

## 机器人智能产线

Intelligent Robot Assembly Line



### 设备简述

Brief Description

HFR全自动智能绕线产线主要由智能上料、绕线、智能沾锡和智能排版四大大部分组成，可集自动插端子机、自动捻线、自动打弯、自动检测等功能于一体的全自动智能绕线产线。绕线机系四轴联动，绕线圈数精确可设定，绕线速度自动可调，主轴标准转速15,000rpm,最高转速可达18,000rpm，对于较细线径产品的绕线，可选配捻线机构，捻线股数，捻线转速及捻线圈数可调。智能上料、沾锡和排版系选配公司自主研发A3、A5、B5、B7等规格的四六轴机器人，可完成沾锡温度260~550℃可调，温度控制精度±5℃。沾锡时间0~5秒可调，控制精度0.1秒，液面自动检测和自动补偿。

实现更高柔性，更高兼容性，方便通用改造；为小批量、多规格产品提供更智能更高效的产线方案。

HFR automated intelligent winding line consists of intelligent loading, winding, wetting and sorting parts, integrating automated terminal insertion, twisting, bending and inspection. The winding machine is of four-shaft interlinked with adjustable coils and speed of winding and main shaft running at standard speed of 15,000rpm and maximum speed up to 18,000rpm. Optional twisting mechanism and adjustable strands, speed and coils of twisting are available for winding of thinner wire products. Intelligent loading, wetting and sorting are performed by our proprietary A3/A5/B5/B7 four-/six-shaft robots available for wetting temperature adjustment ranging 260~550℃ and temperature control accuracy up to ±5℃. Adjustable wetting time ranging 0~5 seconds, control accuracy up to 0.1 second, automated liquid level detection and compensation.

Higher flexibility and compatibility to facilitate rebuilding for general purpose. More Intelligent and higher-efficiency solutions available for small-lot production with diverse specifications.

### 设备参数

Equipment Parameters

型号 (Model Name)	HFR
主轴数 (Number of main shafts)	16, 24
主轴转速 (Main shaft rotational speed)	标准 (Standard): 15,000rpm MAX: 18,000rpm
主轴间距 (Main shaft spacing)	30, 40.5, 80
绕线线径 (Winding wire diameter)	φ0.02~φ2.21mm (依主轴间距和转速而异) (vary depending on main shaft spacing and rotational speed)
机器人选配 (Optional robot configurations)	A3、A5、B5、B7
主轴电机功率 (Main shaft motor power)	1.8KW/2.9KW
电机总功率 (Total motor power)	3.0KW/4.5KW
电源 (Power supply)	380V, 50Hz 中国大陆标准电网 (380V/50Hz, based on standard grid in China)
气源 (Air supply)	0.4~0.6MPa
最大回转直径 (Maximum rotating diameter)	φ25mm, φ35mm, φ45mm, φ55mm, φ65mm, φ75mm, φ90mm (依主轴间距而异) (vary depending on main shaft spacing)
功能 (Functions)	自动上料、自动绕线、自动捻线、自动送料、自动沾锡、自动打弯、自动检测、自动下料、张紧力自动调节、主轴转速连续可调、绕线圈数可调。 (Automated material loading, winding and twisting of wires, feeding, wetting, bending, inspection, unloading, and tension adjustment, adjustable Main shaft rotational speed and coils of winding.)

### 设备特点

Machine Features

自动化程度高：操作简单，维护简便，快速换型，兼容性好  
High level of automation: easy operation, convenient maintenance, quick type upgrading and good compatibility.

自动化性能好：高质量，高精度，高可靠，高效率  
Excellent automatic performance: high quality, high precision, high reliability and high efficiency.

系统扩展性强：系统扩展强，全自动产线生产，也可单机作业  
High system expansibility: high expansibility of the system allows both full automated line production and single-machine operation.

### 适用范围

Application Scope

广泛应用于各种中小型规格电子器件（低压电器、电力电器、通用电器、变压器、汽车电器、高压包、定时器以及电感等）。

Widely applicable for various types of electronic components of small medium sizes (LP apparatus, electric component, general-purpose apparatus, transformer, auto apparatus, FBT flyback transformer, timer and inductor).

已应用的产品有：HF2150、HF152F、4846、HF32FV、HFE18  
Applied products include: HF2150, HF152F, 4846, HF32FV, HFE18

