

## AOTAI COBOTS: A NEW ERA OF WELDING AUTOMATION

Aotai Electric Corporation, known for its innovations in welding technology and welding equipment, has introduced its own line of collaborative robots (cobots) specially adapted for welding tasks. Unlike traditional industrial robots, AOTAI cobots Ai7 and Ai10 series (the technical parameters of which are presented in Table 1) are designed to work safely side by side with personnel without the need for massive protective barriers and comply with the ISO 10218-1 safety standard. Since safety is one of the most important characteristics of collaborative robots, they are equipped with advanced sensors such as torque sensors and collision detection systems and can immediately detect contact and limit the output force when interacting with people, preventing accidents without the need for physical protective barriers.

**Table 1.** Technical characteristics of Aotai Electric Cobots

	Ai10	Ai7
Weight	38.5 kg	24 kg
Payload	10 kg	5 kg
Repeatability	±0.02 mm	±0.02 mm
Range	1350 mm	786.5 mm
Reach	1513 mm	908.5 mm
Speed	1.9 m/s	3.0 m/s
Service life	30000 h	30000 h

Collaborative robots (cobots) are characterized by safety, ease of use, flexibility and integration. Safety is the basis of human-robot cooperation, as joint operations must ensure the protection of the operator.

Ease of use and flexibility are key advantages that allow cobots to quickly adapt to complex, flexible production processes. Integration allows cobots to penetrate diverse markets and complement human labor in a wide range of applications.

Aotai cobots are easy to use, allowing small and medium-sized workshops to automate work without the need for a specialized robotics engineer. One of the latest developments of Aotai Electric is the Mini COBOT Welding Station (see Figure 1), which mainly consists of a cobot, a welding machine and a welding platform.



**Figure 1.** Mini COBOT Welding Station

This complex offers increased usability for welding tasks by integrating additional functions such as a flexible platform, a laser positioning system and other auxiliary equipment.

Its key features are as follows:

- Integrated arc welding software: Deep integration with the robot control system allows you to freely switch between welding modes and easily adjust welding parameters.
- User-friendly interface: The arc welding software has a clear structure and setup instructions, which simplifies the parameter configuration process for users.
- Laser sensing system: The integrated laser sensing system allows real-time position monitoring on the training pendant, which is conducive to accurate positioning.
- End tool with integrated buttons: The tool at the end of the cobot has buttons for switching operating modes, recording points and performing other functions, which ensures convenient operation.
- 4WD + encoder motor.

The system uses a fully digital motor control system with precise and stable wire feed powered by a 4WD motor + encoder motor, which provides efficient, accurate and user-friendly welding solutions.

Of particular note is the AOTAI Mini COBOT welding station (see Figure 2), which uses a magnetic base and a welding cart that integrates the welding machine and the robotic system for easy mobility and control.



**Figure 2.** AOTAI Mini Cobot Welding System

The magnetic base plate allows the robot to be securely fixed on steel structures. Equipped with a 10-meter wire feed cable, it provides convenient work in a wide working area.

Despite the fact that the main specialization of AOTAI cobots is arc welding (MIG/MAG, TIG), their versatility allows them to be used in the following areas: laser welding and cutting; grinding and polishing; palletizing and moving.

AOTAI cobots are not just a replacement for a welder, but also a powerful tool that can not only replace heavy and often repetitive work with improved quality and stability of obtaining high-quality seams, but also helps in the development, manufacture and implementation of new products, which leads to increased profitability of production.