

INOVANCE
汇川技术

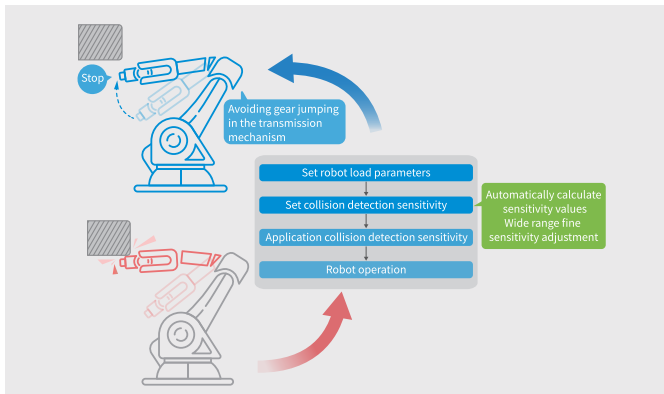
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2003 - 2023

INOVANCE ROBOT



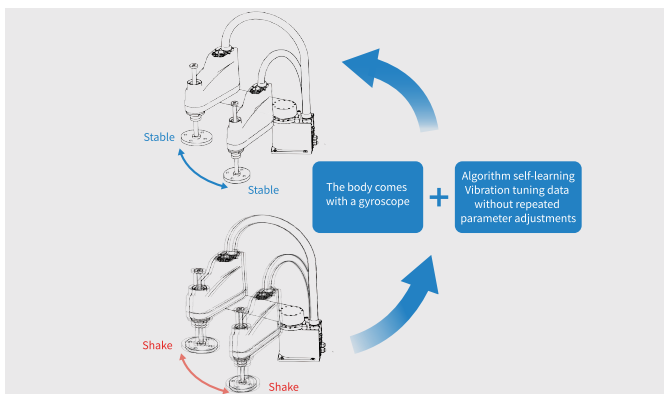
FORWARD, ALWAYS PROGRESSING

Robot controller functions



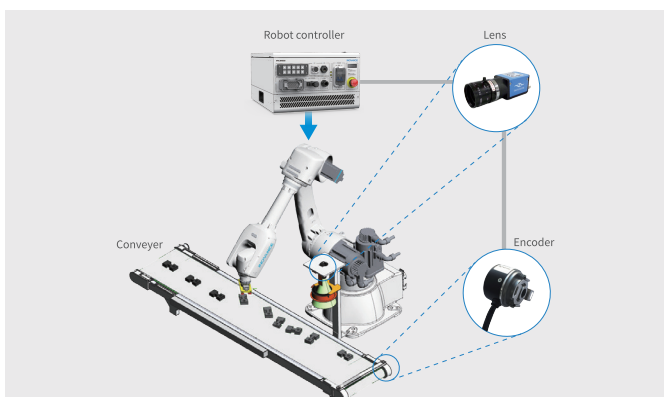
Collision detection

Real time detection of the robot's operating status can effectively avoid gear jumping caused by robot collisions at low speeds, and achieve rapid stopping at high speeds, reducing damage to the robot and equipment caused by collisions.



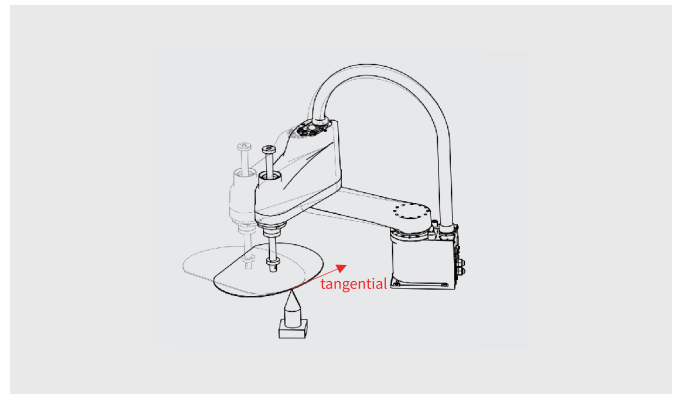
Vibration reduction

It can effectively reduce the shaking caused by resonance, eccentric load, and large load during the robot's movement process, making the robot's movement more stable and still ensuring excellent production performance during high-speed and high-precision operations.



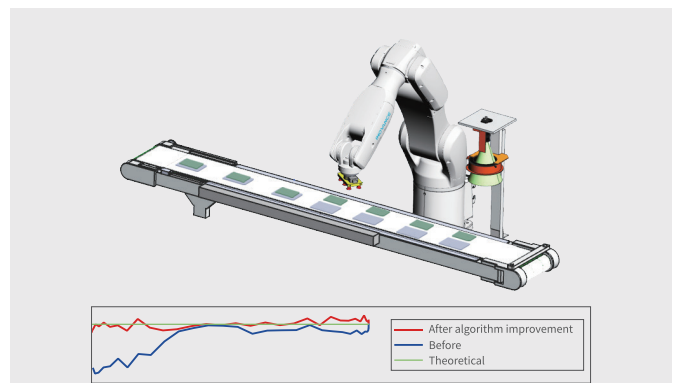
Dynamic following function

Whether it's a single product or multiple products of different types, colors, and sizes, it's easy to handle, switching between assembly line products with just one click. In situations where multiple machines are sorting at the same time, a set of vision can drive multiple robots, reducing the overall cost of the line.



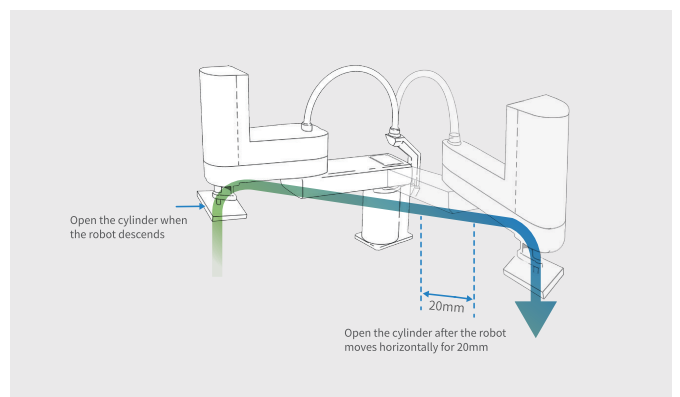
Curve interpolation and fixed tool function

Even in situations where tools are fixed and robots hold workpieces for work, they can perform arbitrary curve interpolation according to requirements, and are widely used in processes such as gluing, polishing, and sewing. On the assembly line, interpolation of the trajectory in the following state can also be completed.



High precision

Fully considering the influence of the robot's body structure, external factors, and visual system on the robot's motion accuracy, high-precision control algorithms are adopted to meet the high-precision applications of loading, unloading, and fitting. This algorithm is also applicable to continuous motion trajectories.



Dynamic I/O

In the robot motion path, precise control of IO opening and closing actions can be carried out based on actual conditions, which is widely used in detection, high-speed transportation, dispensing, laser and other occasions. IO control can be specified based on the position, time, and distance of the movement.

Technical Data



Series		IR-R4	IR-R4H	IRS311-7	IR-R11	IR-R10	IR-R10	IR-R20
Model	IR-R4-56SS-INT	IR-R4H-54SS-INT	IRS311-7-70TSS-INT	IRS311-7-90TSS-INT	IR-R11-90SS-INT	IR-R10-140SS-BI-INT	IR-R10-200SS-BI-INT	IR-R20-170SS-BI-INT
Code								
Structural style	Vertical axis cascading structure							
Number of Axes	6 axes							
Maximum reach (mm)	560.6	545.7	717	911	901.9	1422	2045	1723
Repeatability (mm)	±0.01	±0.02	±0.02	±0.03	±0.02	±0.05	±0.05	±0.05
Maximum Load(kg)	4	4	7	7	11.3	10	10	20
IP rating	IP40 (IP67 optional)	IP40 (IP67 optional)	IP65 450	IP65 300	IP40 (IP67 optional)	IP65 (Wrist: IP67)	IP65 (Wrist: IP67)	Body: IP65 Wrist: IP67
J1 (° / s)	460	460	380	280	225	200	175	175
J2 (° / s)	520	520	520	360	330	200	200	200
J4 (° / s)	560	560	550	550	450	375	400	400
J5 (° / s)	560	560	550	550	420	375	360	360
J6 (° / s)	900	900	1000	620	720	600	610	610
J1 (°)	±170	±170	±170	±170	±170	±170	±170	±170
J2 (°)	-120~+110	-120~+110	-135~+80	-125~+80	+100~135	-160~+60	-155~+80	-155~+80
J3 (°)	-69~+205	-65~+195	-70~+190	-70~+190	-66~+210	-80~+160	-75~+160	-75~+160
J4 (°)	±190	±190	±190	±190	±190	±180	±180	±180
J5 (°)	±120	±120	±120	±120	±125	±140	±140	±140
J6 (°)	±360	±360	±360	±360	±360	±360	±360	±360
J4 (N·m)	8.86	8.86	16.6	16.6	20.45	22	22	42
J5 (N·m)	8.86	8.86	16.6	16.6	20.45	22	22	42
J6 (N·m)	4.9	4.9	9.4	9.4	10.8	9.8	10	20
J4 (N·m)	0.2	0.2	0.47	0.47	0.6	0.63	1	1.18
J5 (N·m)	0.2	0.2	0.47	0.47	0.6	0.63	1	1.18
J6 (N·m)	0.067	0.067	0.15	0.15	0.2	0.2	0.2	0.5
Wiring	12 signal lines 30V 0.5A 8 signal lines 30V 0.2A	12 signal lines 30V 0.5A 8 signal lines 30V 0.2A	12 signal lines 30V 0.5A	12 signal lines 30V 0.5A	12 signal lines 30V 0.5A	18 signal lines 30V 0.5A	18 signal lines 30V 0.5A	18 signal lines 30V 0.5A
Air	Φ4 mm x 4, 0.59 Mpa	Φ4 mm x 4, 0.59 Mpa	Φ4 mm x 2, 0.59 Mpa	Φ4 mm x 2, 0.59 Mpa	Φ4 mm x 4, 0.59 Mpa	Φ8 mm x 1, 0.59 Mpa	Φ8 mm x 1, 0.59 Mpa	Φ8 mm x 1, 0.59 Mpa
Ambient temperature(°C)	0~45							
Relative humidity	5% to 95% RH (non-condensing)							
Maximum temperature Gradient(°C/min)	1.5							
Ambient temperature(°C)	-10~55							
Relative humidity	≤ 95% RH, non-condensing							
Ambient temperature(°C)	-10~55							
Relative humidity	≤ 95% RH, non-condensing							
Weight	24kg	24.5kg	38kg	40kg	45kg	47kg	130kg	245kg
Controller	IRCB501 Series							
Mounting mode	Floor mounted							
Certification	CE, cSGSus, KCs, Kc							

Technical Data



Series	IR-S4	IR-S7	IR-S10	IR-S20	IR-GS20	IR-S50	IR-TS4	IR-TS5	
Model	IR-S4-40Z1553-INT	IR-S7-60Z2053-INT	IR-S10-60Z2053-INT	IR-S20-80Z4255-INT	IR-GS20-80Z4255-INT	IR-S50-100Z4255-INT	IR-TS4-35Z1553-INT	IR-TS5-55Z1553-INT	
Code	-	-	-	-	-	-	-	-	
Arm length	J1+J2(mm)	400	700	800	1000	1000	350	550	
	J1(mm)	225	425	325	350	350	175	275	
	J2(mm)	175	275	375	450	450	175	275	
Maximum speed	J1+J2(mm/s)	7200	8590	9800	9550	10800	6180	9712	
	J3(mm/s)	1300	1600	1600	1010	1010	1300	1300	
	J4(°/s)	2600	2000	2700	705	705	2600	2000	
	J1+J2(mm)	±0.01	±0.02	±0.02	±0.025	±0.025	±0.05	±0.015	
Repeatability	J3(mm)	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	
	J4(°)	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	
Load	Rated(kg)	2	3	5	10	10	2	2	
	Maximum(kg)	4	7	10	20	20	4	5	
Permissible moment inertia of J4	Rated(kg·m ²)	0.005	0.01	0.02	0.5	0.5	0.005	0.01	
	Maximum(kg·m ²)	0.05	0.12	0.3	1	1	0.05	0.12	
Weight(excluding cables)	Mounting base dimensions(mm)	120x120(4-Ø9)	150x150(4-Ø9)	150x150(4-Ø9)	200x200(4-Ø16)	200x200(4-Ø16)	95x95X160(6-Ø6.6)	95x95X160(6-Ø6.6)	
	Press in force of J3	12kg	17.5kg	19kg	53kg	54kg	18.5kg	20kg	
Customer signal line	15 (15pin:D-sub) /15 (15pin:D-sub)	150x150(4-Ø9)	150x150(4-Ø9)	200N	250N	250N	100N	150N	
	CAT5E	150x150(4-Ø9)	150x150(4-Ø9)	200N	250N	250N	15 (15pin:D-sub)	CAT5E	
Customer air piping	Ø6 mm x 2, 0.59 Mpa	150x150(4-Ø9)	150x150(4-Ø9)	200N	250N	250N	Ø6 mm x 2, 0.59 Mpa	Ø6 mm x 2, 0.59 Mpa	
	Ø4 mm x 1, 0.59 Mpa	150N	150N	200N	250N	250N	Ø4 mm x 2, 0.59 Mpa	Ø4 mm x 1, 0.59 Mpa	
Operating conditions	Ambient temperature ⁽¹⁾	5~40°C (no excessive temperature changes)							
	Relative humidity	10~80%							
Shipment Conditions	Ambient temperature	-10°C ~55°C							
	Relative humidity	≤ 80% RH, non-condensing							
Storage Conditions	Ambient temperature	-10°C ~55°C							
	Relative humidity	≤ 80% RH, non-condensing							
Noise level ⁽²⁾	Laeq=75dB(A)								
	J1(°)	±132	±132	±132	±132	±132	±128	±225	
Maximum motion range	J2(°)	±141	±150	±150	±152	±152	±150	±225	
	J3(mm)	150	200	200	420	420	400	150	
Standard cycle time(s) ⁽³⁾	J4(°)	±360	±360	±360	±360	±360	±360	±720	
	Standard cycle time(s) ⁽³⁾	0.342	0.351	0.361	0.361	0.38	0.84	0.304	
Certification	CE, cSGSus, KCs, KC								

- Note**
- [1]** If this product is used in a low temperature environment close to the lowest temperature of the product specification, or if it is suspended for a long time due to holidays and nights, it is recommended to warm up for 10 minutes before running.
- [2]** Noise test conditions: 4 joint linkage, 100% speed and acceleration, duty cycle 50%, measurement position: the front of the robot, 1000mm away from the action area, and more than 50mm from the base mounting surface.
- [3]** Standard cycle time for 4kg SCARA: 1kg load, the time required for the robot to go back and forth with a gate command (300 mm horizontally, 25 mm vertically). Standard cycle time for 7kg/10kg SCARA: 2kg load, the time required for the robot to go back and forth with a gate command (300 mm horizontally, 25 mm vertically). Standard cycle time for 20kg SCARA: 2kg load, the time required for the robot to go back and forth with a gate command (300 mm horizontally, 25 mm vertically). Standard cycle time for 50kg SCARA: 5kg load, the time required for the robot to go back and forth with a gate command (300 mm horizontally, 25 mm vertically). Standard cycle time for 4kg/5kg inverted SCARA: 1kg load, the time required for the robot to go back and forth with a gate command (300 mm horizontally, 25 mm vertically).

Robot Controller



Controller Series	IRCB501 Series		IRCB501 High-protection Series
Mounting mode	Vertical mounting, horizontal mounting, 19" rack mounting		Vertical mounting, horizontal mounting, rack mounting
Standard I/Os	16 inputs and 16 NPN outputs (extendable)		
Communication interfaces	Ethernet interface: Used for TCP/IP, Modbus TCP, Ethernet/IP, MC communication		
	EtherCAT-IN interface: EtherCAT slave -IN interface		
	EtherCAT-OUT interface: EtherCAT master -OUT interface		
	EtherCAT interface: Used for extension of external axes		
	RS232/RS485 interface: Used for serial and Modbus RTU communication (RS485 only)		
	USB2.0 interface: Used for backup/upload programs and export robot status information		
Control mode	Optional interface: Profinet slave		
Power supply	Input voltage: Single-phase 200 VAC to 240 VAC, 10A/20A, 50 Hz to 60 Hz		Input voltage: Single-phase 200 VAC to 250 VAC, 23A, 50 Hz to 60 Hz
	Max. power consumption: 3.1 kW (depending on the robot model)		Max. power consumption: 4.5 kW (depending on the robot model)
IP rating	IP20		IP54 + anti metal dust
Operating conditions	Temperature: 5° C to 40° C ; Relative humidity: 20% to 95% RH@30° C (non-condensing)		Temperature: 0° C to 45° C ; Relative humidity: 20% to 95% RH@30° C (non-condensing)
Dimensions	Standard	High- Power	445mmx575mmx276mm
	330mmx338.5mmx130mm	330mmx400mmx130mm	
Weight	8kg	10kg	30kg
Applicable Robots	SCARA: IR-S4/7/10 Series, IR-TS4/5 Series 6-Axis: IRS311-7 Series, IR-R4/R4H Series	SCARA: IR-S20 Series, IR-GS20 Series, IR-S50 Series 6-Axis: IR-R11 Series	6-Axis: IR-R10 Series, IR-R20 Series SCARA: IR-S50 Series (Optional) High- Power 6-Axis: IRS311-7 Series, IR-R4 Series, IR-R11 Series (Optional)

Teach Pendant



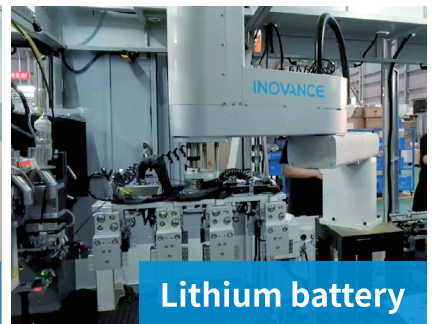
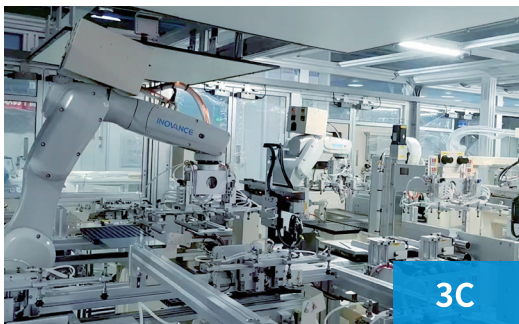
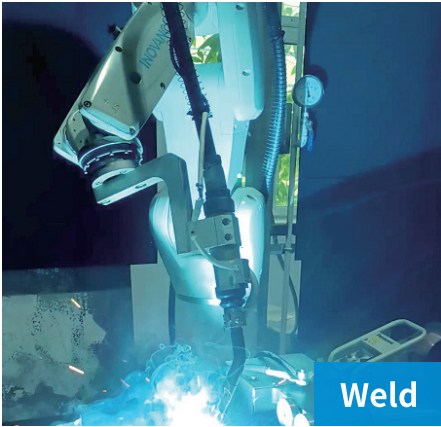
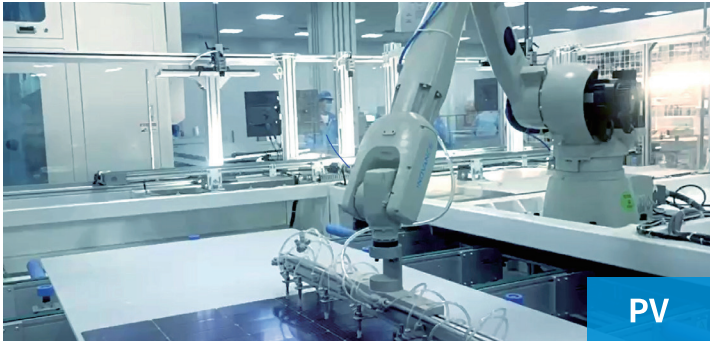
Teach Pendant Model	IRTP80-L5-INT
cable length	5m
screen	7-inch TFT-LCD, Touch screen operation, function keys
IP rating	IP54

Expansion Card



Expansion Card Model	IRCB501-0016ETND-BD	IRCB501-1600END-BD	IRCB501-2ENID-BD	IRCB501-2PN-BD	IRCB501-FS-01-BD
Description	General I/O expansion card with 16 NPN outputs	General I/O expansion card with 16 inputs	2-channel differential input incremental encoder expansion card	PROFINET expansion card	Safety function expansion card
Matching controller	IRCB501 Series, IRCB501 High-protection Series				

Robot application scenarios



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