基于单片机音乐喷泉控制系统设计

中文摘要

最近几年，人们的生活水平越来越高，与之相对的，大家纷纷开始憧憬着绿色城市的形成，而音乐喷泉除了具有与众不同的吸引力之外，还可以发挥相应的净化空气环境的作用，因此在整个休闲娱乐产业里面也慢慢占据了核心地位，尤其是在过去两三年的时间里，几乎每座城市都在争先恐后的打造音乐喷泉，唯恐落后。音乐喷泉的设计过程主要从系统方案、芯片选择、硬件电路构造原理和软件设计原理等方面进行。

结合当下音乐喷泉的实际发展情况来看，在经过慎重考虑之后，最终决定使用这款 AT89C51 单片机来设计相应控制系统。因为其涉及到的控制电路并不是很复杂，所以在针对输出地址展开具体探讨之后，还专门为各种类型的输入以及输出电路进行了详细说明。首先是围绕其工作原理来展开叙述，介绍了从喷水池的具体结构中获取决定喷水池作用的喷水池数据的原理。然后基于此来绘制主程序框图，从而让相应的看门狗程序能够顺利完成。最后再经由程序控制来针对其所喷花型加以设置。除此之外，就连灯光的亮度以及其色彩也都是取决于音频信号，这样一来，就能够让它们跟着音乐节奏而发生相应改变。

关键词：51 单片机；AT89C51；音乐喷泉

Abstract

In recent years, the living standard of people more and more high, in contrast, people began to look forward to the formation of the green city, and the music fountain in addition to have special appeal, can also play to the role of the corresponding clean air environment, so in the entertainment industry is also gradually occupy the central position, especially in the past two or three years, almost every city in the race to create music fountain, for fear of lagging behind. The design process of music fountain is mainly from the aspects of system scheme, chip selection, hardware circuit construction principle and software design principle.

Combined with the actual development of the current music fountain, after careful consideration, the final decision to use this AT89C51 MCU to design the corresponding control system. Because the control circuit involved is not very complex, so in the specific discussion of the output address, but also for a variety of types of input and output circuit in detail. First of all, the principle of how to obtain the data of the fountain which determines the function of the fountain from the concrete structure of the fountain is introduced. Then based on this to draw the main program block diagram, so that the corresponding watchdog program can be successfully completed. Finally through the program control to the spray pattern to be set. In addition, even the brightness of the lights and their colors depend on the audio signal, so they can be changed to the rhythm of the music.

Keywords: music fountain; Single chip microcomputer; SCM control; Spray pool data

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