集萃智造
JITRI INTELLIGENT MANUFACTURING

IIMT-CI



	CI-03	CI-05	CI-010	CI-016	CI-20
Working Radius	600mm	900mm	1300mm	1500mm	1650mm
Payload	3kg	5kg	10kg	16kg	20kg
Repeatability	±0.02mm	±0.02mm	±0.05mm	±0.05mm	±0.05mm
Weight	13kg	21kg	38kg	62kg	63kg

JIANGSU INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE
JIANGSU JITRI INTELLIGENT MANUFACTURING TECHNOLOGY INSTITUTE CO., LTD

Email：marketing@iimt.org.cn
Website：www.iimtcobot.com

Disclaimer: The copyright belongs to IIMT. Reprint or any form of reproduction are prohibited without written permission. Our company reserves the right to interpret and update the content of this product catalog without prior notice.

集萃智造
JITRI INTELLIGENT MANUFACTURING

Say goodbye to manual labor
Bring you a different kind of vibration

PHONE：+86 400 608 0040
MOBILE：+86 18551767179



Powerful welding frees your hands

Welcome to the era of portable, unmanned welding













Say goodbye to manual labor, "weld" the future.

In modern welding production, welding processes are becoming increasingly complex, and the quality requirements for welding are getting higher. It is difficult to recruit skilled welders. Welding robots can effectively complete various welding tasks. Using robotic automation for welding can significantly improve the precision and quality of welded products and shorten processing time.



集萃智造
JITRI INTELLIGENT MANUFACTURING

Challenges Facing the Welding Industry

In 2022, a study on ergonomic risks faced by welders in a South African railway component manufacturing plant showed that 67% of welders reported discomfort and pain during work, 48% reported frequently feeling fatigued, and 78% reported experiencing neck discomfort during welding operations.



Talent Gap for Welders
After nurses and electricians, who comes next? Welders!
They are the third most in-demand workers.

Talent Gap for Welders in South Korea
The shipbuilding industry faces the threat of a welder shortage in 2023.

Talent Gap for Welders in the United States361,000
By 2050.

Talent Gap for Welders i n JapanBy 2050, the gap is expected to be 250,000.

Talent Gap for Welders in India ~1,000,000
As of now!

Talent Gap for Welders in Australia70,000
By 2030.

集萃智造
JITRI INTELLIGENT MANUFACTURING

Pain Points of Traditional Welding

- It's Difficult to Find Welders
- Diverse Usage Scenarios
- High Entry Barriers for the Job
- High Quality Requirements

Advantages of Collaborative Robot Welding

- Unmanned Welding
- Flexible Operations
- Zero-threshold Operation
- Aesthetic Weld Seam

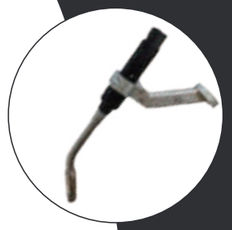
Smart Portable Welding

IIMT Portable Welding consists of the IIMT-CI series collaborative robot body, welding torch, welding system, and other components. The IIMT-CI series collaborative robot body features advantages such as drag teaching and high repeat positioning accuracy, supporting long-duration, uninterrupted, high-quality, and stable welding operations. It primarily aims to reduce costs and improve efficiency in automated production across sectors such as automotive parts, engineering machinery, aerospace, shipbuilding, and metal processing.





IIMT-CI Cobot



Welding Torch



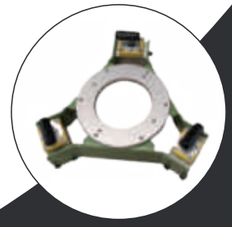
Adapt to popular welding machines



Wire feeding system



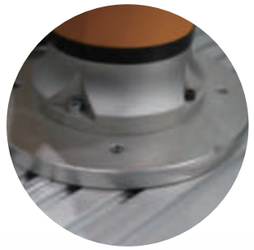
Welding operating system



Magnetic Base

集萃智造
JITRI INTELLIGENT MANUFACTURING

Main Configuration

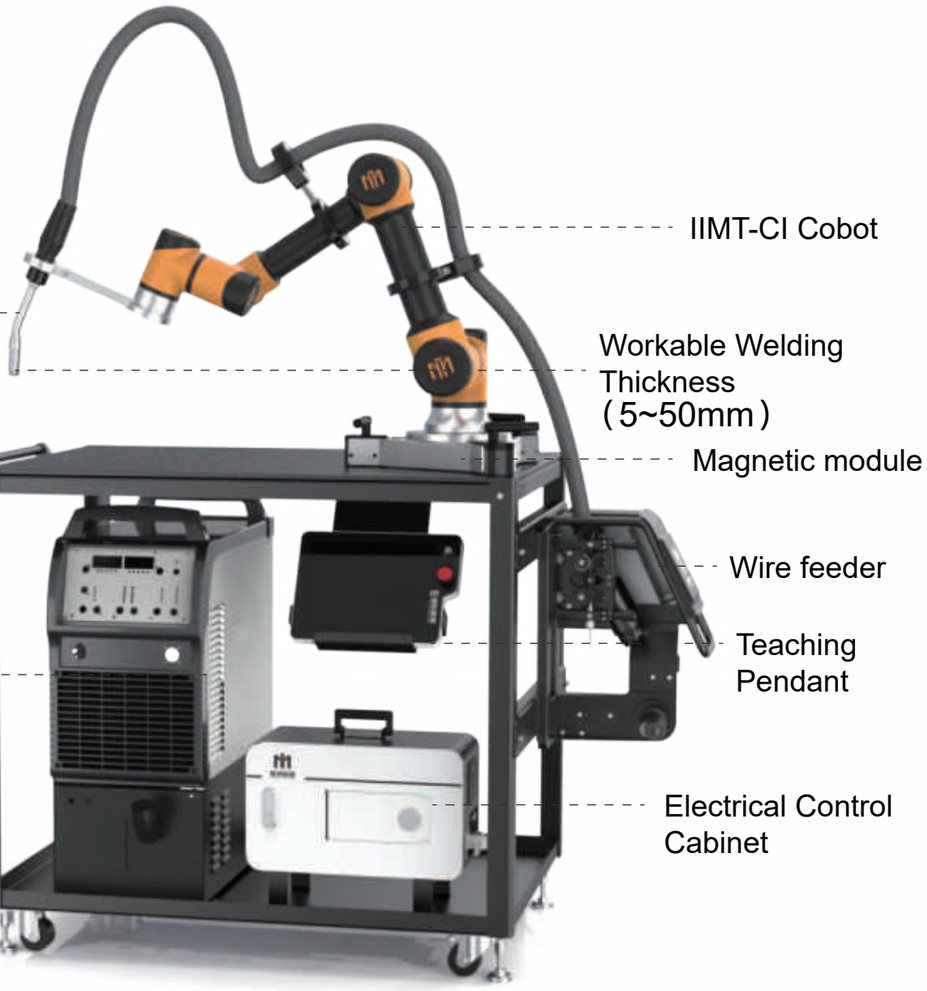


Stationary Welding Station

Magnetic module



Intelligent Portable Welding



Technical Parameters

Robot Arm Installation Mode	Front Installation，Inversion Installation，Side installation on right，Side installation on left
Welding Torch	Many brands of welding torch are integrated with our cobots
Torch Angle	The angle and length can be customized
Welding Type	Support MIG/MAG welding, using 80% argon and 20% carbon dioxide mixture gas, solid/flux-cored welding wires
Diameter of Welding Wires	0.8~1.6mm
Workable Welding Thickness	5-50mm
Adaptable Welding Seam Type	Horizontal fillet weld, vertical fillet weld, flat weld, horizontal weld, vertical weld, upward weld, straight line, arc, wrap angle weaving welding Multi-layer and multi-pass welding can be done
About Welding Machine	support a number of welding machines, including , Panasonic, Aotai, Megmet and other manufacturers. The welder supports air-cooled and water-cooled forms, typical welders, fast pulse welders and other forms.
Power Cord and Connecting Wire	Power line 5 meters, wire 5 meters (can be customized), with ground clamp
Wire feeder	Support many brands of wire feeder machines
Programming	Support welding process package and tree structure programming. In the process of welding positioning, the Free Drive can used to facilitate accurate positioning

Special Features and Applications

On-Demand Mobility and Quick Deployment

IIMT portable welding robot, paired with a magnetic base, is easy to move and can be lifted with one hand. It comes standard with a 5-meter power cable (customization available) and supports vertical, lateral, and inverted orientations, allowing for installation and use at any working point.

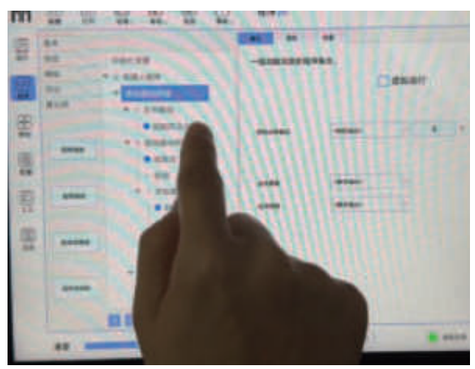




Powerful Functions, No Programming Required

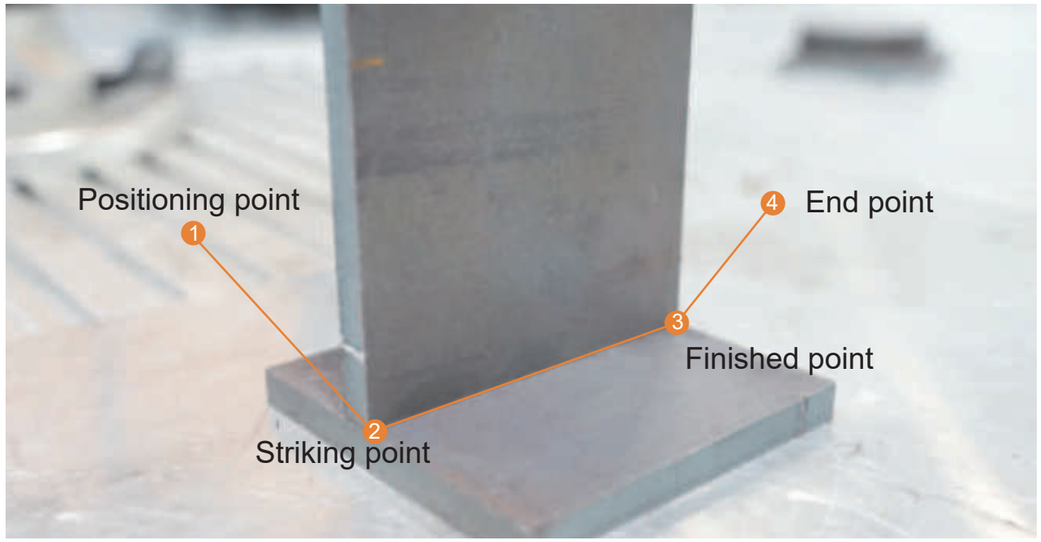
JITRI transforms the experience of skilled welders into digital welding process packages, featuring a quick and intuitive interface. Users can easily set welding trajectories for straight welding, weave welding, and circular arc welding using the teaching pendant, as well as access various manual debugging functions such as simulated welding, manual wire feeding, wire retracting, gas inspection, and spot welding.





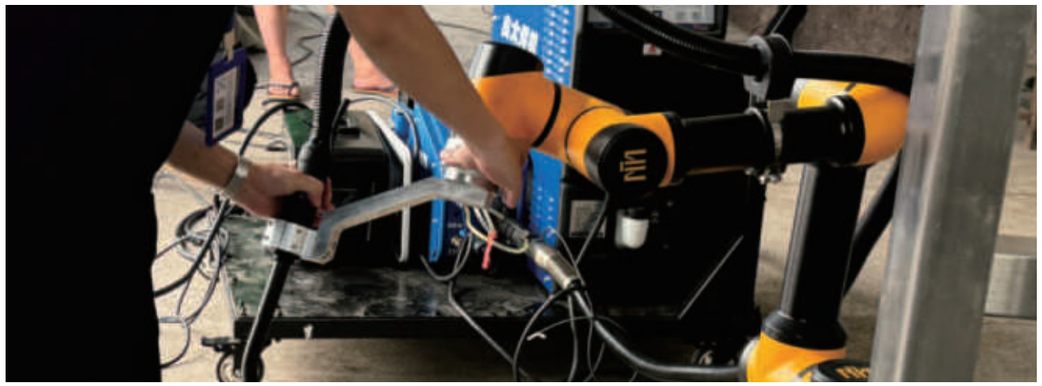
Zero-Threshold Operation, Easy to Master

Leveraging JITRI's full-trajectory reproduction drag teaching technology, the welding robot requires only four steps to calibrate the welding joint positions, including safety points, arc starting points, arc extinguishing segments, and departure points. This allows for quick establishment of welding tasks, making it very accessible—ordinary workers can upgrade to skilled welders.



Multiple Protections, Safe Operation

JITRI robots utilize advanced electromagnetic brakes that can hold in place and prevent falling during sudden power outages or emergency stops. Additionally, they are equipped with high-sensitivity collision detection features, effectively ensuring the safety of human-robot collaboration.



Weld Seam Inspection, Quality Improvement

Visual inspection of weld seams is crucial in harsh welding environments with various materials, as factors like welding speed and machine process parameters constantly affect welding quality. Weld seam visual inspection can detect issues such as incomplete welds and bubbles during the welding process, ensuring high-quality welds.



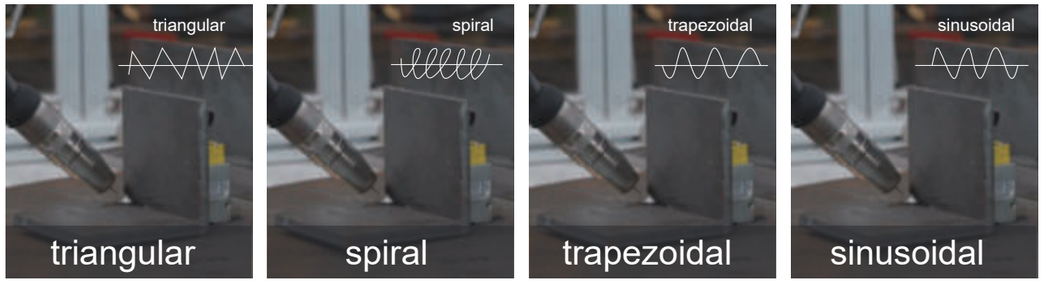
ICH Communication Interfaces, Supporting Secondary Development

We provide a variety of communication interfaces and SDKs, supporting over 50 commonly used secondary development interfaces. Development in C++ on ROS2 is supported, along with control of various servo motors using Modbus RTU, such as those from Panasonic, Hecen, and Leadshine. Customers can carry out highly autonomous secondary development based on JITRI robots.



Supports Multiple Weave Patterns

Supports four weaving patterns: triangular, spiral, trapezoidal, and sinusoidal, to meet the needs of different welding scenarios.



Applicable to Various Metal Materials

Supports welding of various metals, including carbon steel, stainless steel,copper, and aluminum, with plate thicknesses ranging from 5 to 50 mm. It ensures aesthetic and distortion-free welds in various production scenarios.



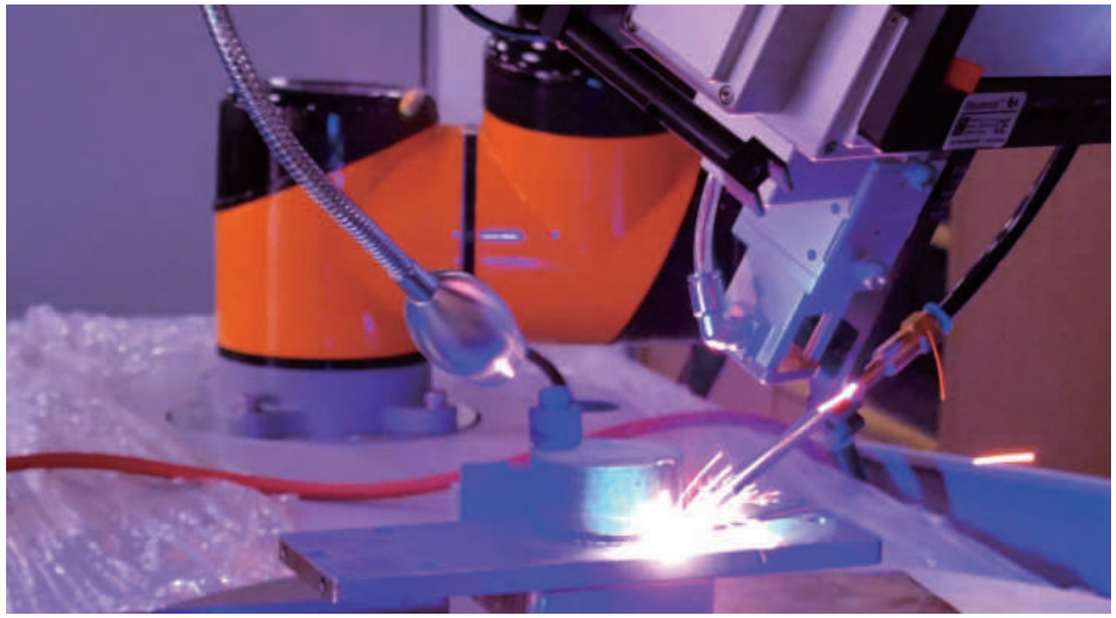
Applicable to Various Processes

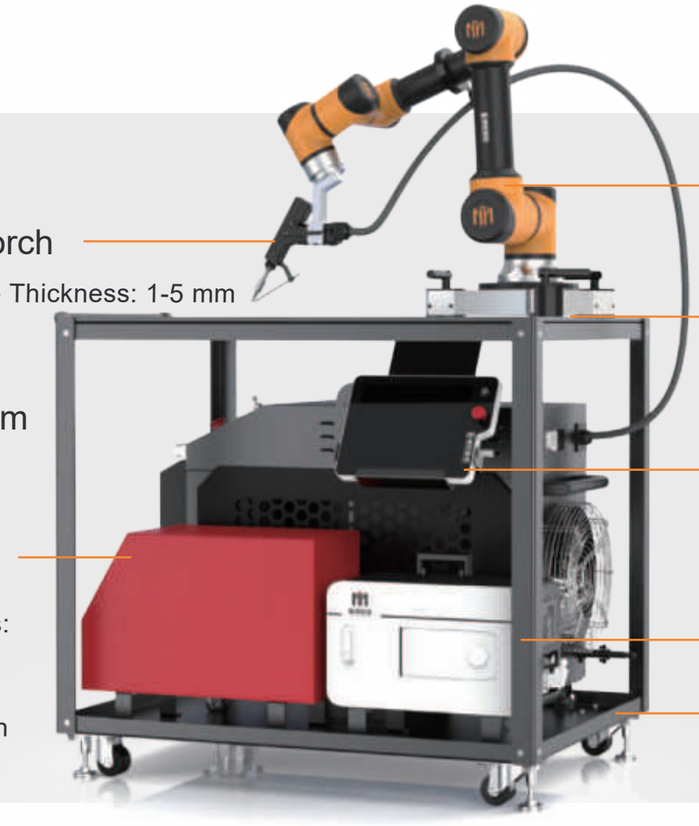
Supports different welding processes, including weave welding, straight welding, circular arc welding, and multi-layer, multi-pass welding.



Laser welding robot

Collaborative robots promote human-robot integration and mutual support. JITRI robots empower welding applications, successfully addressing the shortage of skilled welders and high labor costs in traditional welding through their simple teaching process, flexible deployment methods, and excellent safety performance. By applying automated welding technology, we help customers achieve the dual goals of cost reduction and efficiency improvement.





Welding Torch

Welding Plate Thickness: 1-5 mm



Welding Operating System

Adapt to popular welding machines

Welding Machine Specifications: Supports multiple brands of welding machine products, both domestic and international, such as Hanshi, Qilin, and Benteng.

IIMT-CI Cobot

Fixed Installation Structure or Portable Installation

Can use without filler wire or with filler wire; wire specifications: 0.8~1.6 mm.

Teaching Pendant

Electrical Control Cabinet

Mobile Cart

Advantages and Features

Flexible Drag Teaching, Enhancing Work Efficiency

The IIMT-CI Series Collaborative Robot features exceptional precision and accuracy, along with a more flexible and efficient drag teaching capability. It requires only one teaching session to achieve automated, continuous welding operations, and this teaching process can be reused, allowing for uninterrupted welding work, significantly enhancing work efficiency.

"Multiple layers of safety protection ensure secure production."

The IIMT Manufacturing Robot uses electromagnetic brake technology to ensure that in the event of a sudden power failure or emergency stop, it can quickly lock in place to prevent falling and ensure operational safety. In addition, it is equipped with a highly sensitive collision detection feature, which effectively enhances safety during operation."

"Welding process package, no programming required, quick to get started."

The IIMT Manufacturing self-developed welding process package primarily uses graphical programming to integrate various points, such as waypoint, arc point, weaving welding point, and circular arc, along with parameters like digital outputs (DO), digital inputs (DI), and analog inputs/outputs into the process package. The package includes various welding templates (such as straight welds, arcs, swing welds, etc.), allowing users to select their desired welding process based on the material and type of welding. This simple operation requires no programming, making it easy for even beginners to master, achieving more efficient and high-precision welding processes.

"User-friendly UI interface, making work less frustrating."

"The IIMT Manufacturing Robot has optimized and upgraded the system UI interface based on actual user application scenarios, allowing the robot to better serve its users."



IIMT ROBOT

Easy and efficient operation, saving time and effort while improving production efficiency.

Welding system

Compatible with mainstream welding machines, supporting free switching between pulse and direct current welding, with good stability.

Welding software package

Independently developed by Jicui, it includes various welding templates, allowing users to freely choose welding process templates based on the welding material and type. It offers simple operation with no programming required.

Special features" or "Featured applications

Drag teaching

Simple operation allows for welding of any shape

01 The IIMT Manufacturing Robot features an intuitive 'drag teaching' function, allowing manual guidance of the robotic arm to the desired position. After positioning, simply press a button to confirm the location, referred to as a 'teaching point.' This teaching method is specifically designed for welders, enabling simple adjustments of the welding gun angle and settings without the need for complex coordinate systems or programming code.

02 To perform collaborative robot welding teaching, you first need to set the welding parameters, wire feed speed, welding gun movement speed, and other standard parameters.

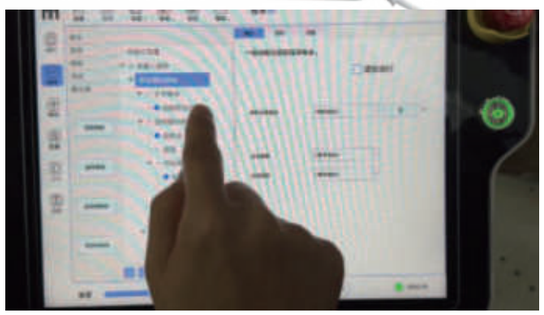
03 Then, use the 'drag teaching' function to manually guide the welding gun to the desired starting position and angle, teaching each waypoint. If necessary, precise positioning can be achieved with the teaching tool for finer adjustments.

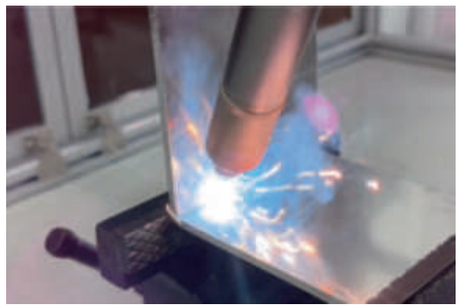
04 After teaching the welding path for the collaborative robot and simulating the path, operations can begin. Once programming is completed, the welding collaborative robot can easily call up the programmed work plan and adapt to new workpiece dimensions and geometries.

05 The IIMT-CI series collaborative robots allow users to easily and quickly drag the welding gun to the specified target welding point. With the end button, users can quickly establish welding tasks, complete circular/linear path selections, and set arc starting and stopping. One drag allows for reuse.









Real-time weld seam visual inspection

Laser precision scanning, intelligent visual recognition, and efficient weld seam detection

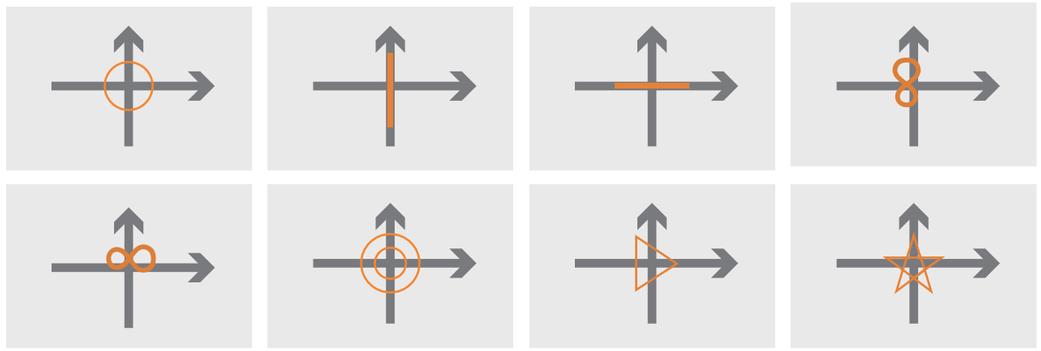
Laser visual weld seam inspection utilizes high-precision laser scanning technology combined with an intelligent visual recognition system to achieve accurate and efficient detection of weld seams, enhancing welding quality and ensuring production safety.

Simplifying welding processes

The welding process package independently developed by IIMT



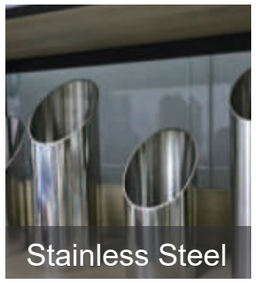
Support multiple weaving welding modes

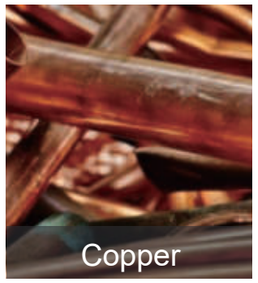


Suitable for various metal materials

Supports welding of various metals such as carbon steel, stainless steel, copper, and aluminum, with plate thicknesses ranging from 1 to 5 mm. It ensures the weld seams are aesthetically pleasing and free from deformation in various production scenarios


Carbon Steel

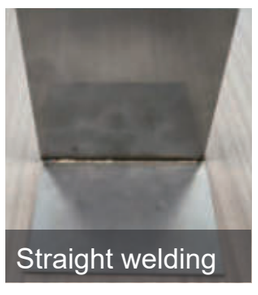

Stainless Steel


Copper

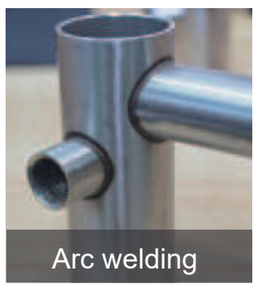

Aluminum Material

Applicable to various processes

Supports different welding processes such as swing welding, straight welding, arc welding.


Straight welding

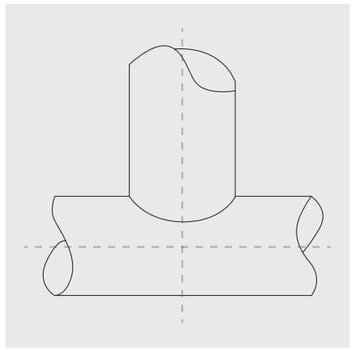

Weaving welding

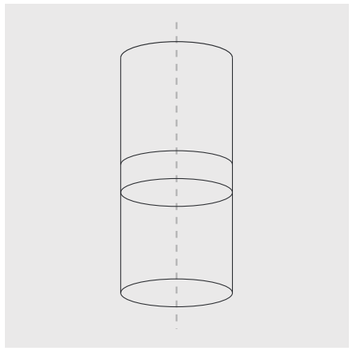

Arc welding

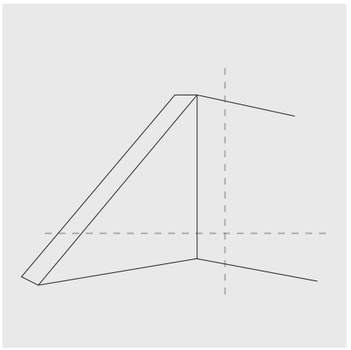

Arc welding

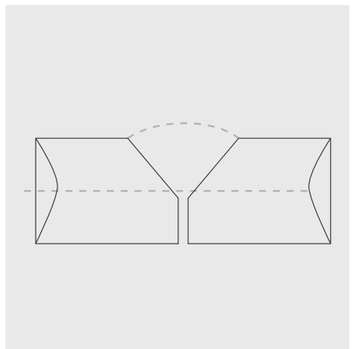
The Jicui Intelligent Manufacturing welding robot meets various welding scenarios

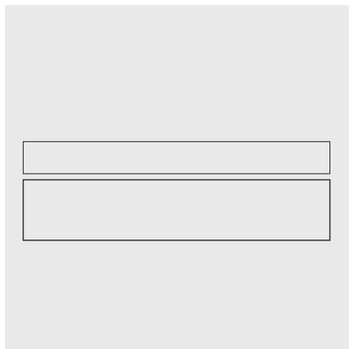
The workstation supports any welding trajectory and stitching trajectory, accommodating various welding modes such as intersection, circular, corner, and V-shaped. It can cover the vast majority of welding application scenarios.


Intersection line


Circular


Corner


V-shaped


Linear

.....

Portable welding robot with abundant optional designs

Universal mobile welding vehicle/flexible platform

Self-developed universal mobile welding vehicle.

Laser weld seam tracking system

support products from multiple brands including Chuangxiang, Intelligent Laser, Mingtu, and Aotai.



Laser weld seam tracking technology

It provides the function of "scan first and then weld". According to the scanning point data, the weld trajectory is extracted and the robot makes intelligent and autonomous decisions. It is mainly used in situations where the scanning angle is inconsistent with the welding angle and the welding space is narrow.

Automatically find the arc starting point

If arc starting fails or arc goes out during welding, the arc will be automatically restarted according to the parameter configuration.

Arc tracking system

It supports multiple communication protocols such as CANopen, DeviceNet, EtherCAT, Profinet, etc., and is equipped with an arc tracking system to monitor and automatically adjust the welding gun position in real time by detecting changes in welding current or voltage to ensure accurate welding of the weld.

Molten pool camera

Equipped with a molten pool camera, it can record the welding situation at all times, realize quality tracking and remote monitoring.



Industrial protective screen

The industrial protective screen has the industrial application quality of being shatterproof, waterproof and dustproof.



- 10. 1-inch 16:10 Screen
- TFT IPS 800*1280
- Support 4G LTE, WLAN, BT and GNSS data communications Support RS232, RJ45 Ethernet, USB, HDMI I/O interface expansion
- Firm design
- US military standard
- IP67 dust and water resistance and 1.22m drop certification
- 10000mAhLithium battery
- running time: 6 hours

Button handle

The mobile handle allows the operator to manually guide the robot, improving welding accuracy and efficiency.



Teach-free intelligent welding system

Teach-free automatic welding

1.Through 3D visual sensors and professional software, automatic identification and automatic positioning of welds are realized.
2.By establishing the topological relationship between welds and process databases, teaching-free automatic welding is realized.

3D camera



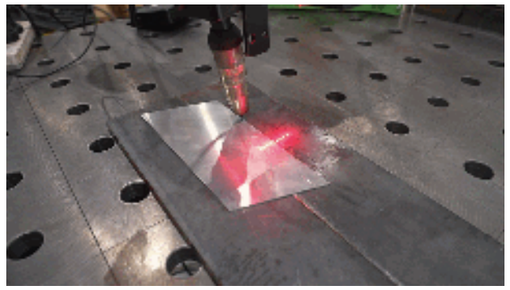
Visual software







Laser weld tracking system



Expert library system

The welding expert library system is an intelligent system that integrates the knowledge and experience of welding experts.

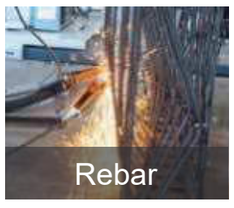
- Process recommendation: Automatically provide appropriate welding process parameters.
- Process control: Adjust parameters in real time to ensure welding quality.
- Defect diagnosis: Predict and diagnose welding defects.
- Fault analysis: Analyze the cause of welding equipment failure.
- Design assistance: Help design welding structures and symbols

Advantages of the Teach-free intelligent welding system

- Specialized medium and thick plate welding software: Powerful process database support
- Industrial-grade 3D visual camera, high precision, strong anti-interference ability
- Powerful graphics processing algorithm
- A variety of applicable templates developed for welding applications









集萃智造
JITRI INTELLIGENT MANUFACTURING

Application

Construction machinery



Port and ocean engineering



Special vehicles



Rall transit



Wind power





Power tower



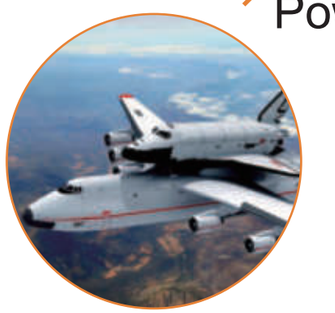
Building steel structure



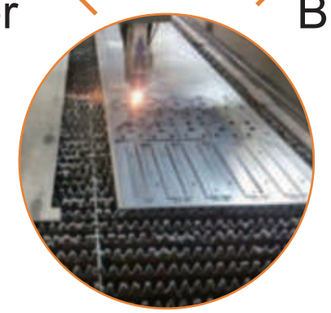
Ship engineering



Energy storage field



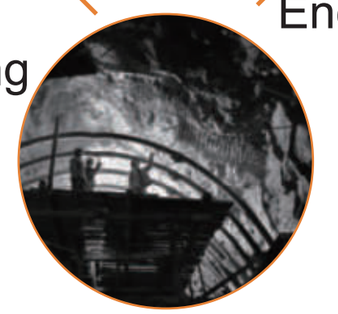
Aerospace



Metal processing



Agricultural machinery



Coal industry



Photovoltaic