

题 目： 可燃性气体检测报警器的设计

摘 要

随着科技发展，各种可燃性气体在工业生产以及日常生活的应用越来越广泛。在 2015 年时我国的天然气管道网使用人口已经接近三亿，而且近年来使用人口依然在不断增长。可燃性气体的使用已是大势所趋，它在工业生产或是日常生活给人们带来巨大的便利。但凡事都是具有两面性的，可燃气体的普及除给我们提供便利之外也给我们的安全带来了隐患。一旦气体泄漏不能及时处理的话，很容易就会导致燃烧爆炸等事故，这无论是对人身安全还是财产安全都是巨大的威胁。

为减少事故的发生，本论文设计了一种报警器用来监测可燃性气体的泄漏情况，这种报警器的核心是气敏传感器和单片机，以这两种元件辅以其他电子技术，从而实现可燃气体浓度信息的检测以及报警功能。为实现检测可燃性气体的功能，选用了 MQ-2 气敏传感器，这种传感器的检测灵敏度高而且能够迅速响应气体浓度的变化，能够有效地抵抗环境和外界的干扰，并且兼具价格实惠、使用寿命长的优点。本系统的控制芯片选择的是 STC89C52 单片机，由于这种单片机的内部没有 A/D 转换通道，所以需要 ADC0832 芯片弥补这一功能。系统的报警电路有发光二极管和蜂鸣器，可以同时发出两种报警信号以确保能被注意到，这对安全方面是个巨大的保障。这款可燃性气体检测报警器的电路简单，经济实用，很适用于日常生活中的检测报警。

关键字：MQ-2 气敏传感器；STC89C52 单片机；ADC0832

Abstract

With the development of science and technology, all kinds of combustible gases are prevalent in industrial production and daily life. In 2015, the population of China's natural gas pipeline network was nearly 300 million, and the population is still growing in recent years. The use of combustible gases has been the trend of The Times, it in industrial production or daily life to bring people great convenience. However, everything has two sides, the widespread use of combustible gas brings us convenience but also has safety risks. Once the gas leakage can not be dealt with in time, it will easily lead to danger, which is a great threat to the safety of life and property.

In order to reduce the occurrence of accidents, this paper takes gas sensor and single chip microcomputer technology as the core and combines with other electronic technology to design an alarm for detecting combustible gas. In order to realize the function of detecting combustible gas, mq-2 semiconductor resistive combustible gas sensor is selected. This sensor has high detection sensitivity, rapid response speed, and can effectively resist environmental and external interference, as well as the advantages of affordable and long service life. The control chip of this system is STC89C52 MCU, because there is no A/D conversion channel inside this MCU, so it needs ADC0832 chip to make up for this function. The system's alarm circuit includes both light-emitting diodes and a buzzer that emits both alarm signals to ensure that they are noticed, which is a huge safety benefit. This combustible gas detection alarm circuit is simple, economical and practical, very suitable for daily life in the detection of alarm.

Keywords: mq-2 gas sensor; STC89C52 MCU; ADC0832

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：

<https://d.book118.com/015122043324011342>