



TM57 Series

**Instructions on how to
program Serial number into TM57 Series
MCU with TWR98/99**

Application Note

**Tenx reserves the right to change or
discontinue this product without notice.**

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CONTENTS

PRODUCT NAME	2
TM57 Series IC	2
TITLE	2
TM57 Series – Instructions on how to program Serial number into TM57 Series MCU with TWR98/99	2
APPLICATION NOTE	2
1. Overview	2
2. Serial number programming	2
3. Operating instructions to program Serial number into TM57 Series MCU with TWR98/99	4
S/N parameter explanation.....	6
4. Notes for Serial number:	8
5. Sample program and the application circuit diagram	9

PRODUCT NAME**TM57 Series IC****TITLE****TM57 Series – Instructions on how to program Serial number into TM57
Series MCU with TWR98/99****APPLICATION NOTE****1. Overview**

In certain applications, it often needs to make certain IC's "unique." For example, one to one relationship must be maintained between the transmitting and receiving of the remote control transmitter. In this occasion, it is necessary to use the serial number to achieve the effect. The Serial number function provided in the TM57 series IC needs to be integrated with software and programmed into TWR98/99 to activate. These procedures will be illustrated in detail as follows:

2. Serial number programming

The function of the following sample program is to read the serial number and display them on PORTD port (this program only reads 3 bytes of Serial number; TM57 series IC supports up to 16 bytes of Serial number.) There is another point needs to be taken care of, i.e. during the process of programming TWR98/99, the parameter, S/N Length, must be assigned a value less than or equal to the number of retlw instructions in the program. For example, 3 bytes of Serial number are reserved using three retlw instructions in the following sample program. Then, the parameter, S/N Length, must be smaller or equal to 3. Otherwise, problems may occur.

```

movlw  FFh
movwr  PortD_R   ; Initialize PortD as the output I/O
clrf   PortD_F   ; Initialize PortD as the output low
start:
call   ret_value1 ; Read back the 1st byte of Serial number
movwf  PortD_F    ; Output the Serial number value through PortD
call   delay     ; delay
call   ret_value2 ; Read back the 2nd byte of Serial number
movwf  PortD_F    ; Output the Serial number value through PortD
call   delay     ; delay
call   ret_value3 ; Read back the 3rd byte of Serial number
movwf  PortD_F    ; Output the Serial number value through PortD
call   delay     ; delay
goto  start

        org      0300h ; This address can be defined freely by the customer
                        ; based on need. However, once the address is finalized,
                        ; it must match the value defined in "S/N Start Address"
                        ; during TWR98/99 programming.

ret_value1:
    retlw  00ffh ; The 1st byte of the Serial number value. The program can
                ; return any value at this point. The value in here after
                ; TWR98/99 programming will be the serial number setup by the
                ; customer.

ret_value2:
    retlw  00ffh ; The 2nd byte of the Serial number value. The program can
                ; return any value at this point. The value in here after
                ; TWR98/99 programming will be the serial number setup by the
                ; customer.

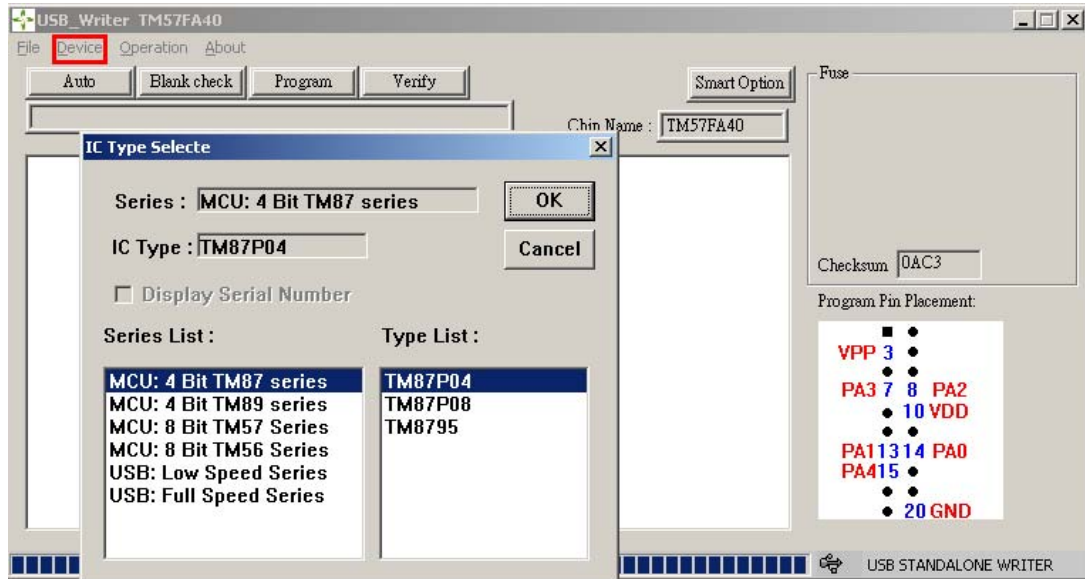
ret_value3:
    retlw  00ffh ; The 3rd byte of the Serial number value. The program can
                ; return any value at this point. The value in here after
                ; TWR98/99 programming will be the serial number setup by the
                ; customer.

end

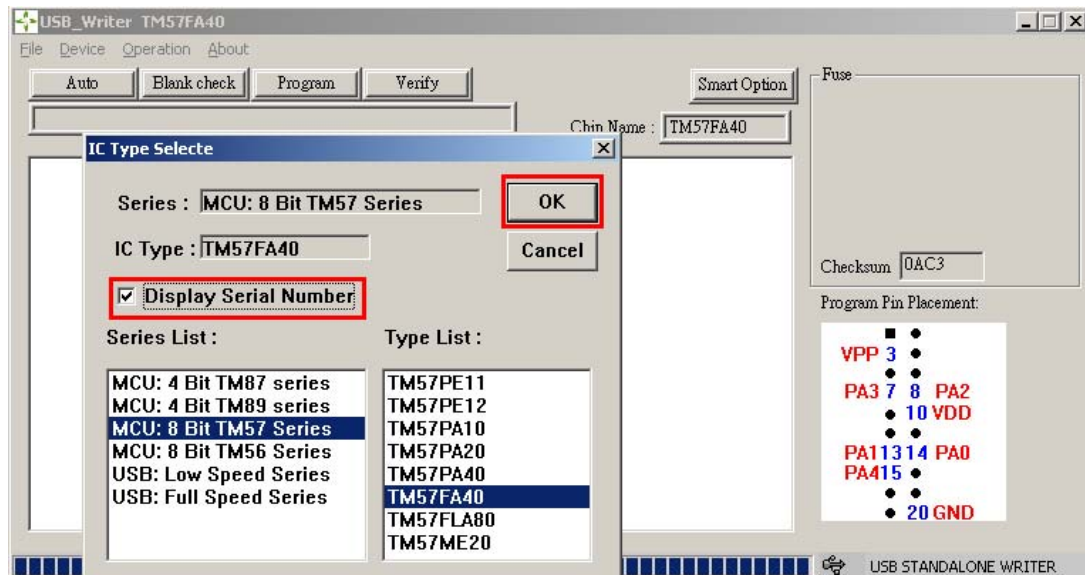
```

3. Operating instructions to program Serial number into TM57 Series MCU with TWR98/99

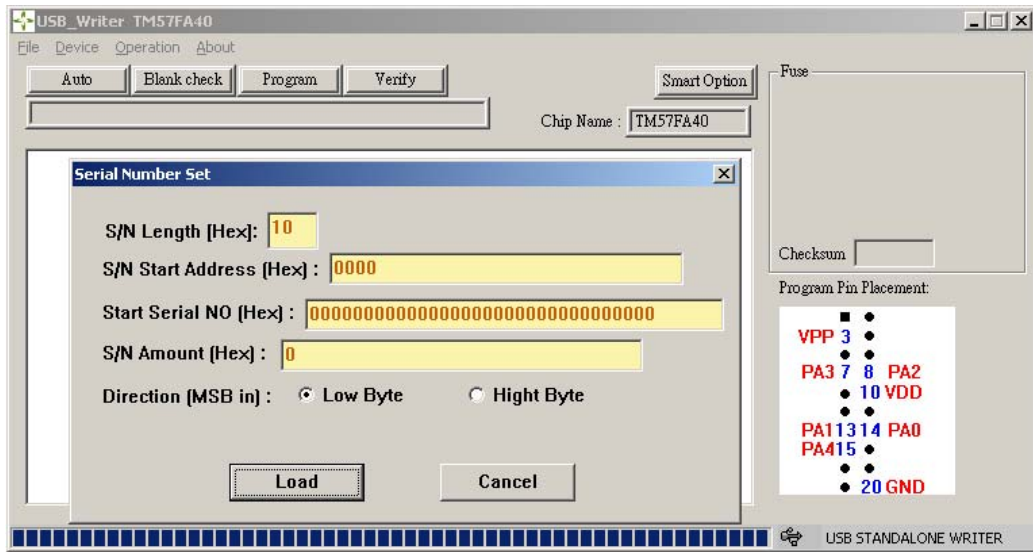
Step 1. Click on the “Device” button:



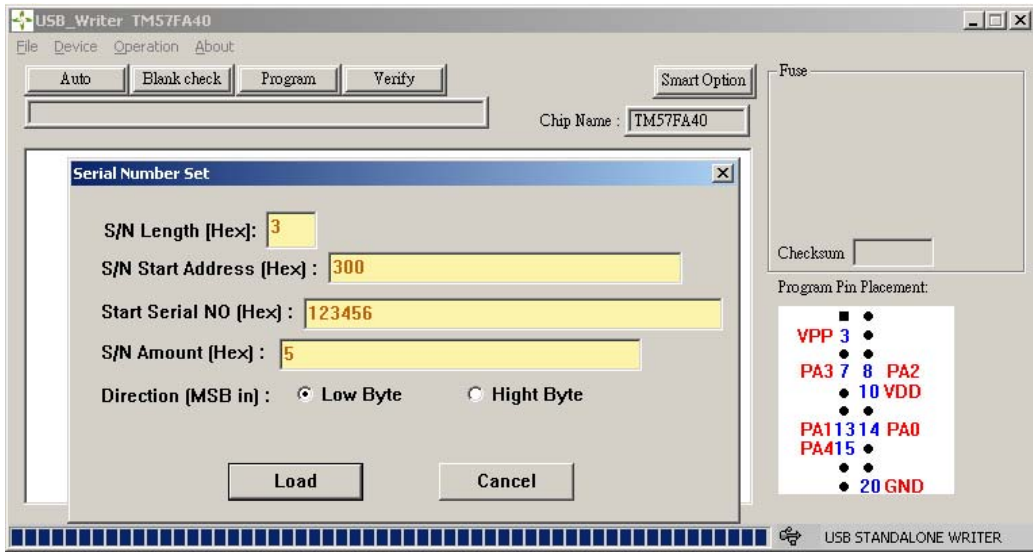
Step 2. After selecting “Customer prepares to program IC,” check mark “Display Serial Number” then click on “OK” to confirm.



Step 3. A dialog box will automatically pop up after click on “OK.” Please set the Serial Number parameter based on the actual program design.



Step 4. After setting up the Serial Number parameter, click on the “Load” button to load the parameter into TWR98/99.

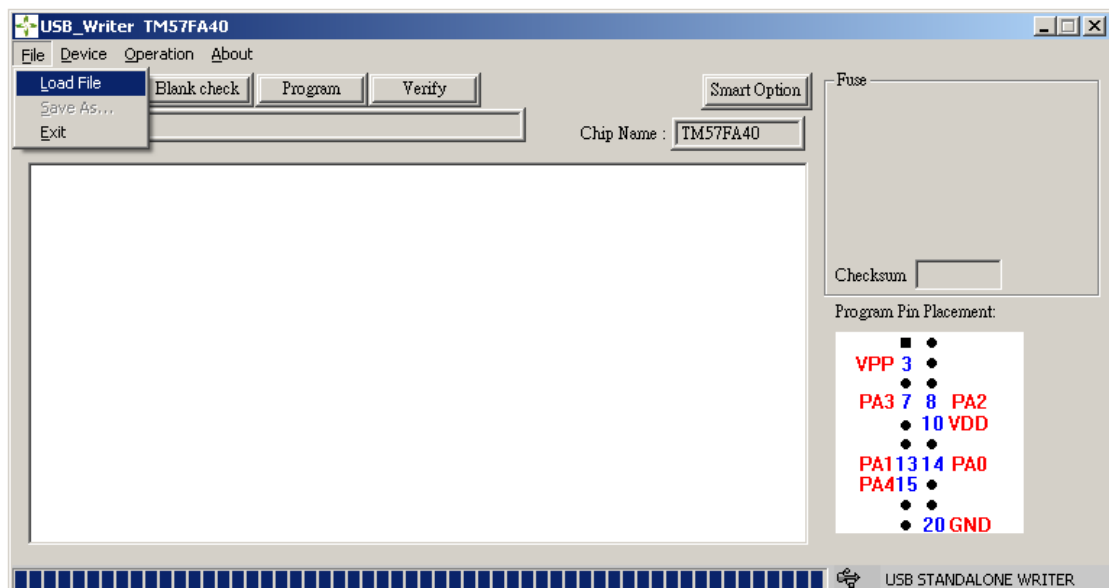


S/N parameter explanation

- "S/N Length {Hex}"** Serial number length setup:
the setup value must be smaller or equal to the number of retlw instructions in program.
- "S/N Start Address {Hex}"** Serial number starting address for programming:
this address must equal to the starting address stored in the Serial number table.
- "Start Serial NO {Hex}"** Serial number initial value.
- "S/N Amount {Hex}"** Setup the total number of IC's to program Serial number
- "Direction {MSB in}"** Program Serial number with the higher bytes on the front or the lower bytes on the front. Using Serial number "12345" as an example, The results of these two options are shown as follows:

Low Byte (Address)	High Byte (Address)
Retlw 12	Retlw 56
Retlw 34	Retlw 34
Retlw 56	Retlw 12

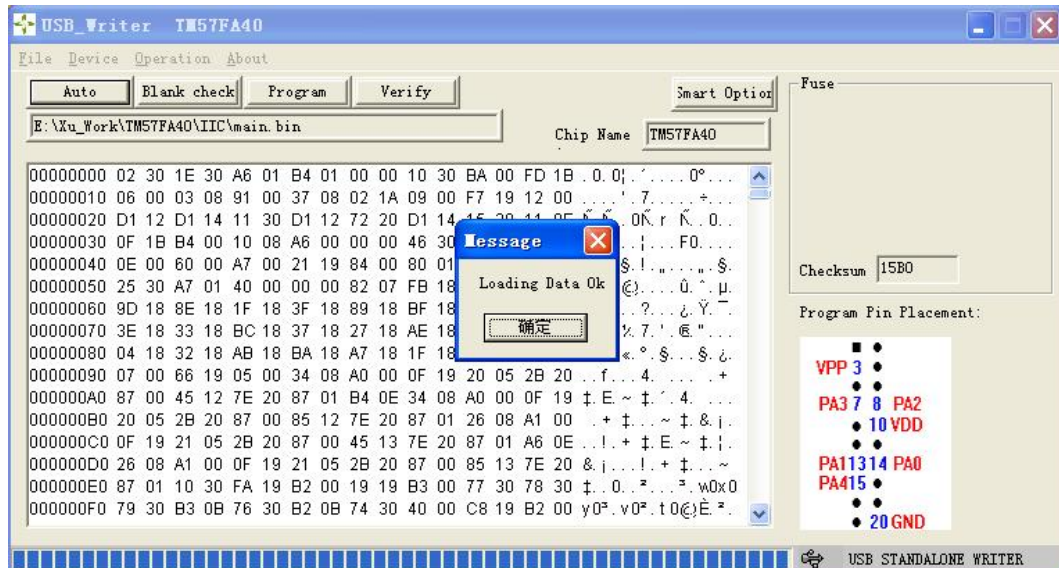
Step 5. Click on File → Load File



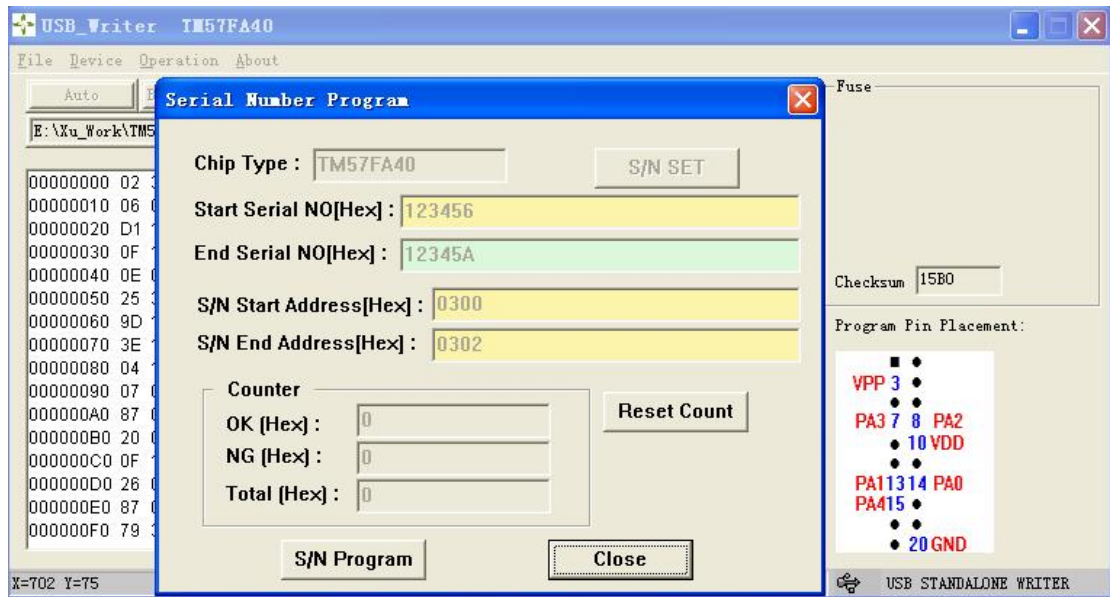
Step 6. Select the programming file documents needed currently, and then click on “Confirm.”



Step 7. After waiting for the file to download OK, click on the “Confirm” button once again and the Serial Number Program mode will pop up



Step 8. Click on the “S/N Program” button to start programming.



4. Notes for Serial number:

1. After finishing all the programming tasks, if programming another code or serial number is desired, go back to step 1 to setup once again.
2. Serial number can also be programmed in the offline mode by click on the "ENTER" button on TWR98/99 directly. However, if the power is disrupted during the programming process, all parameters related to Serial number programming will be reset to the initial values; i.e. TWR98/99 can not memorize the Serial number programming process at all times.

5. Sample program and the application circuit diagram

