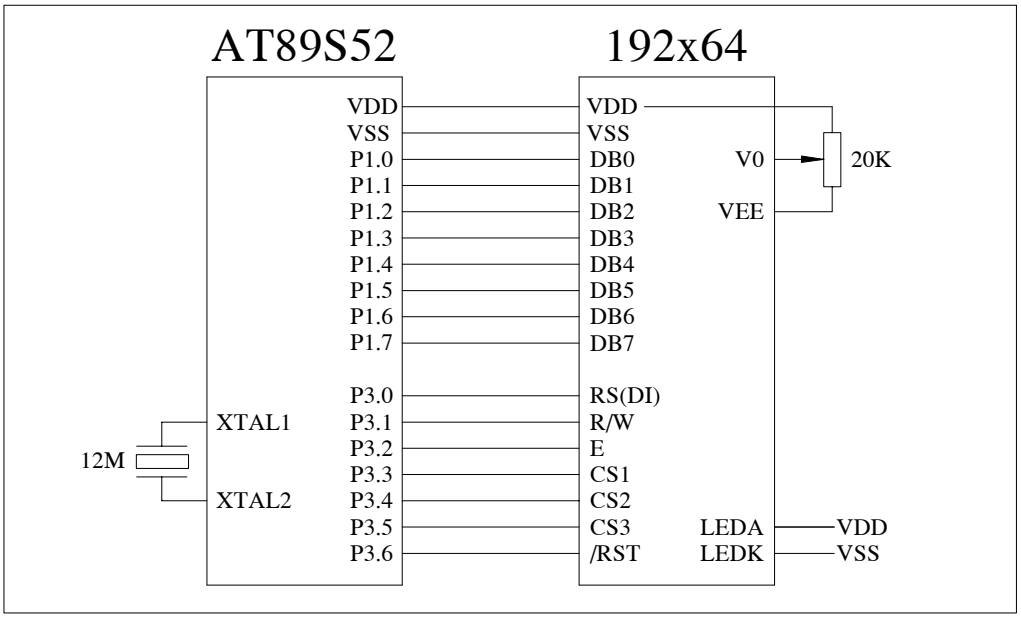
深圳秋田微电子有限公司
SHENZHEN AV-DISPLAY CO.,LTD.

Reference Program for LCD Modules	Version No.	A00
	Type	COB
Remark	192x64 dot matrix series, with S6B0108 or compatible IC	

1. Interface



2. Instruction Code

Instruction	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	Function
Display ON/OFF	L	L	L	L	H	H	H	H	H	L/H	Controls the display on or off. Internal status and display RAM data is not affected. L:OFF, H:ON
Set Address (Y address)	L	L	L	H	Y address (0~63)						Sets the Y address in the Y address counter.
Set Page (X address)	L	L	H	L	H	H	H	Page (0~7)			Sets the X address at the X address register.
Display Start Line (Z address)	L	L	H	H	Display start line (0~63)						Indicates the display data RAM displayed at the top of the screen.
Status Read	L	H	BUSY	L	ON/OFF	RESET	L	L	L	L	Read status. BUSY L: Ready H: In operation ON/OFF L: Display ON H: Display OFF RESET L: Normal H: Reset
Write Display Data	H	L	Write Data								Writes data (DB0:7) into display data RAM. After writing instruction, Y address is increased by 1 automatically.
Read Display Data	H	H	Read Data								Reads data (DB0:7) from display data RAM to the data bus.

Remark: For the detail instruction for the control function, please refer to the related manual data book for controller IC.

3. Reference Program

```
//====== 89S52 MCU, 12M Oscillator ===========
#include <reg51.h>
#include <intrins.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <math.h>
#define uint unsigned int
#define uchar unsigned char
#define xchar unsigned char code

sbit RS  = P3^0;
sbit WRR = P3^1;
sbit E   = P3^2;
sbit CS1 = P3^3;
sbit CS2 = P3^4;
sbit CS3 = P3^5;
sbit RST = P3^6;
sbit BF  = ACC^7;
//-----------------------------------
xchar xshm[1536]={
0xFF,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,
0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,
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0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0x01,0xFF,
0xFF,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
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0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0xFF,
0xFF,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x10,0x10,0x10,0x10,0x18,0xF8,0xF8,0xFC,0x0C,0x0E,0x06,0x04,0x00,0x00,0x00,0x00,
0xFF,0xFF,0xFE,0x02,0x00,0x00,0x00,0x80,0x80,0x80,0x00,0x00,0x00,0x00,0x00,0x00,
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0x00, 0x00, 0x00, 0xF8, 0xF8, 0xF0, 0x10, 0x10, 0x10, 0x10, 0x10, 0x10, 0x10, 0xF0, 0xF0, 0xF0,
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0x00, 0x80, 0xE0, 0x78, 0x3E, 0x0E, 0x86, 0x84, 0x00, 0xF0, 0xF0, 0xF0, 0x01, 0xFF, 0xFE, 0x02,
0xF8, 0xF8, 0xF0, 0x00, 0x80, 0xF8, 0xFE, 0x3E, 0x06, 0x00, 0x00, 0x80, 0x80, 0x00, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0xC0, 0xC0, 0xC0, 0x80, 0x80, 0x80, 0x80, 0x80, 0x80, 0xFF, 0xFF,
0xFE, 0x82, 0x80, 0x80, 0x80, 0x80, 0x80, 0x80, 0xC0, 0xC0, 0xC0, 0x00, 0x00, 0x00, 0x00, 0x00,
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0x04, 0x04, 0x04, 0x84, 0x84, 0xC4, 0x64, 0x34, 0x3C, 0x1C, 0x1E, 0x0E, 0x0C, 0x08, 0x00, 0x00,
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0xFF, 0xFF, 0xFF, 0xF0, 0x18, 0x0C, 0x0F, 0x07, 0x03, 0x01, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
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0x00, 0x00, 0x00, 0x0F, 0x0F, 0x07, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01,
0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x07, 0x07, 0x07, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x1F, 0x1F, 0x1F, 0x08, 0x0E, 0x07, 0x03, 0x00, 0x00, 0x10, 0x10, 0x19,
0x09, 0x0C, 0x06, 0x06, 0x03, 0x01, 0x01, 0x00, 0x01, 0x03, 0x07, 0x0F, 0x0E, 0x04, 0x04, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x07, 0x0F,
0x0F, 0x08, 0x08, 0x08, 0x08, 0x08, 0x08, 0x08, 0x08, 0x08, 0x0C, 0x0F, 0x0F, 0x04, 0x00,
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0x1F, 0x1F, 0x0F, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
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0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0x80,0xFF
};
//------------------------------------
void delayms(uint v)
{ while(v!=0)v--;}
//------------------------------------
void delay(uint nn)
{
  uint mm;
  while(nn-->0)
  for(mm=0;mm<1000;mm++) { };
}
//------------------------------------
void rbusy()
{
  WRR=1;
  do
  {
    P1=0xff;E=1;delayms(4);ACC=P1;E=0;
  }while(BF==1);
}
//------------------------------------
void wcomd_1(uchar wc1)
{
  CS1=1;CS2=0;CS3=0;RS=0;
  rbusy();
  WRR=0;P1=wc1;E=1;delayms(4);E=0;
}
//------------------------------------
void wdata_1(uchar wd1)
```

```
{
  CS1=1;CS2=0;CS3=0;RS=0;
  rbusy();
  RS=1;WRR=0;P1=wd1;E=1;delayms(4);E=0;
}
//-------------------------------------
void wcomd_2(uchar wc2)
{
  CS1=0;CS2=1;CS3=0;RS=0;
  rbusy();
  WRR=0;P1=wc2;E=1;delayms(4);E=0;
}
//-------------------------------------
void wdata_2(uchar wd2)
{
 CS1=0;CS2=1;CS3=0;RS=0;
  rbusy();
  RS=1;WRR=0;P1=wd2;E=1;delayms(4);E=0;
}
//-------------------------------------
void wcomd_3(uchar wc2)
{
  CS1=0;CS2=0;CS3=1;RS=0;
  rbusy();
  WRR=0;P1=wc2;E=1;delayms(4);E=0;
}
//-------------------------------------
void wdata_3(uchar wd2)
{
 CS1=0;CS2=0;CS3=1;RS=0;
  rbusy();
  RS=1;WRR=0;P1=wd2;E=1;delayms(4);E=0;
}
//-------------------------------------
void initial()
{
  wcomd_1(0xc0);wcomd_2(0xc0);wcomd_3(0xc0);
  wcomd_1(0x3f);wcomd_2(0x3f);wcomd_3(0x3f);
}
//-------------------------------------
void disp_all(uchar ch1,uchar ch2)
{
  uchar i,j;
  for(j=0;j<8;j++)
  {
    wcomd_1(0xb8+j);wcomd_2(0xb8+j);wcomd_3(0xb8+j);
    wcomd_1(0x40);wcomd_2(0x40);wcomd_3(0x40);
    for(i=0;i<32;i++)
    {
```

```
      wdata_1(ch1);wdata_2(ch1);wdata_3(ch1);
      wdata_1(ch2);wdata_2(ch2);wdata_3(ch2);
    }
  }
}
//-----------------------------------
void disp_bmp(xchar *str)
{
  uchar i,j;
  for(j=0;j<8;j++)
  {
    wcomd_1(0xb8+j);wcomd_2(0xb8+j);wcomd_3(0xb8+j);
    wcomd_1(0x40);wcomd_2(0x40);wcomd_3(0x40);
    for(i=0;i<64;i++)
    {
      wdata_1(str[i+j*192]);
      wdata_2(str[i+64+j*192]);
      wdata_3(str[i+128+j*192]);
    }
  }
}
//-----------------------------------
////////// main ///////////////
void main(void)
{
  RST=0;delay(10);
  RST=1;delay(2);
  initial();
  while(1)
  {
    disp_bmp(xshm);       delay(100);
    disp_all(0xff,0xff);  delay(100);
    disp_all(0x00,0x00);  delay(100);
    disp_all(0x55,0xaa);  delay(100);
    disp_all(0xaa,0x55);  delay(100);
    disp_all(0xff,0x00);  delay(100);
    disp_all(0x00,0xff);  delay(100);
  }
}
```