ROKAE Robotics

Industrial Robots & Cobots | Full range of robots and automation solutions provider

As a world-leading next-generation intelligent robotics expert, ROKAE Robotics specializes in the research, development, production, and sales of **articulated industrial robots, collaborative robots, and other serial products.** Based on **platform products and self-developed core technologies**, ROKAE is oriented to **industrial, commercial, and healthcare** fields, providing customers with more intelligent, more efficient, and safer products and automation solutions.

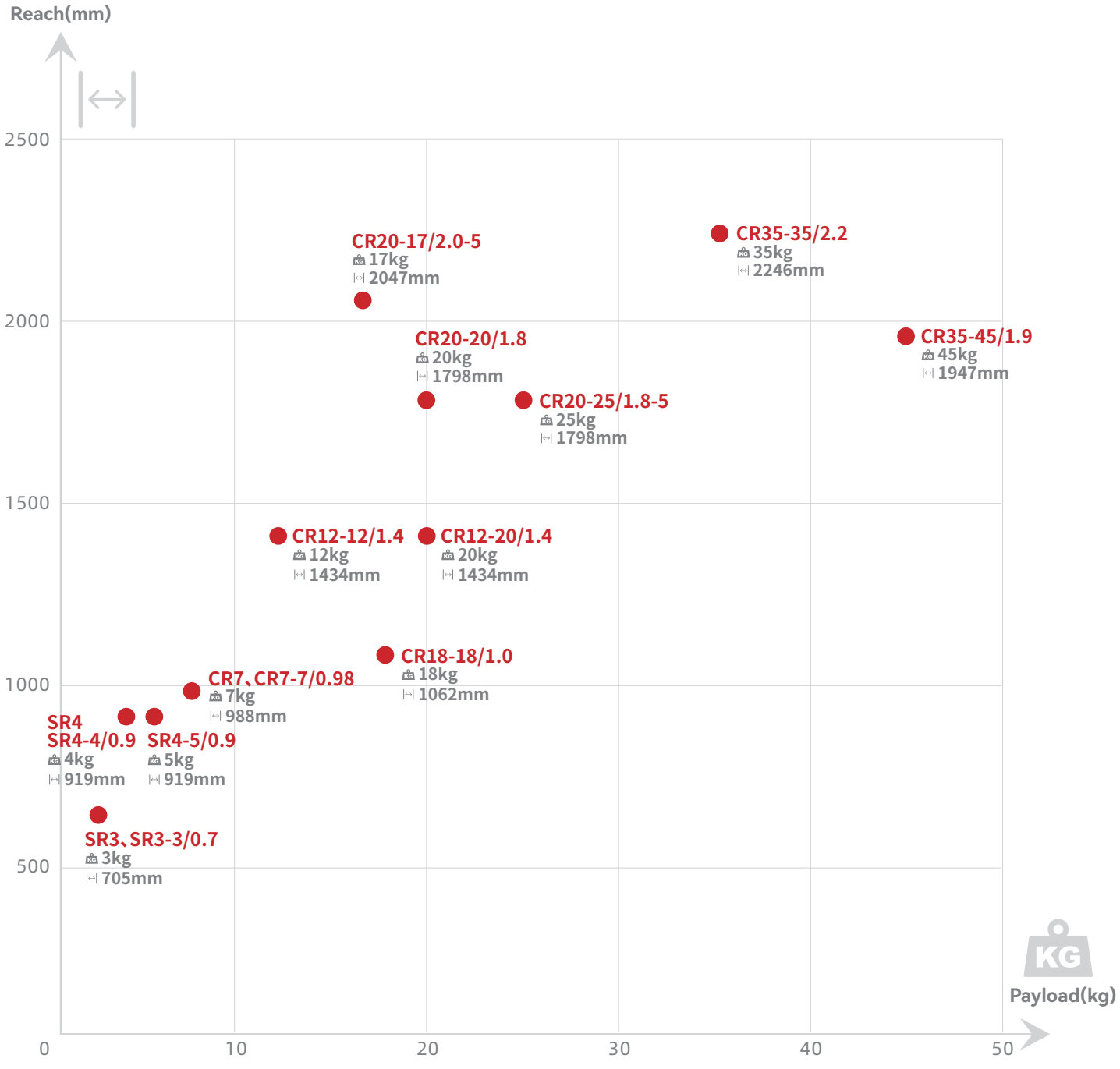
- **Largest** industrial robot + cobot intelligent manufacturing factory **in Northern China**
- **Digital and intelligent** manufacturing system
- Comprehensive and stringent quality control standards
- Robot annual production capacity exceeds **20,000 units**

xMate

New-Generation Flexible Collaborative Robot

The global labor shortage has created increasing demands for robots in industrial production. As robots are adopted in more and more applications, they are required to be safer, more flexible, and easier to use. The introduction of collaborative robots paves the way for human-robot collaboration, but their application faces huge challenges in many scenarios, such as high-precision assembly in industrial production, compliant human-robot interaction in wellness physiotherapy, and high-precision operations in medical surgery, to name just a few. To satisfy these new scenarios, new robot technologies are needed.

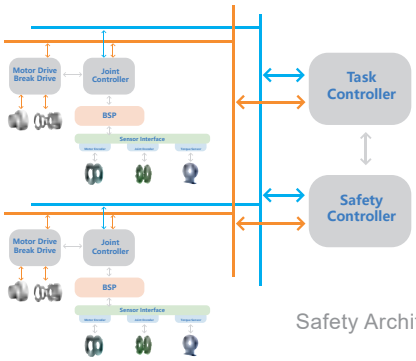
ROKAE's new-generation flexible collaborative robots come with intelligent force sensing and vision. This allows the original open-loop teaching-execution process to be replaced with an intelligent closed-loop process that features dynamic interaction with the environment, making possible safe and accurate interaction between the environment and people. The disruptive innovation enables the robots to unlock more scenarios and become a partner you can rely on in production.



A Powerful Yet Flexible All-Rounder

Extreme Safety

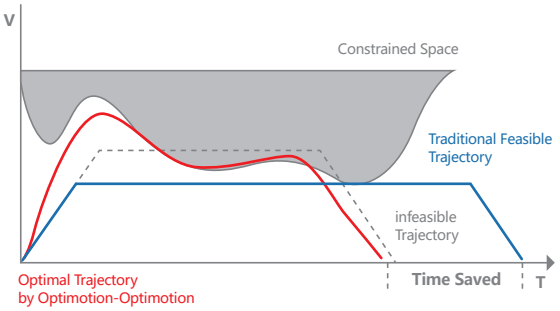
- Sensitivity improved by 10 times thanks to the collision detection by torque sensors
- More than 21 TÜV functional safety features, meets functional safety standards: ISO 13849-1, ISO 10218-1/PL d, Cat. 3; ISO 15066
- Dual-channel redundant monitoring of sensor information and an independently certified safety controller
- The position holding accuracy is better than ±0.1mm when power on and off, powered by suction contracting brake and dynamic feedforward compensation



Safety Architecture

Superior Performance

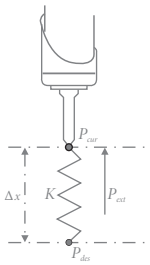
- Cutting-edge motion control technologies for industrial robots: OptiMotion, TrueMotion, and SyncMotion
- First-class robot path accuracy supported by dynamic feedforward compensation and dynamic modeling based on over 2000 parameters
- Payload capacity increased by 20% thanks to the customized motor drive control system



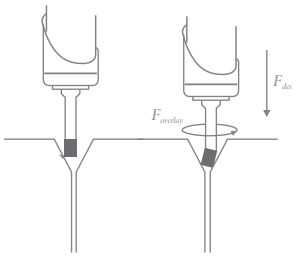
Optimal Takt Time

Compliant Flexibility

- Powerful yet flexible robot control based on patented unified force-position hybrid control framework
- Force control task efficiency improved by over 3 times through highly dynamic force control
- Fine grinding and precision assembly with no extension required thanks to built-in joint sensors and complete force control process kit



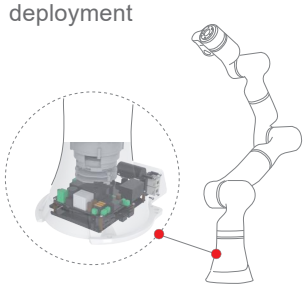
Impedance Control



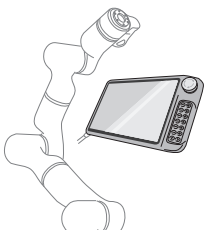
Controlled Force Assembling

Ease of Use

- Direct teaching control with 1N based on point position and continuous trajectory
- Graphical programming interface with flowcharts enables users to get started within 1 hour
- Friendly development and open ecosystem support 100+ ecosystem extension tools of 5 categories
- A control-cabinet-less design is available,reduces system weight by 50% and allows for fast installation and flexible deployment



Cabinet-free Design



Graphical Programming

Excellent Reliability

- Motion planning based on dynamics constraints delivers high performance, overload protection, and an extended service life
- 100+ design verification experiments, 20+ factory tests, and MTBF > 80,000 h
- IP67 protection level satisfies the demands of harsh industrial applications

Better Protection

xMate CR

Flexible Collaborative Robot

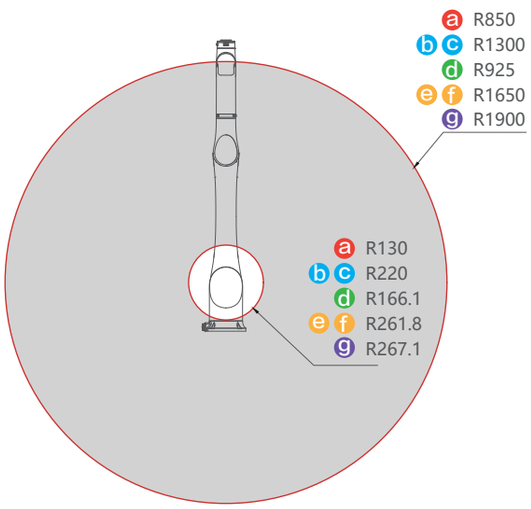
xMate CR series flexible collaborative robots are built on the force-position hybrid control framework and xCore,a new self-developed high-performance control system for industrial robots.Designed for industrial applications,the robots deliver improved motion performance,force control,safety,ease of use,and reliability.Robot body with IP67 protection rating can adapt to more stringent application scenarios.The independent control cabinet provides richer IO resources and more flexible extensibility.Its built-in independent safety controller,TÜV certified,functional safety meets ISO13849-1:2015 standard,up to PL d/Cat.3 level.

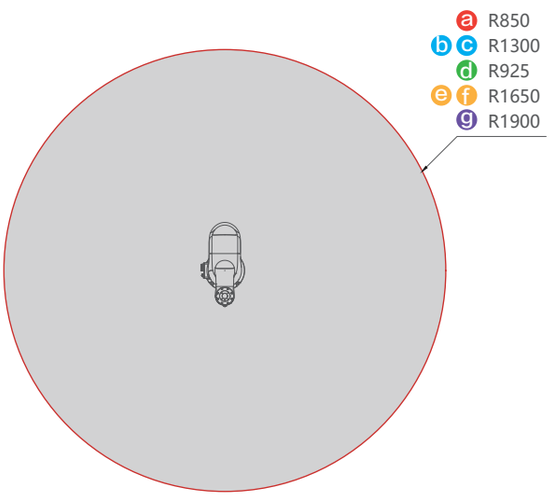
The newly upgraded xMate CR series of flexible cobots further broadens the application scenarios with the characteristics of safer,more flexible and easier to use.The payload capacity has increased to 45kg,with an operating range of up to 2,246 mm.This significantly expands the application scenarios for collaborative robots,allowing them to cover a wide range of industry-specific applications.It comprehensively assists enterprises in enhancing production efficiency and rapidly achieving flexible manufacturing.

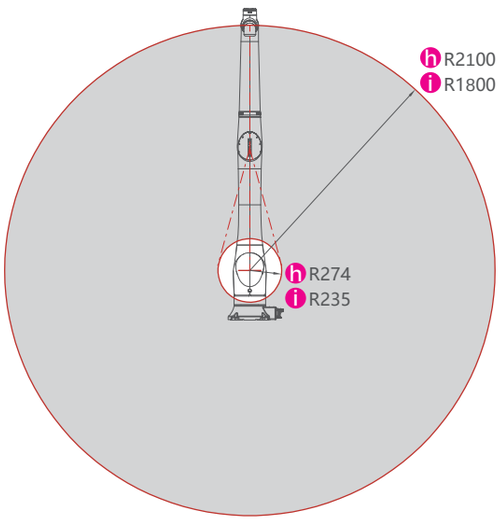
Working range

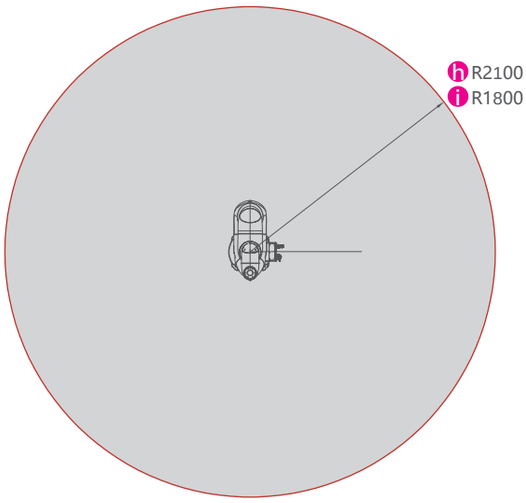
(Dimensions: mm)

a CR7-7/0.98
b CR12-12/1.4
c CR12-20/1.4
d CR18-18/1.0
e CR20-20/1.8
f CR20-25/1.8-5
g CR20-17/2.0-5
h CR35-35/2.2
i CR35-45/1.9



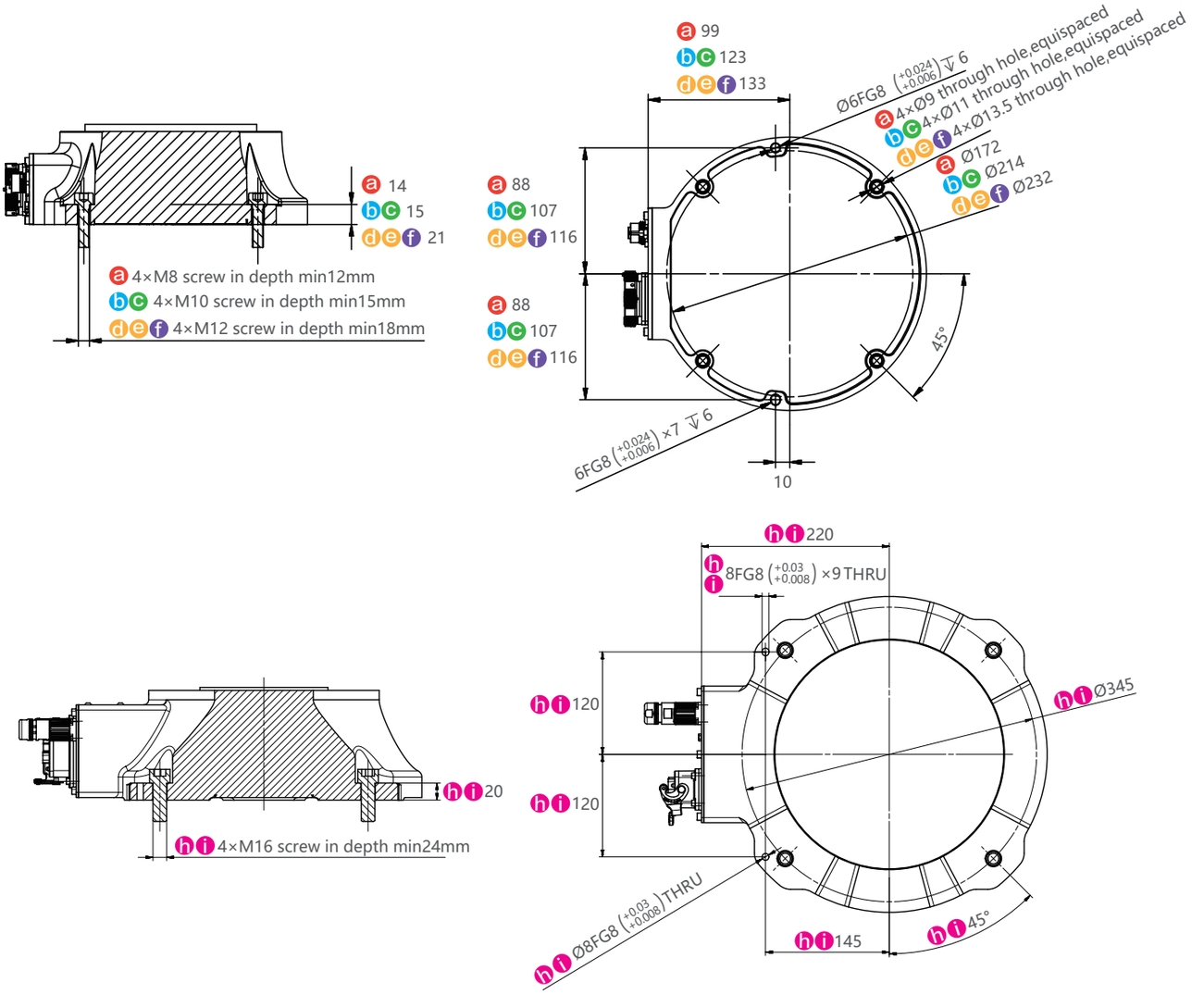




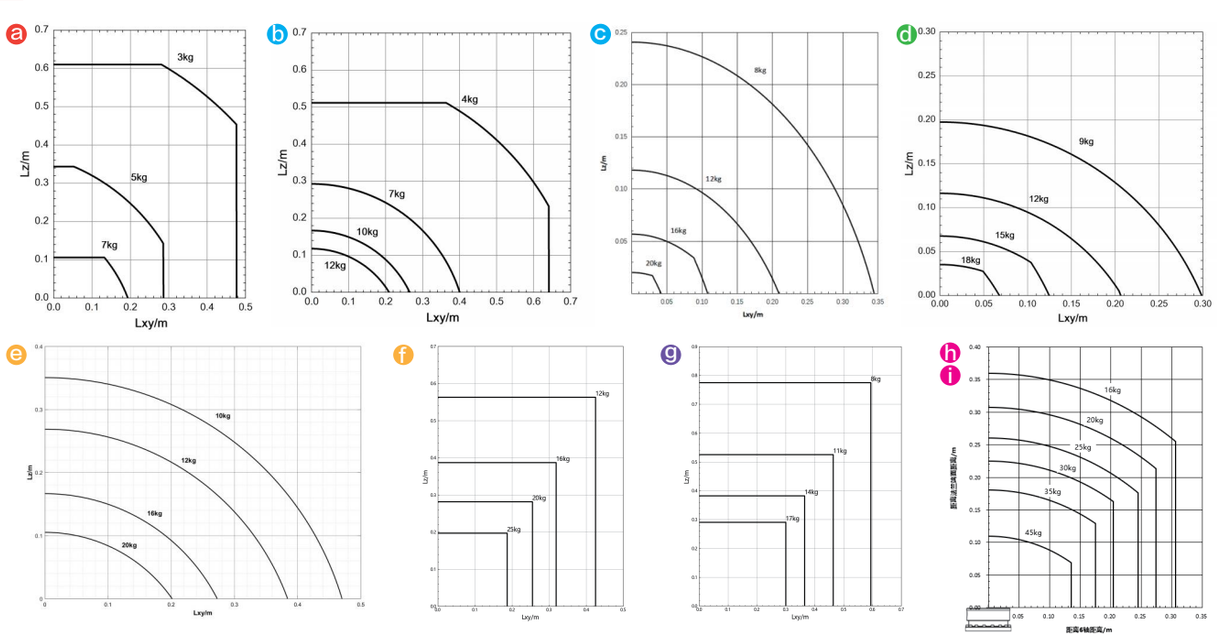


Fixed size of base

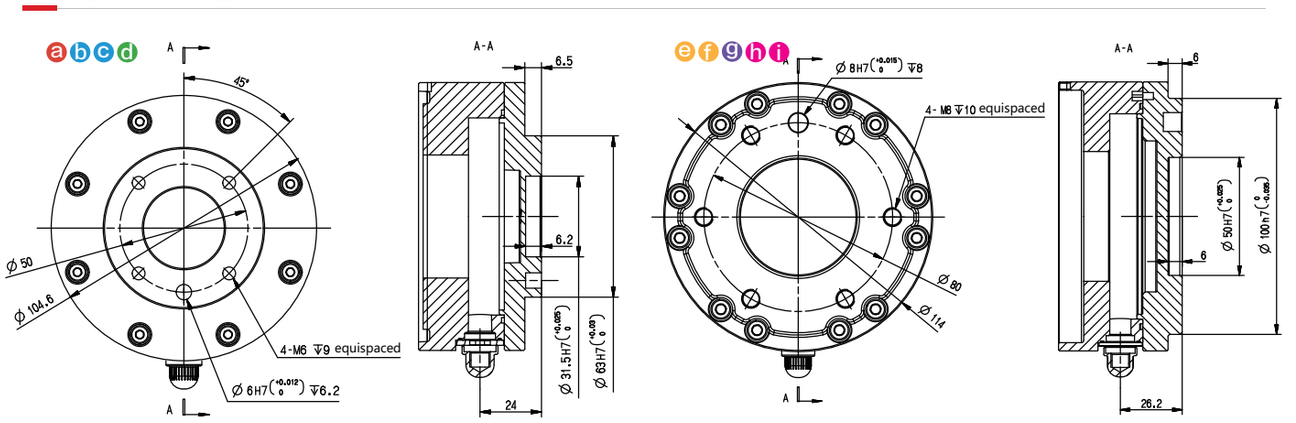
a CR7-7/0.98 b CR12-12/1.4 c CR12-20/1.4 d CR18-18/1.0 e CR20-20/1.8 f CR20-25/1.8-5 g CR20-17/2.0-5 h CR35-35/2.2 i CR35-45/1.9



Wrist load curve



Output flange (Dimensions: mm)



Specifications

Specifications

	CR7-7/0.98	CR12-12/1.4	CR12-20/1.4	CR18-18/1.0	CR20-20/1.8	CR20-25/1.8-5	CR20-17/2.0-5	CR35-35/2.2	CR35-45/1.9
Payload	7 kg	12 kg	20 kg	18 kg	20 kg	25 kg	17 kg	35 kg	45 kg
Reach	988 mm	1,434 mm	1,434 mm	1,062 mm	1,798 mm	1,798 mm	2,047 mm	2,246 mm	1,947 mm
Weight	About 25 kg	About 41 kg	About 41 kg	About 38 kg	About 71 kg	About 69 kg	About 71 kg	About 165 kg	About 161 kg
Degrees of freedom	6	6	6	6	6	5	5	6	6
MTBF	> 80,000 h*	> 80,000 h*	> 80,000 h*	> 80,000 h*	> 80,000 h*	> 80,000 h*	> 80,000 h*	——	——
Power supply	48VDC	48VDC	48VDC	48VDC	48VDC	48VDC	48VDC	——	——
Programming	Direct teaching control and graphical interface	Direct teaching control and graphical interface	Direct teaching control and graphical interface	Direct teaching control and graphical interface	Direct teaching control and graphical interface	Direct teaching control and graphical interface	Direct teaching control and graphical interface	Graphical interface	Graphical interface

Performance

Typical Power	300 w		500 w		500 w		600 w		1,000 w		900 w		600 w		——	——
Safety	Over 21 adjustable safety features including collision detection, virtual walls, and collaboration mode (Optional for models 35kg and above)															
Certification	EN ISO 13849-1, EN ISO 10218-1/ PL d, Cat. 3; ISO 15066, and EU CE marking requirements,KCs marking requirements,EAC marking requirements															
Force sensing (tool flange)	Force，x-y-z	Torque，x-y-z	Force，x-y-z	Torque，x-y-z	Force，x-y-z	Torque，x-y-z	Force，x-y-z	Torque，x-y-z	Force，x-y-z	Torque，x-y-z	Force，x-y-z	Torque，x-y-z	Force，x-y-z	Torque，x-y-z	——	——
Torque sensor resolution	0.1N	0.02Nm	0.1N	0.02Nm	0.1N	0.02Nm	0.1N	0.02Nm	0.1N	0.02Nm	0.1N	0.02Nm	0.1N	0.02Nm	——	——
Adjustable range of Cartesian stiffness	0~6000N/m，0~1000Nm/rad		0~18000N/m，0~2500Nm/rad		0~18000N/m，0~2500Nm/rad		0~18000N/m，0~2500Nm/rad		0~18000N/m，0~2500Nm/rad		0~18000N/m，0~2500Nm/rad		0~18000N/m，0~2500Nm/rad		——	——

Motion

Repeatability	±0.02 mm		±0.03 mm		±0.05 mm		±0.03 mm		±0.05 mm		±0.05 mm		±0.05 mm		±0.05 mm	
Motion joint	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	Working range	Maximum speed
Axis 1	±360°	180°/s	±360°	120°/s	±360°	90°/s	±360°	120°/s	±360°	120°/s	±360°	120°/s	±360°	120°/s	±360°	163°/s	±360°	163°/s
Axis 2	±360°	180°/s	±360°	120°/s	±360°	90°/s	±360°	120°/s	±360°	120°/s	±360°	120°/s	±360°	120°/s	±360°	163°/s	±170°	163°/s
Axis 3	±360°	234°/s	±360°	180°/s	±360°	112°/s	±165°	180°/s	±170°	120°/s	±170°	120°/s	±165°	120°/s	±168°	135°/s	±168°	135°/s
Axis 4	±360°	240°/s	±360°	234°/s	±360°	146°/s	±360°	180°/s	±360°	180°/s	±360°	234°/s	±360°	234°/s	±360°	155°/s	±360°	155°/s
Axis 5	±360°	240°/s	±360°	240°/s	±360°	200°/s	±360°	180°/s	±360°	234°/s	±360°	234°/s	±360°	234°/s	±360°	199°/s	±360°	199°/s
Axis 6	±360°	240°/s	±360°	240°/s	±360°	200°/s	±360°	180°/s	±360°	234°/s	——		——		±360°	228°/s	±360°	228°/s
Maximum speed at tool end	≤3.2m/s		≤3.0m/s		≤3.0m/s		≤3.0m/s		≤3.5m/s		≤3.5m/s		≤4.0m/s		≤6.0m/s		≤6.0m/s	

Physical properties

IP rating	IP67	IP67
ISO cleanroom class	5	5
Noise	≤ 70 dB(A)	≤ 85 dB(A)
Operating ambient temperature	0℃~50℃	0℃~40℃
Humidity	≤ 93% RH (non-condensing)	≤ 93% RH (non-condensing)
Robot installation	At any angle	At any angle
Tool I/O ports	2 Digital outputs, 2 Digital inputs, 2 Analog inputs	2 Digital outputs, 2 Digital inputs, 2 Analog inputs
Tool communication interface	RS485(Alternative with two analog input pins, can not be used simultaneously)	RS485(Alternative with two analog input pins, can not be used simultaneously)
Tool I/O power supply	12V/24V 1A (rated)	12V/24V 1A (rated)

Considering the upgrade of the product, the actual parameters of the product shall be subject to the corresponding hardware installation manual
*Note: If you have any questions about the status of product certification, please contact the manufacturer. Please refer to the corresponding product manual for more details

Controller

Name	xMate Control Cab (MCC)	xMate Control Cab Mix(MCCM)
Applicable models	CR Series models below 35kg	CR Series models 35kg and above
IP rating	IP54	IP54
Operating ambient temperature	0℃~50℃	0℃~50℃
Humidity	≤93% RH (Non-condensing)	≤93% RH (Non-condensing)
Input power	Single-phase 90V ~ 264VAC, 47-63Hz，Single-phase 180V ~ 264VAC, 47-63Hz (CR20 Series)	110V~260V AC，50~60Hz
Dimensions	450 mm x 250 mm x 350 mm	480 mm×325 mm×360 mm
Weight*	About 15 kg	About 15 kg
User IO	16 inputs and 16 outputs (standard)	16 inputs and 16 outputs (standard)
Communication	5 safety inputs, 4 safety outputs (all dual-redundant channels)	5 safety inputs, 4 safety outputs (all dual-redundant channels)
Power output	RS232*1; Gigabit Ethernet RJ45*1;USB3.0*2; HDMI*1; EtherCAT*1	RS232*1; Gigabit Ethernet RJ45*1;USB3.0*2; HDMI*1; EtherCAT*1
Optional extension	General Digital I/O module; Analog I/O module; Incremental encoder signal acquisition module, etc.	General Digital I/O module; Analog I/O module; Incremental encoder signal acquisition module, etc.

Teach Pendant

Name	xPad2
Dimensions	290 mm×170 mm×80 mm
Weight	About 840g (excluding cable)
Cable length	5 m/7 m/15 m/22 m
Display	10.1-in LCD with a resolution of 1,920×1,200
IP rating	IP54

*Note: There will be some differences in the weight of the control cabinet in different configurations.

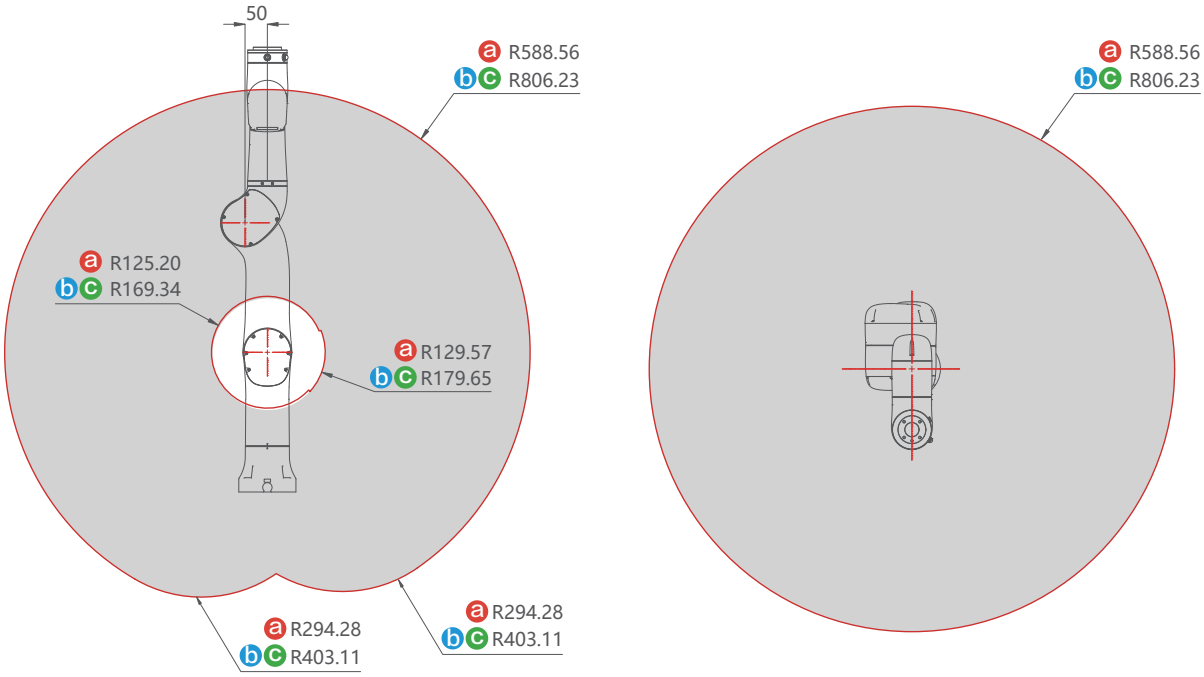
xMate SR

Flexible Collaborative Robot

xMate SR,ROKAE's next-generation flexible cobot series that is lightweight, flexible, and great in cost performance, is a good helper for people's work and life.independent controller cabinet caters to more confined baseinstalation environments.

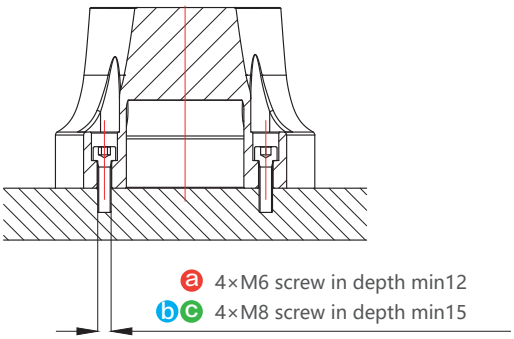
Working range (Dimensions: mm)

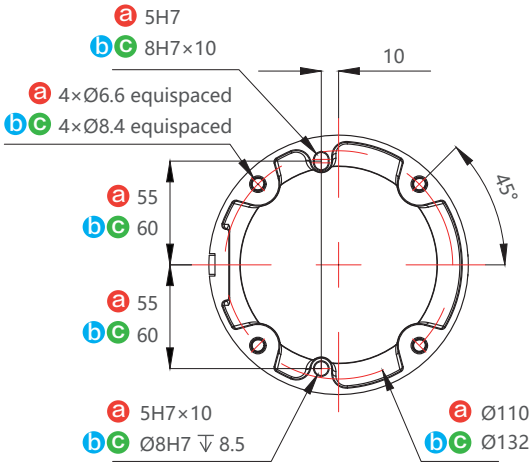
a SR3-3/0.7 b SR4-4/0.9 c SR4-5/0.9



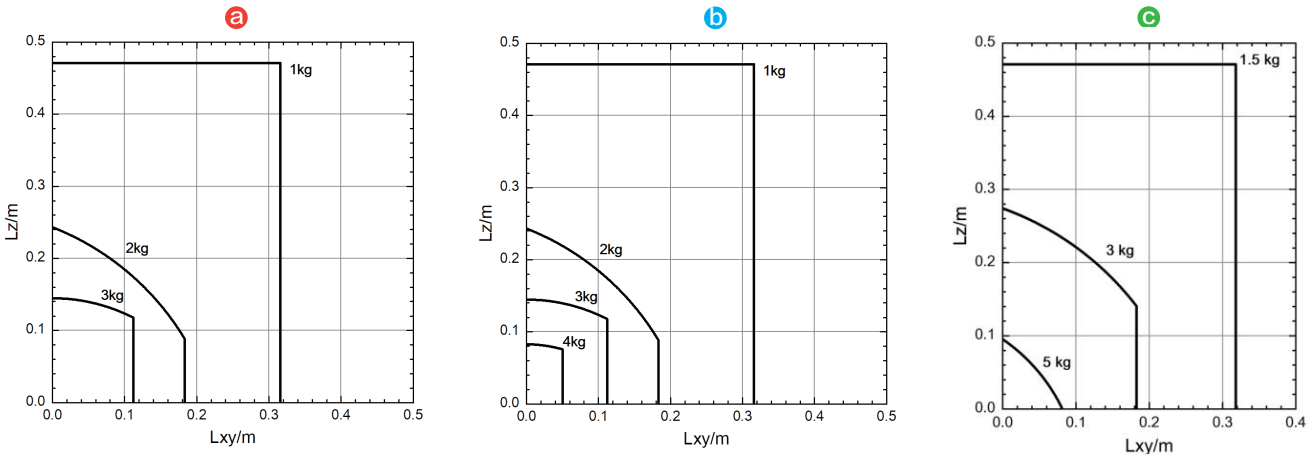
Fixed size of base

a SR3-3/0.7 b SR4-4/0.9 c SR4-5/0.9

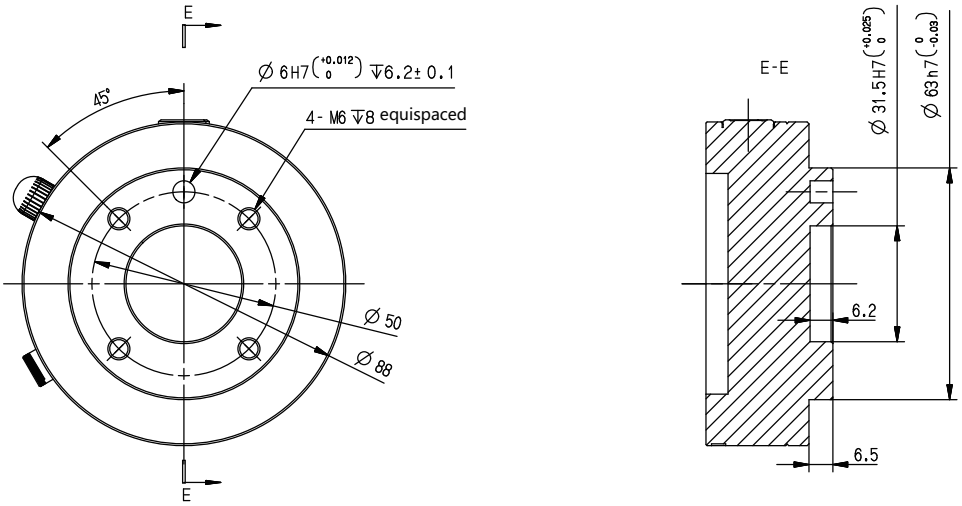




Wrist load curve



Output flange (Dimensions: mm)



Specifications

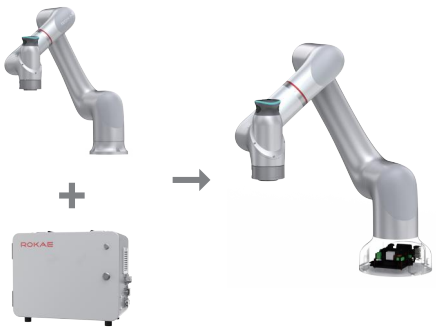
	SR3-3/0.7		SR4-4/0.9		SR4-5/0.9	
Specifications						
Payload	3 kg		4 kg		5 kg	
Reach	705 mm		919 mm		919 mm	
Weight	About 13.8 kg		About 16.5 kg		About 16.5 kg	
Degrees of freedom	6 revolute joints		6 revolute joints		6 revolute joints	
MTBF	> 80,000 h		> 80,000 h		> 80,000 h	
Power supply	48VDC		48VDC		48VDC	
Programming	Direct teaching control and graphical interface		Direct teaching control and graphical interface		Direct teaching control and graphical interface	
Performance						
Typical Power	160w		225w		225w	
Safety	Over 21 adjustable safety features including collision detection, virtual walls, and collaboration mode.					
Certification	EN ISO 13849-1, EN ISO 10218-1/ PL d, Cat. 3; ISO 15066, and EU CE marking requirements, KCs marking requirements,EAC marking requirements					
Force sensing (tool flange)	Force, x-y-z	Torque, x-y-z	Force, x-y-z	Torque, x-y-z	Force, x-y-z	Torque, x-y-z
Force measurement resolution	0.1 N	0.02 Nm	0.1 N	0.02 Nm	0.1 N	0.02 Nm
Relative accuracy of force control	0.5 N	0.1 Nm	0.5 N	0.1 Nm	0.5 N	0.1 Nm
Adjustable range of Cartesian stiffness	0~3000N/m, 0~300Nm/rad		0~3000N/m, 0~300Nm/rad		0~3000N/m, 0~300Nm/rad	
Motion						
Repeatability	±0.03 mm		±0.03 mm		±0.03 mm	
Motion joint	Working range	Maximum speed	Working range	Maximum speed	Working range	Maximum speed
Axis 1	±360°	180°/s	±360°	180°/s	±360°	180°/s
Axis 2	-155°~+140°	180°/s	-160°~+150°	180°/s	-160°~+150°	180°/s
Axis 3	-175°~+135°	180°/s	-170°~+140°	180°/s	-170°~+140°	180°/s
Axis 4	±360°	180°/s	±360°	180°/s	±360°	180°/s
Axis 5	±360°	180°/s	±360°	180°/s	±360°	180°/s
Axis 6	±360°	180°/s	±360°	180°/s	±360°	180°/s
Maximum speed at tool end	⩽ 1.5 m/s		⩽ 2.0m/s		⩽ 2.0m/s	
Physical properties						
IP rating	IP54					
ISO cleanroom class	5					
Noise	⩽ 70 dB(A)					
Operating ambient temperature	0°C~50°C					
Humidity	⩽ 93% RH (non-condensing)					
Robot installation	At any angle					
Tool I/O ports	2 Digital outputs, 2 Digital inputs, 2 Analog inputs					
Tool communication interface	One 100-megabit Ethernet port with RJ45 interface on the connection base					
Tool I/O power supply	(1) 24V/12V, 1A (2) 5V, 1.5A					
Control cabinet						
Name	LightCab					
IP rating	IP20					
Operating ambient temperature	0°C~50°C					
Humidity	⩽93% RH (Non-condensing)					
Input power	48VDC					
Dimensions	228.5 mm x 180 mm x 88 mm					
Weight	About 2.4 kg					
User IO	4 Digital outputs, 4 Digital inputs					
Communication	2 safety inputs, 1 safety outputs					
Power output	2 channels Ethernet,Ethercet					
Optional extension	General Digital I/O module; Analog I/O module; Incremental encoder signal acquisition module, etc.					

Considering the upgrade of the product, the actual parameters of the product shall be subject to the corresponding hardware installation manual

Robot-Integrated Controller CR series

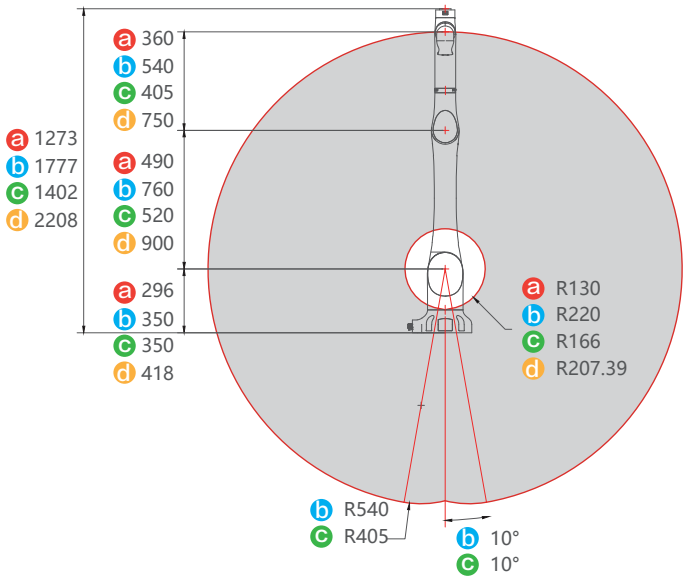
Next-Generation Flexible Collaborative Robots offers an integrated controller design option, which is more convenient for installation and deployment compared to the traditional robot + control cabinet method.

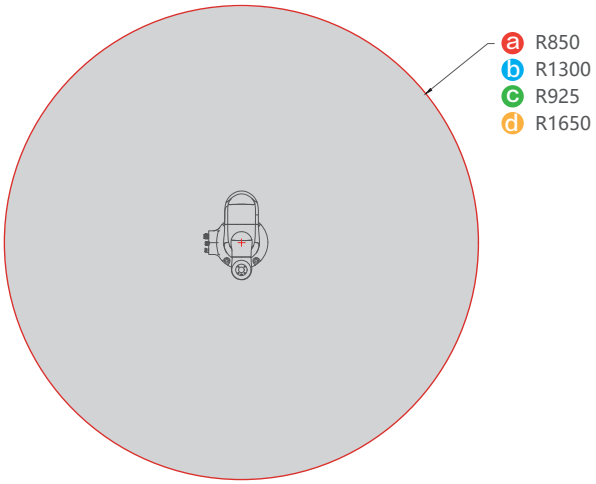
The CR series includes the CR7、CR12、CR18 and CR20,with different payload capacities and working ranges.Highly dynamic force control integrated into the joints increases the payload by 20% compared with competitors.Besides, the CR series is lighter, easier to use, safer, more precise, and more reliable. This makes it an ideal choice for different applications in various industries, helping enterprises implement flexible production quickly.



Working range (Dimensions: mm)

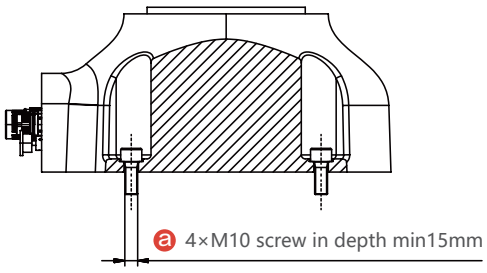
a CR7 b CR12 c CR18 d CR20

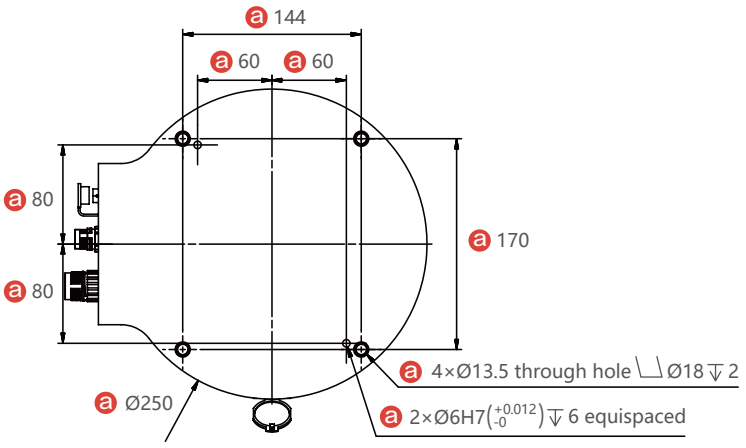


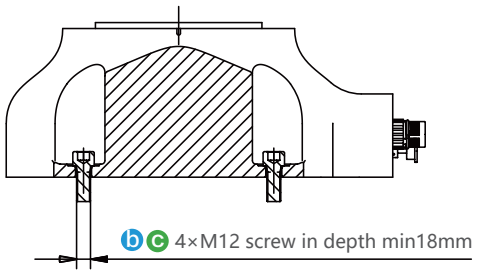


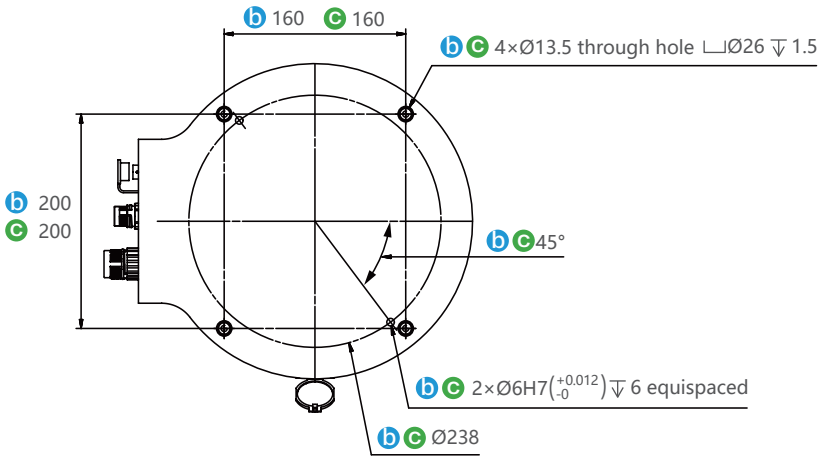
Fixed size of base

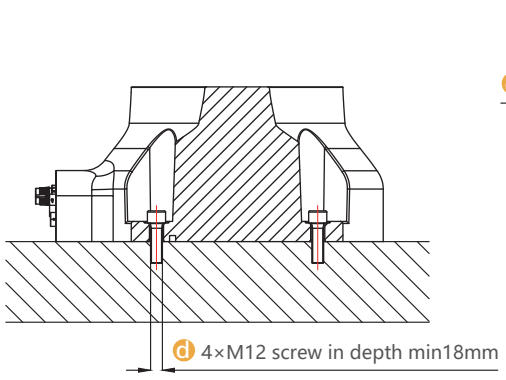
a CR7 b CR12 c CR18 d CR20

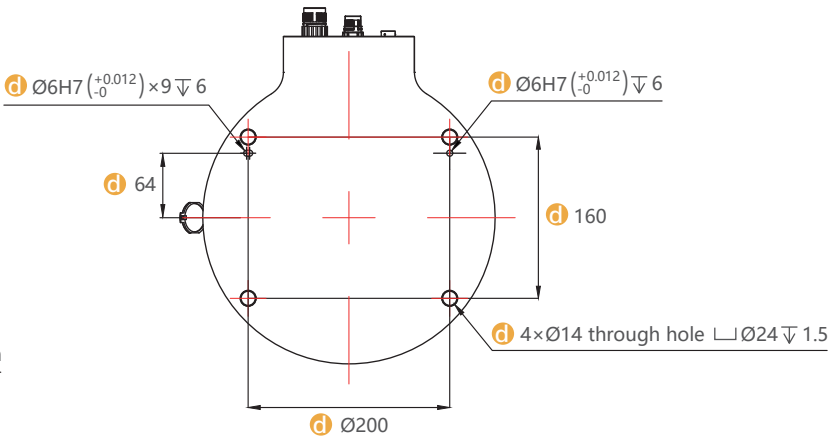




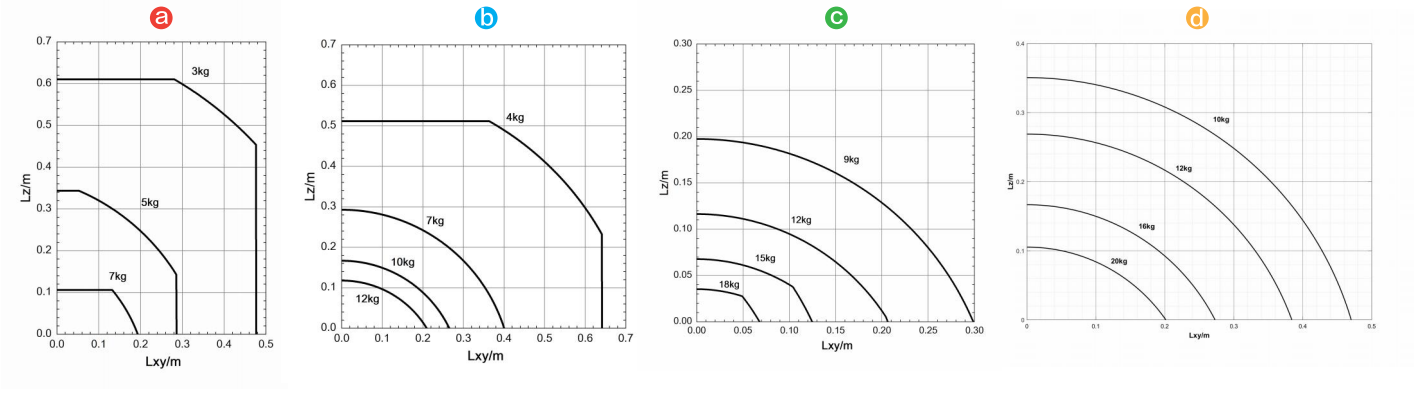






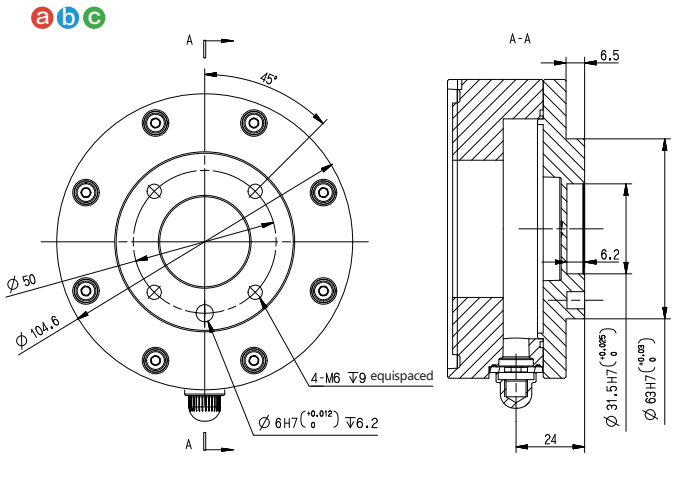


Wrist load curve



Output flange (Dimensions: mm)

a b c



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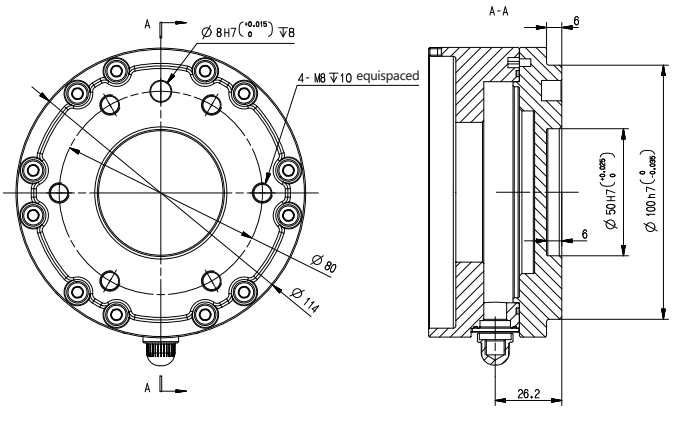


Specifications

	CR7	CR12	CR18	CR20
Specifications				
Payload	7 kg	12 kg	18 kg	20 kg
Reach	988 mm	1,434 mm	1，062 mm	1,798 mm
Weight (including built-in controller)	About 27 kg	About 43 kg	About 40 kg	About 75 kg
Degrees of freedom	6	6	6	6
MTBF	> 80,000 h	> 80,000 h	> 80,000 h	> 80,000 h
Power supply	Single-phase 90-264VAC, frequency 47-63Hz / 48VDC			Single-phase 180V ~ 264VAC, frequency 47-63Hz / 48VDC
Programming	Direct teaching control and graphical interface			
Performance				
Typical Power	300 w	500 w	600 w	1000 w
Safety	Over 21 adjustable safety features including collision detection, virtual walls, and collaboration mode.			
Certification	EN ISO 13849-1, EN ISO 10218-1/ PL d, Cat. 3; ISO 15066, and EU CE marking requirements, KCs marking requirements,EAC marking requirements			
Force sensing (tool flange)	Force, x-y-z / Torque, x-y-z	Force, x-y-z / Torque, x-y-z	Force, x-y-z / Torque, x-y-z	Force, x-y-z / Torque, x-y-z
Force measurement resolution	0.1 N / 0.02 Nm	0.1N / 0.02Nm	0.1N / 0.02Nm	0.1N / 0.02Nm
Relative accuracy of force control	0.5 N / 0.1 Nm	0.5N / 0.1Nm	0.5N / 0.1Nm	0.5N / 0.1Nm
Adjustable range of Cartesian stiffness	0~6000N/m，0~1000Nm/rad	0~18000N/m，0~2500Nm/rad	0~18000N/m，0~2500Nm/rad	0~18000N/m，0~2500Nm/rad
Motion				
Repeatability	±0.02 mm	±0.03 mm	±0.03 mm	±0.05 mm
Motion joint	Working range / Maximum speed	Working range / Maximum speed	Working range / Maximum speed	Working range / Maximum speed
Axis 1	±360° / 180°/s	±360° / 120°/s	±360° / 120°/s	±360° / 120°/s
Axis 2	±360° / 180°/s	±170° / 120°/s	±170° / 120°/s	±360° / 120°/s
Axis 3	±360° / 234°/s	±360° / 180°/s	±165° / 180°/s	±170° / 120°/s
Axis 4	±360° / 240°/s	±360° / 234°/s	±360° / 180°/s	±360° / 180°/s
Axis 5	±360° / 240°/s	±360° / 240°/s	±360° / 180°/s	±360° / 234°/s
Axis 6	±360° / 240°/s	±360° / 240°/s	±360° / 180°/s	±360° / 234°/s
Maximum speed at tool end	⩽ 3.2 m/s	⩽ 3.0 m/s	⩽ 3.0 m/s	⩽ 3.5 m/s

Considering the upgrade of the product, the actual parameters of the product shall be subject to the corresponding hardware installation manual

Physical properties

IP rating	IP54
ISO cleanroom class	5
Noise	⩽ 70 dB(A)
Operating ambient temperature	0°C~50°C
Humidity	⩽ 93% RH (non-condensing)
Robot installation	At any angle
Tool I/O ports	2 Digital outputs, 2 Digital inputs, 2 Analog inputs
Tool communication interface	RS485(Alternative with two analog input pins, can not be used simultaneously)
Tool I/O power supply	12V/24V 1A

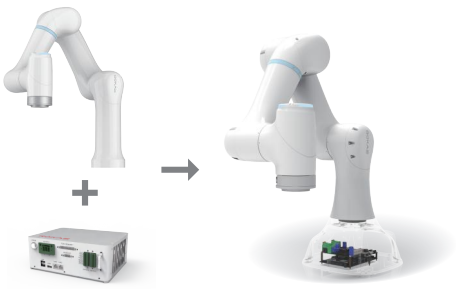
Robot-Integrated Controller

Controller	Built-in controller
Operator interface	Notebook/PAD/Drag Interactive Module
Safety protection device	1 handheld enable / 1 handheld emergency stop
Communication protocols	TCP/IP 1000Mbit, Modbus TCP, Profinet, Ethernet/IP,DeviceNet, CC-Link, CC-Link IE Field Basic
External control interface	Highly dynamic external control; low-level force/position control;robot model library and API
Input power	48VDC
Base I/O ports	4 Digital outputs, 4 Digital inputs, 2 safety input, 1 safety output
Base communication interface	1 channel Ethernet
Base output power supply	24V,1.5A

Robot-Integrated Controller SR series

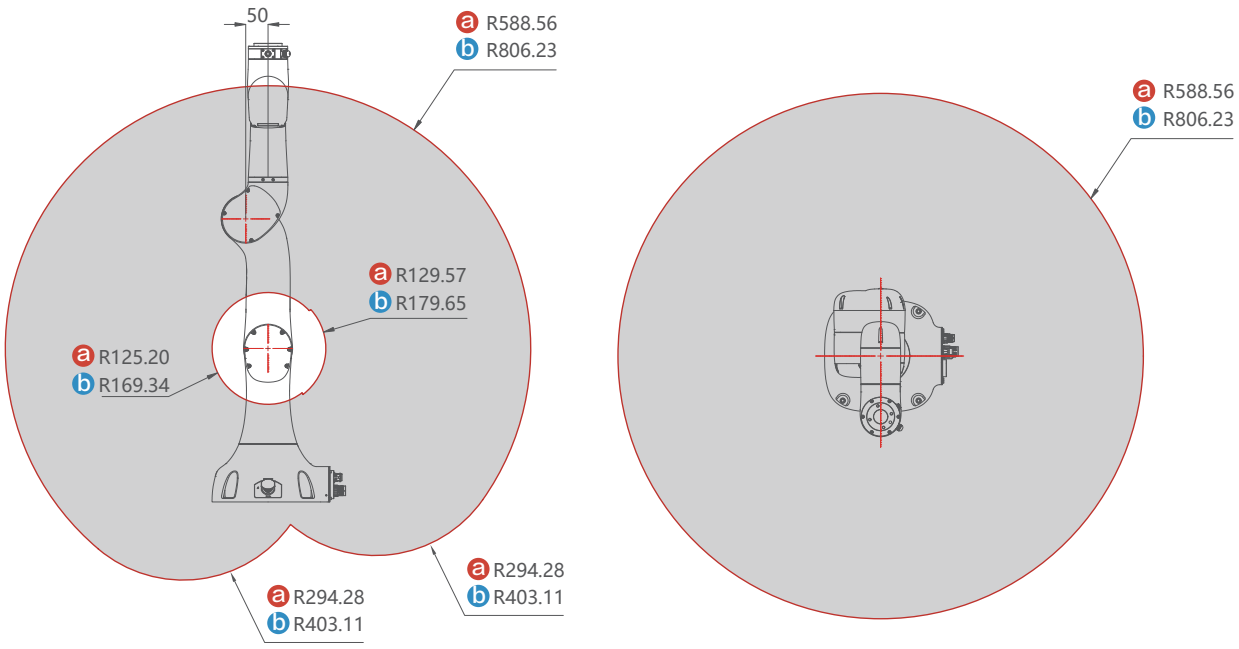
Next-Generation Flexible Collaborative Robots offers an integrated controller design option, which is more convenient for installation and deployment compared to the traditional robot + control cabinet method.

Meanwhile, the integrated controller series products still possess the core features of Next-Generation Flexible Collaborative Robots, xMate. Each joint is equipped with high-precision torque sensors, adopting a brand-new direct force control framework and advanced force control algorithms. This enables capabilities that the first generation of collaborative robots could not achieve or perform well, such as zero-force drag teaching, sensitive collision protection based on joint sensors, and compliant force control functions applicable to industrial precision assembly and medical surgeries.



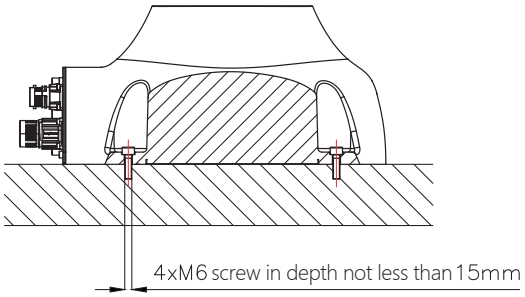
Working range (Dimensions: mm)

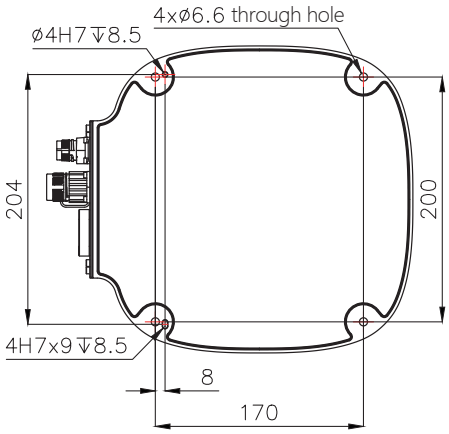
ⓐ SR3 ⓑ SR4



Fixed size of base

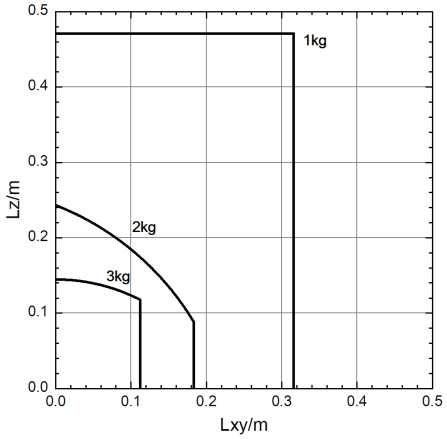
ⓐ SR3 ⓑ SR4



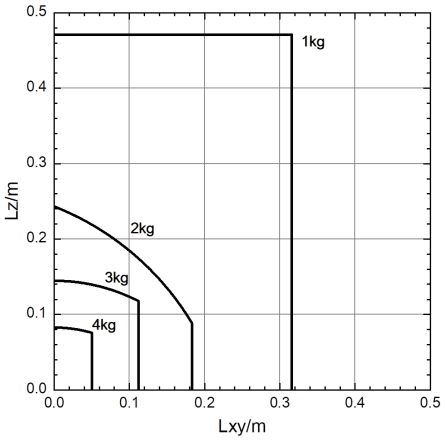


Wrist load curve

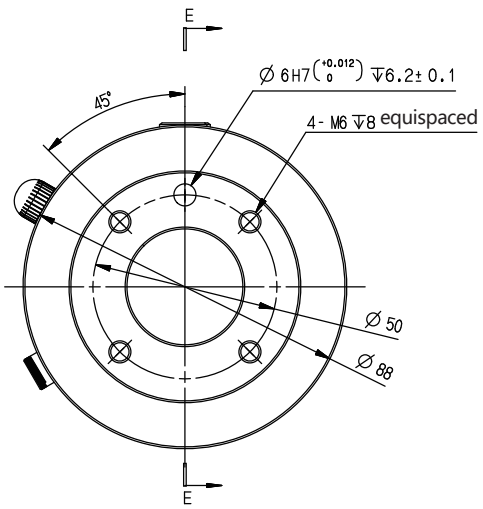
ⓐ

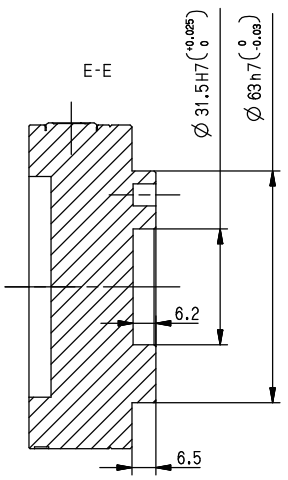


ⓑ



Output flange (Dimensions: mm)





Specifications

	SR3		SR4	
Specifications				
Payload	3 kg		4 kg	
Reach	705 mm		919 mm	
Weight	About 15 kg		About 17.5 kg	
Degrees of freedom	6 revolute joints		6 revolute joints	
MTBF	> 80,000 h		> 80,000 h	
Power supply	90-264VAC, 47-63Hz/48VDC		90-264VAC, 47-63Hz/48VDC	
Programming	Direct teaching control and graphical interface		Direct teaching control and graphical interface	
Performance				
Typical Power	160w		225w	
Safety	Over 21 adjustable safety features including collision detection, virtual walls, and collaboration mode.			
Certification	EN ISO 13849-1, EN ISO 10218-1/ PL d, Cat. 3; ISO 15066, and EU CE marking requirements, KCs marking requirements,EAC marking requirements			
Force sensing (tool flange)	Force, x-y-z	Torque, x-y-z	Force, x-y-z	Torque, x-y-z
Force measurement resolution	0.1 N	0.02 Nm	0.1 N	0.02 Nm
Relative accuracy of force control	0.5 N	0.1 Nm	0.5 N	0.1 Nm
Adjustable range of Cartesian stiffness	0~3000N/m, 0~300Nm/rad		0~3000N/m, 0~300Nm/rad	
Motion				
Repeatability	±0.03 mm		±0.03 mm	
Motion joint	Working range	Maximum speed	Working range	Maximum speed
Axis 1	±360°	180°/s	±360°	180°/s
Axis 2	-135°~+130°	180°/s	-135°~+135°	180°/s
Axis 3	-175°~+135°	180°/s	-170°~+140°	180°/s
Axis 4	±360°	180°/s	±360°	180°/s
Axis 5	±360°	180°/s	±360°	180°/s
Axis 6	±360°	180°/s	±360°	180°/s
Maximum speed at tool end	⩽ 1.5 m/s		⩽ 2.0m/s	

Considering the upgrade of the product, the actual parameters of the product shall be subject to the corresponding hardware installation manual

Physical properties

IP rating	IP54
ISO cleanroom class	5
Noise	⩽ 70 dB(A)
Operating ambient temperature	0°C~50°C
Humidity	⩽ 93% RH (non-condensing)
Robot installation	At any angle
Tool I/O ports	2 Digital outputs, 2 Digital inputs, 2 Analog inputs
Tool communication interface	One 100-megabit Ethernet port with RJ45 interface on the connection base
Tool I/O power supply	(1) 24V/12V, 1A (2) 5V, 1.5A

Robot-Integrated Controller

Controller	Built-in controller
Operator interface	Notebook/PAD/Drag Interactive Module
Safety protection device	1 handheld enable / 1 handheld emergency stop
Communication protocols	TCP/IP 1000Mbit, Modbus TCP, Profinet, Ethernet/IP,DeviceNet, CC-Link, CC-Link IE Field Basic
External control interface	Highly dynamic external control; low-level force/position control;robot model library and API
Input power	48VDC
Base I/O ports	4 Digital outputs, 4 Digital inputs, 2 safety input, 1 safety output
Base communication interface	2 channel Ethernet
Base output power supply	24V,1.5A

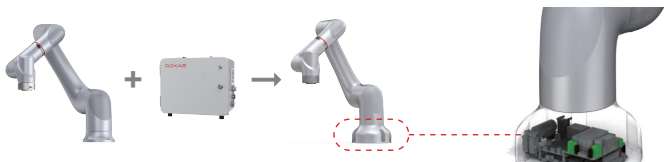
Control systems

Collaborative Robots

Controller

Name	xMate Control Cab (MCC)	xMate Control Cab Mix(MCCM)	LightCab
Applicable models	CR Series models below 35kg, SR Series	CR Series models 35kg and above	SR Series
IP rating	IP54		IP20
Operating ambient temperature	0°C~50°C		0°C~50°C
Humidity	⩽93% RH (Non-condensing)		⩽93% RH (Non-condensing)
Input power	Single-phase 90V～264VAC, 47-63Hz; Single-phase 180V～264VAC, 47-63Hz (CR20 Series)	110V~260V AC, 50~60Hz	48VDC
Dimensions	450 mm×250 mm×350 mm	480 mm×325 mm×360 mm	228.5 mm x 180 mm x 88 mm
Weight*	About 15 kg		About 2.4 kg
General digital IO	16 inputs and 16 outputs (standard)		4 Digital outputs, 4 Digital inputs
Safety IO	5 safety inputs, 4 safety outputs (all dual-redundant channels)		2 safety inputs,1 safety outputs
Communication	RS232*1; Gigabit Ethernet RJ45*1;USB3.0*2; HDMI*1; EtherCAT*1		2 channels Ethernet,Ethercet
Optional extension	General Digital I/O module; Analog I/O module; Incremental encoder signal acquisition module, etc.		General Digital I/O module; Analog I/O module; Incremental encoder signal acquisition module, etc.

*Note: There will be some differences in the weight of the control cabinet in different configurations.



Robot-Integrated Controller

Controller	Built-in controller	
Applicable models*	CR7,CR12,CR18,CR20	SR3,SR4
Operator interface	Notebook/PAD/Drag Interactive Module	
Safety protection device	1 handheld enable / 1 handheld emergency stop	
Communication protocols	TCP/IP 1000Mbit, Modbus TCP, Profinet, Ethernet/IP, DeviceNet, CC-Link, CC-Link IE Field Basic	
External control interface	Highly dynamic external control; low-level force/position control; robot model library and API	
Input power	48VDC	
Base I/O ports	4 Digital outputs, 4 Digital inputs, 2 safety input, 1 safety output	
Base communication interface	1 channel Ethernet	2 channels Ethernet
Base output power supply	24V, 1.5A	24V, 1.5A

*Note: Integrated controller inside the robot body is an option.

Industrial Robot




Controller

	XBC5M	XBC5	XBC5E	XBC6M
Dimensions (W×D×H)	448mm x 446mm x 268mm	522mm x 408mm x 425mm	690mm× 514mm× 835mm	420mm × 317mm × 120 mm
Weight	28kg	35kg	102kg	10kg
Standard I/O	Input:16; Output:16	Input:16; Output:16	Input:16; Output:16	Input:16; Output:16
IP rating	IP40	IP54	IP54	IP54
Power supply	230VAC, voltage fluctuation within -15% to +10%, frequency variation within ±2%	230VAC or 3 x 380VAC(3L+N+PE)*1, voltage fluctuation within -15% to +10%, frequency variation within ±2%	3x380VAC(3L+PE); voltage fluctuation within-10%-10%, frequency variation within ±2%	230VAC, voltage fluctuation within -15% to +10%, frequency variation within ±2%
Typical scenario Average power consumption	0.22kW (NB4 series) 0.52kW (XB7 series)	0.22kW (NB4 series) 0.52kW (XB7 series) 0.63kW (NB12 series) 1.5kW (NB25 series)	2.1kW (NB80 series) 2.6kW (NB220 series)	0.22kW (NB4 series) 0.52kW (XB7 series)
Operating temperature	0°C to +45°C	0°C to +45°C	0°C to +45°C	0°C to +50°C
Storage temperature	-10°C to +55°C	-10°C to +55°C	-10°C to +55°C	-10°C to +55°C
Maximum humidity for operation/storage	⩽ 80% (non-condensing)	⩽ 95% (non-condensing)	⩽95%, (non-condensing)	⩽80%, (non-condensing)

*1: 3x380VAC power supply for NB12 Series, NB25 Series,and 230VAC power supply for the rest.

Teach Pendant

Name	xPad2
Dimensions	290 mm×190 mm×80 mm
Weight	840 g
Cable length	5 m/7 m/15 m/22 m
Display	10.1-in LCD with a resolution of 1,920×1,200
IP rating	IP54

Configuration of Collaborative Robot

Options		Description
xPad2 Teach Pendant		Standard for CR series, optional for SR series
Length of Teach Pendant cable		5 m is standard, 7 m/10 m/15 m/22 m/30 m are optional.
I/O expansion module	I/O external expansion module	Optional, supporting the expansion of NPN and PNP digital I/O, and the expansion of voltage type and current type analog I/O, up to 64-way expansion
	Laser welding IO expansion module	Optional, applicable to laser welding scene control laser, providing 8 DI, 8 DO, 4 AO (1 way of 24 V, 3 ways of 10 V), and 1-way relay
Communication extension module	EtherNet/IP external expansion module	Optional, through which the robot can support EtherNet/IP protocol
	DeviceNet external expansion module	Optional, through which the robot can support DeviceNet protocol
	CC-Link expansion module	Optional, through which the robot can support CC-Link protocol
Power cord, 220 V AC	Chinese standard plug	Standard for each model (cable length of 2 m)
	British standard plug	Optional for SR series (cable length of 3 m, 3*1.0 mm²); optional for CR series (cable length of 3 m, 3*1.5 mm²)
	European standard plug	Optional for SR series (cable length of 3 m, 3*1.0 mm²); optional for CR series (cable length of 3 m, 3*1.5 mm²)
	American standard plug	Optional for SR series (cable length of 3 m, 3*1.31 mm²); optional for CR series (cable length of 3 m, 3*2.08 mm²)
	Brazilian standard plug	Optional for CR/SR series (cable length of 3 m, 3*1.5 mm²)
Power cord, 48 V DC		Optional, with cable length of 0.2 m
DC-DC power module		Optional, stably converting the input DC voltage into 48 V voltage
Handheld emergency stop and enabling device		Optional for CR series and SR series
End effector Ethernet cable plug		Adapting to SR end effector 100-megabit Ethernet port
Tablet kit		Optional, including tablet, silicone protective case, 10-m data cable, and RJ45 interface adapter
Calibration tool of laser tracker		Optional, applicable to vision-guided applications
SDK software package		Optional for each model, with secondary development interface for robots, supporting C++/C#/Python/Java
RokaeStudio off-line programming software		Optional for each model

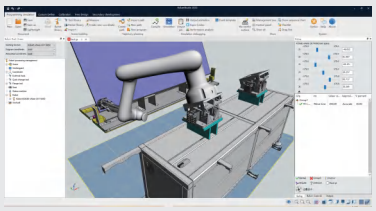
RokaeStudio

Robot Offline Programming and Simulation Software

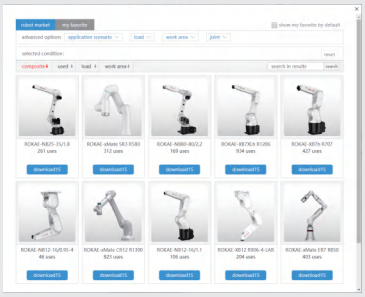
Core function

One-stop solution for robot application problems

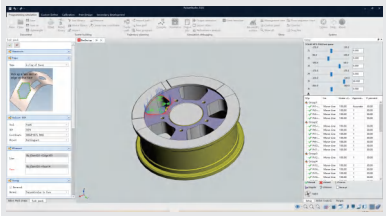
Project design



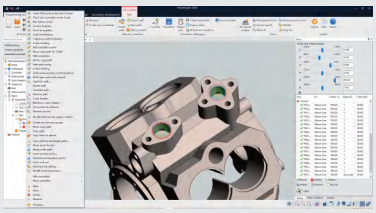
model selection



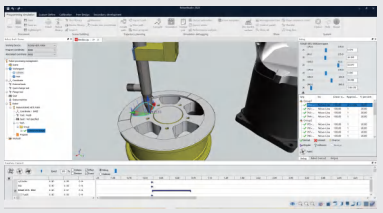
trajectory generation



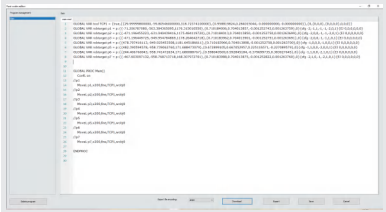
trajectory optimization



simulation debugging



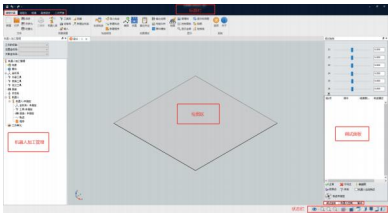
code generation



Positive features

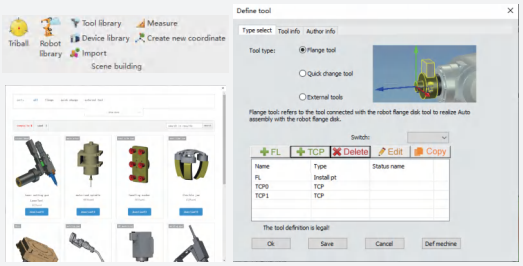
01 Simpler operation interface

- Simple and easy-to-use interface, with clear and smooth UI layout, allowing users to operate it with ease



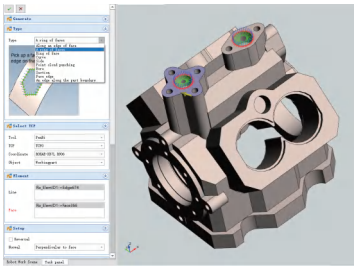
02 More open scenario building

- Provide rich cloud-based resource libraries of robots, equipment, tools, etc., covering all models of ROKAE industrial robots and collaborative robots, as well as commonly used tools.
- Support the import and customization of devices such as rails, parts, and state machines, which can easily cope with more complex application scenarios.



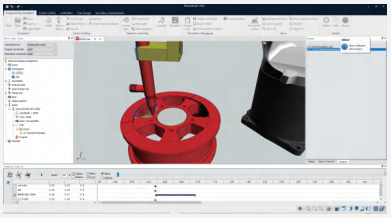
03 More flexible trajectory generation

- Support multiple trajectory generation methods. For different complex models, users can extract their complex features in terms of point, line, and surface, and the algorithm can accurately identify model features to quickly generate the trajectory of a robot, solving problems of time-consuming and inaccurate manual teaching of point position.



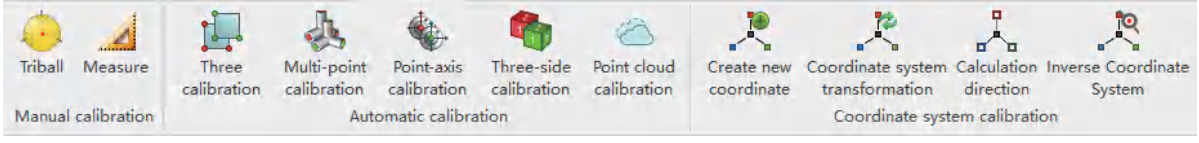
04 More realistic simulation effects

- Support collision detection during real-time simulation, which can simulate and detect collisions of the robot with surrounding parts and facilities during movement, and alert the user in advance by highlighting lines and outputting collision information, so as to nip the accidents in the bud.
- Support action simulation of devices such as robots, parts, and state machines in the scenarios and control the devices to perform different actions through custom events, so as to achieve the real effect of handling, polishing and other scenarios, thus meeting the various project requirements.



05 More accurate program generation

- Support various calibration methods such as three-point calibration, point-axis calibration, and three-plane calibration, which can avoid positional deviation to the maximum extent.
- The robot trajectory set by RokaeStudio can be directly exported to the robot control system as a motion program, so that the user can simply calibrate some point positions to run the program without any complicated operations.

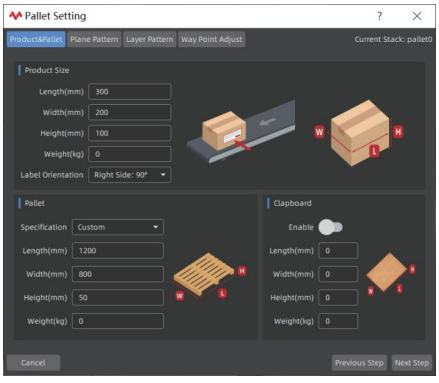


Stacking Process Kit

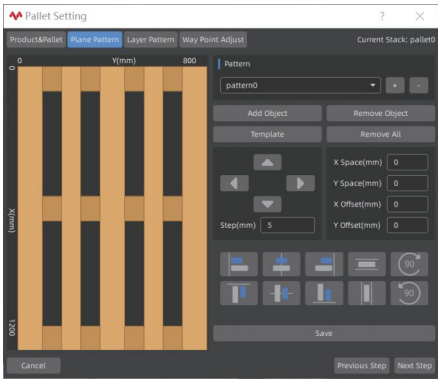
Core function

Easy-to-use and wizard-style stacking process kit

Stacking process	Up to 100 stacking processes can be created.
Stacking tool set	Each stacking process has only one stacking tool set (stacking tool frame, stacking work object frame). RL project tool data can be imported into the stacking tool.
Stack pattern	Available patterns include block, brick, and pin wheel. Custom patterns are supported
Plane pattern	Up to 100 plane patterns can be created for each stacking process.
Number of work objects	Up to 200 work objects can be created for each plane pattern.
Number of layers	Up to 50 layers can be created for each stack.



Dimension setting

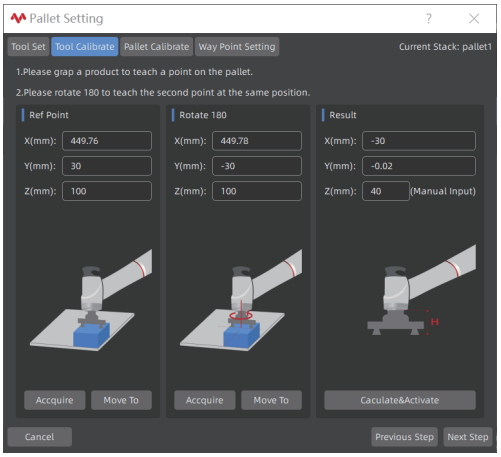


Stacking pattern setting

Positive features

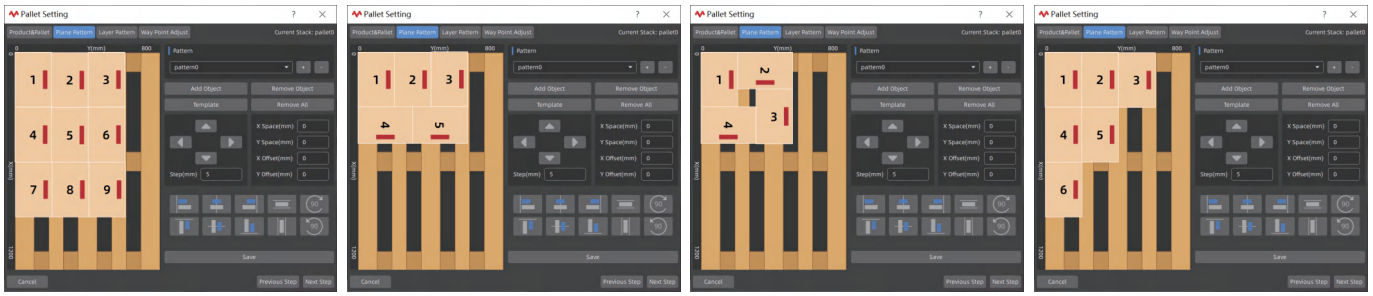
Friendly HMI device

- **Comfortable operation**
  with multi-touch Teach Pendant that supports tablet navigation modes such as swipe and bimanualness.
- **Clear interface**
  which can be used normally after simple setting on the graphical parameter interface.
- **Explicit layout**
  allowing the stacking program to be completed by following the wizard steps.
- **Easy programming**
  allowing for quick programming with code-assisted programming or graphical commands.



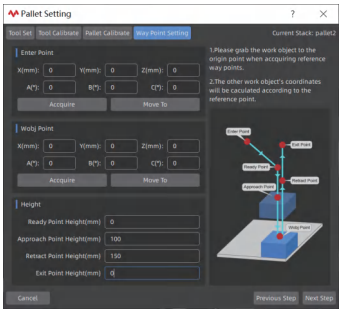
Rich stack pattern

- Provide typical templates for stack pattern, such as block, brick, and pin wheel.
- Meet the needs of customers for customizing the stack pattern based on actual scenarios.



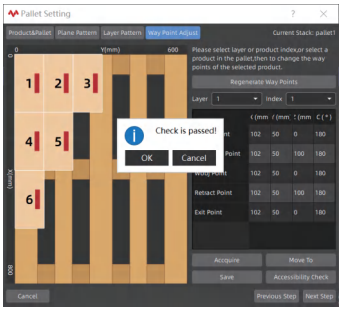
Flexible stacking path

- Simple path design, allowing all target work objects on the tray to be processed by only setting representative positions, such as approach point, reference work object point, and retract point.
- Safe path planning, which divides the entire stacking path into an approach path and a retract path, so as to avoid collisions during movement.
- The stacking paths for each work object in each layer can be set individually to meet the different path requirements in different scenarios.



Comprehensive accessibility check

- The presence of unreachable points in the complete stacking path can be automatically detected and checked before being put into operation.
- All path points on the tray can be tested run, and the corresponding parameters can be adjusted according to the actual trajectory.



Intelligent Welding Process Package

Graphical programming
5-minute mastery

Built-in process expert library
5-second quick access

Core functionality

Solves the tedious direct teaching problem, reduces user entry barrier

Product Highlights

Open Functional Modules

- **Groove Adaptation, Flexible and Effortless**
  ① Simply record the corresponding points through direct teaching to automatically adjust and optimize the welding path, intelligently adapting to irregular grooves.
  ② Use the "Input Surface" function to address groove angle deviations caused by machining errors, automatically calibrating the groove angles.

- **Path Memory, Power Failure Recovery**
  ① In case of unexpected situations, welding can be paused with a single operation to ensure safety.
  ② Upon restart, the system automatically resumes at the previous welding point, eliminating the need for repositioning.
  ③ Automated Interruption: In multi-pass welding, by setting "Pause Time," the system automatically pauses, simplifying slag removal and other maintenance tasks, enabling unattended high-efficiency operations.

- **Multi-Pass Welding, Seam Fine-Tuning**
  ① The system autonomously plans multi-pass paths with simple and clear logic.
  ② Whether minor adjustments or significant changes, the seam fine-tuning function handles them effortlessly.
  ③ For full-penetration welds, even if root cleaning causes changes in groove dimensions, the "Reload Path" function adjusts the multi-pass welding trajectories accordingly.

- **Rich Oscillation Patterns, Customizable Settings**
  ① Supports bow-shaped, Z-shaped, triangular, inverted triangular, and other oscillation patterns to meet diverse application requirements.
  ② Allows setting of amplitude, frequency, dwell time, and angle, enabling personalized oscillation configurations.
  ③ Supports both individual and batch modification of process parameters, enhancing parameter adjustment efficiency.

Rich Oscillation Patterns

01

For Medium to Thick Plate Welding, six commonly used oscillation patterns are designed to meet the needs of most scenarios.

02

For Vertical Weld Seam Welding, each oscillation pattern can have its own set of process parameters, providing excellent openness.

03

For Complex Multi-Pass Welding Scenarios, each set of parameters can be modified in batches or individually, offering high adjustment efficiency.

Oscillation Patterns

- **Bow Oscillation** — Vertical Weld Seam Upward Welding
- **Z-Shaped Oscillation** — Covering Flat Weld Seam Applications
- **Bell-Shaped Oscillation** — Swinging Along the Groove Direction
- **Crescent-Shaped Oscillation** — Suitable for Filling/Capping
- **Positive Triangle Oscillation** — Groove Vertical Weld Base
- **Inverted Triangle Oscillation** — Groove Vertical Weld Base with Gap

Applicable Types: **Flat groove, vertical groove, horizontal groove, arc groove, and conventional corner weld seams.**

Simple Parameter Settings

01

Minimalist Program Display Interface

02

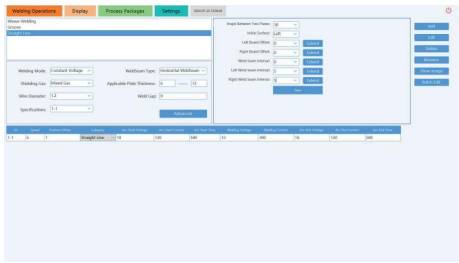
Swift Program Recall and Loading

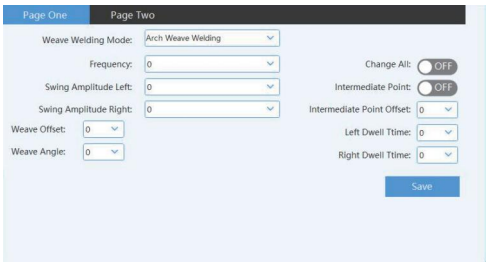
03

Support for Restarting After Arc Interruption and Path Memory

04

Simulated Hand Tack Welding Support in Welder Module





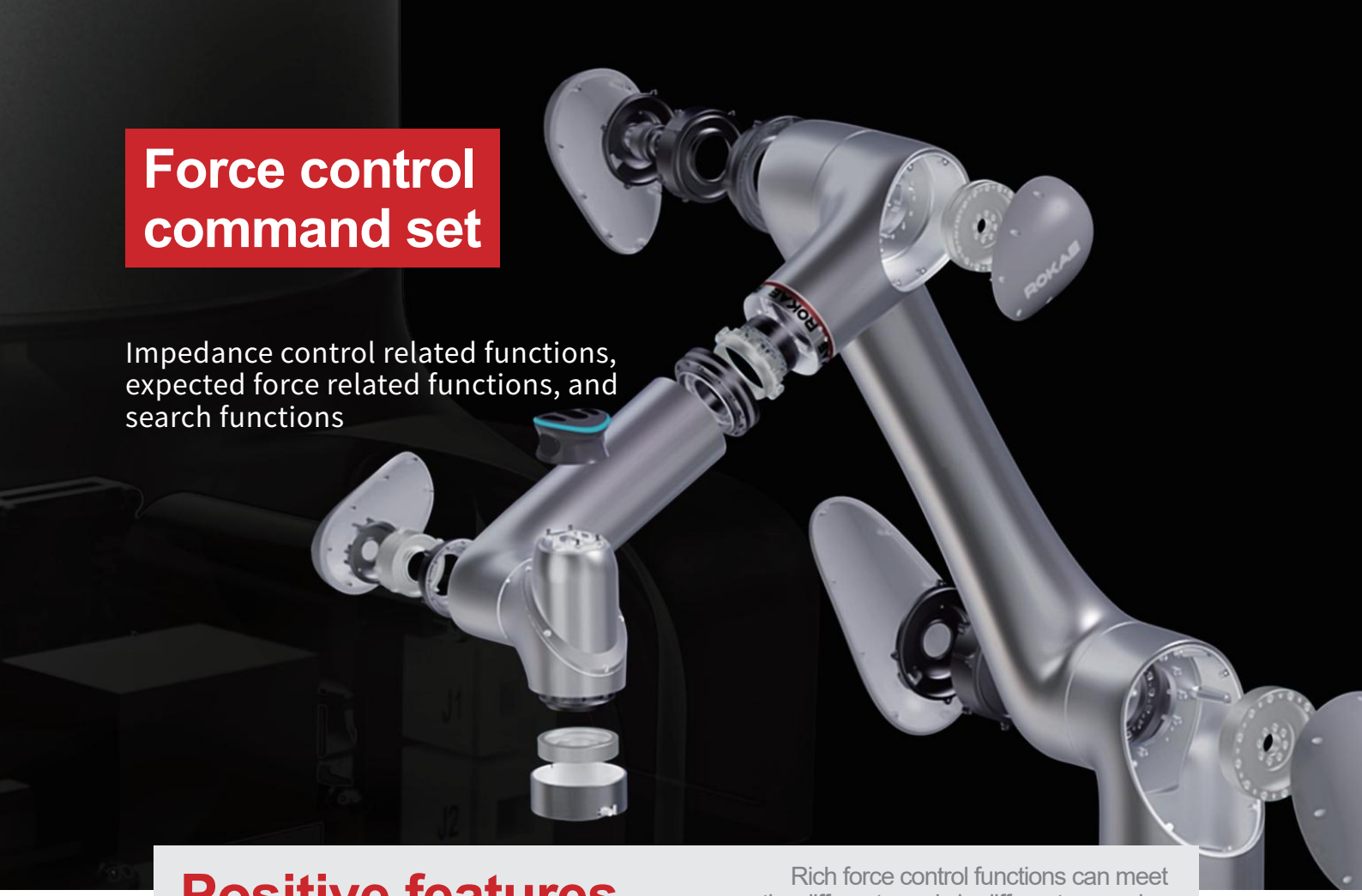
Programming Logic: Process First, Then Programming

① Determine Welding Process → ② Pre-set / Load Process → ③ Graphical Programming → ④ Initiate Welding

Simulate Welding

Force control command set

Impedance control related functions, expected force related functions, and search functions



Positive features

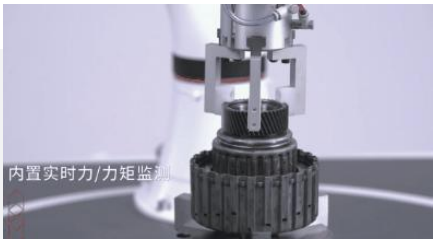
Rich force control functions can meet the different needs in different scenarios

01 Friendly HMI device

- Simple and clear interface, which enables to select and set the corresponding commands and parameters simply through the HMI interface.
- Easy programming, which enables quick realization of the required force control functions with simple statements.

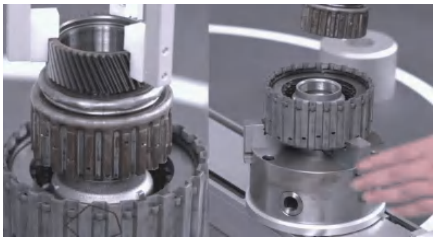
02 Rich force control types

- Support robot base frame, world frame, tool frame, and work object frame
- Support joint impedance and Cartesian impedance control



03 Perfect parameter setting

- Allow freely setting the impedance stiffness and damping parameters within a safe range, so as to adjust the corresponding impedance control effect;
- Allow setting the user's desired force, which can be combined with motion commands for applications such as force-controlled polishing and massage;
- Allow combination with the contact force judgment commands to realize applications such as point-touch high-voltage switches.

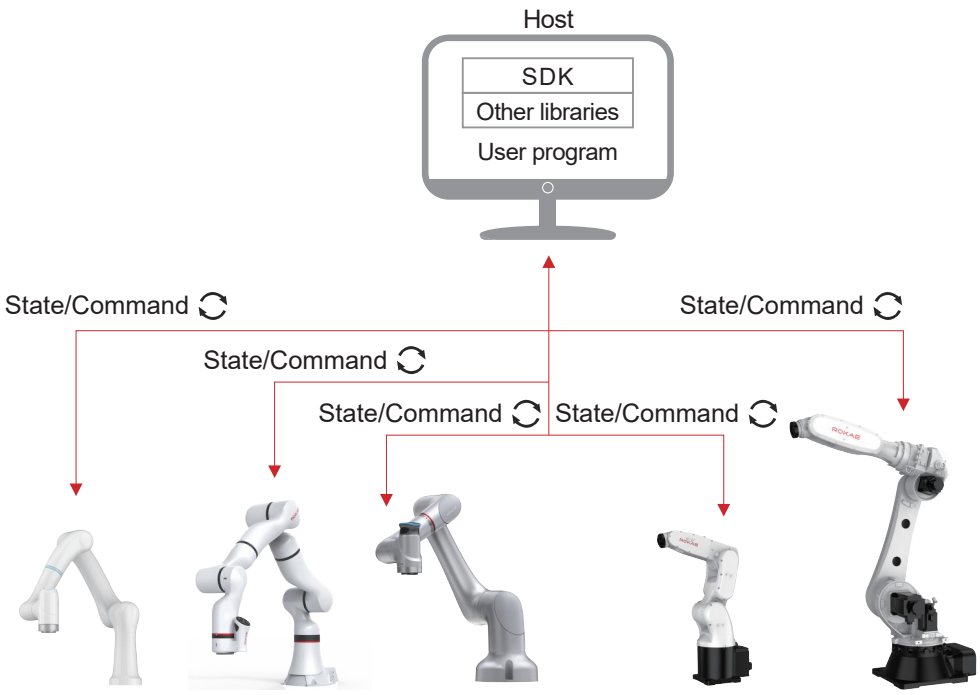


04 Efficient search and contact force judgment

- Advanced motion planning with force control & search function, allowing robots to sense real-time changes in force, so as to effectively cope with the situations such as uncertain work environments, large part tolerances, and complex assembly manipulations.

RCI/SDK
secondary development interface

Provide more underlying, more flexible and high-powered robot control interfaces to users with certain programming and development skills.



Positive features

- Support real-time control and state acquisition for robots of 1 kHz;
- With extensive programming languages and operating systems;

Core function

Supported programming languages:

C++ / C# / Python / Java

Supported operating system:

Ubuntu / Windows / Android

Non-real-time control functions:

- Basic motion: MoveAbsJ, MoveL, MoveJ, MoveC, etc.;
- Robot communication: digital and analog IO, register read/write;
- RL projects: query and execution;
- Direct teaching control and path playback (collaborative robots);
- Others: clear alarms, query controller logs, etc.

Real-time control function packages:

- Joint space position control
- Cartesian space position control
- Joint space impedance control
- Cartesian space impedance control
- Direct torque control

ROKAE Ecosystem

Gathering powerful peripherals and application kits in the robotics industry, ROKAE work with upstream and downstream players to build a sound ecosystem and provide one-stop solutions for you.

6 categories of ecosystem extensions and 100+ eco-system partners

ROKAE +

- Camera: HIKROBOT, MECH MIND, KEYENCE, ALSONTECH, alhua TECHNOLOGY, 如本科技, COGNEX
- Grip pawl: dh, ROBOTIQ, 钧能, SCHUNK
- Screw machine: Atlas Copco, Desoutter
- Grinding tool: ATI, SCHUNK
- AGV: Standard Robots, 迦智, SEER 仙工智能, FEXA The Motion Intelligence
- Welding machine: Panasonic, MEGMEET, OTC, AOTAI, ewm WE ARE WELDING
- Laser welding
- Grinding
- Stacking
- Assembly
- Gluing
- Deburring
- Sorting
- Packaging
- Loading and unloading
- Labelling
- Lnspection
- Cutting
- Massage

Service 360° Worry-free Service

On call **24** hours a day, **7** days a week

Appearing at customer site within **48** hours

Effective usage of robot as primary goal

Nationwide coverage of **5** standard accessory warehouses

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