

APPLICATION NOTE 827

PC Serial Port Drives 12-Bit A/D Converter

Abstract: This application note provides an example of interfacing an A/D converter to a PC using a standard serial port. The CS lines and SCLK lines are emulated by the RTS and DTR lines respectively. Conversion data appears on the data-set-ready (DSR) line. Example C code is given to demonstrate the application circuit.

The circuit shown in **Figure 1** performs a task usually carried out by a microcontroller—that of driving a 12-bit A/D converter (ADC) from the serial port of a PC. Power consumption is low: The 2mA operating current drops to only 15 μ A in shutdown.

When DTR is high, Q1 turns on and allows the circuit to operate normally. Charge on C3 allows Q1 to remain on during DTR's brief negative clock pulses. When DTR goes low for more than 100ms, C3 discharges and turns Q1 off, allowing IC2 to enter shutdown. For that condition, the circuit's supply current is essentially that of IC2—15 μ A maximum and 5 μ A typical.

The circuit is controlled by a simple C routine on the PC ([download EJ22 Listing ZIP file](#)). The code drives DTR high to wake the converter and then starts a conversion, waits for completion, clocks out the data, displays the data, and puts the circuit back to sleep. You can then quit by pressing "Q" or trigger another conversion by pressing any key. The software is easily modified for particular applications.

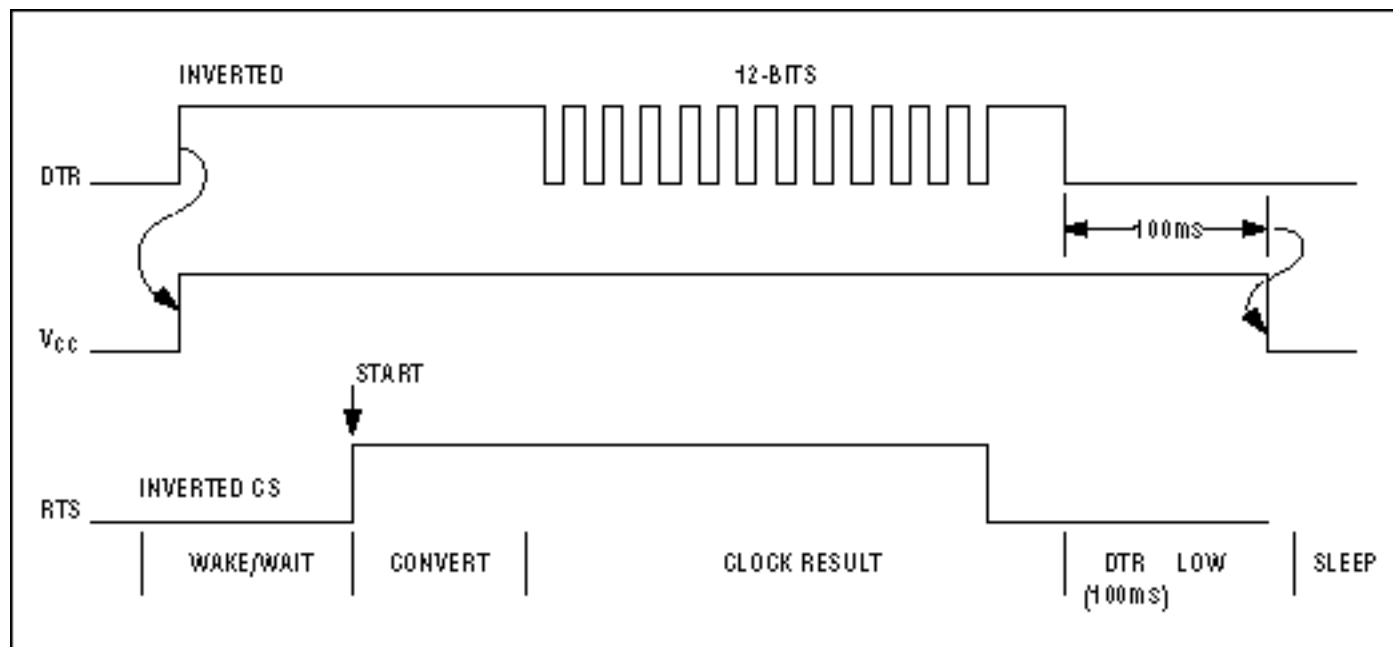


Figure 2. Timing relationships for Figure 1.

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