十速科技股份有限公司
tenx technology inc.

Advance Information

4-Bit Micro-Controller

TM87 series

SZ027_01

Demo program resource usage illustration

Application Note

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

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PRODUCT NAME

SZ027_01

TITLE

Demo program resource usage illustration

APPLICATION NOTE

1. Constant setting illustration

```
TemperatureDisM        equ        011h
TemperatureDisL        equ        012h
```

Show the PSTB constant for temperature. If you want to change the PSTB for temperature, you only need to modify the settings of these two constants.

```
ReadRR                 equ        0001B
ReadRT                 equ        0010B
ReadComplete           equ        1000B
```

Temperature measurement program control constant.

```
TemperatureTabAddressL     equ        00h
TemperatureTabAddressH     equ        00h
```

Temperature search table header address. If you want to change the location of Temperature search table, you only need to modify the settings of these two constants.

2. Memory Unit illustration

```
                org    00H
SecondCounter          dn         1
```

Seconds counter.

```
TemperatureTableAddrL      dn         1
TemperatureTableAddrH      dn         1
```

Temperature search table address storage unit.

```
TemperatureC0          dn         1
TemperatureC1          dn         1
```

Temperature measurement result save unit.

TemperatureOver	dn	1

Signal for temperature exceeding range.

	org 20H	
ACC	dn	1
CF	dn	1

Interrupt service program ACC and CF preservation unit.

C125	dn	1

125MS delay counter.

RrRFC0	dn	1
RrRFC1	dn	1
RrRFC2	dn	1
RrRFC3	dn	1

Variables RrRFC0 to RrRFC3 are used to preserve oscillation frequencies for oscillation circuits which are formed with reference resistors and capacitors.

RtRFC0	dn	1
RtRFC1	dn	1
RtRFC2	dn	1

Variables RtRFC0 to RtRFC2 are used to preserve oscillation frequencies for oscillation circuits which are formed with thermal resistors and capacitors.

Result3	dn	1
Result2	dn	1
Result1	dn	1
Result0	dn	1

Result0 to Result3 are variables used to preserve the quotients of the above two sets of data.

	org 70H	
IntFlag	dn	1
TempZero	dn	1
TempZero	dn	8

Temporary storage unit.

3. I/O port description

The DEMO program uses three I/O ports only for the temperature testing: they are CX、RR、RT respectively.

4. Functions and processes description

This program consists of TIMER2 interrupt services routine and two main functions. The function of EnableTimer2ToTestTemperature is to setup the starting signal for the temperature test, build RT test network, and enable TIMER2 interrupt. The function of TIMER2 interrupt services routine Timer2Interrupt is to read the counting values of RT and RR networks in sequence and set up signal to enable calculations.

The function of CalculateTemperature routine is to calculate and find the temperature values.

Input port parameters：	IntFlag BIT.3 equals 1 means the data is temperature data. RtRFC2, RtRFC1, RtRFC0 (RT NetWork content of counter) RrRFC2, RrRFC1, RrRFC0 (RR NetWork content of counter)
Output port parameters：	the temperature value measured by Temperature0 and Temperature1.
Used variables：	Result3 ~ 0、TempReg+7 ~ 0、TemperatureTableAddrL ~ H.