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Keywords: DS1307,RTC,real-time clock

Using a DS1307 with a PIC Microcontroller

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Abstract: This application note is intended to demonstrate an application using the DS1307 real-time clock (RTC) with a Microchip PIC microcontroller. The software example includes basic operating routines. A schematic of the application circuit is included.

Discussion

This application note demonstrates how to use the DS1307 real-time clock (RTC) with a Microchip PIC16F628 microcontroller.

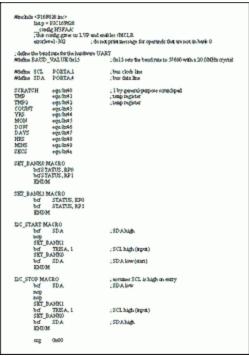
The example code, written in assembly code, includes a routine for reading the time and date from the RTC and a routine to write time and date data to the RTC from user entries.

Operation

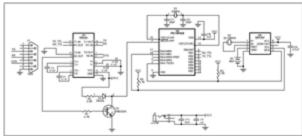
The program uses two general-purpose port pins on the microcontroller to communicate with the DS1307 using the I²C serial interface. The microcontroller's internal UART drives two port pins, which are connected to a DS232 line driver/receiver. User inputs and data outputs from the program are passed through the RS-232 interface from a terminal emulator program on a PC to the microcontroller. The RS-232 DTR input line controls the microcontroller's reset input.

The microcontroller in this example is a PIC16F628. For information on the microcontroller used in this application note, including available programming tools, visit the Microchip web site.

The software is shown in Figure 1. A schematic of the circuit is shown in Figure 2.



Download (TXT, 10kB) Figure 1. Program Listing



More detailed image (PDF, 126kB)

Figure 2. Schematic drawing of the DS1307 circuit used with a PIC microcontroller.

Related Parts		
DS1307	64 x 8, Serial, I ² C Real-Time Clock	Free Samples
DS1337	I ² C Serial Real-Time Clock	Free Samples
DS1338	I ² C RTC with 56-Byte NV RAM	Free Samples
DS1338	I ² C RTC with 56-Byte NV RAM	Free Samples
DS1339	I ² C Serial Real-Time Clock	Free Samples
DS1340	I ² C RTC with Trickle Charger	Free Samples
DS1388	I ² C RTC/Supervisor with Trickle Charger and 512 Bytes EEPROM	Free Samples

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