



HEADQUARTERS

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CPC IS THE LEADING FOUNDATION PROVIDER TO ACHIEVE YOUR INDUSTRY 4.0 VISION.

cpc

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The current five significant trends in the robotics industry are 1. Smart learning.

- 2. Autonomous movement.
- 3. Implement into new markets.
- 4. Energy saving.
- 5. Reduce reliance on labor.

cpc Chieftek Precision Co., Ltd. has always been an essential player in the industrial supply chain. cpc uses self-developed DD motors, mechanical components, drives, and encoders to provide small-sized robotic arms in the market to achieve automation goals in energy saving, mobility, and new market applications.

Tired of the unchangeable production lines?

Rearranging production lines anytime you want to?

Executing multiple different commands at the same time?

Let cpc's miniature robots help you! Super small & super light! Your best choice to maximize the flexibility and efficiency of your production lines!





6 - axis robot

- Small footprint
- Lightweight
- Class-leading repeatability
- Collaborative
- Folding design
- Low noise
- Class-leading torque motor
- High resolution optical absolute encoder
 - Brakes in all axes
 - Internal cable arrangement

- High performance servo drive

- Tool I/O port
- Side connection / Bottom connection





Specifications

	Item		Unit	SO		
	Rated payload		kg	0.5		
	***Max. payload		kg	1		
	Davah	Vertical	mm	446		
	Reach	Horizontal	mm	370		
	*Repeatability		μm	+/- 10		
	We	eight	kg	4		
	Power	r supply	V,A	48 Vdc, 5A		
	Bro	akes	Axis	1,2,3,4,5,6		
	Communication			TCP/IP, Modbus TCP to controller/ EtherCAT to robot		
			J1 (Base)	+/- 360°		
			J2 (Shoulder)	+/- 360°		
	Many		J3 (Elbow)	+/- 360°		
	iviax. mo	lion range	J4 (Wrist)	+/- 360°		
			J5 (Wrist)	+/- 360°		
			J6 (Wrist)	Infinite		
			J1 (Base)	180°/sec		
			J2 (Shoulder)	154°/sec		
	**Max	speed	J3 (Elbow)	180°/sec		
	in card		J4 (Wrist)	288°/sec		
			J5 (Wrist)	324°/sec		
			J6 (Wrist)	324°/sec		
	*Max. To	CP speed	mm/s	600		
	IP protec	tion rating	IP:	54		
	ISO 14 Class Cl	ISO 14644-1 Class Cleanroom		Class 5		
	Product Safety Certification		EN ISO 12100 EN ISO 10218-1 EN 60204-1 EN ISO 13849-1 ISO/TS 15066 ISO/DIS 10218-1.2			

 * $\,$ When the temperature of the robot is constant.

** The maximum speed depends on the center of mass offset. *** Available to 80% motion area.



The S0 is the smallest collaborative robotic arm on the market today, with an arm weight of just 4kg and a maximum payload of 1 kg. The small size and light weight allow S0 to move flexibly even in the narrow space and can change the best mode and position at any time to meet the needs of the production line. The unique folding design creates multiple path planning opportunities for greater movement efficiency.





S0 power/signal input and MCS Coordinate System

Side connection





S0 end connection dimensions and TCS coordinate System





TCS Coordinate System

Tool I/O port



Corresponding pogo pin connector attached



Bottom connection







cpcRobot 6 - axis robot

Unit : mm

Pin definition

Number	Definition	Description	
1	Grounding	Grounding	
2	AI-0	analog input (0~10V)	
3	DI-0	digital input	
4*	DO-0 or power or ground	Digital output or 0/12/24 V or ground	
5	Power	0/12/24 V	
6	Al-1	analog input (0~10V)	
7	DI-1	digital input	
8*	DO-1 or power or ground	Digital output or 0/12/24 V or ground	

* The user can set the output signal as PNP, NPN, or pull/push via the interface.





\square \square 6 - axis robot

- Small footprint

- Lightweight
- Class-leading repeatability
- Industrial
- Folding design
- Low noise
- Class-leading torque motor
- Brakes in J1, J2, J3 and J4 axes - Internal cable arrangement

- High performance servo drive

- High resolution optical absolute

- High rigidity

encoder

- Tool I/O port
- Side connection / Bottom connection



Teach-in panel

89

0





Specifications

lte	em	Unit	DBO	
Payload		kg	0.5	
Pogeh	Vertical	mm	465	
Reach	Horizontal	mm	327	
*Repe	atability	μm	+/- 5	
We	eight	kg	4.7	
Power supply		V,A	48 Vdc, 5A	
Brakes		Axis	1,2,3,4	
Communication			TCP/IP, Modbus TCP to controller/ EtherCAT to robot	
IP protect	tion rating	IP40		
Product Safety Certification		EN ISO 12100 EN ISO 10218-1 EN 60204-1 EN ISO 13849-1 ISO/DIS 10218-1.2		

Dimensions



Base mounting hole

DB0 is a compact, 4.7 kg weight 6-axis robot arm with high rigidity. These features create high precise motion and operate in limited space with optimal usage. 5 µm repeatability makes higher precision mission to be done. DB0 also provides a guided panel to complete the path planning easily.

cpcRobot 6 - axis robot

Item	Unit	DBO
	J1 (Base)	+ 175° / - 175°
	J2 (Shoulder)	+ 160°/-15°
Max motion range	J3 (Elbow)	+ 145°/- 80°
Max. monormange	J4 (Wrist)	+ 175°/- 175°
	J5 (Wrist)	+ 90° / - 90°
	J6 (Wrist)	Infinite
	J1 (Base)	180°/sec
	J2 (Shoulder)	180°/sec
*********	J3 (Elbow)	180°/sec
Max. speed	J4 (Wrist)	360°/sec
	J5 (Wrist)	360°/sec
	J1 (Base) J2 (Shoulder) J3 (Elbow) J4 (Wrist) J5 (Wrist) J6 (Wrist) J2 (Shoulder) J5 (Wrist) J6 (Wrist) J2 (Shoulder) J3 (Elbow) J4 (Wrist) J5 (Wrist) J6 (Wrist) J6 (Wrist) J5 (Wrist) J6 (Wrist) J6 (Wrist) J6 (Wrist) J6 (Wrist)	360°/sec
*Max. TCP speed	mm/s	1000

* When the temperature of the robot is constant.

** The maximum speed depends on the center of mass offset.



DB0 power/signal input and MCS Coordinate System

Side connection









Bottom connection



Robot Ordering information



Accessories





IPC Controller (Lex SKY2 2I640DW)

Power Supplier: 10A@48VDC

cpcRobot 6 - axis robot

DBO end connection dimensions and TCS coordinate System

Unit : mm



TCS Coordinate System

Ø 45

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G

Pin definition

	Number	Definition	Description					
	1	Grounding	Grounding					
J	2	AI-0	analog input (0~10V)					
	3	DI-0	digital input					
	4*	DO-0 or power or ground	Digital output or 0/12/24 V or ground					
	5	Power	0/12/24 V					
	6	Al-1	analog input (0~10V)					
	7	DI-1	digital input					
	8*	DO-1 or power or ground	Digital output or 0/12/24 V or ground					

 * The user can set the output signal as PNP, NPN, or pull/push via the interface.

	G	J				
			Customization			
	Тоо	I I/O Signal: G:	: Typical I/O EC : EtherCAT			
The	The rotation angle of the final axis: M: unlimited $S: \pm 360^{\circ}$					
gth:	03:3 m	12:12 m				
side	e direction	B- bottom dire	ction			





cpcRobot Features



The robotic arm interpreter is a specialized editor for crafting motion programs. Developers can expedite programming and streamline motion verification by simply clicking instructions, configuring settings, and inserting code.





The cpc robotic arm collision detection system employs mathematical models to sense collision during execution of tasks, eliminating the need for external sensors. It covers both the arm and the tool, with sensitivity adjustments available on a dedicated interface for ease of use and configuration.





Dimensional Dragging

In zero-gravity mode, dimensions for free dragging can be specified, including lines and planes.

Hand-Guided Teaching

Hand-guided teaching is an intuitive method for editing robotic arm paths, bypassing the need for complex programming languages. By manually moving the robotic arm, required actions are recorded in real-time, empowering non-technical personnel to effectively employ robotic arms for diverse tasks.



Simulator

The simulator faithfully reproduces robotic arm motion, enabling users to test, verify, and optimize tasks without impacting the physical arm. It offers single-joint operation and Speed Override features, serving as a safe and efficient simulation tool for developing and testing robotic arm applications.







cpcRobot Features

Automated Tool Dimension Calculation

The automated tool dimension calculation feature automatically calculates end-of-arm tool dimensions, reducing manual input, minimizing errors, and enhancing user experience in robotic arm applications.

	-	Measure Tool	_
je je		Producent: Comp from 157 x 2000 room 7 0.050 each u	2 0.00 mm
		Produce2: Resolution 167	1 100 mm
		Fordered Copy Form 107	4 0.00
content /	_	Positions Copy Row TCP	

API and SDK Support

The robotic arm system supports API (Application Programming Interface) and SDK (Software Development Kit), enabling developers to write functions using C, C++, and custom languages. By offering APIs and SDKs, it becomes an open and flexible platform, simplifying robotic arm integration into developers' applications.



Automatic PCS Coordinate System Configuration \leftrightarrow

The automatic PCS Coordinate System Configuration feature automatically calculates and sets the robotic arm's coordinate system, including reference points, directions, and related parameters. This simplifies adaptation to various work scenarios and tasks while reducing operator configuration workload.



EtherCAT Automatic Configuration

EtherCAT automatic configuration automatically recognizes and configures specified devices on EtherCAT, saving time, simplifying the process, and ensuring configuration accuracy.



cpcRobot offers an Android app for remote operation, functioning as a teaching tool for users to perform tasks including program editing, numerical monitoring, manual operations, and teaching.































A PACKAGE

Using cpcStudio





Package selection 50/DB0





ATC Automatic Tool Changer System



ATC Automatic tool change system

In the process of automation, robot arms are increasingly required to perform multitasking to optimize the use of simple design and space efficiency. Therefore, automatic tool change can greatly reduce downtime and tool change time in the robot system. It is seen as an essential requirement to increase production capacity. Direct Technology has launched an automatic tool change system for micro-robots, including the holder, tool/robot joint, and various connectors.

Its unique patented design is purely mechanically combined, so it brings the following main feature:

1. Quick and easy

No external air pressure and power are needed, and the tool exchange can be completed during the movement of the robot arm, which simplifies the entire tool change system and saves the time for tool exchange.

2. High reliability

Because it does not rely on extra power sources, there is no need to worry about the instability of the source and can keep the reliability and integration accuracy of the entire tool changer.

3. Lightweight

Compare to the same class, because of no extra adapters; it will not increase the excessive load consumption of the robot arm.

4. Magnet support guiding ; all directions mechanical fixing

Using the permanent magnet to fix the connecting plate and the tool holder greatly reduces the risk of mechanical wear.

5. Provide electrical connector interface / Customization

Provide customized air pressure and electrical connectors to suit the various tools of the different applications.

Tool changing mechanism -tool / fixture connecting plate

Robot side :

Robot plate dimensions



Assembly height 320 h8 0

Robot plate connecting plate

Pogo pin



tool side :

Tool plate dimensions

 $\emptyset 3 \overline{\vee} 4$

positioning hole

Ø20 H8

Tool plate output interface



18

Weight

Max. payload

Bending force

XY axis maximum Static moment

Z axis maximum

Static moment

Repeatability

Electrical I/O

kg

Ν

Nm

Nm

kg

mm

-

ATC Automatic Tool Changer System

Robot plate input interface





direction marker

Pogo pin

The relationship between the pins and the wiring

	0
input interface	output interface
Pogo pin / No.	Flying wire / Color
1	brown
2	gray
3	blue
4	yellow
5	red
6	pink
7	green
8	white

Tool holder





Automatic Tool Changer System

Tool changer installation and setting

GDC









Using a simple process to test the changing cycle. Fine-tune the TCS to the engaging is smooth and exact.

Exit path

• Enter path

Take the tool Return the tool



Tool changer ordering information

ATC	45	м	Р	F	N	01	J		
								Customization	
							Cable leng	th: 01 : 0.1 m	N : none
						Air pressure	connector	: N: none	
					Output elec	ctrical interf	ace: F: Fly	ving wire C	: M8 connector
			I	nput electri	cal interfac	e: P:Pog	go pin F	: Flying wire	C: M8 connector
			Part: M: Ro	bot plate	T: Tool pl	ate H: T	ool holder	K: Kit	
		Size : 45							
	Product typ	e: ATC Au	utomatic too	ol change s	ystem				







VA Vacuum gripper

VA is a compact integrated vacuum gripper that includes a vacuum pump, pressure detector, and solenoid valve to form a complete vacuum cycle system. Users don't need to prepare a vacuum source. Since there is no tracheal distribution, using the gripper with the arm will avoid the problem of entanglement in the past.

In addition, the vacuum pump, air pressure detector, and solenoid valve can be controlled independently. The user can determine the optimal process for operating the gripper. The VA vacuum gripper can

be installed directly on the cpcRobot and ATC automatic tool changing system to achieve plug-and-play function.

Features

- Plug and play function

- Built-in vacuum ejector, all-electric supply, no need for external pipes.
- Built-in air pressure sensor.
- The pump operation can be controlled freely; therefore, the pump duty cycle can be used efficiently, and the service life can be increased.
- The M5 air pad can be replaced based on application needs. The unused 5xM5 threaded holes must be sealed with set screws. (Customization)

VA Vacuum gripper					
Model	VA-45				
Actuation energy	DC power				
Weight (kg)	0.23				
Maximum suction load (kg)*	0.9				
Maximum vacuum pressure (mbar)**	-500				
Maximum flow (I/min)**	0.55				
Operating temperature (°C)	5-50				
Pressure sensor					
Rated pressure range (mbar)	0-1010				
Output voltage (V)	1-5				

* The suction direction of the standard product is vertical, and the actual use must take into account the diameter of the sucker, the installation direction, and the position of the center of gravity.
** This ideal value will depend on atmospheric pressure conditions.



Pick and Place

RR (7

Pin table

Number	Function	Wire diameter	color
1	24V	28 AWG	white
2	DI-1 (Pump switch)	28 AWG	blue
3	DI-0 Vaccum no/off	28 AWG	pink
4	DO-1	28 AWG	gray
5	DO-0	28 AWG	yellow
6	AO-1	28 AWG	green
7	AO-0 (Pressure sensing)	28 AWG	brown
8	GND	28 AWG	red

VA Vacuum gripper ordering information



*Note: The user can design the customized mounting hole of the pad and positioning hole on VA gripper.



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Not only for users, but also for designers CPC'S PRODUCTS INSPIRE YOU! Together with cpc to achieve new levels of innovation!