

Description

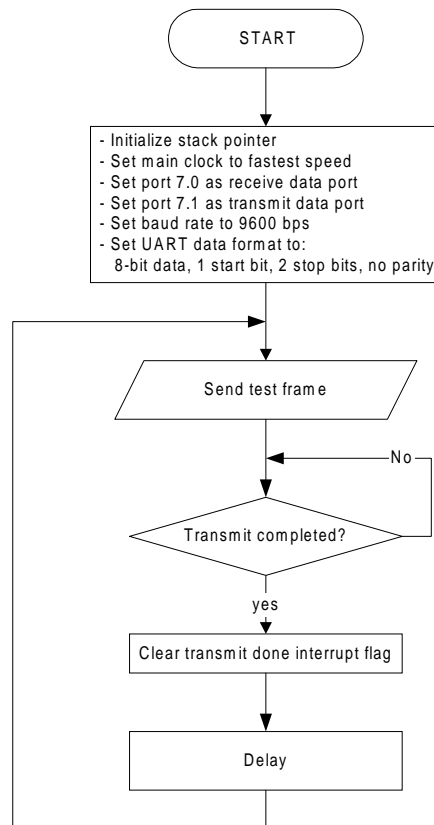
The serial channel 2 of the μ PD7805x/78005x subseries can be used in 3-wire serial I/O mode or asynchronous serial interface (UART) mode.

This program demonstrates the asynchronous serial interface (UART) in transfer-only mode. A frame with one start bit, eight data bits, no parity bit and two stop bits is sent continuously to pin TxD/SO2/P71 at 9600 baud. The frame delay is 700 μ s for an assembly language program and 2.5 ms for a C language program.

Program Specifications

- ❑ Baud rate: 9600
- ❑ Data bits: 8 (least significant bit first)
- ❑ Start bits: 1
- ❑ Stop bits: 2
- ❑ Parity: none
- ❑ Pin used in program: TxD/SO2/P71 UART data output

Flowchart



Assembly Language Program

```

;*****
; Date:          08/16/1999
;
; Parameters: - fastest CPU clock
;              (fx = 5 MHz; 1 CPU clock cycle = 200 ns)
;              - Receive data pin is port 7.0
;              - Transmit data pin is port 7.1
;              - UART mode:
;                9600 baud, 8-bit data, LSB first,
;                1 start bit, 2 stop bits, no parity
;*****
;=====
;              Constants/Variables          =
;=====
RXDirPort     equ     PM7.0      ;RX direction port
TXDirPort     equ     PM7.1      ;TX direction port
TXDataPort    equ     P7.1       ;TX Data port
;=====
;              Specify Interrupt vectors    =
;=====
Res_Vec CSEG AT 0000h           ; Set main program start vector
        DW      Start
;=====
;              Main Program                =
;=====
MAIN      CSEG
Start:    DI                    ; Disable interrupts
          MOVW   AX, #0FE20h     ; Load SP address
          MOVW   SP, AX         ; Set Stack Pointer
          MOV    OSMS,#01h      ; Don't use scaler
          MOV    PCC, #00h      ; Main system clock at fastest setting
          SET1   RXDirPort      ; RX set to input direction
          CLR1   TXDirPort      ; TX set to Output direction
          SET1   TXDataPort     ; Latch transmit output to high
          MOV    BRGC,#90h      ; 9600 bps (k = 0, n = 5)
          MOV    ASIM,#0CDh     ; Mode register settings:
          ; - Baud rate generator output
          ; - Two stop bits
          ; - 8-bit data
          ; - No parity
          ; - RX and TX operation enable
          CLR1   STIF           ; Clear transmit done interrupt flag
Loop1:    MOV    A,#55h         ; Load 55h in A
          MOV    TXS,A          ; Transmit the pattern
Loop2:    NOP                   ; Needed NOP for other interrupt acknowledge
          BF     STIF,$Loop2    ; Wait till transmission is complete
          CLR1   STIF           ; Clear transmit done interrupt flag
          MOV    B,#0FFh       ; Loop3 is a delay between the outputs
Loop3:    NOP                   ; 2 clocks
          DBNZ  B,$Loop3        ; Decrement B and branch back, if B is not 0
          BR    Loop1          ; Repeat the output

          END

```

C Language Program

```

/*****
; Date:          08/16/1999
;
; Parameters: - fastest CPU clock
;              (fx = 5 MHz; 1 CPU clock cycle = 200ns)
;              - Receive data pin is port 7.0
;              - Transmit data pin is port 7.1
;              - UART mode:
;                9600 baud, 8-bit data, LSB first,
;                1 start bit, 2 stop bits, no parity
;*****/
/* extension functions in K0/K0S compiler */
#pragma sfr      /* key word to allow SFR names in C code */
#pragma asm      /* key word to allow ASM statements in C code */
#pragma NOP      /* key word for NOP instruction in C code */
#pragma DI       /* key word for DI instruction in C code */
#pragma EI       /* key word for EI instruction in C code */
/*****
;          Constants/Variables          =
;******/
#define TRUE     1
#define FALSE    0
#define RXDirPort    PM7.0    // RX direction port
#define TXDirPort    PM7.1    // TX direction port
#define TXDataPort   P7.1     // TX Data port

unsigned int  j;
/*****
;          Main Program          =
;******/
void main(void)
{
    DI();                /* Disable interrupts */
    OSMS = 0x01;         /* Don't use scaler */
    PCC = 0x00;          /* Main system clock at fastest setting */
    RXDirPort =1;        /* RX set to input direction */
    TXDirPort =0;        /* TX set to Output direction */
    TXDataPort=1;        /* Latch transmit output to high */
    BRGC = 0x90;         /* 9600 bps (k = 0, n = 5) */
    ASIM = 0xCD;         /* Mode register settings:
                        - Baud rate generator output
                        - Two stop bits
                        - 8-bit data
                        - No parity
                        - RX and TX operation enable

    STIF = 0;           /* Clear transmit done interrupt flag */
    while(TRUE)         /* test loop */
    {
        TXS = 0x55;     /* Transmit the pattern */
        while( !STIF);  /* Wait till transmission is done */
        STIF = 0;        /* Clear transmit done interrupt flag */
        for(j=0;j < 226 ; j++); /* Delay 1 msec */
    }
    /* End of WHILE loop */
}
/* end of MAIN() */

```



For literature, call **1-800-366-9782** 7 a.m. to 6 p.m. Pacific time
or FAX your request to **1-800-729-9288**
or visit our web site at **www.necel.com**

In North America: No part of this document may be copied or reproduced in any form or by any means without the prior written consent of NEC Electronics Inc. (NECEL). The information in this document is subject to change without notice. All devices sold by NECEL are covered by the provisions appearing in NECEL Terms and Conditions of Sales only. Including the limitation of liability, warranty, and patent provisions. NECEL makes no warranty, express, statutory, implied or by description, regarding information set forth herein or regarding the freedom of the described devices from patent infringement. NECEL assumes no responsibility for any errors that may appear in this document. NECEL makes no commitments to update or to keep current information contained in this document. The devices listed in this document are not suitable for use in applications such as, but not limited to, aircraft control systems, aerospace equipment, submarine cables, nuclear reactor control systems, and life support systems. "Standard" quality grade devices are recommended for computers, office equipment, communication equipment, test and measurement equipment, machine tools, industrial robots, audio and visual equipment, and other consumer products. For automotive and transportation equipment, traffic control systems, anti-disaster and anti-crime systems, it is recommended that the customer contact the responsible NECEL salesperson to determine the reliability requirements for any such application and any cost adder. NECEL does not recommend or approve use of any of its products in life support devices or systems or in any application where failure could result in injury or death. If customers wish to use NECEL devices in applications not intended by NECEL, customer must contact the responsible NECEL salespeople to determine NECEL's willingness to support a given application.