

0MHz, or 20MHz

during a write  
ring a read  
k  
by RX

t calls the **Start** subrou-  
**INTADD**. Then it calls  
W = 1), the **RX** subrou-

AX518 eight-pin DIP or  
s an output voltage that  
mV output increments.  
are sent to the chip:

utputs to 0 V initially.  
reset, the MAX518 may

chip's I<sup>2</sup>C address. With  
AX518 chips to a PIC.  
5 V and GND. The four  
1'.

```

;;;;;;;;; I2C subroutines ;;;;;;;;;;
;
; The I2Cout subroutine transfers out three bytes: DEVADD, INTADD, and DATAOUT

I2Cout
    call    Start           ;Generate START condition
    movf   DEVADD,W        ;Send peripheral address with R/W=0 (write)
    call   TX              ;Send peripheral's internal address
    movf   INTADD,W        ;Send data to write to peripheral
    call   TX              ;Send data to write to peripheral
    movf   DATAOUT,W      ;Send data to write to peripheral
    call   TX              ;Send data to write to peripheral
    call   Stop            ;Generate STOP condition
    return

; The I2Cin subroutine transfers out DEVADD (with R/W=0) and INTADD, restarts,
; transfers out DEVADD (with R/W=1) and reads one byte back into DATAIN.

I2Cin
    call    Start           ;Generate START condition
    movf   DEVADD,W        ;Send peripheral address with R/W=0 (write)
    call   TX              ;Send peripheral's internal address
    movf   INTADD,W        ;Send peripheral's internal address
    call   TX              ;Send peripheral's internal address
    call   ReStart         ;ReSTART
    movf   DEVADD,W        ;Send peripheral address
    iorlw  B'00000001'     ; with R/W=1 (read)
    call   TX              ; with R/W=1 (read)
    bsf   TXBUFF,7        ;NOACK the following read of one byte
    call   RX              ;Read byte
    movwf  DATAIN        ; into DATAIN
    call   Stop            ;Generate STOP condition
    return

; The Start subroutine initializes the I2C bus and then generates the START
; condition on the I2C bus.
; The ReStart entry point bypasses the initialization of the I2C bus.

Start
    movlw  B'00111011'     ;Enable I2C master mode
    movwf  SSPCON
    bcf   PORTC,SDA        ;Drive SDA low when it is an output
    bcf   PORTC,SCL        ;Drive SCL low when it is an output
    movlw  TRISC           ;Set indirect pointer to TRISC
    movwf  FSR

ReStart
    bsf   INDF,SDA        ;Make sure SDA is high
    bsf   INDF,SCL        ;Make sure SCL is high
    delay 0,1,2           ;t:START
    bcf   INDF,SDA        ;t:START
    delay 0,1,2           ;t:START
    bcf   INDF,SCL
    return

; The Stop subroutine generates the STOP condition on the I2C bus.

Stop
    bcf   INDF,SDA        ;Return SDA low
    bsf   INDF,SCL        ;Drive SCL high
    delay 0,1,2           ;t:STOP
    bsf   INDF,SDA        ; and then drive SDA high
    return
    
```

Figure 9-9 I<sup>2</sup>C subroutines.