摘　要

随着工业自动化的普及和发展，控制器的需求量逐年增大，搬运机械手的应用也逐渐普及，主要在汽车，电子，机械加工、食品、医药等领域的生产流水线或货物装卸调运，可以更好地节约能源和提高运输设备或产品的效率，以降低其他搬运方式的限制和不足，满足现代经济发展的要求。

搬运机械手是能模仿人和臂的某些动作功能，用以固定程序抓取、搬运物件或操作工具的自动操作装置。为了满足生产的需要，机械手要求设置多种工作方式，例如手动和自动（包括连续、单周期、单步和自动返回初始状态）工作方式。在运动控制方面，PLC 可以用于圆周运动或直线运动的控制。所以利用 PLC 程序控制可以实现机械手的控制要求。通过梯形图程序使各动作电磁阀动作，配合各极限位置的限位开关，准确而又循环的连续操作。系统以液压传动为驱动方式，避免使用三相异步电动机，具有防过载的优点。机械手、PLC、液压系统组成的整体具有高效、安全、经济、实用等特点。

关键词：搬运机械手；液压；电磁阀；可编程控制器（PLC）

ABSTRACT

With the popularity of industrial automation and development, the demand for year-on-year increase of controller, handling the application of robot gradually popularity, mainly in the automotive, electronic, mechanical processing, food, medicine and other areas of the production line or cargo transport, we can be more good to save energy and improve the transport efficiency of equipment or products, to reduce restrictions on other modes of transportation and inadequate to meet the requirements of modern economic development.

Handling manipulator is able to imitate some actions and arm function, fixed procedure of crawling, handling objects or tools automatically-operated equipment. In order to meet the needs of production, various working methods required for the manipulator, such as manual and automatic (including continuous, single cycle, and automatically return to the initial state in a single step) works. In the area of motion control, PLC can be used for circular or linear motion control. Using PLC control manipulator control requirements can be implemented. By ladder diagram programs enable the solenoid valve action, combined with the extreme position of limit switches, accurate and continuous operation of the loop. System in hydraulic-driven way, avoiding the use of three-phase induction motor, has the advantage of overload-proof. Manipulator, PLC, hydraulic system as a whole is an efficient, secure, economical and practical characteristics.

Keywords: handling mechanical hands；hydraulic；solenoid valve；Programmable Logic Controller (PLC)