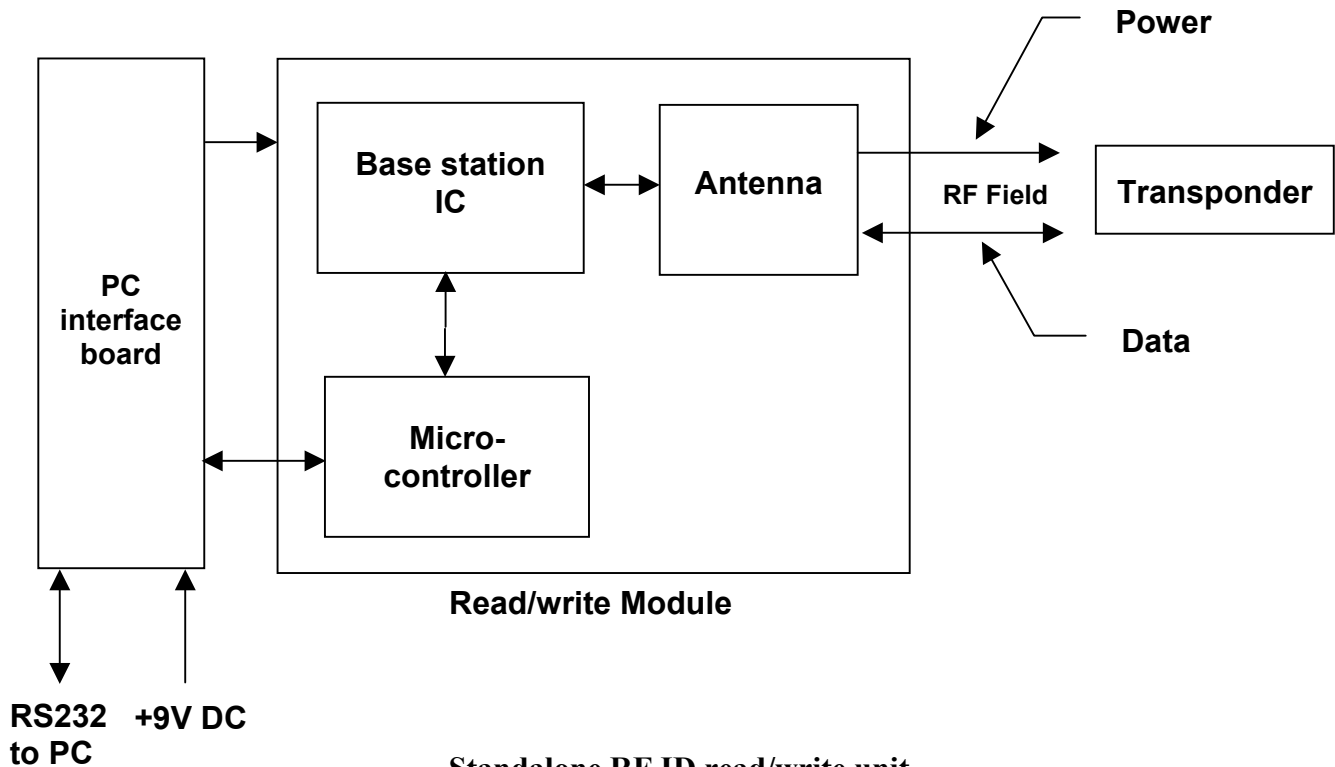


# 125 kHz RFIID Transponder Reader Demonstrator

## Overview

This document describes the functionality of the SIDCOM 125 kHz passive RFIID demonstrator.

## Hardware

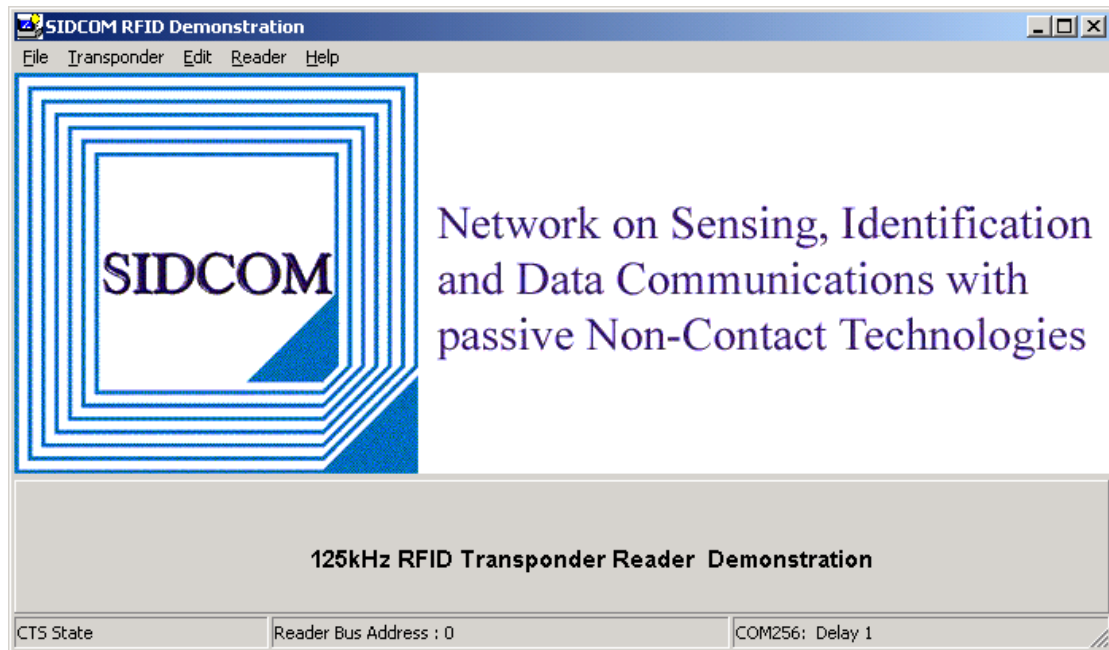


Standalone RF ID read/write unit.

Above is a block diagram of the RFIID demonstrator, which is based upon Atmel's 125 kHz Passive technology. The circuit board comprises of:

- Microchip PIC 16F873 8 bit microcontroller. This provides the communications interface to the PC and controls the RFIID base station IC.
- Atmel U2270B base station IC. This device, together with its associated passive components, produces the RF field to power and transfer data to the passive RFIID tag. The frequency of the RF field is 125kHz, data is transferred by modulating the field where the tag detects this modulation and is able to decode and store the data.
- Atmel TK5551 passive tag, which has a 264-bit EEPROM which is stored in 8 blocks, 33 bits per block. Data is read and written in a block mode, and can be secured to protect against overwriting.

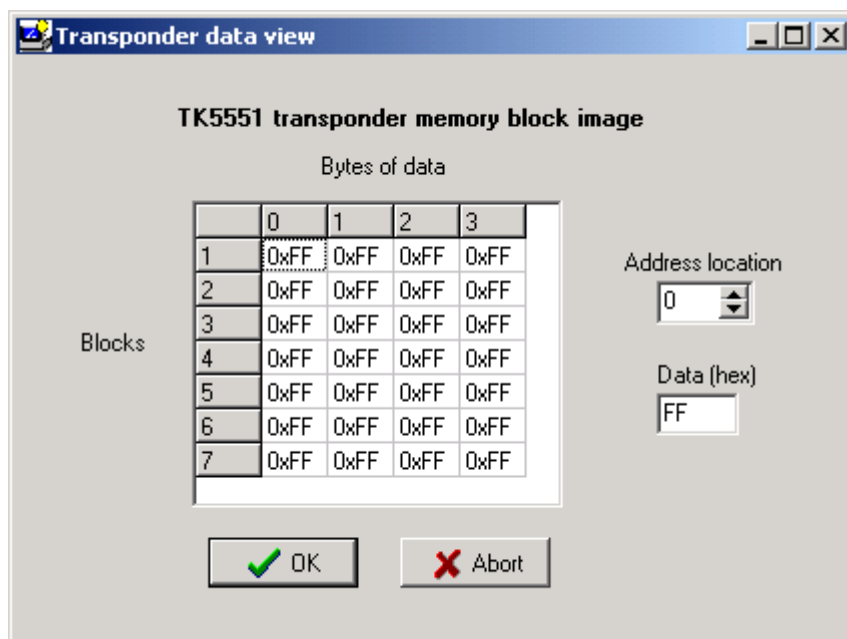
## Software



A simple to use application has been developed in Delphi, to allow the user to demonstrate the application of RFiD, and the capabilities of the Atmel TK5551 tag.

Features include:

- Read, write and verify tag contents.
- Detect a tag.
- Control the RF field.
- View and modify the memory block contents (see below)



## **Setup and Use**

1. Firstly connect a 9V PP3 battery to the demonstrator. Using Microchip MPLAB or similar import the picdemo.hex file. Connect the demonstrator board to the Microchip ICD or similar, and program the PIC flash microcontroller.
2. Connect the demonstrator to a PC with a RS232 serial cable, and invoke the sidecom\_demo.exe application on the PC.
3. To check the communications setup, first set the COM port suitably and the delay factor (**Edit>Settings**) to 10, then choose the **Reader>Program Version** menu item. If the application reports a V0.02 then the communications is setup correctly, if not, then increase or decrease the delay factor until the version is correctly reported.
4. To check the functionality of the system, place a tag near the read/write coil and choose **Transponder>Detect Tag**. If the application reports that a tag is present then the unit is ready to read and write data to the tags.
5. All new tags must be first formatted by the demonstrator, by issuing the **Transponder>Format Tag** command.
6. Data within the tag can be modified by first reading the tag and then editing the tag contents (**Edit>Transponder Data**), and then writing the new contents to the tag.