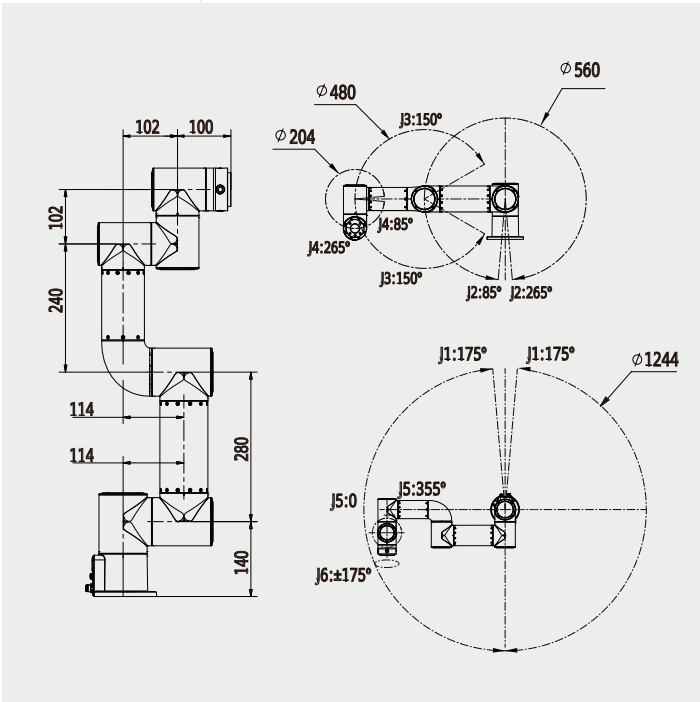
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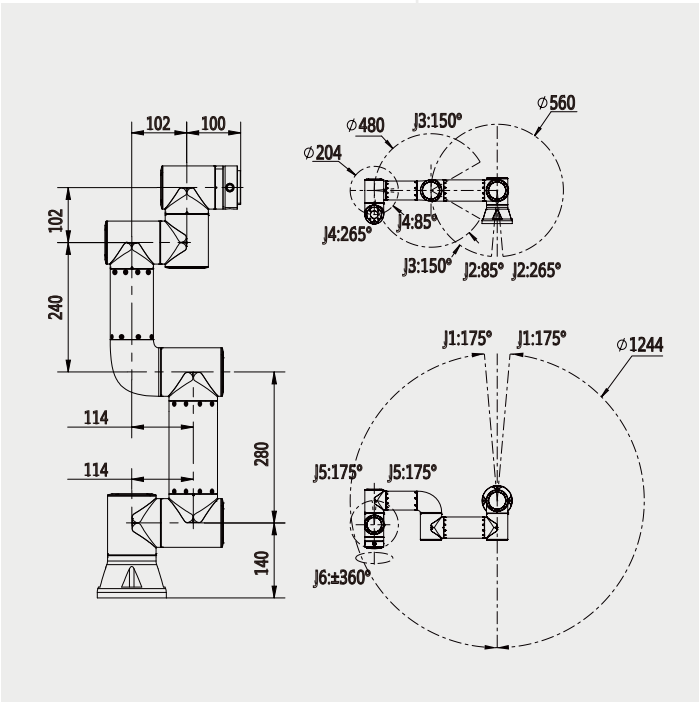
ROBOT END-EFFECTOR
COMPATIBLE WITH
INDUSTRIAL ROBOT
END-EFFECTOR
CONNECTION METHODS



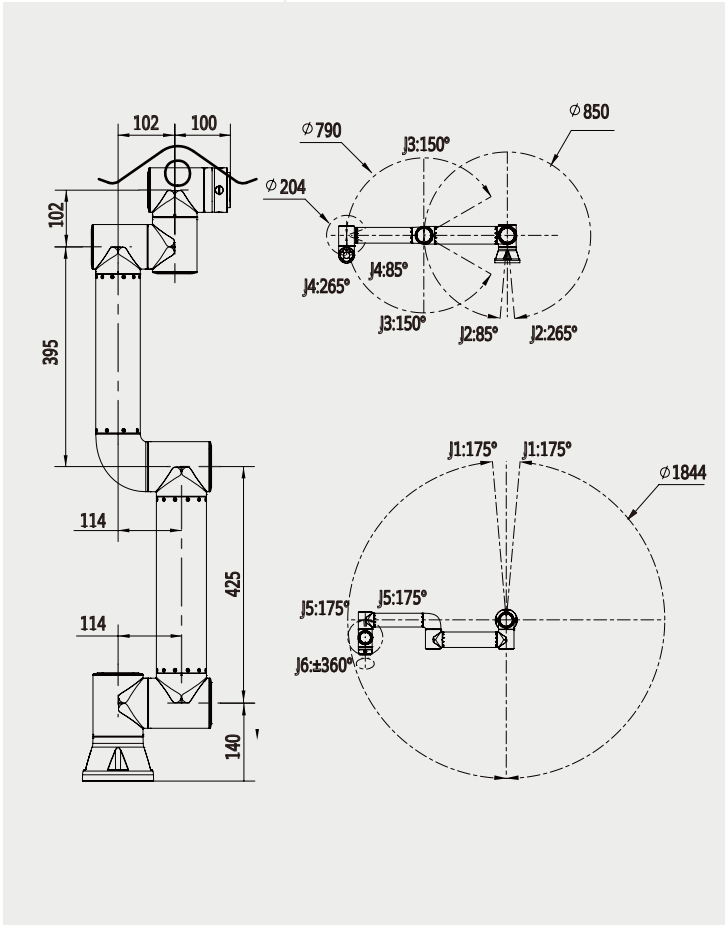
FR3



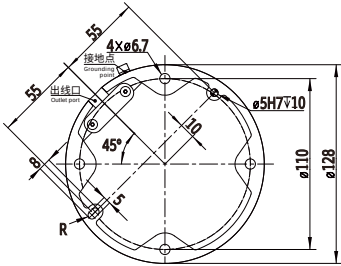
FR3-C



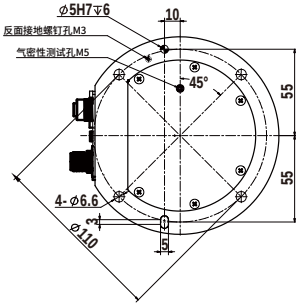
FR3-WMS



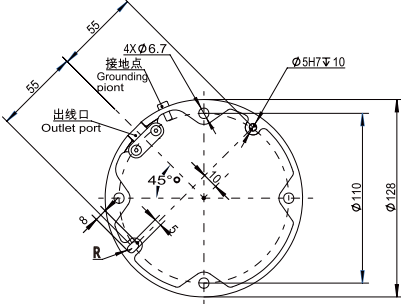
FR3-WML



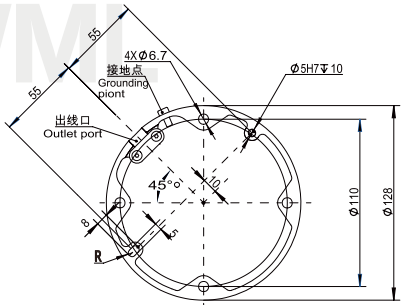
FR3 Pedestal diagram



FR3-C Pedestal diagram



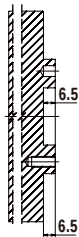
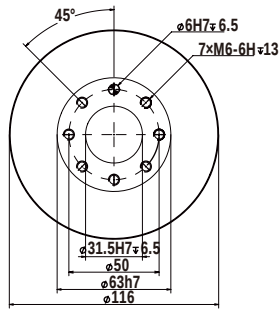
FR3-WMS Pedestal diagram



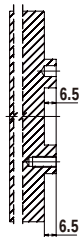
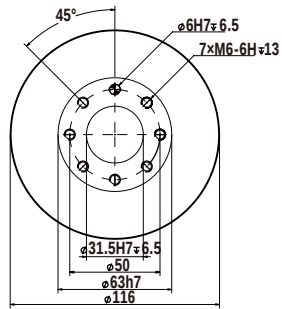
FR3-WML Pedestal diagram

DRAWINGS

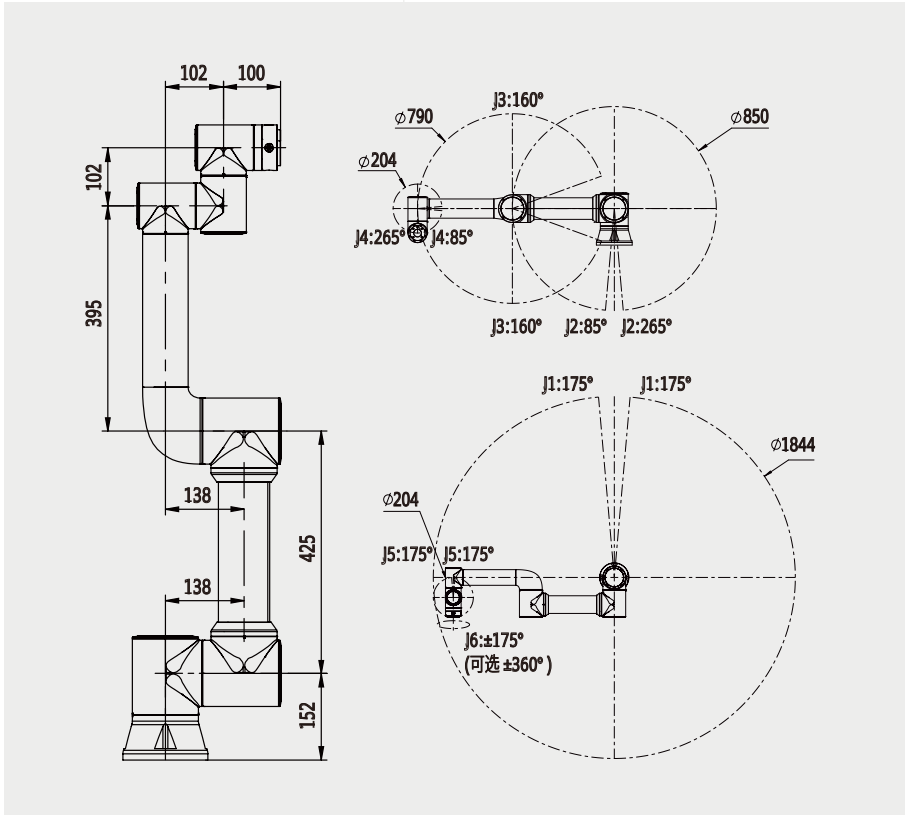
Unit : mm



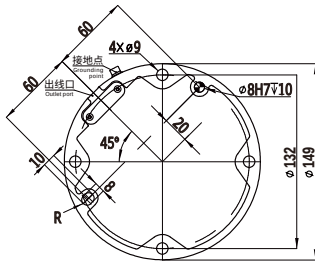
COMPATIBILITY OF ROBOT
END EFFECTOR
CONNECTION METHODS OF
THE END EFFECTOR OF
INDUSTRIAL ROBOTS



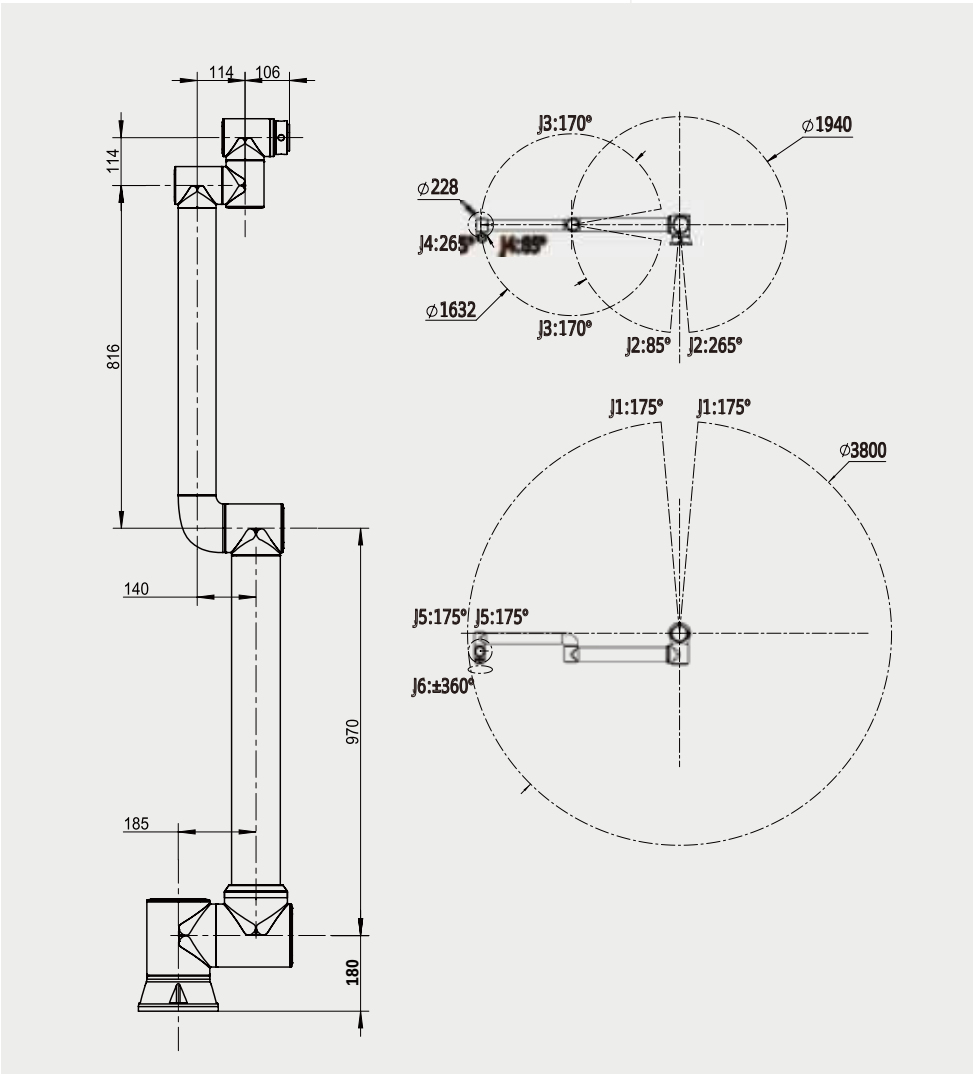
COMPATIBILITY OF ROBOT
END EFFECTOR
CONNECTION METHODS OF
THE END EFFECTOR OF
INDUSTRIAL ROBOTS



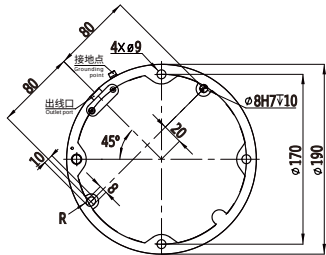
FR5



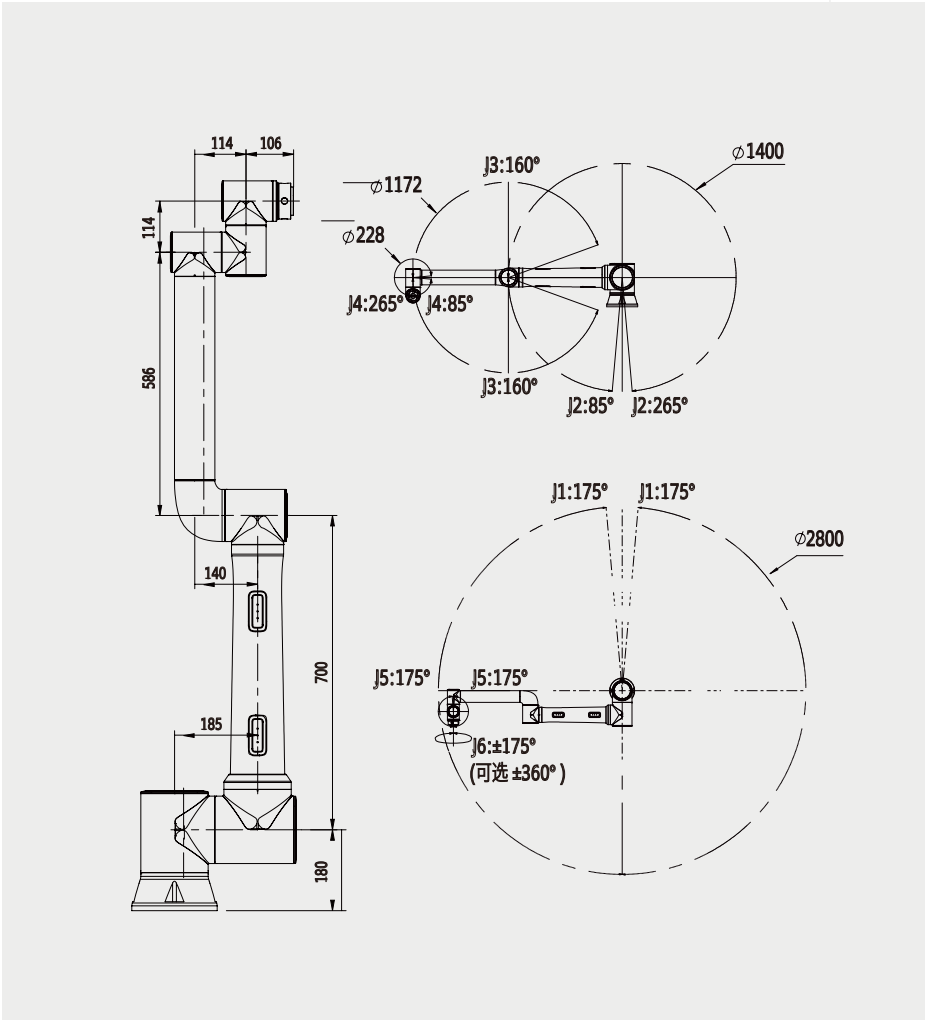
FR5 Pedestal diagram



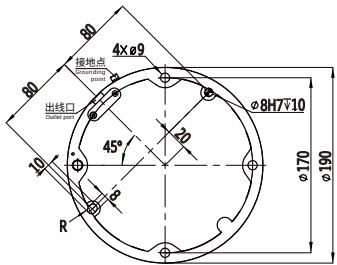
FR5-WML



FR5-WML Pedestal diagram



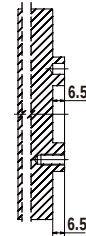
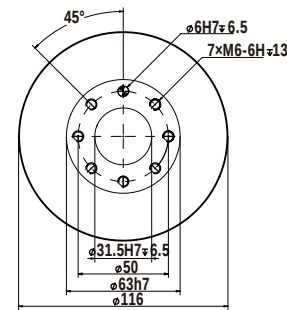
FR10



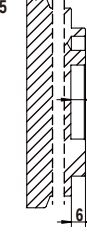
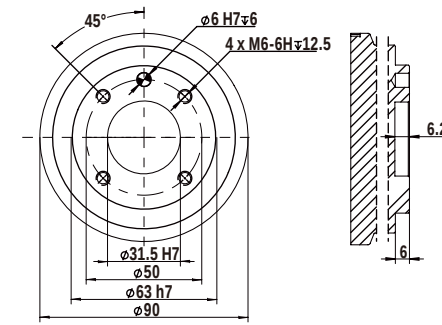
FR10 Pedestal diagram

DRAWINGS

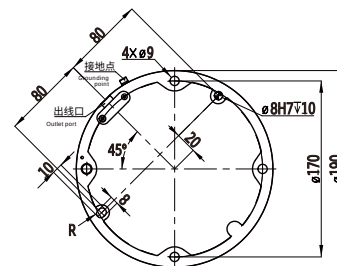
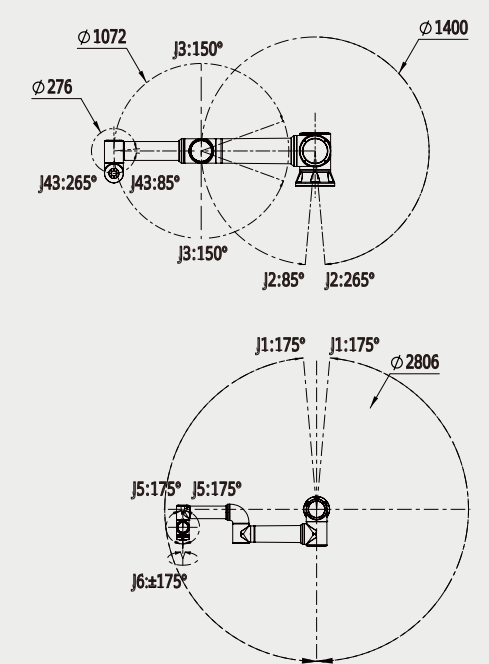
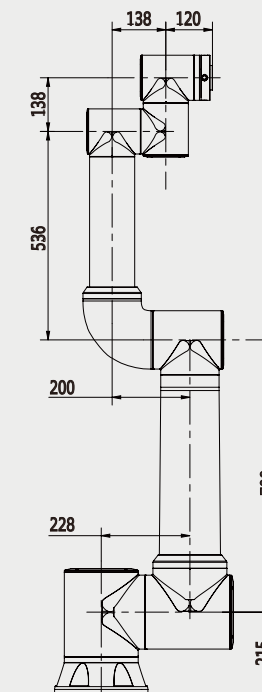
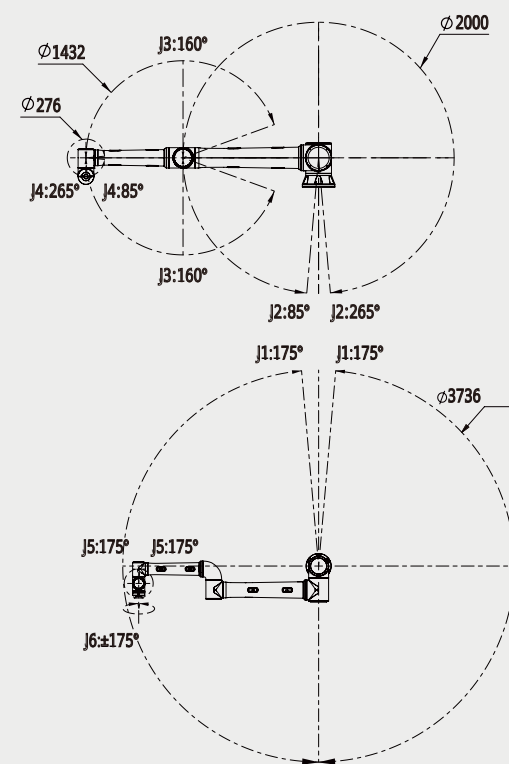
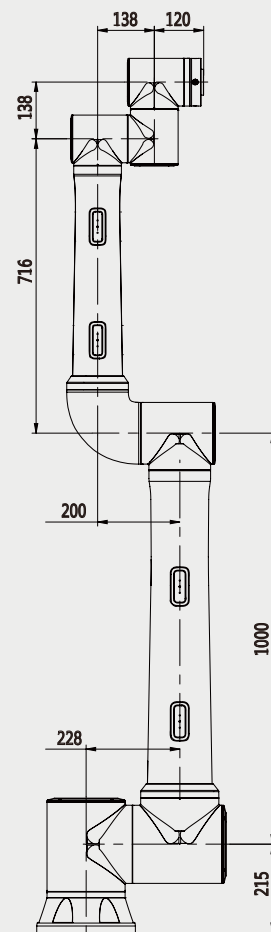
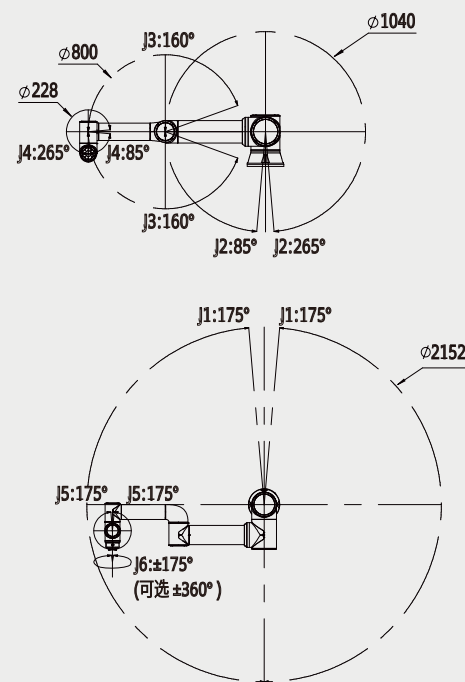
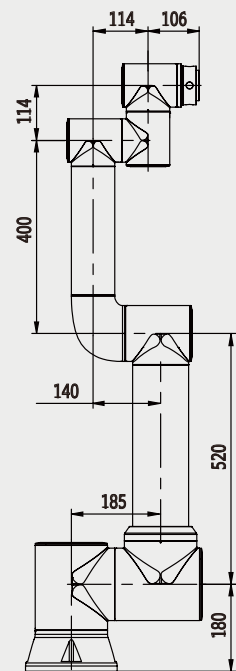
Unit : mm



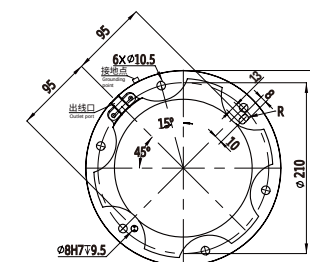
► COMPATIBILITY OF ROBOT END EFFECTOR CONNECTION METHODS OF THE END EFFECTOR OF INDUSTRIAL ROBOTS



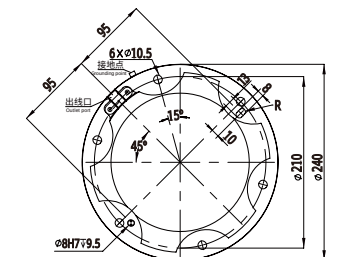
▶ ROBOT END-EFFECTOR
COMPATIBLE WITH
INDUSTRIAL ROBOT
END-EFFECTOR
CONNECTION METHODS



FR16 Pedestal diagram



FR20 Pedestal diagram



FR30 Pedestal diagram

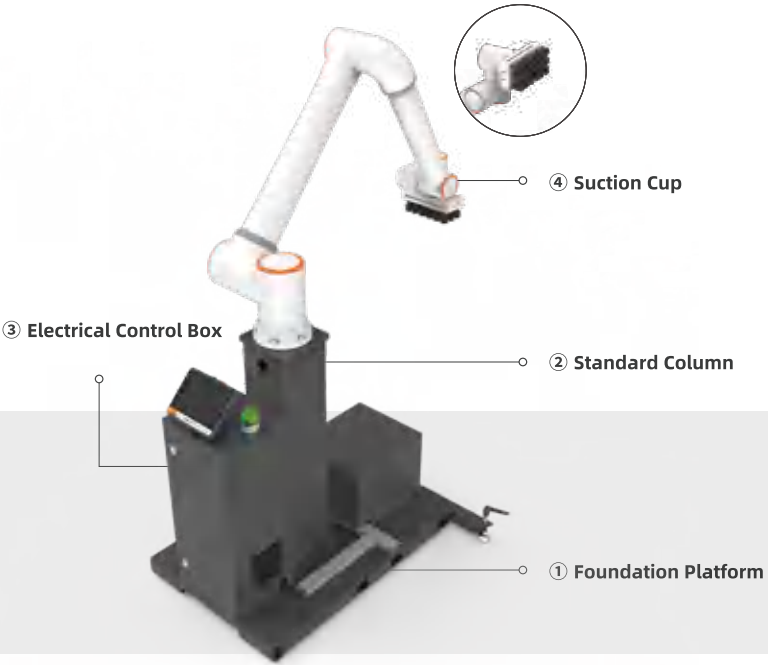


* FAIRINO only provides required components and does not offer complete solution

One-Step Palletizing Workstation

Complete palletizing automation tasks in three steps

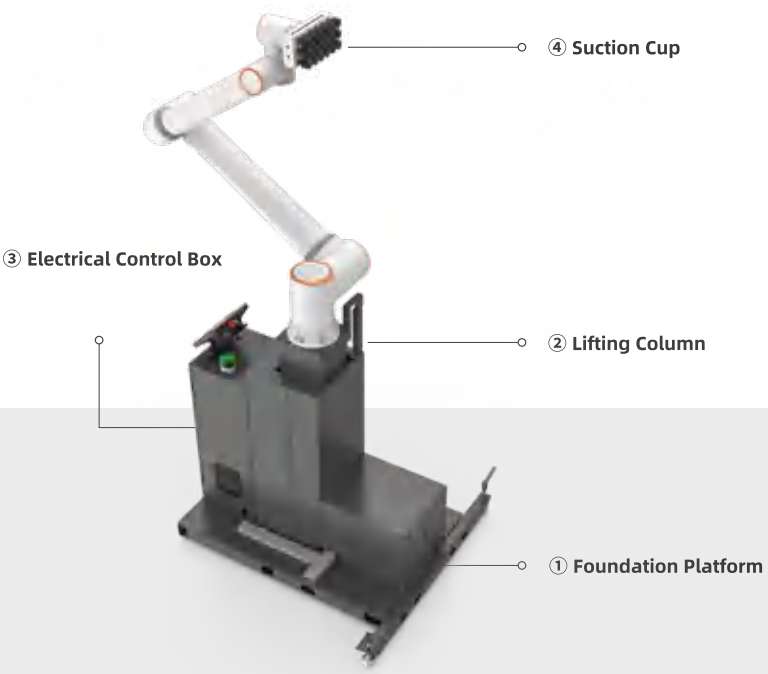
Just three steps are needed to complete the overall programming work for FAIRINO turnkey palletizing solution. The graphical programming is convenient and efficient; plug and play allows for quick and easy switching, achieving production line flexibility and automation.



Palletizing Workstation Components

Using FR20

Column high: 1210mm
Pallet size: 1200*1100mm/1200*800mm
The workstation supports floor mobility.
The fixed FR20 palletizing system weighs approximately 330 kg.
The column-mounted version of the palletizing kit supports a stacking height of up to 1800 mm.

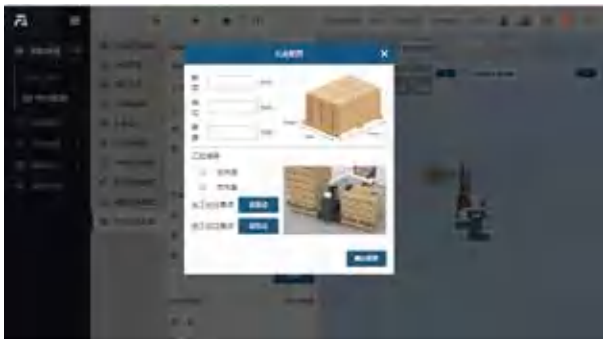
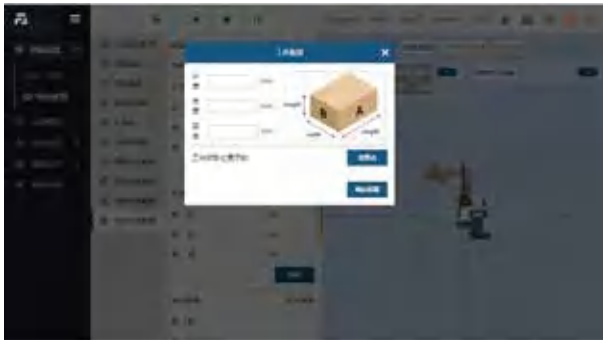
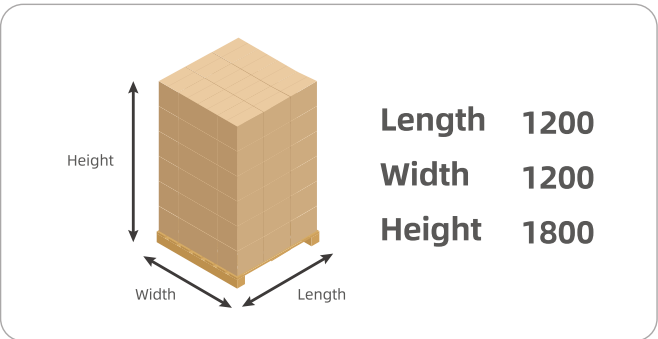
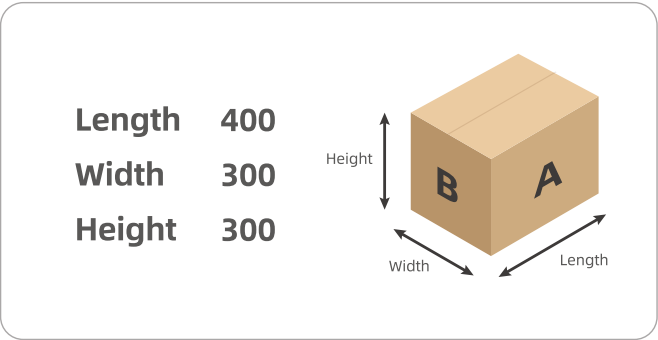


Using FR10

Lifting column height range: 1140-1640mm, lifting speed 50mm/s
Electrical specification:
Main Power Supply : 110-240 VAC
Pallet size: 1200*1100mm/1200*800mm
The workstation supports floor mobility.
Total weight: Approx375kg

Using FR20

Lifting column height range: 1140-1640mm, lifting speed 50mm/s
Electrical specification:
Main Power Supply : 110-240 VAC
Pallet size: 1200*1100mm/1200*800mm
The workstation supports floor mobility.
Total weight: Approx410kg



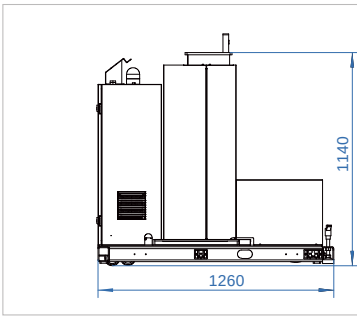
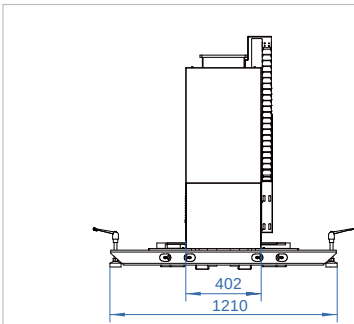
Web interface

Delivery Time 25 working days

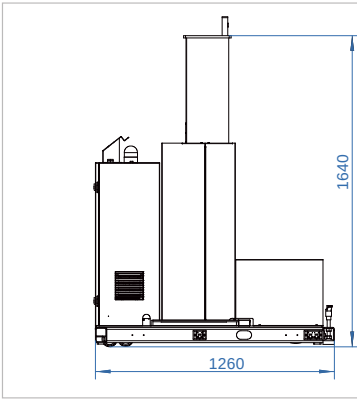
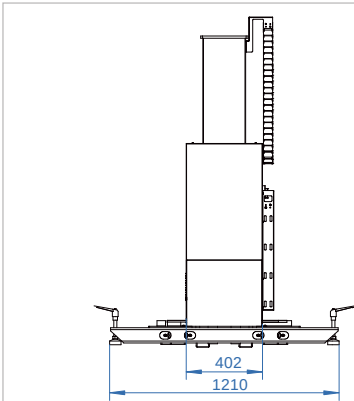


Code to get the accessory list
Including software & hardware
accessories

Palletizing Solution



单位：mm



DRAWINGS

3D Vision-Based No-Programming Welding Solution

Open a new journey of convenient welding with one click

This solution integrates FAIRINO cobots, 3D cameras, and the FAIRINO AIRLab system. Paired with a no-programming welding platform, it enables automatic and precise weld seam detection, efficient teaching-free operation, and intelligent weld path analysis and planning — ensuring high consistency and accuracy in welding tasks.

FR-Welding-Hardware

Welding Hardware

Solution

- ① Welder (with water tank): Ehave2 CM500M
- ② 3D Camera: FRSV-Nano FRSV-Nano-Pro FRSV-Nano-Pro-C
- ③ Switch Cabinet
- ④ Magnet (3 pcs)
- ⑤ Trolley
- ⑥ Router: TL-CPE1300D
- ⑦ Controller
- ⑧ Torch Extension Cable
- ⑨ End tool

Technical Specification

Size **1472*840*1649mm**

Magnetic base for fixation, can be easily moved around

Magnetic base size **382*331*121mm**

The equipment is fixed on a trolley, which can be moved along with the trolley

The wire feeder can rotate 360° and can be detached from the trolley and placed freely

Robot Vision

Solution

- ① 3D Camera: FRSV-Nano FRSV-Nano-Pro FRSV-Nano-Pro-C
- ② IPC Industrial Processing Computer
- ③ IPC Graphics + Graphics Card : RTX A2000
- ④ Vision Software

Technical Specification

Field of View : 52°*50° (H*V)

Near Field: 329*287mm@350mm

Far Field: 1021*881mm@1100mm

Working Range: 350 ~110 0mm (varies with environment)

Point Cloud Resolution: 1280 x 1024

Accuracy: <0.05%@1100mm

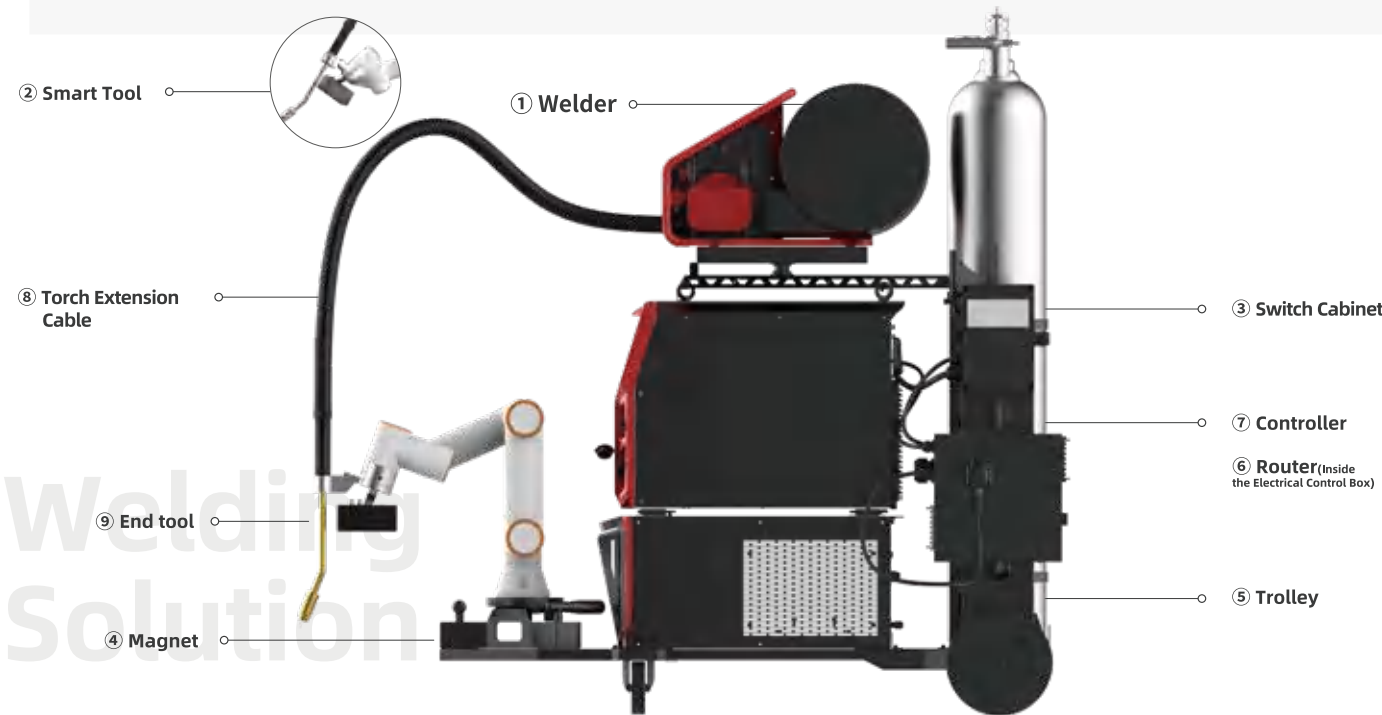


Delivery Time 25 working days

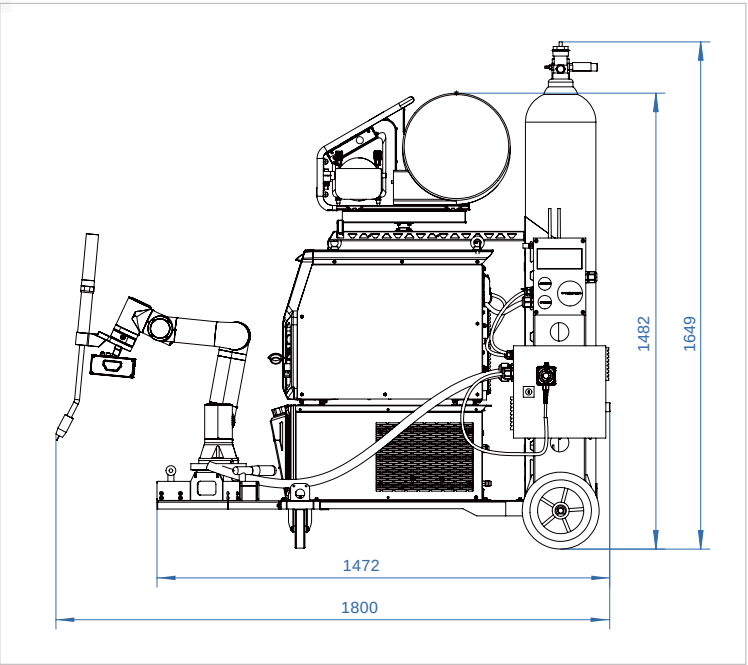
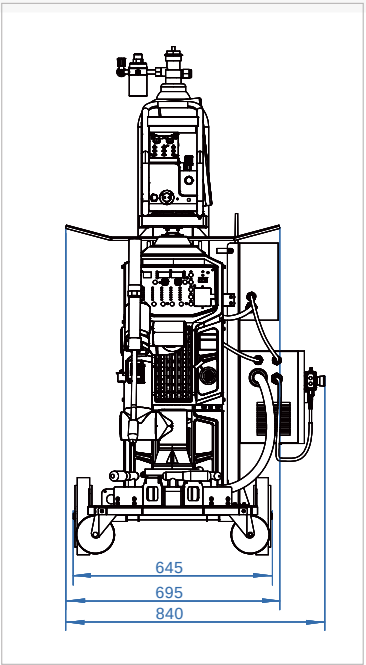
Qualification Magnet: GIG
IPC Graphics + Graphics Card Display Card: CE、UL、RHOS



Code to get the accessory list
Including software & hardware
accessories



Unit : mm
DRAWINGS



CNC Workstation

Robotic Ecosystem Application in the CNC Industry

Powered by FAIRINO 6-axis collaborative robots, this solution offers easy programming, fast deployment, and high safety. It accelerates CNC automation upgrades, enabling flexible production capacity and helping manufacturers quickly adapt to diverse and changing product demands.

CNC Workstation Components

Main Components

- ① Drawer shelf
- ② Workstation main body
- ③ FR10 robot
- ④ 45-degree mounting adapter
- ⑤ Robot mounting base
- ⑥ Teach pendant
- ⑦ Controller box access port

Technical Specification

Vertical Drawer Type Workstation
Dimensions
L1100mm*W790mm*H1010mm



Horizontal Drawer Type Workstation
Dimensions
L1100mm*W600mm*H1010mm



Fixed table dimensions 1100mm* W600mm
Weight 280kg (excluding robot)
Power specifications 110-220VAC
Operation methods Web-based teach pendant

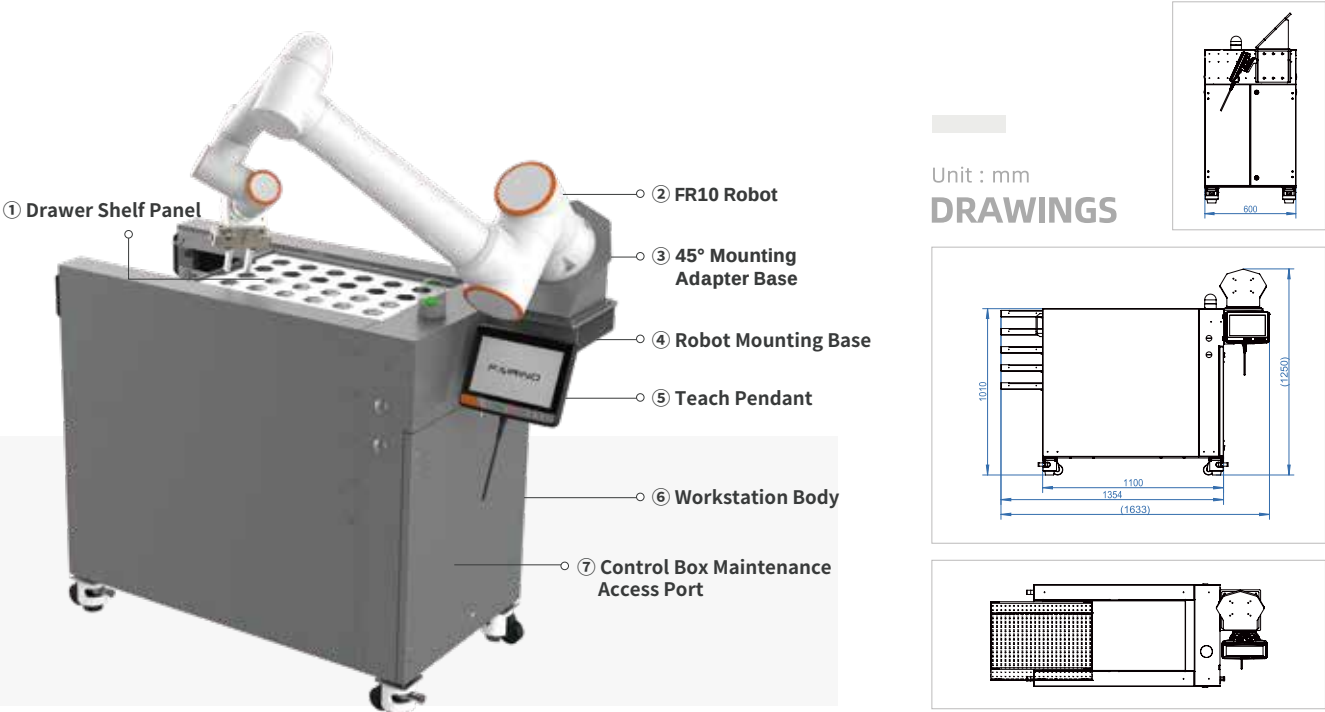
Delivery Time 25 working days

CNC WORKSTATION

CNC Workstation – Vertical Drawer Type



CNC Workstation - Horizontal Drawer Type



Spark Project Education Platform

Eco-level application of "Robot + N" in education field

By integrating visual systems, end effectors, torque sensors, mobile platforms, and other hardware and software components with robots, we achieve a "hand" + "eye" + "foot" + "brain" hardware combination, making our platform more open, user-friendly, , and with greater expandability.



Plug and play



Compatible with peripheral devices



Support secondary development

Integrated Modular Design

Open Hardware and Software Platform

Secure Innovative Application



FR-Spark Project-Hardware

■ Gripper ■ Camera ■ Sensor

EDUCATIONAL WORKBENCH

Gripper	Model:	Adjustable Stroke	0-40mm	Body Weight	360g
	EPG40-050	Single Finger Grip Force	2-50N	Communication Protocols	Modbus RTU(RS 485)、Digital I/O
Camera	Model: Gemini 2	Depth Image Measurement Range	0.15m-10m	SDK	Orbbec SDK
		Working Range	0.2m-5m	Depth Image Resolution @ Frame Rate * 3	1280x800@30fps 640x400@60fps
		Operating Temperature	0 ~ 40°C		
Sensor	Model: FR-6F-75MM	Resolution	0.1%FS	Repeatability	0.2%FS
		Overall Accuracy	≤1%FS	Zero Drift (Temperature Coefficient)	0.3%FS/10°C
		Overload Capacity	200%	Operating Temperature	-20-80°C
Delivery Time		25 working days			
Qualification		Gripper: CE、RoHS			



*The parameters provided are for reference only. Actual accuracy may vary depending on the selected product configuration

Code to get the accessory list Including software & hardware accessories

Item	Gemini 2		EPG40-050		PGEA-100-40		FRMG2		RG75-300		FRSV-Nano / FRSV-Nano-Pro / FRSV-Nano-Pro-C		FR-6F-75MM	
Performance Parameters	Depth Image Measurement Range	0.15m-10m	Adjustable Stroke	0-40 mm	Adjustable Stroke	0-40 mm	Adjustable Stroke	0-50 mm	Adjustable Stroke	0-75 mm	Field of View (FOV)	52°*50° (H*V)	Fx,Fy	100N
	Working Range	0.2m-5m	Single Finger Grip Force	2-50 N	Single Finger Grip Force	30-100 N	Single Finger Grip Force	150 N	Single Finger Grip Force	40-300 N	Near Field	329*287mm@350mm	Fz	200N
	Camera Driver	UVC	Repeatability	±0.02 mm	Repeatability	±0.02 mm	Repeatability	±0.03 mm	Repeatability	±0.02 mm	Far Field	1021*881mm@1100mm	Mx,My	5Nm
	SDK	Orbbec SDK	Opening/Closing Time	0.5 s	Maximum Recommended Load	2 kg	Maximum Recommended Load	3 kg	Opening/Closing Time	0.55 s	Working Range	350 –1100mm (varies with environment)	Mz	5Nm
	Operating Temperature	0~40°C	Maximum Recommended Load	0.8 Kg	Operating noise	<50dB	Operating noise	<60dB	Maximum Recommended Load	6 Kg	Point Cloud Resolution	1280 x 1024	Resolution	0.1%FS
	Depth Image Resolution @ Frame Rate * 3	1280x800@30fps 640x400@60fps	Operating Environment	5~40°C, Below 85% RH	Operating Voltage	24VDC±10%	Operating Voltage	24VDC±10%	Operating Environment	5~40°C, Below 85% RH	Accuracy	<0.05%@1100mm	Repeatability	0.2%FS
	Color Image Resolution @ Frame Rate * 4	1920x1080@30fps 1280x720@60fps			Rated & Peak Current	0.3 A (Rated) 1.2 A (Peak)	Rated & Peak Current	1A			Point Cloud Frame Rate	<3 Hz	Overall Accuracy	≤1%FS
					Peak Power	20W	Peak Power	24W			Power Supply	POE (Power over Ethernet)	Zero Drift (Temperature Coefficient)	0.3%FS/10°C
					Transmission mode	Rack and pinion & Cross roller guide	Transmission mode	Rack and Pinion Drive						
					Operating Environment	0~40°C, Below85% RH	Drop Detection	Supported						
Dimension	90 * 25 * 30 mm ± 0.5mm		40*24*87mm		118mm*73.8mm*29mm		64 *40*100mm(Without Fingers)		131.5*100*75mm		FRSV-Nano:	136.5 *60.5 * 45.1mm(without camera cover)	75*30.5mm	
											FRSV-Nano-Pro:	139 * 61.5 * 46mm(without camera cover)		
											FRSV-Nano-Pro-C:	139 x 63.8 x 58mm(with camera cover)		
Weight	97g		360g		600g		800g		1.5kg		482g(without camera cover)		0.2kg	
IP Classification	/		IP40		IP40		IP54		IP65		IP65		IP64	
Communication Interface	MIPI		Modbus RTU(RS 485)、Digital I/O		Modbus (RS485)+I/O (NN)		RS485		Modbus RTU(RS 485)		GigE		RS485/Industrial Ethernet	
Qualification	Class1、RoHS、FCC、CE、Reach、KC		CE、RoHS		CE、FCC、RoHS		/		CE、RoHS		/		/	

Products									
						FRSV-Nano	FRSV-Nano-Pro	FRSV-Nano-Pro-C	



Scan to join
FAIRINO FR+ Ecosystem

COMPANY PROFILE



FAIRINO ROBOT

FAIRINO—A robotics company committed to the in-house development and manufacturing of all core components.

We adhere to a core strategy of “tiered product architecture + integration of cutting-edge technologies”, deeply combining collaborative robots with AI, vision, sensors, and other advanced technologies. Our mission is to provide highly convenient intelligent systems for various industries, accelerating the widespread adoption of automation from industrial to commercial sectors.

In the field of embodied intelligence, we have established a full-stack solution system for humanoid robots, offering a complete customized service chain—from joint modules to humanoid robotic arms, upper-body systems, and full humanoid units—precisely meeting enterprises' differentiated needs.

For industry clients, we provide customized components, complete robots, and system solutions for both collaborative robots and humanoid robots. Our open development platform empowers partners to unlock more possibilities. FAIRINO always upholds a partnership-driven philosophy, continuously creating added value for customers and collaborators.

FAIRINO invites you to explore and embrace the diverse new world of intelligent automation.

In the era of intelligent manufacturing, how do collaborative robots and humanoid robots jointly create a new value ecosystem?

Enterprise Efficiency Enhancement: Reduce costs and improve quality, empower employees to enhance their skills, and drive lean production;

Business Upgrade: Optimize service experience, accurately meet customer needs, and build differentiated competitiveness;

Craftsmanship Inheritance: Standardize manual processes, balance efficiency and quality, and activate new vitality in traditional crafts;

Life Assistant: Share household tasks intelligently and provide customized cleaning and cooking solutions to make technology part of a warm daily life.

From industrial manufacturing to commercial services, from craft workshops to smart homes, from the flexible collaboration of collaborative robots to the embodied intelligence breakthrough of humanoid robots, FAIRINO continuously expands application boundaries with its comprehensive robot product matrix. By combining full-chain in-house R&D capabilities with scenario-based innovation, we unlock diverse possibilities in the intelligent future.