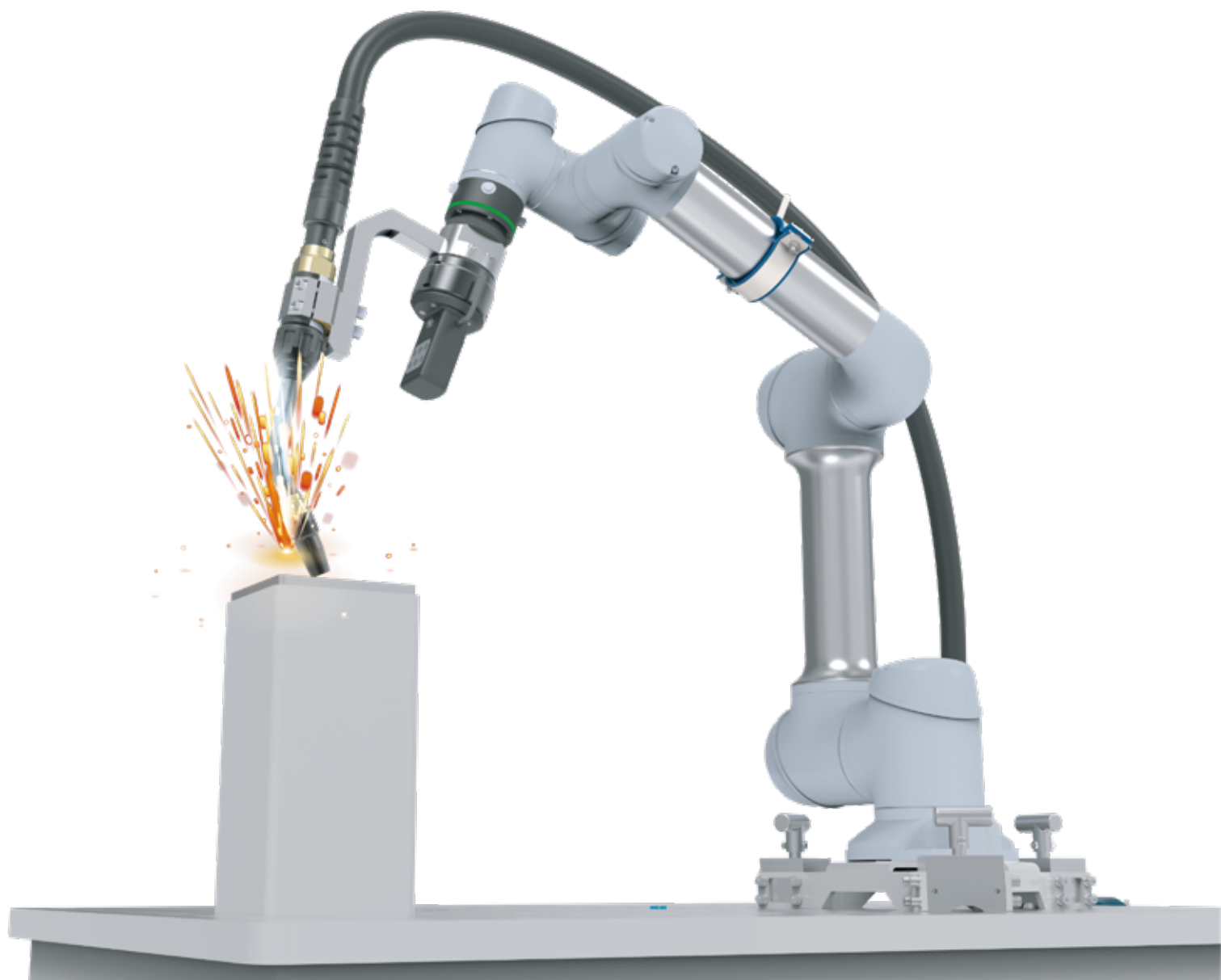


# 多可GCR-W系列 焊接协作机器人

致力于成为未来智造的最佳伙伴  
Strive to be the Best Partner for Smarter Future



# 产品介绍

## Product Introduction

DUCO多可协作焊接机器人具有图形化交互和牵引示教两大核心功能，标配焊接工艺包，支持用户快速实现点焊、角焊、摆焊、往复焊、堆焊、多层多道焊等各种焊接作业任务。选配外部轴插件包后可扩展更多焊接应用场景，定制各种形态的焊接工作站。

DUCO协作机器人优秀的重复定位精度和轨迹精度，适配激光视觉焊缝跟踪系统，可实现灵活部署、自动跟踪、自动纠偏等功能，实现长时间、不间断、高质量、高稳定性的焊缝输出，为汽车零部件、船舶制造、工程机械、新能源、航空航天、金属加工等领域的焊接自动化生产降本增效

DUCO Welding Cobot is equipped with two core functions: zero-code programming and direct teaching. It comes standard with a welding software, enabling users to quickly perform various welding tasks such as spot welding, corner welding, traverse welding, repetitive welding, overlay welding, and multi-pass welding. The optional external axis plug-in package allows for expanded welding applications and customized workstations.

DUCO Cobot offers outstanding reposition accuracy and trajectory precision. Compatible with laser vision weld seam tracking systems, it enables flexible deployment, automatic tracking, and correction, ensuring long-term, high-quality, stable weld output. It enhances cost efficiency in automotive, shipbuilding, engineering machinery, new energy, aerospace, and metal processing industries.

# 产品特点

## Product Features



### 用户交互友好

User-Friendly Interface

- 图形化交互，用户接受程度高  
Graphical user interface, high user acceptance.
- 拖拽式编程，零基础快速入门  
Zero-code programming, fast learning for beginners.



### 通讯接口丰富

Multiple Communication Interfaces

- 通讯接口丰富，兼容主流品牌  
Multiple communication interfaces, compatible with major brands.
- 适配焊机品牌，实现即插即用  
Compatible with welding machine brands, for plug-and-play use.



### 产品性能优良

Ultra Precision Performance

- 高精度保障高质量的焊缝输出  
High precision ensures high-quality weld output.
- 高精度衔接视觉实现功能多样  
High-precision visual integration for diverse functions.



### 焊接工艺包

Welding Software Kits

- 专业焊接工艺包兼顾专业性与易用性  
Professional welding package balances expertise and usability.
- 支持点焊、角焊、摆焊、往复焊、多层多道焊  
Supports spot, corner, oscillation, reciprocating, and multi-layer welding.



### 产品功能齐全

Fully Welding Functions

- 牵引示教实现焊接交互更直接  
Trajectory teaching streamlines welding interaction.
- 丰富的按钮接口实现更多可能  
Rich button interface enables more possibilities.



### 功能扩展丰富

Extensive Functionality Expansion

- 外部轴和多机协同拓展焊接应用更多空间  
External axis and multi-axis cooperation expand welding applications.
- 完备的开发接口便于搭建各种焊接工作站  
Complete SDK facilitates diverse welding station building.

# 产品型号

## Product Model



技术参数		GCR3-618-W	GCR5-910-W	GCR7-910-W	GCR10-1300-W	GCR12-1300-W	
机器人本体	最大负载	3kg	5kg	7kg	10kg	12kg	
	自由度	6	6	6	6	6	
	末端最大速度	2.4m/s	3.6m/s	3.2m/s	3.8m/s	3.8m/s	
	末端最大直线速度	0.8m/s	1.5m/s	1.5m/s	1.5m/s	1.5m/s	
	有效工作半径	618mm	917mm	917mm	1300mm	1300mm	
	重复定位精度	±0.02mm	±0.02mm	±0.02mm	±0.03mm	±0.03mm	
	关节	运动范围	最大速度 Max Speed				
	J4/J5/J6	±360°	225°/s	225°/s	225°/s	225°/s	225°/s
	J3	±360°	225°/s	225°/s	225°/s	225°/s	225°/s
	J2	±360°	225°/s	225°/s	200°/s	180°/s	180°/s
	J1	±360°	225°/s	225°/s	200°/s	180°/s	180°/s
	功耗		典型工况约200W	典型工况约200W	典型工况约200W	典型工况约400W	典型工况约500W
	安装方式		置地式、倒挂式、悬臂式				
	IP等级		IP65				
	环境温度		-10°C~50°C				
	储存温度		-40°C~55°C				
	末端I/O端口		2DI, 2DO, EtherCAT, RS485				
机器人包装尺寸		532x431x330mm	698x588x450mm	698x588x450mm	958x508x516mm	958x508x516mm	
净重/毛重		13kg/20kg	22kg/30kg	22kg/30kg	37.8kg/46kg	37.8kg/46kg	
控制柜	输入电源	100-240VAC(47-63Hz) 10A					
	IP等级	IP54					
	通讯接口	EtherCAT, Ethernet/IP, Modbus/TCP, CAN, TCP/IP, RS485, Profinet, External Encoder, WIFI (选配)					
	I/O接口	2AI/2AO, 4*SDI/3*SDO, 16DI/16DO (PNP, 24V/Max 500mA), 其中 8DI/8DO 可配置为功能DI/DO					
	尺寸	252x390x275mm					
标准示教器 (1)	重量	10.5kg					
	外形尺寸	300×196×99mm					
	IP等级	IP65					
	屏幕尺寸	10.1寸					
	屏幕分辨率	1280*800@60Hz					
重量	1.1kg						

(1) 示教器类型分为PC/移动终端(PAD/手机)/标准示教器, 以上展示数据为标准示教器数据。

## 控制系统 Control System

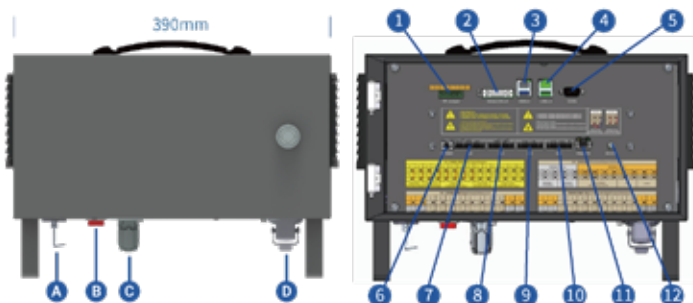
控制器是机器人的大脑,用于控制机器人上下料、抓取、打磨、搬运、焊接、涂胶涂油等操作,还可实现输入输出控制等功能。最新的DUCO多可控制柜在兼顾了安全性和灵活性的同时缩小了占地面积,在人机协作领域有更优异的表现。既可以全面兼容多可系列型号机器人,还可以独立应用于自动化操控系统。

The controller serves as the brain of the robot, enabling operations such as loading/unloading, grasping, grinding, handling, welding, gluing, and oiling, as well as input/output control functions. The latest DUCO controller cabinet not only combines safety and flexibility but also reduces its footprint, delivering even better performance in human-robot collaboration. It is fully compatible with the entire DUCO series of robots and can also operate independently in automated control systems.

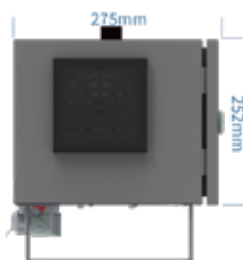


示教器

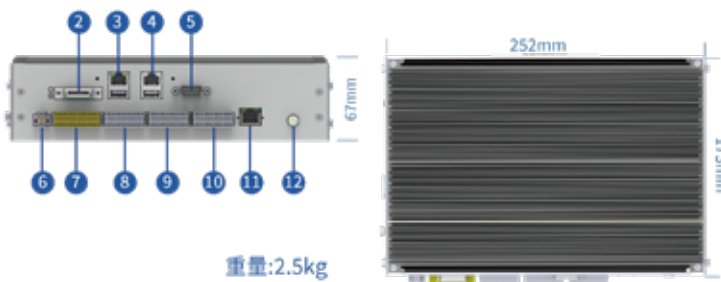
### DC15S/30D 控制柜



- A AC输入接口
- B 系统开关
- C 示教器接口
- D 机械臂接口



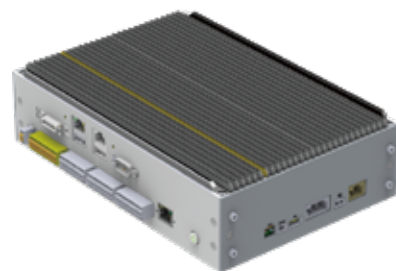
### DC00控制器



重量:2.5kg

\*LAN2接口已被示教器占用

DC15S/DC30D控制柜/DC00控制器用户接口			
序号	接口名称	序号	接口名称
1	TP. Jumper	7	SIO(安全IO)
2	VGA&COM3/4	8	DIO(数字IO)
3	LAN1+USB3.0	9	CIO(可配置IO)
4	LAN2* +USB2.0	10	EIO(功能拓展IO)
5	COM1	11	EtherCAT2
6	IO-POWER(IO供电)	12	ON/OFF(开关机)



## 用户接口 User Interface

DI	
用户DI	16路(其中8路可配功能DI)
输入有效电平	PNP型, L:-3V-5V, H:11V-30VDC, 2-15mA
开关时间	TON:50ms TOFF:50ms

DO	
用户DO	16路(其中8路可配功能DO)
输出电压	PNP型, 22-28V, Max:0.5A
输出电流	PNP型:<2A(超过2A时, 用户需要扩展电源)
开关时间	TON:50ms TOFF:50ms

AI/AO		
模拟电压输入2路	输入电压信号	0-10V 精度±1%
	输入阻抗	48KΩ
	分辨率	12位
模拟电压输出2路	输出电压信号	0-10V 精度±1%
	分辨率	12位

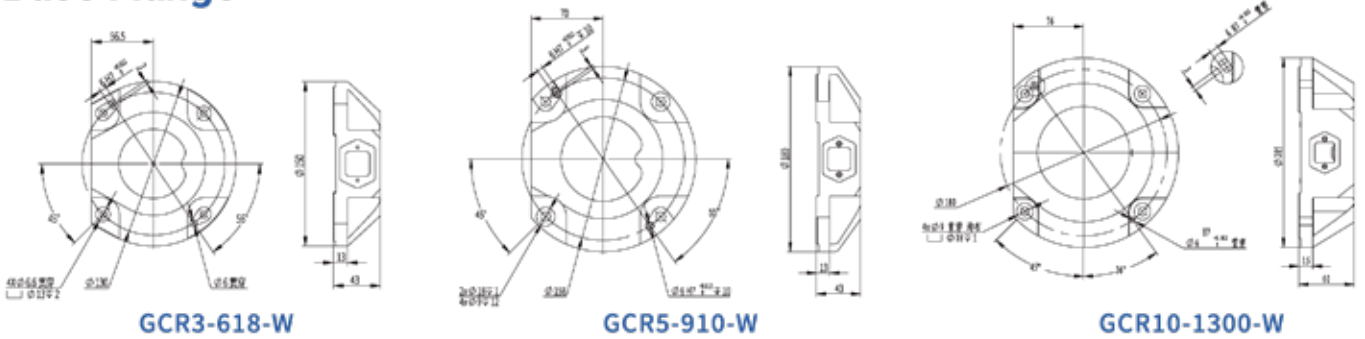
SDI	
急停信号输入	1路(无源信号, 干接点输入)
防护性停止输入	1路(无源信号, 干接点输入)
可配置安全输入	2路(无源信号, 干接点输入)

SDO	
可配置安全输出	2路(PNP有源信号)
急停反馈输出	1路(PNP有源信号)
输出电压	23.52V-25.2VDC (Max 0.5A 短路保护)

通讯/COM	
CAN	1路, 波特率可配置10k, 20k, 50k, 100k, 125k, 250k, 500k, 1000k bps
RS485	1路, 波特率可配置4800, 9600, 19200, 38400, 115200 bps
LAN	1路千兆, 支持MODBUS TCP, PROFINET, TCP/IP
EtherCAT	1路, EtherCAT通讯
INC编码器 A+, A-, B+, B-, Z+, Z-	工作电压:24VDC 频率:<200KHz 输入:方波信号

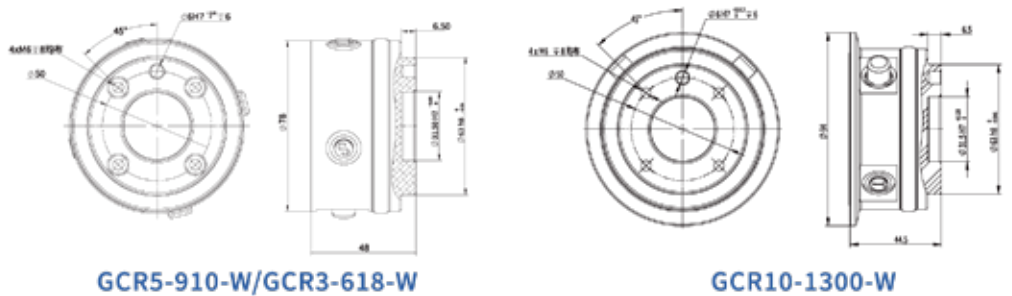
# 底座法兰

## Base Flange



# 工具法兰

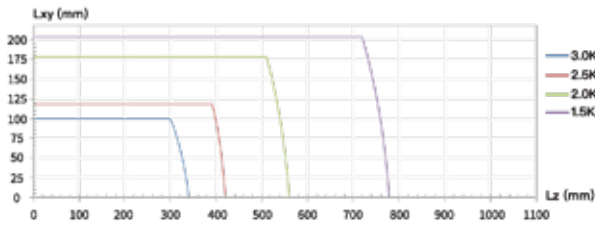
## EOAT Flange



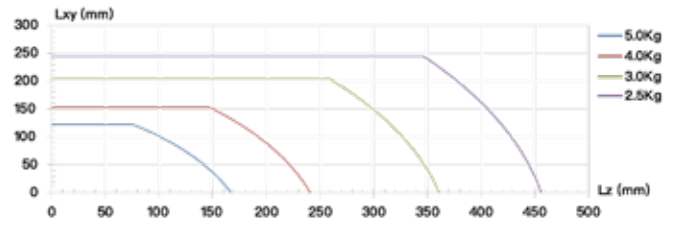
# 负载曲线

## Payload Diagram

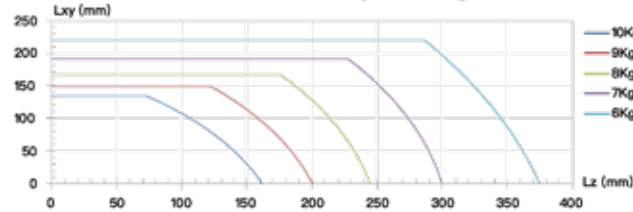
GCR3-618-W Payload Diagram



GCR5-910-W Payload Diagram



GCR10-1300-W Payload Diagram



# 工作空间

## WorkSpace



# 牵引示教模块

## Teaching Assistant System

### 产品介绍 Product Description

牵引示教模块是DUCO协作机器人针对焊接场景开发的应用配件，致力于提升用户在焊接场景应用协作机器人的交互友好性和便捷性。牵引示教模块有两种型号，分别为力控牵引示教模块TCS-FX620和摇杆牵引示教模块TCS-YB620。该模块可与机器人末端快速连接，即插即用，与焊接工艺包配合使用，能够有效降低操作者的劳动强度、提升作业效率。

The Teaching Assistant System is a welding accessory developed by DUCO, dedicated to enhancing the user-friendliness and convenience of collaborative robots in welding applications. It includes two models: the Torque Sensor Direct Teaching Module TCS-FX620 and the Joystick Direct Teaching Module TCS-YB620. The module can be quickly connected to the robot's end effector with plug-and-play functionality. When integrated with the welding process package, it significantly reduces operator labor intensity and improves work efficiency.



力控牵引示教模块 TCS-FX620



摇杆牵引示教模块 TCS-YB620

### 安装接口及尺寸

#### Interface & Dimensions



### 产品参数 Product Parameter

#### 力控牵引示教模块 TCS-FX620 Torque Sensor Direct Teaching Module TCS-FX620

产品名称	力控牵引示教模块	功率	<1A
IP等级	IP65	工作环境温度	-10°C~50°C
供电	24V DC	相对湿度	95%，无冷凝

#### 摇杆牵引示教模块 TCS-YB620 Joystick Direct Teaching Module TCS-YB620

产品名称	摇杆牵引示教模块	功率	<1A
IP等级	IP65	工作环境温度	-10°C~50°C
供电	24V DC	相对湿度	95%，无冷凝

# 焊接工艺包

## Welding Software Kits

#### 焊接电源适配国内品牌



MEGMEET



#### 焊接电源适配国外品牌



#### 传感器品牌



## 焊接工艺包 Welding Software Kits

DUCO自主开发的焊接工艺包,集成了焊机配置、功能设置、工艺参数设置、视觉传感器设置,以及起弧、收弧、电弧跟踪、摆焊、多层多道等多种功能,多种快捷指令设计,省去繁琐得界面操作,操作调试方便,普通工人在短时间内就可以上手操作,为客户提供更安全高效的解决方案。

DUCO's independently developed welding process package integrates multiple functions including welding machine configuration, fuction settings, process parameter settings, and vision sensor settings, as well as arc starting, arc ending, arc tracking, weaving welding, and multi-layer and multi-pass welding. Multiple shortcut commands eliminate tedious interface operations and facilitate operation and debugging, allowing ordinary workers to learn how to operate the system in a short time, providing customers with safer and more efficient solutions.



功能设置  
Function settings



摆焊  
Weave Welding



多层多道焊接  
Multi-pass Welding



电弧跟踪  
Arc Tracking

## 外部轴工艺包 External Axis Process HMI

支持通过外部轴来扩展机器人自由度或者通过外部轴来变换工件位置,即可单独控制或和机器人进行联动,为焊接场景应用提供更多可能性。

Supporting the extension of robot degrees of freedom through an external axis or the transformation of the workpiece position through an external axis, which can be controlled separately or in conjunction with the robot, provides more possibilities for welding scene applications.

支持的外部轴型号如下:

The supported external axis models are as follows:

品牌 Brand	驱动器型号 Drive Model	通讯协议 Communication Protocol
汇川 INNOVANCE	SV630N/SV660N/SV670N	EtherCAT



外部轴方案配置  
External Axis Setup



外部轴标定  
External Axis Calibration

力控传感器



视觉



电爪



气爪吸盘



快换法兰



仿真&离线编程



拧紧系统



管线包



网关&拓展模块



激光扫描仪



三维扫描仪



国内焊机



国外焊机



其他

