

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.

tenx technology inc.

Preliminary

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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.

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

 $\quad \text{end} \quad$

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3. Operating instructions to program Serial number into TM57 Series

MCU with TWR98/99

Step 1. Click on the "Device" button:

🛟 USB_Writer TM57FA40					
Elle Device Operation About					
Auto Blank check Program	Verify		Smart Option	-Fuse	27
		Chin N	ame : TM57FA40		
IC Type Selecte		×			
Series : MCU: 4 Bit TM8	7 00100	ОК			
Selles . MICO. 4 DICTMU	-				
IC Type : TM87P04		Cancel		Checksum 0AC3	
🗖 Display Serial Numbe	r			Program Pin Placement:	<u></u>
Series List :	Type List :				
Selles List.	Type List.			VPP 3	
MCU: 4 Bit TM87 series	TM87P04			PA3 7 8 PA2	
MCU: 4 Bit TM89 series	TM87P08			• 10 VDD	
MCU: 8 Bit TM57 Series MCU: 8 Bit TM56 Series	TM8795			PA11314 PA0	
USB: Low Speed Series				PA11314 PA0	
USB: Full Speed Series				• •	
				• 20 GND	
				- -	
	L Post.			STANDALONE	WRITER

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

USB_Writer TM57FA40				
e <u>D</u> evice <u>O</u> peration <u>A</u> bout				
Auto Blank check Program	Verify		Smart Option	Fuse
IC Type Selecte	1		: TM57FA40	
	F			
Series : MCU: 8 Bit TM57	Series	ОК		
IC Type : TM57FA40	1	Cancel		
				Checksum OAC3
Display Serial Number				Program Pin Placement:
Series List :	Type List :			
7	·			VPP 3
MCU: 4 Bit TM87 series	TM57PE11			PA3 7 8 PA2
MCU: 4 Bit TM89 series	TM57PE12			• 10 VDD
MCU: 8 Bit TM57 Series	TM57PA10			• •
MCU: 8 Bit TM56 Series	TM57PA20			PA11314 PA0
USB: Low Speed Series	TM57PA40			PA415 •
USB: Full Speed Series	TM57FA40			• •
	TM57FLA80			 20 GND
	TM57ME20			
				STANDALONE WRITE

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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.

uto Blank check Program Verify Sm	art Option
Chip Name : TM57F.	A40
Serial Number Set	×
S/N Length [Hex]: 10	Checksum
S/N Start Address (Hex) : 0000	Program Pin Placement:
Start Serial NO (Hex) : 00000000000000000000000000000000000	riogiani rii riacement.
	VPP 3 •
S/N Amount (Hex) : 0	PA3 7 8 PA2
Direction (MSB in) : 💿 Low Byte 🛛 🔿 Hight Byte	• 10 VDD
	PA11314 PA0
	PA415 •

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

	art Option
Chip Name : TM57F	A40
Serial Number Set	X
S/N Length [Hex]: 3	
S/N Start Address (Hex) : 300	Checksum
Start Serial NO (Hex) : 123456	Program Pin Placement:
	VPP 3
S/N Amount (Hex) : 5	PA3 7 8 PA2
Direction (MSB in) : 💿 Low Byte 🛛 🔿 Hight Byte	• 10 VDD
	PA11314 PA0
	PA415 •

"S/N Length {Hex}"	Serial number length setup:		
	the setup value must be sma	ller or equal to the number	
	of retlw instructions in progra	m.	
"S/N Start Address {Hex}"	Serial number starting addres	ss for programming:	
	this address must equal to th	e 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)	Hight Byte (Address)	

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

Step 5. Click on File \rightarrow Load File

SB_Writer TM57FA40	
File Device Operation About	P
Load File Blank check Program Verify Smart Option	Fuse
Exit Chip Name : TM57FA40	
	Checksum
	Program Pin Placement:
	VPP 3 •
	PA3 7 8 PA2 • 10 VDD
	PA11314 PA0
	PA415 •
	• • • • • • • • • • • • • • • • • • •
	🛛 🖙 USB STANDALONE WRITER

tenx technology, inc. Rev 1.0, 2010/08/16 Step 6. Select the programming file documents needed currently, and then click on "Confirm."

🕂 USB_Writer TN57FA40	
Eile Device Operation About	
Auto Blank check Program Verify 3mart Option	'use
17 ?	
查找范围 ①: C IIC ▼ ← 仓 合 囲・	
main	
	sum
	am Pin Placement:
	1.
文件名 (2): main 打开 (2)	7 8 PA2
文件类型(I): TxIce Hex Files (*.hex) 取消	• 10 VDD
	PA415 •
	• 20 GND
	😝 USB STANDALONE WRITER

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

SB_Writer TH57FA40	
File Device Operation About Auto Blank check Program Verify Smart Option	-Fuse
E. CAL OF RTHOFF ROCIE CHIEFIN OIL	
00000000 02 30 1E 30 A6 01 B4 01 00 00 10 30 BA 00 FD 1B . 0. 0¦. ´ 0° 📐	
00000010 06 00 03 08 91 00 37 08 02 1A 09 00 F7 19 12 00'.7+ =	
00000020 D1 12 D1 14 11 30 D1 12 72 20 D1 14 15 30 11 05 K K . 0	
00000030 0F 1B B4 00 10 08 A6 00 00 00 46 30 Lessage	
00000040 0E 00 60 00 A7 00 21 19 84 00 80 01 00000050 25 30 A7 01 40 00 00 00 82 07 FB 18 Loading Data Ok (c)û. ^.µ.	Checksum 15B0
00000000 9D 18 8E 18 1F 18 3F 18 89 18 BF 18	D D DI L
000000070 3E 18 33 18 BC 18 37 18 27 18 AE 18 () () () () () () () () () () () () ()	Program Pin Placement:
00000080 04 18 32 18 AB 18 BA 18 A7 18 1F 18	
00000090 07 00 66 19 05 00 34 08 A0 00 OF 19 20 05 2B 20f4+	VPP 3 •
000000A0 87 00 45 12 7E 20 87 01 B4 0E 34 08 A0 00 0F 19 ‡.E.~ ‡.´.4	PA3 7 8 PA2
000000B0 20 05 2B 20 87 00 85 12 7E 20 87 01 26 08 A1 00 . + ‡~ ‡.&.j.	• 10 VDD
000000C0 OF 19 21 05 2B 20 87 00 45 13 7E 20 87 01 A6 OE	••
000000D0 26 08 A1 00 0F 19 21 05 28 20 87 00 85 13 7E 20 & j ! . + ‡~	PA11314 PA0
000000E0 87 01 10 30 FA 19 B2 00 19 19 B3 00 77 30 78 30 ‡0 ² ³ .w0x0	PA415 •
000000F0 79 30 B3 0B 76 30 B2 0B 74 30 40 00 C8 19 B2 00 y0³.v0².t0@}È.². 💽	• 20 GND
	USB STANDALONE WRITER

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

💠 USB_Writer	T#57FA40	
Eile Device Operation About		
Auto	Serial Number Program	Fuse
E:\Xu_Work\TM5		
00000000 02 3	Chip Type : TM57FA40 S/N SET	
00000010 06 0 00000020 D1 1	Start Serial NO[Hex] : 123456	
00000030 OF 1	End Serial NO[Hex] : 12345A	
00000040 OE 0 00000050 25 3	S/N Start Address[Hex]: 0300 S/N End Address[Hex]: 0302	Checksum 15B0
00000060 9D 1		Program Pin Placement:
00000070 3E 1 00000080 04 1	• •	VPP 3 •
00000090 07 0 000000A0 87 0	Counter Reset Count	••
00000080 20 0	OK (Hex): 0	PA3 7 8 PA2 • 10 VDD
000000C0 OF 1 000000D0 26 (Total (Hex):	PA11314 PA0
000000E0 87 0 000000F0 79 3		PA415 •
	S/N Program Close	• 20 GND
X=702 Y=75		🖙 USB STANDALONE WRITER

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 rest 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

